

Throtel, throttel, trottlet or trotel. Engineering Undergraduates' Perception of the Use of Kahoot! to Review Course Content

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ABSTRACT

Education has undergone a fundamental change driven by technological advances, significantly altering the way teaching and learning is conceptualized in the classroom. Currently the variety of learning and teaching platforms is extensive and in general, these have been very well received by language teachers. The use of these platforms is often driven by teachers' eagerness to keep students motivated, engaged, and focused throughout a class. This exploratory study investigates engineering undergraduates' perceptions of integrating Kahoot! (a Game-based Student Response System (GSRS)) to review technological vocabulary and grammar before their unit tests. Students' perceptions were assessed using quantitative and qualitative methods throughout one semester. The findings indicated that students found the use of Kahoot! to be beneficial in relation to: (1) improving technological vocabulary in English (2) review more complex grammatical structures; (3) enjoy a more relaxed classroom environment. Finally, the present article presents some implications that may be useful to language lecturers.

Keywords: Game-based Student Response System, Kahoot!, learning platforms, technological vocabulary.

Education has experienced a fundamental change driven by technological advances, which have substantially modified the way teaching and learning are interpreted in the classroom. Lecturers, aware of the great challenge they often face to keep students' motivation and engagement, often resort to the use of gamification or the way of playing creative games in classroom without compromising the scientific nature of a curriculum (Nolan & McBride, 2014). Research indicates that the use of game design features in non-game contexts (Deterding et al., 2011) can bring many advantages to the learning context. An important advantage is that using these game-based learning platforms increases classroom dynamics, attendance, student motivation and engagement, as students may perceive the learning environment as more interesting and competitive (Kalogiannakis et al., 2021; Owen & Licorish, 2020; Rojabi et al.,

2022) while making lectures more interactive. Gamification, therefore, can turn students' learning environment into a positive classroom atmosphere, with “challenges, clear goals, feedback and an element of playfulness” (Kay & Lesage, 2009; Plum & LaRosa, 2017).

One of the ways to facilitate classroom interaction has been through Student Response Systems (SRS), a technology that permits an instructor to introduce a question or problem to the class, allows students to enter their responses on some type of device, and immediately aggregates and summarizes students' comments in the classroom, enabling not only teachers to assess students' understanding of key concepts precisely, but also allowing students to measure their own understanding (Bruff, 2009). SRSs have been used as an integrated tool to encourage active learning since the early seventies (Bruff, 2009; Cardoso, 2011), becoming increasingly common in higher level education. The real-time interaction between students and the teacher provided by SRS yields opportunities for fast feedback and greater engagement. To the best of our knowledge there are few research which taps into the specific issues encountered by students in reviewing course vocabulary and grammar through SRSs. Therefore, it seems warranted to investigate whether designing learning experiences through gamification can result in meaningful engagement with L2 learners and contribute to their language learning process.

Engagement and Game-Based Student Response System

Engagement is a major concern for learning in general and for language learning in particular (Dörnyei & Kormos, 2000) where the “automatization of L2 skills requires an extended practice period” (Mercer & Dörnyei, 2020, p.3). A good command of communicative language skills, as Mercer and Dörnyei (2020) emphasize, requires prolonged communicative practice, and this in turn demands “learners' willing engagement” (p.3). This involvement refers to the amount and/or kind of students' participation in a specific language learning task. If students are involved in their own learning, teachers are halfway done with their job.

However, getting students to stay engaged in the face of the distractions that surround them today is one of the great challenges that teachers are constantly competing with. As Schlechty (2011) points out, teachers often become creators of experiences for students, aiming to create engaging tasks with clear objectives, addressing their interests, opportunities, and experiences. The L2 practitioner, as Dörnyei, Henry and Muir contend (2016, p.113) is therefore challenged to “create a better ‘fit’ between learning activities and learner identities” so that learners realize that there is a “sense of continuity between what they learn and do in the classroom, and who they are and what they are interested in doing in their lives outside the classroom” (Ushioda, 2011, p. 204).

