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An investigation on the application of Kahoot, Quizziz, Blooket & Educaplay in grammatical instruction

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Abstract

It is inevitable that grammar has played a vital role in language learning since the adoption of incorrect grammatical structures leads to communication breakdown. Hence, numerous approaches have been utilized to teach grammar to students including Grammar Translation Method, Direct method, or Communicative Language Teaching. These methods are seemingly effective in applying campus-based classrooms rather than in virtual classrooms. During the virtual teaching period, it is assumed that the level of students' engagement in the lesson has been modest. Furthermore, interactive game-based tools such as Kahoot, Quizziz have been widely used to enhance students' vocabulary and reading comprehension (Chiang, 2020, Al Shra'ah, 2021 and Munuyandi, Husain, Jabar, and Jusoh, 2021). The current study aims at investigating the effects of interactive game-based learning tools (Kahoot, Quizziz, Blooket, and Educaplay) on English-major students' grammatical learning and their attitudes toward the application. The study was conducted with the combination of quasi-experimental and qualitative study and utilization of pre-test and post-test, and questionnaires to collect comprehensive data. The findings showed that there were no significant differences in grammatical performance of the two researched groups and the participants showed positive attitudes towards all the tools in which three of them (Kahoot, Quziziz and Blooket) were recommended in grammatical instruction.

***Keywords*:** grammar, mixed research method, game-based tools, Kahoot, Quizziz, Blooket, Educaplay.

1. Introduction

It is supposed that technological advancement has transformed all aspects of life and education inclusive. In the past, English grammatical lessons were quite tedious with three stages: theoretical presentation, mechanical drilling, and homework completion. Grammar was taught through rules, examples and texts (Thornbury, 1999) and instructed in diverse approaches such as behavioristic approach, grammar translation method, direct method, and audio-lingual method (Dibekulu, 2022). To be more specific, Yaccob and Yunus (2019) and Awing and Nasri (2023) advocated that games facilitate enhancing students' academic achievement, motivation, interest and student participation. The shared drawback of those teaching methods is that they are seemingly effective in small-size classes and applied in physical classes. During covid 19 pandemic period, due to strict lockdown and social distancing regulations, Vietnamese students were virtually instructed. Therefore, lecturers were constrained to alter teaching methods to maximize the learning effectiveness. One of the researchers came up with digital tools including Kahoot!, Quizziz, Blooket and Educaplay and applied them in grammar instruction. And the aim of this paper is to evaluate the impacts of those tools on grammatical improvement and students' perceptions.

In fact, there have been a handful of empirical studies on the impacts of these virtual interactive learning platforms on students' grammatical development. Heni, Sudarsono, and Regina (2021), with Design and Development Research by Branch methodology, concluded that Kahoot! – One of the most popular interactive learning tools is feasible and should be utilized for grammar learning at senior high school. Meanwhile, Zarzycka-Piskorz (2016) observed General English course students at a Poland-based

university to learn about their intrinsic motivation in learning when experiencing the Kahoot gamification system and administered questionnaires to dig into their preference for Kahoot. The results revealed students' positive attitude toward Kahoot application thanks to competition boosting features, various objectives attainment and excitement. As for the studies on quizziz, Pham (2023) concluded that students instructed with Quizziz got higher marks in the grammar achievement test whereas Munuyandi, Husain, Jabar, Jusoh (2021) found that respondents showed positive attitude toward Quizziz adoption in Malaysian grammar learning. Also, Pham and Ly (2023) asserted that Vietnamese students considered Blooket a beneficial tool in grammar classes. Our research examined the four above-mentioned digital interactive tools with a comprehensive aim to see whether the group which was instructed with those tools outperformed the group taught by traditional methods and their perceptions on learning integrated with technology. To accomplish these objectives, two questions were raised below.

Research questions

- To what extent do interactive game-based learning tools impact English-majored students' grammar at a private university?
- What are the attitudes of English-majored students at a private university toward the application of game-based learning tools in teaching grammar?

