



Vocabulary Enrichment Via Kahoot! App: Exploring Gamification In The FLE Classroom

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Abstract. Acquiring a rich and diverse vocabulary is fundamental to teaching French as a Foreign Language (FLE) in elementary school, playing a crucial role in developing students' language skills. With the need for innovative pedagogical approaches, gamification is emerging as a promising strategy, integrating game elements into education to increase engagement and learning. This research focuses on analyzing the impact of using Kahoot!, as a gamification tool, to enrich the vocabulary of 6th-grade FLE students at the Medersat.com school in Taznakht, located in the provincial delegation of Errachidia, compared with conventional methods.

In this context, this research involves a quasi-experimental approach with two groups of students: a test group using Kahoot! and a control group following conventional teaching methods. Standardized tests were used to measure vocabulary before and after the intervention, complemented by classroom observations to assess student engagement and satisfaction.

Preliminary results indicate a significant improvement in vocabulary enrichment in the test group compared to the control group. Moreover, an increase in motivation and engagement was observed in students using Kahoot!.

Keywords: Gamification, Kahoot!, Lexical Enrichment, FLE, Engagement.

1 Introduction

Acquiring a rich and varied vocabulary is a fundamental element in learning a foreign language, especially for primary school pupils who are just beginning their language learning process. In fact, mastery of vocabulary plays a crucial role in the development of oral and written communication skills [1]. A solid lexical background enables learners to express themselves fluently, understand texts and instructions easily, and participate actively in classroom interactions.

However, regular vocabulary teaching methods in primary French as a foreign language (FLE) classes face several challenges. According to the National Evaluation Instance report (2019), the results of Moroccan students in the international PIRLS 2016 literacy study reveal significant gaps, with only 36% of students reaching the minimum required level [2]. These findings underline the need for innovative and stimulating pedagogical approaches, capable of arousing students' interest and engagement in learning vocabulary in FLE.

In this context, gamification, i.e. the integration of playful elements into teaching, is emerging as a promising strategy for boosting vocabulary learning in the EFL classroom [3]. By incorporating game mechanisms such as challenges, rewards and friendly competition, gamification aims to increase learners' intrinsic motivation and foster deeper, longer-lasting learning (Qian & Clark, 2016).

One of the most promising gamification tools for teaching vocabulary in primary French is Kahoot!. This fun, interactive platform enables teachers to create quizzes, discussions and surveys in the form of games, which students respond to using their mobile devices or computers. The competitive aspect and the "game show" atmosphere arouse students' enthusiasm and stimulate their desire to learn [4].

Many studies have highlighted the potential benefits of Kahoot! for vocabulary learning, such as improved lexical retention, increased motivation and classroom engagement [4,5]. However, the majority of research has focused on learning contexts other than FLE or has presented methodological limitations [4,6].

Faced with this finding, the present study aims to examine in depth the impact of gamification, and specifically Kahoot! application, on the lexical enrichment of 6th grade elementary students in FLE classes, seeking to answer two specific questions that guided our research:

- To what extent does the gamified application Kahoot! facilitate vocabulary acquisition in the FLE classroom among primary school learners?
- Is gamification more effective than conventional teaching methods for vocabulary acquisition in FLE?

We hypothesized that the gamified approach would facilitate vocabulary acquisition and retention compared to more conventional instruction. To test this hypothesis, a quasi-experimental design with pre-test and post-test was adopted, comparing the performance of learners in the experimental group, exposed to Kahoot!, with that of the control group following more conventional teaching.

2 Literature review

2.1 Gamification and language learning

Gamification, which involves integrating game elements into non-game contexts, has recently emerged as an innovative approach in education [7]. In the context of language learning, this approach aims to harness the motivational potential and playfulness of games to foster learner engagement and facilitate language acquisition [3]. Gamification is based on several theories of learning and motivation, such as Deci & Ryan's (1985) self-determination theory [8] and Malone and Lepper's (1987) intrinsic motivation model [9]. According to these theories, the integration of play elements such as challenges, rewards, friendly competition and fantasy can stimulate learners' intrinsic motivation, thus fostering deeper and longer-lasting learning.

One of the main benefits of gamification in language learning lies in its ability to increase learner motivation and engagement [10]. Game elements, such as points systems, levels to reach and rankings, create a sense of challenge and friendly competition, stimulating learners' interest and perseverance [3]. Moreover, the fantasy and interactive aspect of gamified activities helps to make learning more attractive and fun, especially for young learners. Another major benefit of gamification resides in its ability to promote active, discovery-based learning [11]. By incorporating playful challenges and reward mechanisms, gamified activities encourage learners to explore, experiment and solve problems independently. This process of learning through action and risk-taking promotes a deeper and more lasting understanding of linguistic concepts.