If engagement ensures meaningful learning and active participation in the classroom and in students' academic life, there is a need to delve into teaching practices that can connect students' curricular and extra-curricular spheres so that they can find the process of learning an L2 personally and academically relevant. Task design, therefore, becomes highly relevant in language learning. Research shows that specific features of task design, such as familiarity with the task, task repetition, and level of challenge, are related students' engagement (Dao, 2019; Sang & Hiver, 2021) because they may find these tasks more achievable.

In the last two decades, the concept of engagement has attracted increasing interest in the field of educational psychology. L2 research has also focused on exploring the nature of engagement, seizing the specific requirements for engagement, and researching its development over time

(Hiver et al., 2021). Students can engage in task-based learning from cognitive, behavioral, social, and emotional dimensions. Cognitive engagement is concerned with learners' mental effort and sustained attention (Helm & Clarke, 2001; Philp & Duchesne, 2016). Learners are cognitively engaged when they demonstrate intended and sustained attention to fulfil a task or achieve a learning goal (Reeve, 2012). Behavioral engagement is related to the amount of time students spend on a given task and to the quality of students' participation (Sang & Hiver, 2021). Social engagement refers to the relations among learners and their intentions to participate in turn-taking and topic development, willing to listen to one another, and participate in collaborative activities (Phung, 2017). Emotional engagement concerns the affective nature of students' involvement (Philp & Duchesne, 2016) in each task. Learners may show interest, enjoyment, enthusiasm or boredom, anxiety, frustration, and anger when engaged in a learning task. These positive and negative emotions will function differently for each student and at different times. High levels of attention and confidence shows high emotional engagement Cheng, 2017; Wu, 2018).

A defining feature of the construct of engagement is that it concerns active participation and students' involvement. Task engagement, therefore, is closely related to students' energy in action observable during the course while performing a language-related task (Zhou, Hiver & al-Hoorie, 2021). Teachers, however, often face challenges when trying to involve their students these days because of the multiple competing and pressing influences. Another major obstacle encountered has to do with the fact that students' involvement includes external and internal dimensions that do not always go together. Thus, the amount of learning behaviors a student may exhibit does not necessarily correspond with their involvement at a cognitive or affective level. This multifaceted construct is conceived of as "constructive, enthusiastic, willing, emotionally positive, and cognitively focused participation with learning activities" (Skinner & Pitzer, 2012, p.12).

Engagement is not static but dynamic and emergent and can be easily shaped by providing pedagogical support and creating good learning environments (Fredricks et al., 2004). The use of games for learning purposes has been found to foster motivation, and classroom dynamics. When integrated into a traditional classroom, games can also enhance learning and engagement. Student engagement that can arise from the use of games is due to several reasons: (1) the competitiveness among students that can be triggered by the game; (2) the change of atmosphere and disruption to the classroom brought about by gaming; (3) the sense of fun and excitement that learning games provide (Wang, 2015). Gamification elements can be included into SRSs to create game-based student response systems (GSRSSs) (Iwamoto et al., 2017; Licorish et al. 2018; Yapıcı & Karakoyun, 2017).

One of these systems is Kahoot!, a tool which "transforms temporarily a classroom into a game show" (Wang, 2015, p. 218). Kahoot! was launched in 2013, and today it has 70 million monthly active users (Lunden, 2018; Wang & Tahir, 2020), who use this game-based learning platform either to review curriculum contents, for formative assessment or as a way to break away from more conventional classroom activities, thus infusing dynamism into the lecture. The concept of Kahoot! is to combine SRS, the technical infrastructure in educational sites, students preferred digital devices (e.g., pads, laptops, or mobile devices), and gaming into one learning platform. With Kahoot! the lecturer has the role of a game show host, and the students are the contestants. A multiple-choice quiz is displayed on a large screen and students choose their answers as quickly and correctly as possible on their digital devices. Quiz questions can