2. Literature review

2.*1Game-based learning tools*

2.1.1 *Definition*

Salen and Zimmerman (2004) define a game as an activity that involves players in a kind of competition among them under certain game rules. The outcome of this is usually a winner or a scale of achievements. Apart from rules, Mayer (2014) defined games as responsive, allowing players to act according to a system of acting and responding. Besides, games are said to be challenging, and usually follow a progress that is usually cumulative when one action is followed by other actions under similar circumstances. With these characteristics, games are more likely to put forth more motivation to their players. This would in turn help players achieve a higher and higher level in the game.

When defining games for learning, one more characteristic added to the definition is some specific learning goals. A certain game especially designed for educational purposes should serve certain learning needs from learners and thus help them achieve some knowledge through playing the game. They are designed with a goal to facilitate learning by engaging students in a game-like learning activity. When motivated, they are highly engaged in learning subjects and thus enhance their learning competence (Hartt, Hosseini, & Mostafapour, 2020). However, one thing to remember is that game designers should balance between two different goals both acquiring learning purposes and enjoying the gameplay. If the focus is too much on achieving the learning objectives, the feeling of a game-like environment may not be achieved when vital elements of a game including playfulness or player satisfaction, are not maintained. In contrast, when the focus is spent too much on the game side, the ultimate purposes of learning may be lost (Plass, Homer, Mayer, & Kinzer, 2020).

2.1.2 *Types of game-based learning tools*

Role-playing games

Since as early as 1995, Abour and Christine already argued that using learners' experience as a means of teaching helped enhance their enthusiasm in the learning process. Role play games, as a result, are said to help players experience situations that may occur some time in their future. From an educational perspective, role-play games provide learners with opportunities to play various roles of different characters and drive them through several scenarios. On the way to achieving objectives when playing the game, they are constantly exposed to certain learning content that are integrated in the game.

Collaborative games

Collaborative learning, as discussed by Dirksen (2016), provides learners with opportunities to be involved in learning experience through interactively negotiating, supporting and other activities that draw learners' attention. In order to finish a task, they must discuss with their group members to exchange ideas and thus learn from one another. As a result, they will become more active learners and their learning competence will be improved when engaging in these games (Khan et al., 2021).

Detective games

E-learning games, in detective style, are designed to engage learners by immersing them in a mysterious environment where they must explore, solve puzzles, and uncover hidden clues. These games often incorporate a narrative to drive the learning experience and foster curiosity.

A key benefit of detective-style games is their ability to enhance problem-solving skills (Katerina, 2020). By encouraging learners to think critically and creatively to overcome challenges, these games can be valuable tools for employee development. Additionally, they are well-suited for teaching compliance topics that require keen observation and attention to detail.

Competitive games

For years, how to engage learners in learning activities has been an issue for most educators. This is especially true when a teacher has to have students finish a task in a limited amount of time. In such a situation, involving learners in a competition against each other is an appropriate solution. According to Li, Li, Wu, and Zhen (2022), even though competition does not directly ensure improving learners' competence, it is significantly effective in raising their motivation and engagement in doing the assigned task. One way to create competitive activities in a classroom setting is to organize games in which students must compete against each other.

Competitive e-learning games can be a powerful tool for adult learners, as they not only motivate individuals but also provide opportunities for peer comparison and academic growth (Plass, Homer, et al., 2020). By allowing learners to track their progress against others through leaderboards or similar systems, these

games can provide a sense of competition and encourage learners to strive for excellence. Competitive e-learning games, therefore, can be particularly effective in workplace settings where deadlines are tight or team building is a priority as they help learners stay motivated, improve their performance, and contribute to a positive and collaborative learning environment.

