

EFFECTIVE ONLINE LEARNING PLATFORM BY KAHOOT FOR SAFETY COURSE

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ABSTRACT

The objectives of this study were 1) to study the effect of Kahoot digital platform for teaching Safety Course on students' engagement. 2) to study the effect of Kahoot digital platform for teaching Safety Course on students' interest. 3) to study the effect of Kahoot digital platform for teaching Safety Course on students' knowledge. The study is qualitative research, which elects 181 students from the Chongqing Technology And Business Institute in China, and divide the students evenly into two classes, class A have 91 people and class B have 90 people, Class A is the experimental class and Class B is the contrast class. In class A, kahoot is used for teaching, and in class B, traditional teaching methods are used. After the experiment, the data were analyzed by questionnaires and tests. Through the results of the questionnaires, it can be found that compared with students in class B, students in class A are obviously more willing to actively interact with classmates or teachers, more willing to answer questions in class, and also show greater enthusiasm for learning. In addition, judging from the test results, class A has a better grasp of knowledge than class B.

Keywords: Kahoot Digital Platform, Safety Course, Engagement Interest and Knowledge of Students

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INTRODUCTION

In the information age, digital transformation is reshaping society, economic markets and future forms of work. In this process, the importance of education has become increasingly prominent. At the same time, the COVID-19 pandemic has also posed a huge challenge to China's education. According to statistics, in the spring semester of 2020, all undergraduate universities implemented online teaching, with 1.08 million teachers offering 1.1 million courses, 17.19 million courses in total. The number of college students taking part in online learning reached 22.59 million, totaling 3.5 billion (Guang ming Daily, 2020). In this context, Chinese education has made full use of MOOC, virtual simulation experiments, artificial intelligence, VR practical training and other digital resources to carry out an unprecedented large-scale online teaching practice. The digital transformation of education is deeply influencing the future education in China. It is an important engine and innovation path for the high-quality development of education in China. In addition, in 2023, the Ministry of Education proposed to accelerate the digital transformation of higher education, create a new form of higher education teaching, systematically gather and integrate various resources, and improve students' ability to solve practical problems and transform knowledge. With the continuous advancement of China's education reform, diversified electronic media platforms are increasingly applied to curriculum teaching, various emerging education teaching methods are subtly affecting all aspects of classroom teaching. Therefore, educators believe that it is necessary to improve traditional teaching methods and develop a new teaching model that stimulates students' motivation to learn, improves students' classroom participation, and cultivates students' knowledge transfer and problem-solving skills.

The current state of safety course: Some teachers lamented that today's college students are not interested in safety education classes and do not pay enough attention, although front-line teachers are also exploring new teaching methods, but the effect is not ideal. Li Zhifeng (2019) pointed out in the study that at present, China's vocational education work in colleges and universities lacks a systematic safety education and training mechanism, students have weak safety awareness, lacking of safety precautions, and lack of a dedicated safety education teaching team. Du Yuejia (2018) found that multimedia teaching methods should be adopted in the methods and approaches of reforming the safe teaching of college students, and the teaching activities carried out with multimedia can turn abstraction into concrete and improve college students' learning interest and learning effect. For example, college teachers In addition, college teachers can also publish small videos and tips related to safety knowledge through WeChat groups, QQ groups, Weibo, etc, so that safety knowledge education can go out of the classroom and penetrate into the daily learning life of college students. College students can be guided to make micro-films on safety knowledge. Traditional safety teaching can no longer meet the needs of current pedagogy, only by developing a new curriculum management model, stimulating students' learning motivation and interest, and improving classroom participation, can students truly master the ability to solve practical problems and knowledge transformation. Advantages of Kahoot: College students are in adolescence, they are jumpy, curious, lively and active, unilateral knowledge indoctrination will make students feel that safe knowledge learning is boring, and then develop the habit of wandering and impetuosity. And Kahoot is an interactive website for gamified learning, which can use technology to create virtual learning situations, connect with students' daily life, and create a vivid and interesting classroom atmosphere. For example, simulate real scenes through pictures or videos, or use game platforms to provide students with more intuitive and specific knowledge content, so that students can understand what they have learned from multiple aspects and perspectives. Finally, teachers can also use the educational game platform to set up a group PK mode, using points, badges and leaderboards to stimulate students' desire to win and lose, and cooperate in the competition. On the other hand, college students have strong self-esteem and refuse to

communicate for fear of losing face by saying the wrong thing. And this is one of the reasons why most students with poor foundation are reluctant to answer questions. Many teachers may find this phenomenon when teaching online, some students are silent in the daily classroom, but they are extremely active in "anonymous" online learning. Psychology believes that this is the effect of group effect, learners in the formal learning environment often subject to a variety of external constraints such as teachers, classmates, parents or the environment, but in informal learning conditions such as the Internet, they will be free from external constraints and amplify their own personality. Therefore, under the cover of the concealment mechanism, people tend to show some behaviors that do not appear in ordinary life. Educational games can just use the game platform to provide students with a psychological comfort zone, so that students can truly express themselves, and improve their mastery of safety knowledge through practice while expressing themselves.