be prompted with images, and videos to enhance engagement, enjoyment, and participation (Ruiz, 2021). Other properties that make Kahoot! attractive to participants is the suspenseful music, points rewarded for quick responses, leader board displays and colorful displays (Owen & Licorish, 2020). Students know how correctly or wrongly they have answered and in what position they are through a distribution chart that shows the scoreboard with the nicknames and the scores of the best five students, which fosters competition and contributes to keeping students engaged. The top three participants are announced at the end of the game (Wang & Tahir, 2020). There are two key features of playing Kahoot! that contribute to keeping students engaged in a similar way computers games do: (1) the notion of levelling up and (2) differentiated rewards (Mercer & Dörnyei, 2020). Regarding “levelling up”, Kahoot! can challenge students at the right level of competence by increasing the level of difficulty of the questions. This leveling up is visualised and gives learners a sense of achievement and progress. As for differentiated rewards, another key feature of computer games is to keep players engaged; by rewarding students with progress after they have passed levels and acquired points, students are likely to stay on task and feel the benefit of being praised by their peers and their teacher.

A number of studies have investigated the use of Kahoot! in the classroom. Among those focusing on its effectiveness in enhancing student engagement, motivation, and learning outcomes are Wang (2015), Licorish et al.’s (2018), and Plump and LaRosa’s (2017). Wang (2015) conducted a study to investigate how students' engagement and motivation were influenced over time by the repeated use of Kahoot!. The study also aimed to assess whether the effectiveness of Kahoot! in enhancing learning outcomes diminished as students grew more familiar with the tool. Licorish et al. (2018) examined the perceptions of undergraduate students regarding the use of Kahoot! in lectures. Researchers found that students felt more engaged when Kahoot! was used. The study also highlighted the platform's ability to create a more dynamic and interactive learning environment. Plump & LaRosa’s (2017) study found that students who used Kahoot! as a revision tool performed better in assessments compared to those who did not. The researchers suggested that the immediate feedback provided by Kahoot! helped reinforce learning. Though these studies highlighted that Kahoot! is overall effective in promoting students’ engagement and enhancing learning outcomes, they also suggest that this effectiveness may vary depending on how it is implemented, the specific context in which it is used, and the intended learning objectives.

Research questions and aims of the study

Different studies have researched the use of Student Response System technology in higher education settings by exploring students’ perspectives of integrating Kahoot! to foster their learning (Owen & Licorish, 2020; Ruiz, 2021). The aim of this study is still to investigate students' perceptions of the effectiveness of using gamification in English language learning. However, it further refines this perception to focus on how engineering students perceive the use of Kahoot to review grammar and vocabulary course content. Given this gap in knowledge, the following research questions were outlined:

RQ1. In what different ways did students perceive the use of Kahoot! in class contributed to reviewing course content?

RQ2. How do students perceive the use of Kahoot! in classroom dynamics, their engagement and motivation?

Methodology

Setting of the study

The present study was conducted at a well-established polytechnic university founded in 1998, and presently has over 7.200 graduate and postgraduate students. The university offers students a wide range of undergraduate degree programs in the fields of Engineering, Architecture, and Economic and Business Sciences. The participants in the present study were studying for an Engineering degree. The technical English course undergraduates attend is designed to improve their communication skills and broaden their knowledge of specialized language.

Participants

In total, 36 Engineering undergraduates participated in the study. They were on average 19 years of age. In terms of gender, 30 were male and 6 were female. Regarding their English proficiency in relation to the Cambridge English Placement Test, which assessed their reading, listening and language knowledge skills, this oscillated between B1 and B2.

Data collection Instruments

The design of the study involved the collection of both quantitative and qualitative data at different times during the semester. To investigate students' perceptions of the extent Kahoot! had on achieving learning outcomes, the Classroom Response System Perception (CRiSP) questionnaire (Richardson et al., 2015) was used. This instrument allows for the assessment of Classroom Response Systems (CRS) in relation to three scales based on a 5-point Likert scale: (1) the usability (4 items); (2) the impact on student engagement (10 items); and (3) the impact on student learning (12 items) (Richardson et al., 2015, p. 432). To obtain maximum participation, students completed the questionnaires during one of the lessons.

