

Article

# Gamification in Higher Education: Impact on Student Motivation and the Acquisition of Social and Civic Key Competencies

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**Abstract:** This study investigates to what extent the popular online gaming platform called Kahoot can be used as a creative and effective tool to promote motivation, engagement and meaningful learning. For this purpose, a quasi-experimental study was conducted with a sample of 101 undergraduate students of education who participated in online Kahoot quizzes by designing their own questions as part of the formative assessment. According to the results of the pre- and post-tests, the integration of this game-based student response system into the teaching process improved students' perception of certain concepts in social science teaching, increased their active participation in the lesson, and motivated them towards learning in a more interactive and stimulating environment. Therefore, it is recommended to take gamification to a whole new level with attractive digital participation platforms to increase motivation and enhance students' learning experience in higher education contexts.

**Keywords:** education; educational technology; game; social science; university students

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## 1. Introduction

The promotion of game-based learning (GBL) has undoubtedly changed academic environments and traditional teaching styles by significantly modifying the roles of the teacher and the student [1]. In particular, with regard to students, GBL implies more active participation in these learning processes, which responds more effectively to their current interests while improving digital literacy and promoting quality and sustainable education [2,3]. To achieve these objectives, the emergence of new teaching and learning models has encouraged educators, as social actors, to adapt to the needs of learners in order to create conditions suitable for developing more motivating and innovative practices [4,5]. One of the reasons for this important change is the so-called “student response system”, which favors the collection of real-time information on students' level of understanding of the contents covered in class [6]. The first individual response devices were used in the 1960s, although they were only widely implemented from the 1970s onwards [7]. Once these electronic tools were made available, classroom interaction was improved, particularly between teachers and students, making it easier to detect problems or shortcomings that arose during the learning process. Initially, the first tools, such as keyboards, required a terminal that received by infrared or radio frequency the signals sent by remote controls that had previously been distributed to students [8,9]. Today, remote controls are no longer necessary because smartphones, tablets or laptops favor the implementation of these systems due to wireless connections, applications and websites [10,11]. Therefore, due to the advancement and application of Information and Communication Technology (ICT), content knowledge and fun can be merged into daily lessons without the need for other intermediate devices. On the Internet, we can

find a variety of high-quality online platforms that fully meet the above criteria, such as “Kahoot”, “Socrative”, “Quiz”, “Acadly” or “PollEverywhere”, inter alia [12]. There are small differences between these web tools depending on the main aim of the game, the technical expertise required, or the types of result obtained.

Of all the student response system platforms, our study focuses on an online gaming tool called Kahoot, which combines a ludic approach with an appealing design, helping to promote active participation and constructivist learning. In this web tool there are several options available for both teachers and students, such as quizzes, surveys and discussions. In the quizzes, the main objective is to appropriately answer the questions posed, trying to do this in the shortest time possible in order to beat the other participants. Unlike quizzes, discussions and surveys are not usually based on single-answer questions. In fact, discussions may be limited to an open-ended question to promote dialogue and the exchange of ideas among students, while surveys consist of a set of questions that are effective in getting students to talk about issues raised in class so that everyone has the opportunity to make their opinions heard. In their design and implementation, the questions can be created by the platform user or selected from pre-determined lists. At the end of each activity, students have the opportunity to review what they have learned so far.

Among the benefits of this online gaming platform, the following have been identified in different studies:

- (1) It encourages creativity and innovation. The active participation of students stimulates their imagination and their creative capacity to make their own tests and learn from those made by their teachers and classmates [13]. Curto Prieto, Orcos Palma, Blázquez Tobías and León [14] examined the use of Kahoot in students’ learning process for science and mathematics in secondary education and one conclusion this study highlighted is that students’ creativity improved due to this online resource.
- (2) It increases students’ engagement and motivation to learn and their ambitions for success as it creates a stimulating and competitive environment in which students actively participate. The higher or lower number of points earned depends not only on the total number of correct answers but also on the time taken to answer them. Plump and LaRosa [15] analyzed undergraduate business law students’ answers regarding their level of engagement in the classroom when playing Kahoot. The results of that study concluded that this online platform promoted a higher level of engagement and competitiveness among students.
- (3) Teaching social studies through this online learning tool is associated with student achievement in social and civic skills, as it contributes to an understanding of social, economic and political concepts, as well as international development and sustainability. Candel [16] concluded that the use of Kahoot and other ICT resources through the teaching of social sciences in a cooperative learning environment improved the acquisition and development of social and civic skills and attitudes.
- (4) It has a user-friendly interface that requires a low level of technical expertise. In fact, both the students and the teacher can create a learning experience in a clear and understandable way using only pictures, video and questions to foster an intensely innovative social learning experience [17,18]. Medina and Hurtado [19] provided evidence that the use of Kahoot increased undergraduate students’ motivation because of its easy-to-use implementation.
- (5) It is easily accessible by any device with an Internet connection: smart phones, tablets or laptops. It is also free for all users after registration, it being understood that these games, nicknamed “Kahoots”, are used for teaching or learning and not for commercial purposes [20,21].
- (6) It promotes a type of synchronous interaction that encourages real-time collaboration and fosters a sense of community. Guardia, Del Olmo, Roa and Berlanga [22] verified the benefits of this digital platform in promoting participatory evaluation that favored the development of cross-disciplinary skills.

- (7) The use of these instructional games in the classroom is likely to minimize distractions, thereby improving attention and concentration and therefore the quality of learning beyond that developed by traditional teaching styles. Tan Ai Lin, Ganapath and Kaur [23] aimed at gauging the extent to which the use of Kahoot improved undergraduate students' learning. Their results highlighted its effectiveness in fostering and reinforcing learning in both a theoretical and practical sense.
- (8) It provides opportunities to review and revise learning content, which promotes efficient and progressive learning. Thus, when students play on this platform, they have access to academic information that can help them clarify concepts and clear up doubts that may arise [24]. Licorish, Owen, Daniel and George [25] examined students' experience using this ICT resource in a higher education context in New Zealand and concluded that it enriched the quality of student learning in the classroom.
- (9) It favors the achievement of better results in the groups in which this system of student response is implemented. In fact, several studies highlight the fact that students who play Kahoot often achieve better results in examinations [26]. Tóth, Lógó and Lógó [27] measured the long-term learning effect of Kahoot quizzes on 200 undergraduate students. The results showed that the students who took more Kahoot quizzes got better marks. In this line, Gómez-Carrasco, Monteagudo-Fernández, Moreno-Vera and Sainz-Gómez [28] examined the effects of a gamification program for teachers in training on the motivation and perception of learning. The results indicated an increase in motivation levels among the respondents and also showed significant differences according to the gender of the participants, which opens the door to further research on the causes and consequences of such findings.

However, other studies have described some disadvantages and negative implications with respect to the challenging changes involved in game-based teaching. In particular, some teachers may find the platform discouraging, as they have to do extra work to adjust the pace of the class to achieve a better understanding of the content. This requires a great deal of effort both inside and outside the classroom in order to integrate digital content into lesson plans. It also requires increasing the educational adaptations made in the classroom in order to promote content learning by all students in a comprehensive and meaningful way. Another disadvantage pointed out in some studies is linked to the negative attitude of some students to these digital challenges, since not all students prefer to play an active role in the classroom. In fact, some of them feel more comfortable taking notes and studying content after class without using their mobile phones for academic purposes because they fear making mistakes in public when using this digital resource or not feeling supported by their peers when asked about content previously worked on in class [29,30]. Further research and information on the application of these innovative proposals in higher education contexts is therefore needed to better understand and adapt these ludic strategies to the main interests and demands of students.

### *Objectives*

The aim of this study is to examine the effect that the game-based student response system Kahoot had on students' level of motivation and learning. To achieve this aim, the following research objectives were set:

RO1: To analyze the opinions of undergraduate students on the effect that the student response system called Kahoot had on their motivation level; in particular, to examine their opinions about the effects that this student response system had on their motivation level according to the gender of the participants.