Furthermore, gamified environments offer learners a safe space to make mistakes and learn from them, without fear of judgment or negative consequences [3]. This freedom to explore and experiment helps to reduce language learning anxiety and boost learners' confidence in their abilities.

It's important to note that the effectiveness of gamification in language learning depends largely on the role played by the teacher [12]. The teacher must design and facilitate gamified activities in such a way as to promote meaningful and lasting learning. This involves clearly defining pedagogical objectives, aligning game mechanisms with these objectives, and providing adequate guidance and support to learners throughout the process [11]. Moreover, the teacher must be careful to maintain a balance between playful and pedagogical aspects, to avoid learners becoming distracted by game elements to the detriment of learning [12]. Clear communication of expectations and game rules is essential to ensure a productive and beneficial learning environment.

Indeed, gamification offers significant potential for improving language learning. But it's essential to recognize its limitations and adopt a thoughtful, balanced approach when implementing it. Careful design, coherent pedagogical integration and consideration of technical and logistical challenges are crucial to maximizing the benefits of this innovative approach.

2.2 Kahoot! as a gamification tool in the FLE classroom

Among the many gamification tools available for language teaching, Kahoot! has emerged as a promising and popular platform for teachers and learners of scientific disciplines in particular. Developed in 2013, this online application enables teachers to create interactive quizzes, discussions and surveys as stimulating games, which students respond to using their mobile devices or computers.

Kahoot's main appeal lies in its "game show" concept, where students take on the role of contestants, while the teacher acts as host. This playful, interactive dynamic creates an engaging atmosphere, stimulating learners' motivation and active participation [3].

In fact, Kahoot! offers a range of features enabling teachers to customize activities according to their pedagogical objectives. Questions can be accompanied by videos, images or music to enrich the learning experience. Moreover, teachers can set time limits for answering questions, adding an element of challenge and speed to the activity.

The application offers several modes of use adapted to different learning contexts. The "quiz" mode assesses students' knowledge through a series of multiple-choice

questions. The "discussion" mode offers the possibility of engaging in debate or reflection around an open-ended question, with no predefined answer. Finally, the "survey" mode can be used to gather students' opinions and perceptions on a given subject, facilitating formative assessment and teaching adaptation.

3 Methodology

To achieve this aim, a semi-experimental design with pre-test and post-test was adopted, following a quantitative approach. As Cohen, Manion, and Morrison (2007) point out, this design allows for the random assignment of control and experimental groups while preserving the natural classroom configuration [13], which was essential in the school setting of this research. Indeed, studies of gamification in real classrooms are crucial for evaluating its effectiveness in authentic learning environments.

This quasi-experimental methodological design is widely used in research into the integration of educational technologies and gamification in language teaching. It enables us to compare the performance of learners exposed to an innovative teaching intervention (the experimental group) with that of learners following conventional teaching (the control group).

3.1 Sample

The pilot study was carried out with a sample of 50 6th grade primary school pupils (equivalent to CM2 in the French education system) enrolled at the Medersat.Com Taznakht¹ elementary school, located in the rural commune of Medaghera, provincial directorate of Errachidia, Draa-Tafilalet regional academy in Morocco. The choice of this school was motivated by the availability of the necessary digital infrastructure (interactive whiteboards, video projectors, tablets and Internet connection) to implement the experiment, as well as by the enthusiasm and cooperation of the volunteer teacher.

In line with experimental design requirements, participants were randomly assigned to two groups (Table 1): an experimental group ($n = 24$) and a control group ($n = 26$). As recommended by Creswell (2015) [19], this random allocation aims to "ensure an equal distribution of potentially disruptive characteristics between groups" (p. 114). The experimental group comprised 11 boys and 13 girls, while the control group included 12 boys and 14 girls, all aged 11 to 13 and from low- to middle-income backgrounds.

¹ The Maderast.com school Taznakhet is part of a national network of 63 community schools. This initiative is part of a public-private partnership established in 1998 between the Ministry of National Education and the BMCE Bank Foundation. This partnership aims to promote and pursue excellence in pre-school and primary education. It implements an innovative educational and pedagogical project, focusing on modern technology equipment and teacher training, with the aim of optimizing the teaching-learning process.