Qualitative data was collected at the end of the semester through a questionnaire using open-ended questions that allowed the researcher to ascertain subtle aspects that could not be articulated in the questionnaire and that were also related to their perception of the effectiveness of using Kahoot! to review the course contents. Both questionnaires were written in English and anonymous.

Procedure

Students played a total of 5 Kahoot' quizzes, following the end of each of the five course units. Each of the syllabus units was scheduled to be taught over two weeks. At the end of the unit, students played the Kahoot! designed by the teacher with grammar and technical vocabulary questions in line with the content covered in the unit. The 36 students completed the CRiSP questionnaire following the last Kahoot! quiz in the course. The open-ended questionnaire was sent by email to the students at the end of the course. Figure 1 shows the design of the study with the different stages of the course and when the quantitative and qualitative instruments were used to collect the data for the study. The students completed these questionnaires prior to the final exam of the course.

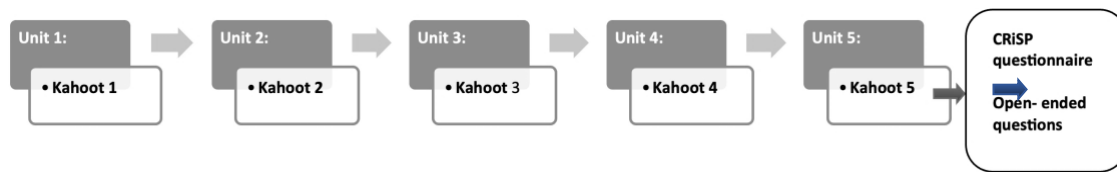


Figure 1. Design of the study

Data analysis

To analyze quantitative data obtained from the CRiSP questionnaire, descriptive statistics were used. The 26 items that make up the questionnaire were grouped into three categories; (1) usability; (2) engagement, and (3) learning.

Regarding the qualitative data collected by the open-ended questions, thematic content analysis (Dörnyei, 2007) was conducted without a pre-existing coding scheme. Different steps for thematic analysis included: familiarization with the data, initial coding, and a second-level coding process to rework themes until having these completely defined. Data were coded manually line-by-line to achieve closer familiarity with the overall organization. Different categories were assigned after comparing new salient categories to initial ones.

Special attention was paid to nouns, adjectives, and adverbs that conveyed students' perceptions of Kahoot's effectiveness in reviewing the course content. Participants' responses that were closely related were grouped (Loewen et al., 2009). To ensure coding quality, an independent coder was invited to confirm the accuracy of the themes. Three major themes emerged as significant for understanding undergraduates' perceptions: 1) increased engagement; 2) competitiveness; 3) awareness of strengths and weaknesses. The section discussing qualitative results will offer the excerpts that most closely represent the major emergent themes.

Findings

The following findings are presented in accordance with the guiding research questions: (1) the different ways in which students perceived the use of Kahoot! contributed to the achievement of learning outcomes, and (2) the specific issues students found in learning and revising technical vocabulary and grammar through Kahoot! gamification.

The different ways in which students perceived that the use of Kahoot contributed to the achievement of learning outcomes.

To discuss the finding in this section three tables are presented. Each of these showing the results in relation to the three scales included in the Classroom Response System Perception (CRiSP) questionnaire.

Usability

Students found Kahoot to be an easy-to-use game-based learning platform ($M=4.73$, $n=36$). As shown in Table 1, 88.8% of the students agreed that Kahoot! was easy to use. As for any difficulties or technical problems they may have experienced when playing with this digital tool, no students claimed to have encountered difficulties.