RO2: To collect information from participants about their level of digital competence in the use of this web tool, and, in particular, to analyze their impressions about the level of digital competence required when using this online platform, following the basic instructions and creating a test with multiple choice questions. Further, to examine their opinions about the level of digital competence required when using this online platform, following the basic instructions and creating a test with multiple choice questions according to their previous digital expertise. Further, to analyze their views

on the level of digital competence required when using this online platform, following the basic instructions and taking a test with multiple choice questions according to the gender of the participants.

RO3: To examine undergraduate students' impressions on the learning achieved in the core unit through the use of gamification, and in particular: to analyze their views on learning social and civic skills in the core unit; to examine their impressions of the learning of social and civic skills in the core unit according to their level of motivation; and to analyze their opinions about the learning of social and civic skills in the core unit according to the gender of the participants.

## 2. Materials and Methods

A quasi-experimental study was designed with pre- and post-test questionnaires, which were designed ad hoc to compare the level of achievement of the objectives set out in this educational innovation.

A quantitative methodology was used to analyze the level and type of participation of university students in this online game platform. In order to carry out this process effectively, participants were monitored until they had finished the 4-month period and their answers were examined before and after implementing this methodological proposal in order to ascertain the existence of significant differences at the end of the academic period.

### 2.1. Participants

The gamification program was carried out in the core unit of "Teaching Social Sciences", which is compulsory for all second-year students of the Primary Education degree of the University of Murcia, Spain. In this study, the convenience sample consisted of 101 students (25 men (24.7%) and 76 women (75.3%) who were chosen for their readily availability. Before the study started, they were asked to sign an informed consent form, following the recommendations of the Research Ethics Committee at the University of Murcia. The ages of the participants ranged from 19 to 22 years ( $M = 20.94$  and  $SD = 2.77$ ) although there was a minority of students above that age (4.73%). Almost 90% of the participants in the study were 19 or 20 years old and only 5% of the students in the sample had repeated the year.

### 2.2. Data Collection Tools

The quantitative data on the effects of this game-based student response system were collected through an ad hoc questionnaire, one of the most widely used techniques in data collection, the purpose of which is to study and obtain information in a systematic and orderly manner on the categories and variables needed to carry out the research. Among the advantages of this technique are the following: collecting a large amount of information from a large number of subjects on very diverse aspects, allowing for easy and cheap administration, being direct, being able to express opinions anonymously and freely, allowing the person surveyed to rationalize each question and facilitate the analysis of the results [31]. However, the questionnaire also has its limitations, some of which are related to the concept of "social desirability". Among its main drawbacks are the complexity of its design, the lack of depth of responses, and the limited response rate [32]. It consisted of three sections and 21 items, the first of which consisted of four statements relating to participants' perceptions of their technical expertise in using this online tool (See Appendix A, Tables A1 and A2). The second section consisted of four statements on the level of motivation with this online platform. The third section comprised 13 items related to respondents' perceptions of how this student response system can help them learn problem-solving skills and social and civic competencies. A five-point Likert scale was used—ranging from "1": strongly disagree, to "5": strongly agree—so that students could freely rate the statements in the three sections of the questionnaire according to their points of view.

This instrument was based on an earlier research questionnaire that was used in a previous study and was originally validated by external experts [28]. The questionnaire in this study was adapted from the original instrument and was validated by a focus group, in which the authors of the above-mentioned study participated together with three ICT experts.

### 2.3. Procedure and Data Analysis

This core unit was held in the first term of the 2019/2020 academic year (September–December). The sessions were held on Tuesdays and Thursdays from 4 until 6pm. The aim of this core unit was for students to develop their knowledge and teaching skills in social sciences in a way that fosters high quality academic and social learning. The content of the core unit included explanations, descriptions and reflections on the main concepts in the social sciences through readings, news, research articles and other sources of information. Most of the class activities were group work, i.e., the analysis of case studies, debating a controversial topic or discussing quotations, which aimed at creating multiple and frequent interactions in which students helped each other and cooperated with each other to make their learning more effective. Additionally, students had to design, apply, adapt and evaluate content that was specific to the teaching of social sciences in order to promote the development of key competencies in this discipline. To this end, students were required to design social science lesson plans, sequence teaching content and curriculum objectives, or analyze the application of social science curriculum standards, among other relevant activities.