2.1.3 *The importance of Game-based learning tools*

In today's educational landscape, the learning process at school is said to center around teaching and drilling with repetition that mostly focuses on factual information (Chee, 2016). Therefore, it would be beneficial to find a more effective use of teaching aids to enhance the learning experience. The integration of digital games, consequently, and applied sciences into classrooms has significantly impacted both teaching methods and student engagement. Game-Based Learning (GBL) offers a promising approach to improving both learning and teaching outcomes.

One of the primary challenges educators face is teaching diverse groups of students with varying personalities, abilities, and learning preferences. GBL can address this challenge by providing a variety of engaging activities, rewards, and surprises that cater to different learning styles and maintain student interest.

Beyond rote memorization, effective learning includes the use of personal knowledge and practical experience to confront real problems in reality. GBL can play a crucial role in developing these problem-solving abilities and preparing students for future success by preparing them through authentic scenarios that replicate the outside world (Fischer & Barabasch, 2020).

Research has consistently shown that knowledge and skills acquired through GBL are more likely to be retained for longer periods than those from traditional learning methods (Chee, 2016). This is because GBL effectively engages students in the learning process by providing well-designed games with meaningful learning tasks that align with educational objectives. These games can motivate self-learning, problem-solving skills, and overall student engagement.

While GBL offers many benefits, it is essential to note that aligning learning objectives with game dynamics can be challenging. Educators must carefully consider this factor when designing and implementing GBL activities to ensure they effectively contribute to the learning process.

Games for entertainment are capable of engaging learners for a long period of time through several factors, one of which is the ability to define challenges for learners to achieve thus making the games more interesting (Plass, Mayer, & Homer, 2020). Another factor that game-based learning approaches help increase learners' motivation is that they allow learners to have their own strategies and monitor their progress toward their learning objectives.

2.2 Studies on interactive games in teaching grammar

A study was conducted to investigate the impact of mobile game-based language learning apps on the motivation of Saudi female EFL students at King Abdulaziz University. Thirty students aged 18-20, enrolled in their foundation year, participated in the seven-week study. Data was collected using pre- and post-intervention questionnaires. The pre-questionnaire assessed students' initial motivations for learning English, while the post-questionnaire explored their perceptions of the three mobile apps and their influence on motivation. The findings revealed that while students were motivated to learn English, their motivation was primarily instrumental. This was due to the compulsory nature of the course and the requirement to achieve high scores for their preferred majors. Significantly, the post-questionnaire results indicated that students perceived the mobile apps as beneficial for language learning and found them motivating. These findings contribute to the existing literature on mobile game-based learning and the impact on EFL students' motivation. To be more specific, Heni, Sudarsono, and Regina (2021) adopted Design and development research, with the involvement of the 11th graders, and found that Kahoot is applicable for grammar learning.

Various studies have been conducted and verified that having more exposure to the target language would highly lead to better learners' academic performance. In a study to compare academic results between a group of students speaking English as their native language and a group of minority students whose first language is not English, the authors concluded that though the gap between two groups was not wide, it was still significant (Agirdag & Vanlaar, 2018). Similarly, Gozcu and Caganaga (2016) adapted a game for educational activities in an English-speaking environment. Their findings indicated that applying games in education provided students with a more comfortable environment for both educators and learners to be involved in learning practices as long as games were designed with pedagogical aims. In the context of Vietnam, Pham (2023) conducted research to figure out whether application of Quizizz in teaching grammar was effective. The author's results confirmed other researchers' claims that gamification positively affected students' results when students who studied in game mode scored higher than those studying on paper. Besides, the author added that it would be more beneficial if educators utilized suitable instructional materials in their teaching. Also, Pham & Ly(2023) delved into the effectiveness of Blooket use in instructing university students' grammar and conducted questionnaires and interviews for data collection. The finding stated that the students were content with this tool and found it beneficial.