Table 1. Statements to ascertain students' perception of Kahoot! usability (n=36)

<i>Item</i>	<i>Strongly agree</i>	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>	<i>Strongly disagree</i>	<i>M</i>
1. I think Kahoot! voting system was easy to use	30 (83.3%)	2 (5.5%)	2 (5.5%)	1 (2.7%)	1 (2.7%)	4.63
2. I think Kahoot! was difficult to use.	0 (0%)	0 (0%)	2 (5.5%)	4 (11.1%)	30 (83.3%)	4.77
3. It was difficult to know what was expected of me using Kahoot!	0 (0%)	1 (2.7%)	1 (2.7%)	6 (16.6%)	28 (77.7%)	4.69
4. There were a great number of technological problems using Kahoot!	0 (0%)	0 (0%)	0 (0%)	6 (16.6%)	30 (83.3%)	4.83

Engagement

As observed in Table 2 and regarding the influence of Kahoot! on students' engagement, these indicated that it had a positive effect on their learning ($M=4.28$, $n=36$). The positive influence on students' engagement related to their high levels of confidence (74.9%), their desire to participate in the class (97.2%), and to their higher levels of attention during the class (77.7%). It is also noteworthy that students stated that the use of Kahoot directly contributed to their enjoyment of the class (100%).

Table 2. Statements to understand students' perceptions of the impact of Kahoot! on their level of engagement. (n=36)

<i>Item</i>	<i>Strongly agree</i>	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>	<i>Strongly disagree</i>	<i>M</i>
1. I often chose the correct answer without really understanding.	0 (0%)	1 (2.7%)	6 (16.6%)	20 (55.5%)	9 (25%)	4.02
2. I felt more confident to participate in class when we used Kahoot!	14 (38.8%)	13 (36.1%)	2 (5.5%)	7 (19.4%)	0 (0%)	3.94
3. I participated in Kahoot! most time in class.	34 (94.4%)	2 (5.5%)	0 (0%)	0 (0%)	0 (0%)	4.94
4. Kahoot! increased how often I directly participated in class.	30 (83.3%)	5 (13.8%)	1 (2.7%)	0 (0%)	0 (0%)	4.80
5. Kahoot! contributed to being more active in class.	30 (83.3%)	4 (11.1%)	2 (5.5%)	0 (0%)	0 (0%)	4.77
6. The use of Kahoot! helped me to be more focused in class.	20 (55.5%)	8 (22.2%)	8 (22.2%)	0 (0%)	0 (0%)	4.33
7. The use of Kahoot! has increased my concentration levels in class.	16 (44.4%)	12 (33.3%)	8 (22.2%)	0 (0%)	0 (0%)	4.22
8. Using Kahoot! has motivated me to attend class.	8 (22.2%)	5 (13.8%)	13 (36.1%)	5 (13.8%)	5 (13.8%)	3.16
9. The use of Kahoot! has contributed to my enjoyment in the course.	30 (83.3%)	6 (16.6%)	0 (0%)	0 (0%)	0 (0%)	4.83
10. The rest of the class could not see my answers, and this motivated me to be an active participant.	10 (27.7%)	12 (33.3%)	8 (22.2%)	6 (16.6%)	0 (0%)	3.86

Learning

Regarding students' perception of the influence of Kahoot! on English learning and on the review of grammar and technological vocabulary (Table 3), the results of the quantitative data show that students considered the use of Kahoot! as an optimal tool to improve the quality of the classes (91.6%), and to gain more control over their learning (63.8%). Also, many students noted the use of Kahoot! contributed to improving their learning of technical English (74.99%), particularly to review technical vocabulary (80.5%). A smaller number of students (52.77%) perceived that using Kahoot! helped them review the grammar of the course.

Table 3. Statements to understand students' perceptions of the impact of Kahoot! on their learning. (n=36)