Table 1. Student distribution between control and experimental groups

Megersat.com			Girls	Boys	Total
	Group A	Control	14	12	26
	Group B	Experimental	13	11	24

3.2 Measuring instruments

In order to assess student performance before and after the teaching intervention, we developed pre- and post-tests in collaboration with researchers from the Literary, Linguistic and Didactic Research Laboratory at the ENS (Superior Normal School) of Meknes and a volunteer 6th grade FLE teacher from the Medersat.Com Taznakhet school. These standardized tests included 20 multiple-choice questions divided into four levels of cognitive ability according to Bloom's revised taxonomy (Anderson et al., 2001): knowledge, comprehension, application, and analysis and synthesis.

The validity of the tests was confirmed by experts in FLE didactics from ENS Meknes and trainers from CRMEF (Regional Centers for Education and Training Professions) in Errachidia. Their suggestions were incorporated in the final version. In addition, the reliability of the instruments was checked using two complementary methods: Internal consistency, expressed by a Cronbach's alpha coefficient of 0.714 (higher than the minimum threshold of 0.70 recommended by Nunnally, 1978), and half-reliability, translated by a Pearson correlation of 0.732 between even and odd items, indicating acceptable reliability.

Item difficulty and discrimination indices were also calculated (Table 2), as recommended by Worthen et al. (2011) [14]. The results showed that difficulty indices ranged from 0.07 to 0.85, while discrimination indices were between 0 and 0.76, which is considered satisfactory for the aims of this study.

Table 2. Indices of difficulty and discrimination

Items	Difficulty index	Discrimination index
1	0.21	0.24
2	0.36	0.65
3	0.39	0.71
4	0.55	0.35
5	0.42	0.41
6	0.39	0.76
7	0.55	0.47
8	0.42	0.53
9	0.39	0.47
10	0.67	0.59
11	0.21	0.29
12	0.33	0.18
13	0.30	0.06
14	0.85	0.06
15	0.79	0.75
16	0.79	0.06
17	0.18	0.29

18	0.42	0.29
19	0.33	0.47
20	0.15	0.31

3.3 Design and procedure

This quasi-experimental study took place in several crucial stages. Firstly, permission was obtained from the local authorities to conduct the research at the Medersat.Com Taznakht school. Next, the lessons of the FLE program to be included in the experiment were selected in concertation with the volunteer teacher.

A working meeting was organized with the volunteer teacher to inform him of the study's objectives and procedures. Support was provided for the preparation of teaching sessions, in particular for the creation of Kahoot! gamified quizzes for the experimental group.

As recommended by Creswell (2015) in quasi-experimental research, pre-tests were administered to both groups to establish their initial equivalence. Thereafter, the teacher delivered the selected lessons using two distinct methods: the regular method for the control group and the gamified method via Kahoot! for the experimental group. The latter involved integrating playful multiple-choice quizzes at the end of each lesson to review the target vocabulary.

After an intervention period of at least ten weeks, we administered post-tests to both groups. Finally, the data were collected and prepared for statistical analysis.

The following diagram summarizes our methodological approach:

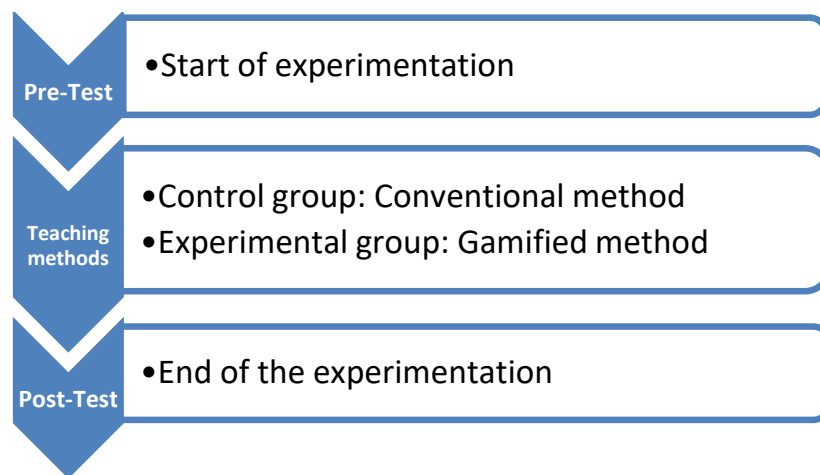


Fig. 1. Research design

3.4 Data analysis

To answer the two questions that guided our research, a Wilcoxon signed ranks test was used to examine differences within the experimental group between pre-test and post-test scores. This choice was motivated by the small sample size and the presence of outliers, as recommended by Pallan (2020).