Having reviewed the previous empirical studies, it was apparent that the scholars conducted action research, experimental research or surveys whereas the present study was implemented with the combination of experimental research and survey. Secondly, individual tools (Kahoot, or Quizziz, or Blooket) were researched while four tools(Kahoot, Quizziz, Blooket and Educaplay) were selected in the current study. It is supposed that this study will make a substantial contribution to CALL practices.

3. Method

3.1 Setting and participants

To facilitate the data collection procedure, the study was conducted with participation of the English-major students taught by the

researchers. To be specific, 120 students in two grammar classes at NTTU were purposefully selected for the research implementation in semester 2 2022-2023 but only 72 students engaged in tests and questionnaire administration. The reason why convenience sampling was adopted was that it would be convenient for the lecturer-researcher to deploy teaching methodology synchronically between two groups. The researcher used the coursebook My Grammar Lab which was in accordance with the syllabus for experiments. Based on the syllabus requirement, only five modules were virtually taught during the 12-session period.

3.2 Research design and instruments

The researcher employed a mixed quasi-experimental and quantitative method for data collection. In experimental design, the control group (group A hereinafter) was instructed with textbook based grammar exercises and the experimental group (group B hereinafter) was instructed with game-based grammar exercises. Both classes were instructed by the same teacher. The game-based tools included Kahoot, Quizziz, Blooket and Educaplay.

3.2.1 Pre-test and post-test

The researcher employed pre-posttests to assess the participants' grammatical performance before and after the experimental phase. To achieve the validity and reliability, those tests were adapted from the coursebook Destination B1(Mann & Taylore-Knowles, 2012), with similar format, comprising 40 readymade multiple choice questions. Both tests were administered via Google Form during the online learning period and the content was in accordance with the syllabus.

3.2.2 Questionnaire

Besides, 34-item questionnaires were allocated to the experimental group to explore the participants' opinions after experiencing the learning with those tools.

The questionnaire is concerned with 2 items about demographic information, 3 items about Experience in using game-based interactive tools, Students' attitudes toward the application of game-based interactive tools in online grammar teaching, and the remainder about Students' perceptions on the application of each game-based interactive tool in online grammar teaching. To eliminate the bias of data, some pairs of items with opposing content were included in the questionnaire, such as"I feel annoyed at playing quizs in grammar class" and "I feel comfortable using Game-based interactive tools in grammatical learning".

The Cronbach Alpha is 0.922, which ensures the reliability of the data.

The experimental stage is described below.

Session	CG	EG
1	Pre-test (online)	Pre-test (online)
2	Present simple: Do exercise	Blooket
3	Past simple	Blooket
4	Present perfect	Kahoot
5	Future form	Kahoot
6	Modal verbs	Quizziz
7	Conditionals	Quizziz
8	Word order and sentence pattern	Educaplay
9	Gerunds and infinitives	Educaplay
10	Relative clause	Blooket
11	Passive form	Kahoot
12	Post-test	Post-test; Questionnaire

The teaching method applied in this research was the 3P teaching model which comprises presentation, practice and production. The only disparity in the way students from two groups were taught in classes was in the practice stage, when Group A students were required to complete text-based exercises and Group B students participated in doing quiz, as precisely stated in the above-mentioned table.

3.2.3 Focus group interview

After each tool was implemented in teaching Group B students, the researcher conducted informal interviews with students by asking them to write their comments on the chat box. The researcher aimed to examine whether those tools are beneficial to them, easy to use or if there are any troubles during the learning process.

3.3 Data collection procedure

This procedure underwent two phases: experimental and questionnaire administration. Initially, the researchers created the pre-tests and assigned them to both classes in session 1. In the subsequent stage, the control group was assigned to do text-based grammar exercises and the experimental group played Kahoot, Quizizz, Blooket and Educaplay respectively. In each session, about 4 exercises were embedded on one tool and each exercise consists of 5 question items. In the last session, posttests were taken by the participants and a Google-form survey was sent to the experimental group. Tests and questionnaires were virtually administered.