<i>Item</i>	<i>Strongly agree</i>	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>	<i>Strongly disagree</i>	<i>M</i>
1. I think that using Kahoot! in the course wasted too much time.	0 (0%)	0 (0%)	0 (0%)	6 (16.6%)	30 (83.3%)	4.83
2. The lecturer should continue using Kahoot!	28 (77.7%)	7 (19.4%)	1 (2.7%)	0 (0%)	0 (0%)	4.75
3. The use of Kahoot! helped increase the quality of the classes.	25 (69.4%)	8 (22.2%)	2 (5.5%)	0 (0%)	0 (0%)	4.52
4. Kahoot! increased my motivation to learn Technical English.	25 (69.4%)	7 (19.4%)	3 (8.3%)	1 (2.7%)	0 (0%)	4.55
5. The interaction between students and lecturer offered by Kahoot! is effective.	30 (83.3%)	4 (11.1%)	0 (0%)	0 (0%)	0 (0%)	4.61
6. Kahoot helped me get instant feedback on what I knew and did not know.	20 (55.5%)	8 (22.2%)	8 (22.2%)	0 (0%)	0 (0%)	4.33
7. Using Kahoot! has helped me to review the course grammar.	9 (25.0%)	10 (27.7%)	9 (25.0%)	4 (11.1%)	4 (11.1%)	3.05
8. Using Kahoot! has helped me to learn technical vocabulary.	15 (41.6%)	14 (38.8%)	6 (16.6%)	1 (2.7%)	0 (0%)	4.19
9. The teacher used the results of the Kahoot quizzes to assess our understanding and focus on the material that was not well understood.	22 (61.1%)	9 (25.0%)	3 (8.3%)	2 (5.5%)	0 (0%)	4.41
10. Using Kahoot! improved my learning of technical English.	15 (41.6%)	12 (33.3%)	6 (16.6%)	3 (8.3%)	0 (0%)	4.63
11. I found that Kahoot! provided me with greater control over my learning than in the lessons we did not use Kahoot!	9 (25.0%)	14 (38.8%)	10 (27.7%)	3 (8.3%)	0 (0%)	3.80
12. The use of Kahoot! helped me think more deeply about the course grammar and vocabulary.	8 (22.2%)	14 (38.8%)	12 (33.3%)	2 (5.5%)	0 (0%)	3.77

Grammar through Kahoot gamification

Qualitative data was collected through three open-ended questions that allowed the researcher to ascertain subtle aspects that could not be articulated in the questionnaire and that were also related to students' perception of the effectiveness of using Kahoot! to review the grammar and vocabulary content (see figure 2 and 3 for examples of both grammar and vocabulary questions in one of the Kahoot! quizzes).



Figure 2. Screenshot with an example of grammar question

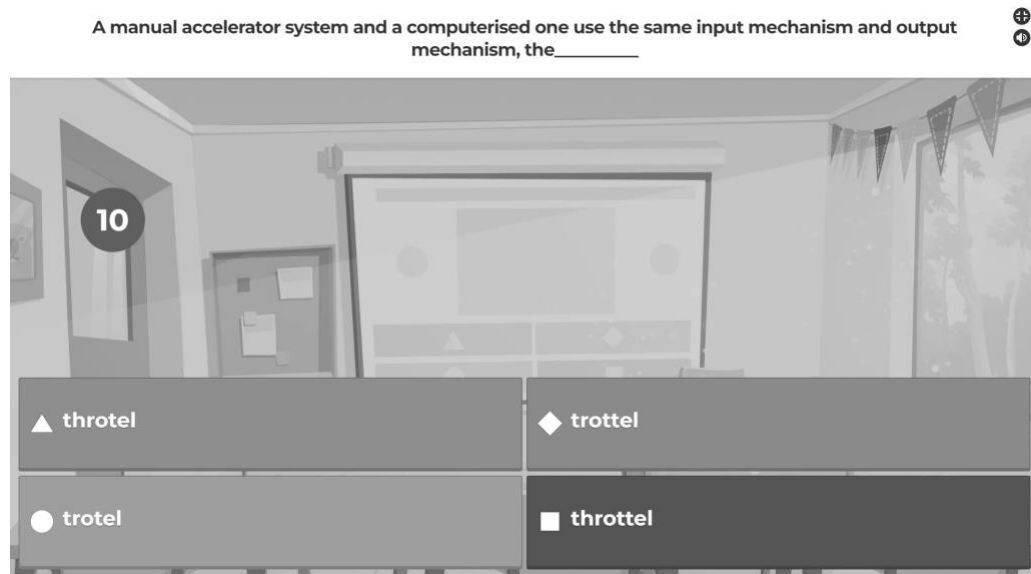


Figure 3. Screenshot with an example of vocabulary question

Open-ended questions helped determine in specific terms the extent to which Kahoot! had contributed or not to learning the technical vocabulary and grammar they had seen in the unit. These three questions are:

- (1) Do you think Kahoot's vocabulary questions have helped you learn vocabulary better?