For the second question, an independent samples t-test was performed to compare the performance of the experimental and control groups. This more rigorous parametric analysis was applied because the overall sample size was large enough, and there were no outliers [15].

The magnitude of the effect of teaching method (gamified vs. conventional) on vocabulary learning was estimated by calculating the eta-squared (η^2) from the t-test results, according to the formula proposed by Pallant (2020):

$$\eta^2 = t^2 / (t^2 + ddl)$$

Moreover, individual learning progress (gain) was measured for each student using standardized gain (Hake, 1998):

$$gi = \frac{\text{Posttest score} - \text{Pretest score}}{\text{Max score} - \text{Pretest score}}$$

The average learning gain (N-Gain) for each group was then calculated by summing the individual gains and dividing by the group size:

$$N - gain = \frac{\sum gi}{N}$$

Quantitative data from the pre- and post-tests were analyzed using IBM SPSS (version 27).

3.5 Ethical considerations

This study was conducted in strict compliance with the ethical principles of research involving human beings. Following the American Psychological Association's recommendations (2017), informed consent was obtained in advance from the parents or legal guardians of the participating students. Moreover, particular attention was paid to protecting the confidentiality and anonymity of the data collected. No information that could identify the participants was kept.

4 Results

Quantitative data collected via standardized tests enabled rigorous analysis of students' progress in acquiring the target vocabulary. This quasi-experimental methodology is widely recognized in the literature on the integration of educational technologies and gamification in foreign language teaching. Indeed, it offers the possibility of making reliable comparisons between groups while preserving the natural classroom setting (Creswell, 2015).

The presentation and discussion of the results of this study will therefore shed further light on the potential benefits of the Kahoot! platform for vocabulary learning in FLE, thus helping to enrich thinking on the effective integration of gamification in language teaching.

4.1 Checking group equivalence

Before analyzing the differences in performance between the groups, it was essential to ensure their initial equivalence. To this aim, an independent samples t-test was carried out to compare the mean scores obtained by the experimental and control groups at pre-test.

The results showed that there was no statistically significant difference between the mean pre-test scores of the two groups ($t(48) = 0.37$, $p = 0.71$). The experimental group obtained a mean score of 11.25 ($Sd = 3.17$), while the control group posted a mean score of 10.92 ($Sd = 3.44$).

Table 3. Pre-test equivalence of the two groups

	method teaching	N	Pre-test		t	ddl	P
			$\bar{X}$	Sd			
Experimental Group	Gamification	24	11,25	3,17	0,37	48	0,71
Control Group	Conventional	26	10,92	3,44			

$\bar{X}$: Mean Sd : Standard deviation

The statistical test $t(48) = 0.37$ with a significance level of $p = 0.71$ indicates that this difference of 0.33 points between the two means is not statistically significant. This means that the two groups were indeed equivalent in terms of their initial lexical knowledge, prior to the implementation of the teaching intervention (the use of Kahoot! in the experimental group).

This lack of significant difference between groups at the initial level is in line with methodological recommendations for quasi-experimental designs (Creswell, 2015). As Cohen et al. (2007) point out, this step of checking group equivalence ensures that any differences observed later are due to the educational intervention and not to pre-existing participant characteristics [13].

4.2 Analysis of intra-group and inter-group differences

The average pre- and post-test performances of the experimental and control groups are shown in Table 4.

Table 4. Average pre- and post-test performance of groups

	method teaching	N	Pre-test		Post-test		N-gain
			$\bar{X}$	Sd	$\bar{X}$	Sd	
Experimental Group	Gamification	24	11,25	3,17	0,586	2,75	0,586
Control Group	Conventional	26	10,92	3,44	0,233	3,11	0,233

These results indicate that the experimental group achieved higher mean scores ($\bar{X}$) at the post-test ($\bar{X} = 16.38$, $Sd = 2.75$) than at the pre-test ($\bar{X} = 11.25$, $Sd = 3.17$), suggesting

a marked improvement in vocabulary performance. In contrast, the control group also improved, but to a lesser extent, from a mean score of 10.92 (Sd = 3.44) at the pre-test to 13.04 (Sd = 3.11) at the post-test. Furthermore, the results show that the experimental group achieved an average learning gain (N-Gain) of 0.586, compared with just 0.233 for the control group. This confirms that using Kahoot! enabled students in the experimental group to make greater progress than their peers in the control group.

To check whether these differences in performance were statistically significant, a Wilcoxon test was carried out for the experimental group. The results revealed a significant difference between pre-test and post-test scores ($z = -4.12$, $p < 0.001$), indicating that the use of Kahoot! resulted in a statistically significant improvement in lexical performance for students in the experimental group between the beginning and end of the study.