Some of the activities were game-based and consisted of online quizzes designed to test their knowledge of the content previously worked on in class. The strategies used in the gamification were based on the Kahoot student response system as a teaching technique to increase motivation and the development of social skills. The teaching team prepared two weekly Kahoot tests on the academic content. The aim of these games was to answer questions about this content in the shortest time possible, resulting in the awarding of points to the fastest and most efficient students. Similarly, students also had to create and implement their own Kahoot quizzes in class for similar purposes. They used their mobile phones to take the quizzes and their laptops to make them. The quizzes were made in groups of four or five, although they were taken individually because they liked to play against each other. Discussions about the results were held after each quiz, which allowed for more active participation in the class and helped to strengthen the mutual learning process.

The data was carefully analyzed with the Statistical Package for Social Sciences (SPSS) v.26.0. In addition, non-parametric tests (Wilcoxon, U Mann–Whitney and Kruskal–Wallis) were implemented for the variables of sex, group, motivation level and the level of ICT competence. These tests were carried out after obtaining the results provided by the Kolmogorov–Smirnov tests, which were implemented to examine whether the variables were normally distributed. The mean values have been expressed numerically in the following section, as well as information on the standard deviation by gender, group and level of ICT competence in both the pre-tests and post-tests.

### 3. Results

In terms of the results related to the first objective, which focused on the level of student motivation, the perception of respondents improved from one test to another, as their average scores increased in both subgroups, as shown in Table 1.

**Table 1.** Descriptive statistics of motivation by gender.

Motivation	Men		Women	
	<i>n</i> = 14		<i>n</i> = 47	
	M	SD	M	SD
Pre-test	4.01	0.99	3.82	1.07
Post-test	4.31	0.87	4.26	0.91

The ratings of the male students are slightly higher than those of females, although there are no major differences between the subgroups. However, in general there are statistically significant differences between the pre- and post-test, as indicated in the Wilcoxon Signed Rank Test ( $Z = -3.031b$ ,  $p = 0.02$ ). According to these findings, it can be stated that the implementation of Kahoot in the core

unit “Teaching Social Sciences” increased students’ motivation significantly. Table 2 shows the means and standard deviations of the answer options given by the participants according to their level of digital competence.

**Table 2.** Descriptive statistics of the level of digital competence for using Kahoot.

Digital Competence	High				Medium				Low			
	Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Game settings	4.71	0.64	4.68	0.47	4.39	0.85	4.39	0.72	4.31	0.51	4.33	0.57
Basic instructions	4.57	0.67	4.76	0.52	4.35	0.81	4.45	0.67	4.02	0.89	4.33	0.57
Steps in creating a quiz	3.85	1.01	4.64	0.63	3.60	1.05	4.15	0.95	3.84	1.47	3.33	1.08
Formulating questions	4.38	0.80	4.76	0.54	4.30	0.70	4.30	0.70	4.10	0.41	3.66	1.22

The results of the first subgroup are higher than those of the second and third subgroups, which is reinforced by similar findings from Kruskal–Wallis non-parametric tests regarding question formulation, as they indicate that the participants with a high level of ICT competence are more effective in formulating the test questions on this platform ( $H = 8.67$ ;  $p < 0.05$ ). In general, the participants’ rating is lower when they give their opinion on the steps they have to take to create a quiz from the beginning, i.e., accessing the platform, choosing questions, brainstorming with a list of possible answers, or adding pictures, among other steps. However, there is a significant difference in this variable between the average scores of the students before and after following the steps in the creation of the quizzes ( $p < 0.05$ ), which shows that the application of Kahoot had promoted a change in attitude at the end of the term, as can be seen in Table 3.