4. Findings and discussion

The major findings were reported in line with two research questions:

RQ1: To what extent do interactive game-based learning tools impact English-majored students' grammar at a private university?
The difference in students' grammar ability between control and experimental groups

1. **PreTest**

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
PreTestScore	ControlGroup	33	24.97	6.885	1.199
	ExperimentalGroup	39	26.44	6.017	.963

Levene's Test for Equality of Variances		t-test for Equality of Means						
F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
.257	.613	-.964	70	.338	-1.466	1.520	-4.499	1.566
		-.953	64.157	.344	-1.466	1.538	-4.538	1.606

Independent Sample T-Test of pre-test score

The mean pre total score of students in the experimental group (26.44) was higher than the mean score of those in the control group (24.97). An independent sample t-test showed that this difference was not statistically significant (Sig. 2-tailed >0.05. Consequently, it is evident that there was little difference in grammar competence of students from both groups

Group	N	Mean	Std. Deviation	Std. Error Mean
ControlGroup	33	25.30	6.536	1.138
ExperimentalGroup	39	27.23	7.590	1.215

. **Group statistics of post-test scores of control and experimental groups**

Levene's Test for Equality of Variances		t-test for Equality of Means						
F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
.247	.621	-1.144	70	.257	-1.928	1.686	-5.290	1.434
		-1.158	69.972	.251	-1.928	1.665	-5.248	1.393

The mean grammar competence pre total score of students of the experimental group (27.23) was higher than the mean score of those in the control group (25.30). An independent samples t-test showed that this difference was not statistically significant (t (70)=-1.144, P<0.05). There is not enough evidence to conclude that there was a positive impact of application of game-based tools on learners' grammar competence.

The Improvement in students' grammar ability from control group

In order to check if there is significant improvement in grammatical ability of learners of the control group before and after taking part in the research, a paired sample t-test was carried out to figure out if there is significant difference in the mean scores of pretest and post-test of the control group.

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PreTestScore	24.97	33	6.885	1.199
	PostTestScore	25.30	33	6.536	1.138

Table XX: Paired Samples Statistics of pre-test scores of control group

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PreTestScore PostTestScore	-.333	4.708	.820	-2.003	1.336	-.407	32	.687

Table XX: Paired Samples Test of pretest scores from control group

Before the experimental period, participants in the control group had the mean score of M=24.97, SD = 6.89. After the period, the mean score of the group is M=25.30, SD=6.54. A paired sample t-test revealed that the difference between the two scores is not significant t(33)=-.407, p>0.05. It can be concluded that there is not much improvement in grammar competence of students in the control group.

The Improvement in students' grammar ability from experimental group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PreTestScore	26.44	39	6.017	.963
	PostTestScore	27.23	39	7.590	1.215

Mean Scores Statistics of Pretest and Post T*-est of Control Group

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PreTestScore - PostTestScore	-.795	7.592	1.216	-3.256	1.666	-.654	38	.517

Paired Samples Test Of Pretest and Posttest Scores of Control Group

The mean post-test score of the experimental group (27.23) was higher than the pre-test score (26.44). However, a paired-samples t-test showed that this difference was not statistically significant (t (38) = -.654, P<0.05). It can be concluded that there was not much improvement in grammar competence of students in the experimental group.

RQ2: What are the attitudes of English-majored students at a private university toward the application of game-based learning tools in teaching grammar?

Demographic information

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	14	41.2	41.2	41.2
	Female	20	58.8	58.8	100.0
	Total	34	100.0	100.0	

The table illustrates the proportion of students engaging in this study, in terms of gender. It can be seen that female students accounted for the majority with 58.8% and male students constituting 41.2%.