For comparison between groups, a t-test for independent samples was applied. The results showed a statistically significant difference between the post-test scores of the experimental and control groups ($t(48) = 4.23$, $p < 0.001$). In other words, this very low p-value ($p < 0.001$) indicates that the difference observed between the mean post-test performance of the two groups is statistically highly significant.

Table 5. Student's test of experimental and control group performance

	method teaching	N	Post-test		t	ddl	P
			$\bar{X}$	Sd			
Experi- mental Group	Gamifica- tion	24	16,38	2,75	4,23	48	0,0001
Control Group	Conven- tional	26	13,04	3,11			

This finding suggests that the gamified teaching method enabled students in the experimental group to perform better in vocabulary than their peers following the conventional approach, in line with Pallant's (2020) methodological recommendations for this type of quasi-experimental design.

4.3 Effect size estimation

In order to assess the magnitude of the impact of the teaching method (gamified vs. conventional) on students' vocabulary performance, the effect size was calculated. To do this, the eta-square (η^2) was derived from the results of the t-test comparing post-test scores between the two groups:

$$\eta^2 = t^2 / (t^2 + \text{ddl})$$

- $t = 4.23$ (t-statistic value from t-test comparing groups at post-test)
- $\text{ddl} = 48$ (degrees of freedom of the t-test)

So, applying the formula:

$$\eta^2 = 4,23^2 / (4,23^2 + 48)$$

— $\eta^2 = 0,2714$

To interpret the results, we used Cohen's thresholds (1988) (Table 6):

Table 6. Interpretation of Eta-squared values (η^2)

Eta-squared values (η^2)	Effect size values
0.00 < 0.01	Negligible
0.01 < 0.06	Small
0.06 < 0.14	Medium
0.14 < 1.00	Large

The eta-squared value obtained is 0.2714, which, according to the thresholds established by Cohen (1988), indicates a significant effect of the gamified teaching method on vocabulary learning. This means that 27.14% of the total variance in post-test scores is explained by the teaching method (gamified vs. conventional).

This result suggests that using the Kahoot! gamification platform had a substantial impact on students' vocabulary performance, over and above the progress observed with the regular teaching method. This effect size estimate supports Hamari & al. (2016) findings on the effectiveness of successfully integrating educational technologies, such as gamification, into foreign language learning[16].

5 Discussion, implications and limitations of the research

The results of this quasi-experimental study shed significant light on the benefits of integrating the gamification application Kahoot into vocabulary learning in French as a foreign language, for pupils in the 6th year of primary school. As Schmall (2018) and Rachel & Rokinson (2018) point out in their work on the use of educational technologies in the language classroom, the data collected highlight the positive impact of this innovative pedagogical approach [12,17].

More specifically, the higher post-test performance of the experimental group, compared with the control group following more conventional teaching, testifies to the beneficial effects of gamification on students' lexical enrichment. This finding corroborates the conclusions of Wang and Tahir (2020) in their meta-analysis, which underlines the crucial role of motivation and engagement generated by Kahoot!-type tools in foreign language learning, thus promoting better retention of lexical knowledge[4].

Indeed, the interactive and playful nature of the Kahoot! quizzes seem to have enabled students in the experimental group to appropriate the target vocabulary more effectively, as indicated by their significantly greater progress compared with their peers in the control group. This result concurs with the observations of Flores (2021) and Reynolds & Taylor (2020), who also found greater learning gains in learners exposed to a gamified method compared to a conventional approach in the language classroom[18,19].

Moreover, the effect size estimate, calculated using eta-squared, reveals that the gamified teaching method had a substantial impact on students' vocabulary performance, in line with Rachel & Rokinson's (2018) recommendations for the successful integration of educational technologies into language teaching. According to these authors, "the use of gamification in foreign language learning environments can lead to significant improvements in student outcomes" (p. 85).

This finding can be explained by the motivational and cognitive mechanisms underlying the gamified approach [20,21]. As Rachels and Rockinson-Szapkiw (2018) point out, "gamification takes advantage of the principles of self-determination theory, addressing the basic psychological needs of autonomy, competence and affiliation, thus stimulating learners' intrinsic engagement"[12]. What's more, the immediate feedback, challenge and competitive elements of Kahoot! quizzes are said to promote vocabulary memorization, in line with multimedia learning theories.