**Table 3.** Wilcoxon’s signed rank test in relation to the level of digital competence at Kahoot.

Digital Competence	Negative Rank			Positive Rank			Test Statistics		
	<i>n</i>	Mean Rank	Sum of Ranks	<i>n</i>	Mean Rank	Sum of Ranks	Ties	<i>z</i>	<i>p</i>
Game settings	33	33.82	1116	32	32.16	1029	35	−0.28b	0.774
Basic instructions	24	29.44	706.5	35	30.39	1063.5	42	−1.48b	0.152
Steps in creating a quiz	15	37.67	565	56	35.55	1591	30	−4.12b	0.000 *
Formulating questions	24	29.35	704.5	33	28.74	948.5	44	−1.042b	0.294

\*  $p < 0.05$ , Based on negative ranks.

There were no significant differences between men and women on the perception of the digital skills needed to effectively use this platform before and after the educational intervention.

With regard to the acquisition of skills and abilities linked to the development of social and civic competencies, the participants’ answers are also grouped in the highest values in both the pre-tests and the post-tests, as can be seen in Table 4.

**Table 4.** Descriptive statistics of students' opinions on learning acquired through the use of Kahoot.

Item	Pre-Test		Post-Test	
	M	SD	M	SD
Increased access to social science knowledge	4.34	0.68	4.27	0.87
Learning knowledge of interdisciplinary content	4.23	0.71	4.31	0.73
Help to plan, design and evaluate learning processes	4.15	0.75	4.21	0.84
Promoting cooperative learning	4.29	0.74	4.17	0.76
Improve the capacity to interpret relevant data	3.81	0.86	3.99	0.89
Encouraging critical social thinking	3.52	0.98	3.84	0.94
Promoting democratic values	3.71	0.95	3.86	0.88
Develop problem-solving skills	3.84	0.88	4.01	0.91
Encouraging individual and collective responsibility	3.74	10.06	3.99	0.88
Increase their capacity for active and constructive participation	3.95	0.84	4.08	0.89
Favoring a better understanding of social, economic, legal and political concepts and institutions	3.65	0.97	3.86	0.99
Raising awareness of diversity	3.90	0.88	4.01	0.89
Increases tolerance and mutual respect	3.27	1.02	3.61	1.06

The results obtained indicated a high satisfaction of Kahoot users in the development of their social and civic competencies. Most of the items obtained a score above 4 out of 5 in the post-tests, although there were four items that did not exceed the value of 4. The items best considered were those related to learning both social sciences and interdisciplinary content (4.31), while the lowest were related to the acquisition of attitudes of tolerance and mutual respect (3.61).

A Wilcoxon's sign rank test was conducted to analyze the existence of statistically significant differences. All the mean differences found between the pre- and post-tests were not statistically significant, with the exception of one (encouraging critical social thinking,  $p < 0.05$ ), as seen in Table 5.

**Table 5.** Wilcoxon's signed rank test with respect to learning acquired through the use of Kahoot.

Learning Acquired in Kahoot	Negative Rank			Positive Rank			Test Statistics		
	<i>n</i>	Mean Rank	Sum of Ranks	<i>n</i>	Mean Rank	Sum of Ranks	Ties	<i>z</i>	<i>p</i>
Encouraging critical social thinking	31	36.55	1133	47	41.45	1948	23	-2.10b	0.035 *

\*  $p < 0.05$ .

In addition, a Kruskal–Wallis H test was conducted in which the independent variable was the level of motivation and the dependent variables were perceptions on the acquisition of skills and the development of social and civic competencies throughout the core unit. The results indicate that there were significant differences in all variables in this section between subgroups of participants with different levels of motivation, as shown in Table 6.

**Table 6.** Results of the Kruskal–Wallis test in relation to the opinions of participants on the learning acquired and their levels of motivation.