Experience in using interactive game-based tools

Tool	Valid	Frequency	Percent	Valid percent	Cumulative percent
Kahoot	Yes	26	76.5	76.5	76.5
	No	8	23.5	23.5	23.5
Quizziz	Yes	32	94.1	94.1	94.1
	No	2	5.9	5.9	5.9
Blooket	Yes	22	64.7	64.7	64.7
	No	12	35.3	35.3	35.3
Educaplay	Yes	9	26.5	26.5	26.5
	No	25	73.5	73.5	73.5

The table provides information about to what extent the participants were familiar with those tools. They had the most experience in using Quizziz with 94.1%, followed by Kahoot with 76.5%, Blooket with 64.7%, and Educaplay ranking the last with only 26.5%.

Preference for using interactive game-based tools

Tool	Valid	Frequency	Percent	Valid percent	Cumulative percent
Kahoot	1	0	0	0	0
	2	2	5.9	5.9	5.9
	3	5	14.7	14.7	14.7
	4	8	23.5	23.5	23.5
	5	7	20.6	20.6	20.6
	6	12	35.3	35.3	35.3
Quizziz	1	1	2.9	2.9	2.9
	2	0	0	0	0
	3	2	5.9	5.9	5.9
	4	6	17.6	17.6	17.6
	5	11	32.4	32.4	32.4
	6	14	41.2	41.2	41.2
Blooket	1	1	2.9	2.9	2.9
	2	4	11.8	11.8	11.8
	3	6	17.6	17.6	17.6
	4	5	14.7	14.7	14.7

	5	9	26.5	26.5	26.5
	6	9	26.5	26.5	26.5
Educaplay	1	10	29.4	29.4	29.4
	2	1	2.9	2.9	2.9
	3	6	17.6	17.6	17.6
	4	5	14.7	14.7	14.7
	5	6	17.6	17.6	17.6
	6	6	17.6	17.6	17.6

Similarly, as observed in the table, Quizziz was the most preferred by the participants with 91.2%. The following tool was Kahoot with 79.4%, Blooket with 67.7% and Educaplay with nearly 50%.

Students' attitudes toward the application of game-based interactive tools in online grammar teaching

Effective learning

Item	N	Mean	Std. Deviation
Compared with the traditional learning method, I think game-based interactive tools helps students remember the grammatical structures for a longer time	34	4.97	1.291
I think Game-based interactive tools help students learn autonomously	34	4.76	1.232
I think Using Game-based interactive tools can boost students' confidence to participate in classroom activities	34	4.91	1.288
I think they promote students' academic achievement through using extra exercises	34	4.71	1.355
I think Game-based interactive tools cause lacked understanding of grammar use	34	3.76	1.776
I think Game-based interactive tools are not effective in exercises related to making sentences.	34	3.53	1.796
I think Game-based interactive tools are not effective in grammar learning and teaching	34	3.5	1.863

As observed in the table, the first four items had the highest mean scores ranging from 4.71 to 4.97, and SD ranging from 1.232 to 1.355. It can be inferred that the students showed approval of the utilization of those tools in enhancing their retention ability, confidence, autonomy, and academic performance.

Students 'interest and participation

Item	N	Mean	Std. Deviation
I believe that Game-based interactive tools make the lessons more interesting	34	5.06	1.301

I feel annoyed at playing quizs in grammar class	34	3.38	1.970
I feel comfortable using Game-based interactive tools in grammatical learning	34	4.82	1.359
Compared to the traditional learning method, using Game-based interactive tools makes students participate in class activities enthusiastically	34	4.88	1.320
Game-based interactive tools help a large number of students do exercises at a time	34	4.91	1.288
Game-based interactive tools do not make students participate in class actively	34	3.09	1.990

The table depicts that those tools helped bring joy and comfort to the users, with M= 5.06 and 4.82 respectively. Conversely, the participants were uncertain about the frustration those tools cause to them with M= 3.38. Similarly, in terms of students' participation, with M= 4.88 and 4.91, the respondents showed their agreement on those tools promoting their engagement and enthusiasm.