- (2) Do you think that Kahoot's grammar questions have helped you learn grammar better?
- (3) Would you have changed any aspect of the design of the Kahoot! quizzes? Students were asked to elaborate on their responses by avoiding simply answering with yes or no.

As shown in Table 4, six major categories resulted from students' responses: (1) awareness of strengths and weaknesses; (2) awareness of vocabulary spelling; (3) missing images in the quiz; (4) insufficient grammar questions; (5) increased engagement; (6) competitiveness. Increased engagement was the category students most referred to (69.4%, 25/36). Thus, students highlighted that playing Kahoot! encouraged them to be engaged. Some of them also highlighted that it was fun to compete against others (50%, 18), this being a factor that made them more focused.

Another relevant category was awareness of vocabulary spelling (55.5%) in 20 of the responses. Students recalled having learnt to spell specific technical words through Kahoot!. It is also significant that a few students (5 responses) reported having found insufficient grammar questions in the Kahoot! quizzes as compared to those focusing on reviewing vocabulary. The critical side of the students (41.6%, 15) was also evident in their opinions about the Kahoot! design, noting that the inclusion of images throughout some of the grammar-related questions would have made it easier to choose the correct answer.

Table 4. Emergent categories resulting from qualitative data

Category	No. of students n=36	Representative quotations
Increased Engagement	25 (69.4%)	<p>"When we played Kahoot! we reviewed key aspects of grammar and vocabulary, and we also had a good time. We all participated, unlike other times where we feel intimidated and could not get involved because we were embarrassed or thought we didn't have the right answer."</p> <p>"Kahoot! made us engaged all the time. Playing Kahoot! created a fun and relaxed atmosphere. We were learning and having fun at the same time."</p>
Awareness of vocabulary spelling	20 (55.5%)	<p>"I realized the spelling of many words such as throttle, weight, sealed, or encrypted."</p> <p>"Using Kahoot! helped me learn that both touch screen as two words and touchscreen as one word are acceptable."</p>
Competitiveness	18 (50%)	<p>"Kahoot! includes an element of competitiveness that is not harmful at all."</p> <p>"I competed with myself and my peers."</p>
Missing images	15 (41.6%)	<p>"I would have included illustrative images in some of the questions."</p> <p>"The teacher could include images in some of the Kahoot! questions. This would certainly contribute to making the quiz more enjoyable."</p>
Awareness of strengths and weaknesses	10 (27.7%)	<p>"Yes, as I realized that I had some problems with specific grammatical aspects that I thought I had mastered."</p> <p>"Kahoot! quizzes helped me to know that I needed to review the vocabulary of the unit more carefully."</p>
Insufficient grammar questions	5 (13.8%)	<p>"The number of questions that focused on reviewing grammatical aspects was significantly lower than the number of questions that focused on reviewing technical vocabulary. Teacher should consider including more questions that review grammar, this could be helpful."</p> <p>"If the teacher is still using Kahoot! I would recommend that she design more questions focused on grammatical content."</p>

Discussion

Quantitative and qualitative results obtained in the present study corroborate those of other studies that have also measured students' perception of the influence of Kahoot! use on their learning (Licorish et al., 2018 Ruiz, 2021; Wang, 2015). These investigations highlight students' positive perceptions about the use of Kahoot! in the course. In Licorish' study, Kahoot! gave students more opportunities to engage with the lecturer, peers, and lecture content. Ruiz's (2021) quantitative and qualitative research demonstrated that students perceived the use of Kahoot! positive in relation to their engagement and motivation to learn, the improvement of the understanding of concepts and the enhancement of a positive learning environment. Wang's (2015) quasi experiment focused on researching the wear off effect of using Kahoot! in classroom teaching in terms of user-friendliness, concentration, perceived learning, engagement, motivation, and classroom dynamics. Results revealed that the use of Kahoot! increased students' engagement and learning even after repeated use for five months. In the present study, students' positive perception of the use of Kahoot! had largely to do with their recognition of feeling comfortable participating in the game. According to the students this fact had to do with the anonymity they enjoyed being able to answer on a device, something that contributed to reducing their fear of making a mistake in front of their peers. L2 engagement, as also expressed by the students, was achieved through the competitive element of Kahoot! The ranking and points system encouraged them to do their best and fostered a healthy competitive spirit. Another important factor pointed out by most students was the enjoyment and fun that Kahoot! generated for them. According to several students, this fun and enjoyment factor engaged them and helped to reduce the barriers to interaction that they recognized they had in their regular classes. As one of the students highlighted, all the course students "participated, unlike other times where we felt intimidated and could not get involved because we were embarrassed or thought we didn't have the right answer."