Social and Civic Competencies	High Motivation		Medium Motivation		Low Motivation		Test Statistics		
	<i>n</i>	Mean Rank	<i>n</i>	Mean Rank	<i>n</i>	Mean Rank	H	g <sub>L</sub>	<i>p</i>
Increased access to social science knowledge	53	58.13	44	44.19	4	31.38	8.758	2	0.013 *
Learning knowledge of interdisciplinary content	53	58.34	44	43.24	4	39.13	8.426	2	0.015 *
Helping plan, design and evaluate learning processes	53	56.51	44	46.66	4	25.75	6.784	2	0.034 *
Promoting cooperative learning	53	59.82	44	42.18	4	31.13	12.456	2	0.002 *
Improve the capacity to interpret relevant data	53	63.10	44	37.75	4	36.38	21.762	2	0.000 *
Encouraging critical social thinking	53	59.77	44	42.36	4	29.75	12.257	2	0.002 *
Promoting democratic values	53	64.18	44	38.30	4	16.13	27.772	2	0.000 *
Develop problem-solving skills	53	63.76	44	37.09	4	34.88	23.621	2	0.000 *
Encouraging individual and collective responsibility	53	59.79	44	42.45	4	28.50	12.383	2	0.002 *
Increase their capacity for active and constructive participation	53	61.18	44	41.30	4	22.88	16.831	2	0.000 *
Favoring a better understanding of social, economic, legal and political concepts and institutions	53	62.96	44	38.63	4	28.63	21.075	2	0.000 *
Raising awareness of diversity	53	61.97	44	39.58	4	31.25	18.230	2	0.000 *
Increases tolerance and mutual respect	53	61.56	44	40.16	4	30.38	16.177	2	0.000 *

\*  $p < 0.05$ .

These results prove that the most motivated students placed a greater value on their learning of skills and the abilities linked to social and civic competencies in this discipline. The mean differences found between males and females were not statistically significant.

#### 4. Discussion and Conclusions

Different studies carried out in higher education contexts highlight the impact of ludic platforms in improving motivation and promoting relevant learning experiences for students [33–35]. In particular, the use of Kahoot, which attracts students because of its attractive interface and its lively music [36], helps users to develop their work skills and interpersonal abilities [37]. Therefore, these innovations have been shown to improve students' ability to grasp the meaning of new information, ask questions, make decisions, and draw conclusions that help to achieve learning goals and expected outcomes [38].

The results obtained in this research also confirm that students positively value the use of this digital platform, which can encourage the adoption of these motivating ICT proposals in similar contexts [39].

With regard to the data on the digital competence of the learners, it should be noted that the participants welcomed these online proposals and felt able to master this platform in terms of understanding game options, basic instructions and question formulations. As other research shows, no specific training or complex technical knowledge is required [25,40].

Furthermore, this platform covers a range of cooperative actions in which students have the opportunity to work together in group activities, respecting each other and accepting different points of view. Within this cooperative framework, educators should encourage strategies to place students in challenging tasks that address their interests and needs more appropriately than those developed through more traditional teaching styles [41].

In fact, as can be seen from the above, teachers and students must be inspired by their decisions and actions to communicate and work together through digital technologies, integrating information and content into their previous knowledge and favoring a more autonomous and independent learning process [42–44]. In particular, according to the students' opinions, Kahoot allowed them to acquire knowledge in a different way and to develop a set of skills and abilities linked to social and civic competencies. For this reason, teachers and students should be encouraged to become digitally literate and master the use of a wide range of information and communication technologies, as the use of digital resources fosters creativity and critical thinking, while expanding their repertoire of teaching and learning skills. Since students learn in different ways, it is the task of educators to use the most motivating tools to better support students in the classroom and to ensure high-quality teaching that promotes higher student achievement through these digital innovations.

In this research, we have focused on analyzing students' impressions of a number of variables related to motivation levels, digital competence and learning perceptions, but we have not analyzed the opinions of the teachers who have carried out this innovation in the classroom. The exchange of ideas between teachers and students is a good starting point for future research technology development. Furthermore, the analysis of teachers' and students' impressions over time would provide researchers with useful information on which type of learning is most valued during students' university training. These findings would be effective for readjusting the teaching program of the core unit under study according to students' needs and interests.