5.1 Pedagogical implications

The results of this quasi-experimental study underline the value of integrating gamification tools such as Kahoot! into the teaching/learning of vocabulary in French as a foreign language (FLE). Teachers are encouraged to exploit the motivational and engaging potential of these platforms to stimulate lexical acquisition in their students. As Laurence Schmall (2017) points out, "the careful design of gamified activities, ensuring their alignment with learning objectives, is a key factor in their effectiveness in educational contexts." [17]. Teachers should pay particular attention to selecting or creating Kahoot! quizzes that precisely target the vocabulary elements to be acquired, making sure they are relevant to the program and the skills targeted, and varying levels of difficulty and question types (multiple choice, matching, etc.) to support learning in a progressive manner.

In addition, the regular integration of these playful activities, whether at the start of a lesson to arouse students' curiosity or at the end of a session to review vocabulary, would help maintain their engagement and motivation throughout the learning process (Wang & Tahir, 2020). This gamified approach promotes long-term retention of lexical knowledge by meeting learners' basic psychological needs.

Furthermore, the successful integration of gamification into the teaching of vocabulary in French as a foreign language requires adequate teacher training, as recommended by Reynolds & Taylor (2020). Not only do they need to master the functionalities of the Kahoot! platform, but they also need to understand the motivational and cognitive mechanisms underlying the gamified approach in order to take full advantage of it in their teaching practices.

Finally, the results of this study invite educational decision-makers to encourage the use of gamification tools in language classrooms, by ensuring the availability of the necessary digital infrastructures and supporting teachers in their efforts to integrate these technologies. As Rachels and Rockinson-Szapkiw (2018) point out, "schools should consider investing in educational gaming platforms such as Kahoot!, as they can make a significant contribution to improving students' foreign language outcomes".

5.2 Limits and prospects

Although this study brought encouraging results regarding the positive impact of using the Kahoot! platform on vocabulary learning in FLE, certain limitations must be taken into account when interpreting the findings.

Firstly, as a pilot study, the main aim was to prepare the ground for more in-depth research on a larger scale. As such, the relatively small sample size ($n = 50$) limits the generalizability of the findings. Future studies involving a larger number of participants would help to corroborate and deepen the effects observed.

Secondly, as pointed out by Creswell and Guetterman (2019), the lack of total control over the curriculum may introduce potential confounding factors. Although teachers were trained and supervised, it is possible that variations could have arisen in the implementation of pedagogical interventions, potentially affecting results.

Finally, time and resource constraints prevented the inclusion of complementary measures, such as classroom observations or participant interviews, which would have enabled us to triangulate the quantitative data and deepen our understanding of the learning processes underlying the use of gamification in FLE. Consequently, future research should focus on filling these methodological gaps by conducting studies on a larger scale, with tighter control of the study program and the integration of qualitative measures. This would refine our understanding of the mechanisms by which gamification, and the Kahoot! tool in particular, influence foreign language vocabulary learning.

It would also be interesting to explore the long-term impact of recurrent Kahoot! use on learners' lexical enrichment. In addition, the integration of classroom observations and interviews with teachers and students would enrich our understanding of the motivational and cognitive mechanisms involved in gamification-assisted vocabulary learning.

Despite these limitations, this pilot study provides encouraging evidence of the potential benefits of using the Kahoot! platform for lexical enrichment in FLE. Its results pave the way for future, more in-depth research, combining quantitative and qualitative methods to better identify the conditions for effective integration of gamification in foreign language teaching/learning.

6 Conclusion

The results of this study revealed statistically significant differences between the performance of the experimental group and that of the control group. The analysis of within-group differences showed a notable progression in the scores of the experimental group between pre- and post-test, while the inter-group comparison highlighted a significant difference at post-test, with a large effect size. These results confirm our initial hypothesis about the effectiveness of Kahoot! for vocabulary enrichment in FLE classroom.

Students who used Kahoot demonstrated a significant increase in motivation and involvement in class, compared with the control group. This finding is explained by the fact that Kahoot meets several key principles of active learning, due in particular to the following factors:

- **Interactivity:** One of Kahoot's key strengths for vocabulary learning is its interactive nature. The app transforms lessons into a stimulating experience where students can actively participate, ask questions and receive immediate answers. This interactivity is essential to maintain learners' attention and facilitate deeper, more meaningful learning.
- **Fun aspect:** The "game show" atmosphere creates a stimulating and fun experience, arousing learners' interest and active involvement. Game's fun and engaging nature helps maintain learners' interest throughout sessions, transforming learning tasks often perceived as monotonous into enjoyable activities.
- **Competitive aspect:** With its points and ranking systems, Kahoot! encourages competition between students, stimulating their desire to progress and overcome challenges. This positive dynamic can help reinforce the memorization and retention of newly acquired vocabulary.