Students' perceptions on the application of each game-based interactive tool in online grammar teaching

Kahoot & Blooket

Item	N	Mean	Std. Deviation
I think Kahoot! can boost students' ability to think quickly.	34	4.74	1.421
I enjoy using Kahoot in grammar learning	34	4.94	1.413
I do not feel comfortable using Kahoot because I must look at the question and options screen at a time.	34	3.47	1.727
I think Kahoot is an effective grammar-teaching tool	34	4.62	1.349
I think Blooket is an interesting tool to learn grammar	34	4.62	1.371
I think Blooket has different types of games which promote students' interest in grammar learning	34	4.65	1.535
I think Blooket increases students' competition when doing quizs	34	4.53	1.542
I feel annoyed because it takes much time to log in	34	3.12	1.935

From the table, it is obvious that in general Kahoot had higher mean scores than Blooket (Kahoot ranging from 3.47 to 4.94 while Blooket ranging from 3.12 to 4.65) but the students were content with both. Kahoot stimulates their thinking ability and Blooket creates a competitive atmosphere and has various types of games. However, some of them may not be satisfied with Kahoot because they had to notice the question and option screen spontaneously, which is in line with the interview responses. Their online comments amplified the minor drawback of Kahoot that they are allowed to play once only, which hinders them in getting high scores. Only one negative side of Blooket was that the "gold mining" game caused frustration due to "point robbing" function, as stated in the interview responses.

Quizziz & Educaplay

Item	N	Mean	Std. Deviation
I think Quizziz increases students' competition when doing quizs	34	4.94	1.301
I think Quizziz is an interesting tool to learn grammar	34	4.91	1.334
I think Quizziz is an effective grammar-teaching tool	34	4.68	1.296
I think Quizziz helps students do homework easily	34	4.82	1.336
I feel excited using Quizziz in grammar learning	34	4.91	1.288

I think Educaplay is an interesting tool to learn grammar	34	4.44	1.541
I think Educaplay has different types of games which promote students' interest in grammar learning.	34	4.29	1.488
I think Educaplay increases students' competition when doing quizs	34	4.21	1.591
I feel excited about playing Educaplay because it is easy to use.	34	4.35	1.631

With the high mean scores, the students greatly advocated Quizziz, which facilitated them in boosting competition, excitement and the effectiveness in learning. Meanwhile, they showed a little agreement with Educaplay. From the feedback during the learning process, it was assumed that "Froggy game" in Educaplay was quite boring.

Discussion

The first finding reveals that there is little improvement in grammar performance of students instructed with the four tools. It is opposed to the finding by Pham (2023) that students learning with Quizziz had better grammar performance than others. The finding may be rooted from virtual learning, which restricted the teacher' control on their test performance or inadequacy of practice with those tools (only 4-5 quizzes/ session).

The second one asserts that the students had positive attitudes toward the application of four tools in grammar learning, concerning effective learning, and students' interest and participation. It was found that Quizziz and Kahoot were the most preferred and brought tremendous benefits to them and Blooket was regarded as an effective tool in grammar improvement. It is similar to the finding of Zarzycka-Piskorz (2016), Heni, Sudarsono, and Regina (2021), Munuyandi, Husain, Jabar, Jusoh (2021), and Pham & Ly (2023). It is supposed that students from various countries or universities have preference for using games to maximize their learning and motivation.

5. Conclusion

This present study was conducted with an aim to investigate the effectiveness of Kahoot, Quizziz, Blooket, and Educaplay in grammar learning and English-major students' attitudes toward those tools. The researchers used mixed method of quasi-experimental and survey for data collection and concluded that there was little improvement in grammar performance, Quiziz, Kahoot, and Blooket should be integrated with teaching because they make the lesson not only more interesting but also more engaging and effective. In the 4.0 era, teachers are required to adjust lesson plans with technological support to help students learn more effectively and enthusiastically. It is believed that this study would be a beneficial source for CALL practices.

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