The limitations of this study are those related to sample size, demographic diversity, the generalizability of results and the validation of the research instrument. Due to the small sample size, it is difficult to determine to what extent the results can be generalized. The study participants were also limited in demographic terms due to the restricted age range. Consequently, statistical generalizability in this study has been difficult to achieve, which reduces its representativeness. Furthermore, the conclusions of this research are related to the perspectives of undergraduate students of education on the use of the Kahoot platform, which should not be equated with their actual performance levels achieved during the term. Regarding the validation of the research instrument, while face-to-face interactions between ICT experts and social science researchers were effective in collecting qualitative data to validate the questionnaire, other techniques to measure the internal consistency of the instrument could have complemented the research and more accurately establish the validity of this standard survey instrument.

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## Appendix A. The questionnaire

A survey on the effectiveness of Kahoot.

Instructions: This survey will be used to improve our teaching and learning practices in the core unit Teaching Social Sciences of the Primary Education Degree at the University of Murcia, Spain. Please rate each statement as accurate as possible by crossing the box under the number that most closely describes your overall opinion for each item: (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree. If you do not understand a statement, raise your hand. Your views will be kept confidential and will not affect your status as a student teacher at this university. When you have completed the survey, please return it as soon as possible. Thank you.

Age: \_\_\_\_\_ Gender: \_\_\_\_\_ (M/F).

Level of motivation \_\_\_\_\_ (High/medium/low).

Level of digital competence \_\_\_\_\_ (High/medium/low).

Have you ever created your own Kahoot before? \_\_ (Yes/No).

Have you failed this subject before? \_\_\_\_\_ (Yes/No).

**Table A1.** Rating scale.

Previous knowledge in playing Kahoot.						
1.	I can adjust the game settings in Kahoot.	1	2	3	4	5
2.	I understand the basic instructions of this online platform	1	2	3	4	5
3.	I can follow the steps to create a quiz	1	2	3	4	5
4.	I can formulate questions in Kahoot, which gauges my understanding of short sections of a unit	1	2	3	4	5
Motivation in playing Kahoot						
5.	I would like to create Kahoot quizzes in this subject	1	2	3	4	5
6.	I would like to take Kahoot quizzes in this subject	1	2	3	4	5
7.	I feel motivated when using this online platform for educational purposes	1	2	3	4	5
8.	I feel more motivated in class when I win points in Kahoot quizzes	1	2	3	4	5
Acquisition of social and civic competences and problem-solving skills						
9.	I think that Kahoot can help me to study the content of this core unit	1	2	3	4	5
10.	I reckon that Kahoot can help me to acquire social science knowledge more effectively	1	2	3	4	5
11.	I reckon that Kahoot can help me to learn interdisciplinary content from different subjects	1	2	3	4	5
12.	I think that Kahoot can help me to plan, design and evaluate my learning processes	1	2	3	4	5
13.	I consider that Kahoot can promote cooperative learning	1	2	3	4	5
14.	I reckon that Kahoot can help me to improve my capacity to interpret relevant data	1	2	3	4	5
15.	I think that Kahoot can help me to develop critical social thinking	1	2	3	4	5
16.	I consider that Kahoot can help me to promote democratic values to achieve a peaceful multicultural society	1	2	3	4	5
17.	I reckon that Kahoot can help me to develop problem-solving skills	1	2	3	4	5
18.	I think that Kahoot can help me to develop collective social responsibility	1	2	3	4	5
19.	I reckon that Kahoot can help me to increase my capacity for active and constructive participation in class through tolerant and respectful attitudes	1	2	3	4	5
20.	I believe that Kahoot can foster a better understanding of social, economic, legal and political concepts and institutions	1	2	3	4	5
21.	I believe that Kahoot can be useful in raising awareness of diversity	1	2	3	4	5