However, using Kahoot! also presents certain limitations and challenges that need to be taken into account:

- **Technological challenges:** Using Kahoot! requires access to digital devices (smartphones, tablets, computers) and a stable Internet connection. In some educational contexts, particularly in schools with limited resources, these technical requirements can represent a major obstacle to the effective implementation of this tool. Moreover, teachers must have the necessary skills to manage and resolve any technical problems that may arise.
- **Risk of excessive competitiveness:** As mentioned above, the competitive dimension of Kahoot!, while motivating, can sometimes lead to an excessive race for points and rankings. This dynamic can create a harmful environment where only the best students are valued, to the detriment of the confidence and motivation of other learners. So it's crucial for teachers to strike a balance between competition and collaboration, emphasizing both individual progress and collaborative learning.
- **Potential distractions from teaching content:** While the playfulness of Kahoot! is an asset for capturing students' attention, it can also be a potential source of distraction. Visual effects, sounds and a competitive atmosphere can distract learners from essential learning content, particularly when it comes to vocabulary [20]. It is therefore crucial that teachers carefully design and supervise Kahoot! activities, ensuring that playful elements remain at the service of learning objectives and do not become an end in themselves. Clarifying expectations, rules and pedagogical objectives is essential to maximize the benefits of this tool, while minimizing the risks of distraction.

The pedagogical implications of this study invite teachers to exploit the potential of gamification, and more specifically of the Kahoot! platform, in teaching vocabulary in FLE. Careful design of gamified activities, aligned with learning objectives, appears to be a key factor in their effectiveness in educational contexts [17]. In addition, teacher training in using these technological tools and understanding their underlying mechanisms are essential if they are to take full advantage of them.

Although this pilot study brought encouraging results, future larger-scale research, incorporating complementary measures, will deepen our understanding of the learning processes underlying the use of gamification in FLE. Exploring the long-term impact of Kahoot!, as well as its influence on other aspects of language learning, are also interesting avenues for future work.

In essence, this study illuminates the potential of gamification, and particularly Kahoot!, for vocabulary enrichment in FLE among Moroccan primary school pupils. The encouraging results obtained pave the way for further reflection on the effective integration of innovative educational technologies in language teaching. While challenges remain, the playful and interactive approach offered by Kahoot! seems to play a crucial role in motivating and engaging learners, thus fostering significant progress in vocabulary acquisition. These findings contribute to the debate on the evolution of pedagogical practices in FLE teaching, while emphasizing the need for future research on a larger scale, incorporating complementary measures, to deepen understanding the learning processes involved in the use of gamification in FLE in various educational contexts.

References

1. Ovtcharov V, Cobb T, Halter R. La richesse lexicale des productions orales: mesure fiable du niveau de compétence langagière. *Can Mod Lang Rev* [Internet]. 2006 [cité 12 mai 2024];63:107-25. Disponible sur: <https://utpjournals.press/doi/10.3138/cmlr.63.1.107>
2. Instance Nationale d'Évaluation auprès du Conseil Supérieur de l'Éducation, de la Formation et de la Recherche Scientifique. Résultats des élèves marocains dans l'étude internationale sur le progrès en littératie PIRLS 2016 [Internet]. Rabat: Instance Nationale d'Évaluation auprès du Conseil Supérieur de l'Éducation, de la Formation et de la Recherche Scientifique.; 2019. Disponible sur: <https://www.csefrs.ma/wp-content/uploads/2019/05/Rapport-PIRLS-Fr.pdf>
3. Flores Quiroz M, Gutiérrez R, Rocha F, Paz Valenzuela M, Vilches C. Improving english vocabulary learning through kahoot!: a quasi-experimental high school experience. *Teach Engl Technol* [Internet]. 2021 [cité 25 janv 2024];21:3-13. Disponible sur: <https://www.cceol.com/search/article-detail?id=945093>
4. Wang AI, Tahir R. The effect of using Kahoot! for learning – A literature review. *Comput Educ* [Internet]. 2020 [cité 17 mars 2024];149:103818. Disponible sur: <https://www.sciencedirect.com/science/article/pii/S0360131520300208>
5. Guaqueta CA, Castro-Garces AY. The Use of Language Learning Apps as a Didactic Tool for EFL Vocabulary Building. *Engl Lang Teach* [Internet]. 2018 [cité 12 mai 2024];11:61-71. Disponible sur: <https://eric.ed.gov/?id=EJ1166513>
6. Hamari J, Koivisto J, Sarsa H. Does Gamification Work? — A Literature Review of Empirical Studies on Gamification. *Proc. Annu. Hawaii Int. Conf. Syst. Sci.* 2014.
7. Deterding S, Dixon D, Khaled R, Nacke L. From game design elements to gamefulness: defining « gamification ». *Proc 15th Int Acad MindTrek Conf Envisioning Future Media Environ* [Internet]. Tampere Finland: ACM; 2011 [cité 1 mai 2023]. p. 9-15. Disponible sur: <https://dl.acm.org/doi/10.1145/2181037.2181040>
8. Deci EL, Ryan RM. *Intrinsic Motivation and Self-Determination in Human Behavior* [Internet]. 1^{re} éd. Boston, MA: Springer New York, NY; 1985 [cité 12 mai 2024]. Disponible sur: <http://link.springer.com/10.1007/978-1-4899-2271-7>