In addition to engaging students in language learning, one of the main objectives of designing and conducting the Kahoot! was to review the grammar and technical vocabulary learnt during the course. The process of revising course grammar and vocabulary became interactive, enjoyable, and effective. The design of the course Kahoot! used different types of questions, such as multiple-choice, true/false, and matching exercises, and vocabulary questions using matching words with definitions and pictures. This variety suited the different learning styles of the students. Students' engagement, therefore, was manifested in its behavioral, cognitive, and affective dimensions. In terms of student behavioral engagement, it is possible that this increased because Kahoot! always requires students to actively participate.

The Kahoot! format requires constant interaction with the content and this fact kept students' attention focused on the task. Another very important feature of Kahoot! is its competitive nature. This motivated students to participate enthusiastically, striving to score points and achieve high rankings on the board. In terms of cognitive engagement, timed questions and varied question formats (multiple-choice, true/false) may have challenged students to provide answers efficiently. In addition, the fast-paced nature of the game required students to quick thinking and adaptability, which may have promoted their cognitive flexibility. Finally, and in terms of affective engagement, Kahoot! allowed the teacher to customize quizzes and to create content that could resonate with students' interests and experiences in the L2 course. This fact contributed to creating a more personal and emotionally engaging experience.

Conclusion

Engaging students in meaningful learning is a major current challenge for many teachers, who observe daily how the attention span of students in the classroom is affected by various distractions. Engagement has, in fact, become one of the most fashionable research topics in the field of educational psychology. A defining feature of the construct of engagement is that it concerns active participation and students' involvement. Another core characteristic of engagement is emotional responsiveness. Engaged students are expected to invest energy and attention and become emotionally involved. Keeping this in mind, the Technical English course was designed to include a series of Kahoots! so that students could review grammar and technical vocabulary specific to the unit in advance of taking the tests.

The rationale of using gamification throughout the semester was based on research establishing that gamification can engage students by increasing competitiveness among them, changing the atmosphere in the classroom, and providing the sense of fun and excitement that learning games provide (Wang, 2015). The present research gathered quantitative and qualitative data to assess the effectiveness with which 36 undergraduate engineering students perceived the use of Kahoot! to review specific course content. Analysis of quantitative data showed that playing Kahoot! during the semester had a positive effect on students' perception over their learning. This perception is related to an increased level of confidence, a greater desire to participate in the course, and a higher level of attention. Qualitative data indicate that using Kahoot! on a regular basis for one semester contributed to a learning experience that students found fun and relaxed. Also, the use of Kahoot! systematically in the English language course helped the lecturer to combat distractions, thus improving the quality of teaching and learning and engaging students affectively, behaviorally, and cognitively.

Limitations and Future Research

The present study was used with a small sample of English language students and therefore may be limited in generalizability. Nevertheless, this study can be regarded as a piece of action research characterized by being limited in scope and with the main objective of looking closely at different ways of engaging students in a particular language learning context. The positive results of this research can trigger further research covering a wide range of topics to understand its effectiveness, benefits, challenges, and best practices.

Future studies could, for instance, focus on researching how Kahoot! affects student collaboration, communication, and social interaction, particularly in team modes or group activities. Another potential area of research could explore how the immediate feedback provided by Kahoot! influences student learning and self-assessment. This could include examining how students use this feedback to improve their understanding and performance.

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