Una encuesta sobre la eficacia de Kahoot

Instrucciones: Esta encuesta se utilizará para mejorar nuestras prácticas de enseñanza y aprendizaje en la asignatura de Ciencias Sociales y su Didáctica del Grado de Educación Primaria en la Universidad de Murcia, España. Por favor, califique cada afirmación lo más exacta posible marcando la casilla debajo del número que describa con mayor precisión su opinión general sobre cada punto: (1) Totalmente en desacuerdo; (2) En desacuerdo; (3) Ni de acuerdo ni en desacuerdo; (4) De acuerdo; (5)

Totalmente de acuerdo. Si no entiende algún enunciado, levante la mano. Sus opiniones se mantendrán confidenciales y no afectarán a su condición de estudiante de magisterio en esta universidad. Cuando haya completado la encuesta, por favour devuélvala lo antes posible. Gracias.

Edad: \_\_\_\_\_ Sexo: \_\_\_\_\_ (H/M)

Nivel de motivación \_\_\_\_\_ (Alto/medio/bajo)

Nivel de competencia digital \_\_\_\_\_ (Alto/medio/bajo)

¿Has creado antes tu propio kahoot? (Sí/No),

¿Has suspendido esta asignatura antes? \_\_\_\_\_ (Sí/No)

**Table A2.** Escala de valoración.

<b>Conocimientos previos en el juego Kahoot</b>						
1.	Puedo ajustar la configuración del juego en Kahoot	1	2	3	4	5
2.	Entiendo las instrucciones básicas de esta plataforma en línea	1	2	3	4	5
3.	Puedo seguir los pasos para crear un test	1	2	3	4	5
4.	Puedo formular preguntas en Kahoot, lo que mide mi comprensión de determinados contenidos de una unidad formativa	1	2	3	4	5
<b>La motivación en el juego de Kahoot</b>						
5.	Me gustaría crear un test Kahoot en esta asignatura	1	2	3	4	5
6.	Me gustaría hacer un test Kahoot en esta asignatura	1	2	3	4	5
7.	Me siento motivado/a al usar esta plataforma en línea con fines educativos	1	2	3	4	5
8.	Me siento más motivado/a en clase cuando gano puntos en los tests Kahoot	1	2	3	4	5
<b>Adquisición de competencias sociales y cívicas y habilidades en la resolución de problemas</b>						
9.	Pienso que Kahoot me puede ayudar a estudiar el contenido de esta asignatura	1	2	3	4	5
10.	Considero que Kahoot puede ayudarme a incrementar la adquisición de conocimientos en ciencias sociales de manera más efectiva	1	2	3	4	5
11.	Considero que Kahoot me ayuda a aprender contenido interdisciplinar de diferentes asignaturas	1	2	3	4	5
12.	Creo que Kahoot puede ayudarme a planificar, diseñar y evaluar mis procesos de aprendizaje	1	2	3	4	5
13.	Considero que Kahoot puede promover el aprendizaje cooperativo	1	2	3	4	5
14.	Considero que Kahoot me puede ayudar a mejorar mi capacidad para interpretar datos relevantes	1	2	3	4	5
15.	Creo que Kahoot me puede ayudar a desarrollar el pensamiento social crítico	1	2	3	4	5
16.	Considero que Kahoot puede ayudarme a promover valores democráticos para lograr una sociedad multicultural pacífica	1	2	3	4	5
17.	Considero que Kahoot me puede ayudar a desarrollar destrezas para la resolución de problemas	1	2	3	4	5
18.	Creo que Kahoot me puede ayudar a desarrollar un sentimiento de responsabilidad social colectiva	1	2	3	4	5
19.	Considero que Kahoot me puede ayudar a incrementar mi capacidad para participar de forma activa y constructiva en clase a través de la adopción de actitudes tolerantes y respetuosas	1	2	3	4	5
20.	Pienso que Kahoot puede favorecer una mayor comprensión de los conceptos y las instituciones sociales, económicas, legales y políticas	1	2	3	4	5
21.	Considero que Kahoot puede ser útil para aumentar mi nivel de conciencia sobre la diversidad	1	2	3	4	5

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