9. Malone TW, Lepper MR. Making Learning Fun: A Taxonomy of Intrinsic Motivations for Learning. *Aptit Learn Instr* [Internet]. Routledge; 1987. p. 223-54. Disponible sur: 10.4324/9781003163244-10
10. Kherazi A, Bourray M. Gamification and m-learning: An innovative approach to sustainable language learning. *E3S Web Conf* [Internet]. 2024 [cité 4 mai 2024];477:00066. Disponible sur: https://www.e3s-conferences.org/articles/e3sconf/abs/2024/07/e3sconf_star2024_00066/e3sconf_star2024_00066.html
11. Kapp KM. *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education*. San Francisco: Pfeiffer; 2012.
12. Rachels JR, Rockinson-Szapkiw AJ. The effects of a mobile gamification app on elementary students' Spanish achievement and self-efficacy. *Comput Assist Lang Learn* [Internet]. 2018 [cité 12 mai 2024];31:72-89. Disponible sur: <https://doi.org/10.1080/09588221.2017.1382536>
13. Cohen L, Manion L, Morrison K. *Research Methods in Education* [Internet]. 6^e éd. London: Routledge; 2007. Disponible sur: <https://doi.org/10.4324/9780203029053>
14. Worthen BR, Fitzpatrick JL, Sanders JR, Wingate LA. *Program Evaluation: Alternative Approaches and Practical Guidelines*. 4^e éd. Boston: Pearson; 2011.
15. Pallant J. sch. 7^e éd. London: Routledge; 2020.
16. Hamari J, Shernoff DJ, Rowe E, Coller B, Asbell-Clarke J, Edwards T. Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning. *Comput Hum Behav* [Internet]. 2016 [cité 29 nov 2023];54:170-9. Disponible sur: <https://www.sciencedirect.com/science/article/pii/S074756321530056X>
17. Schmoll L. Questionner la médiation ludoéducative au sein d'un espace ludoéduquant. *Rech En Didact Lang Cult Cah Acedle* [Internet]. 2018 [cité 13 avr 2023]; Disponible sur: <https://journals.openedition.org/rdlc/3279#tocto1n2>
18. Reynolds ED, Taylor B. Kahoot!: EFL instructors' implementation experiences and impacts on students' vocabulary knowledge. 2020;
19. Flores Quiroz M, Gutiérrez R, Rocha F, Paz Valenzuela M, Vilches C. Improving English vocabulary learning through Kahoot!: A quasi-experimental high school experience. *Teach Engl Technol* [Internet]. 2021 [cité 12 mai 2024];21:3-13. Disponible sur: <https://www.cceol.com/search/article-detail?id=945093>
20. Reynolds ED, Fuchs RW, Johnson P. Game On With Kahoot!: Effects on Vocabulary Learning and Motivation. *Int J Comput-Assist Lang Learn Teach* [Internet]. 2021 [cité 23 janv 2024];11:40-53. Disponible sur: <https://ideas.repec.org/a/igg/jcallt/v11y2021i4p40-53.html>
21. Wichadee S, Pattanapichet F. Enhancement of performance and motivation through application of digital games in an english language class. *Teach Engl Technol*. 2018;18:77-92.
22. Licorish SA, Owen HE, Daniel B, George JL. Students' perception of Kahoot!'s influence on teaching and learning. *Res Pract Technol Enhanc Learn* [Internet]. 2018 [cité 12 mai 2024];13:1-23. Disponible sur: <https://link.springer.com/article/10.1186/s41039-018-0078-8>

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