Research Questions: 1) Students mainly listen, rarely participate in class discussion and interaction, the participation of students are low; 2) Students are not interested in safety course, but learn other knowledge or playing mobile phones in class; 3) Students can't master the knowledge points of safety course. The purpose of this paper: through experimental and comparative research, using questionnaires, tests and other research tools, to explore the effect of Kahoot digital platform for teaching Safety Course on knowledge, engagement and interest of students, So as to solve the problems existing in the Safety Course and improve the effectiveness of the Safety Course.

LITERATURE REVIEWS

Zong Chuanxin and Luo Ganhong (2017) believed that safety education for college students is the bottom line of college students' work and the primary task of ideological and political education for college students. It is inevitable to carry out safety education for college students in line with the development of the time by making use of the openness, flexibility, richness, immediacy and other characteristics of new network media. The use of new network media to continuously innovate the new model of college students' safety education has become an important issue in college management. The so-called gamified learning refers to the integration of game elements and game mechanisms into teaching under the guidance of the concept of learning gamified learning, such as game fun, game points and ranking elements, game clearing mechanism, etc (Liu qiong, 2011). Then, in terms of training objectives, development, and evaluation methods, it is based on the age and psychological characteristics of learners. Learn from game design, select appropriate development tools, evaluation methods and teaching strategies, create an interesting learning environment, so that students can master knowledge and exercise skills in a relaxed and pleasant environment. The essence of gamified learning is to organically integrate game elements or game design or game concepts into the activities of various links of teaching and management, so that students can achieve a better learning experience and improve the learning effect. Kahoot is one such gamified learning platform. The instant feedback of the platform can help teachers and students to quickly obtain effective information in the classroom interaction, form timely and effective feedback, and then better guide teaching. At the same time, the platform has added game competition mechanism and anonymous system, which can effectively stimulate students' enthusiasm for participation and form a good classroom interactive atmosphere. (Yuan Hehui, 2022)

Research on the effect of Kahoot digital platform for teaching Safety Course on students' engagement.

In the Influence of Gamified Learning on Students' Engagement in Junior Middle School English Class by scholar Yuan Hehui (2022), students' engagement is divided into behavioral engagement, cognitive engagement and emotional engagement. Behavioral engagement refers to students' behavioral effort in safety course teaching, which mainly includes two variables:

concentration and learning; Cognitive engagement refers to the learning strategies used by students to reflect their thinking level, including shallow variables and deep variables. Emotional engagement refers to students' emotional experience in the learning process, which mainly includes three variables: fun, anxiety and success. Therefore, with reference to the questionnaire compiled by the scholar, the relevant questionnaire contents were formulated. The questionnaire consists of 15 questions designed to study the effects of Kahoot digital platform for teaching Safety Course on students' engagement. This questionnaire was conducted in both Class A and Class B. Accordingly, the following three hypotheses derived for this study:

H1: The using of Kahoot digital platform for teaching Safety Course will significantly increase students' engagement compared to traditional teaching methods.

A Study on the effect of Kahoot digital platform for teaching Safety Course on students' interest.

In order to explore students' attitude towards Kahoot, questionnaire was designed to collect data. The questionnaire was designed from the aspects of students' experience, students' learning effect, reasons, etc. The questionnaire did not have a specified scale analysis, so it was not suitable for reliability and validity analysis. In the process of questionnaire design, the content of the questionnaire was finally determined by referring to other scholars' questionnaires. Accordingly, the following three hypotheses derived for this study:

H2: The using of Kahoot digital platform for teaching Safety Course will significantly enhance students' interest compared to traditional teaching methods.

Research on the effect of Kahoot digital platform for teaching Safety Course on students' knowledge.

In order to study the influence of Kahoot on students' mastery of safety knowledge, class A and Class B were tested after the experiment, and the test content was the experimental course content.

H3: The using of Kahoot digital platform for teaching Safety Course will significantly improve students' knowledge compared to traditional teaching methods.

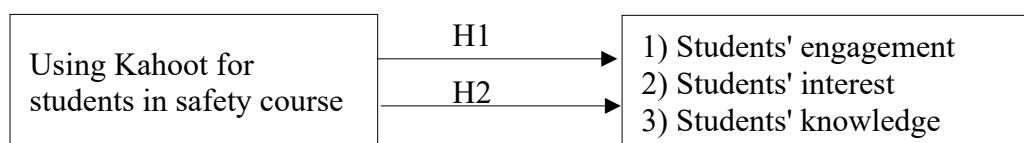


Figure 1 Research Framework

RESEARCH METHODOLOGY

In order to examine the effect of using kahoot in Safety Course on the engagement, interest and knowledge of students, the study was then designed to adopt a qualitative research approach. Using the experiment, questionnaires and test are the instruments to collect information from the sample to be studied. The population in this study consisted of 1020 students from Management from Chongqing Technology And Business Institute in China. The sample size was 181 samples, which was determined using Krejcie and Morgan tables using purposive sampling and simple random sampling. The sample was divided into two classes, class A have 91 people and class B have 90 people, Class A is the experimental class and Class B is the contrast class. In class A, kahoot is used for teaching, and in class B, traditional teaching methods are used. Before conducting the survey, the students of class A were trained in order to familiarize themselves with the kahoot as soon as possible. After the experiment, the data of engagement, interest and knowledge of students were tested by questionnaires and test. To

address the issue of achieving key goals, report the results in descriptive and tabular form. All details will be introduced in the next section.

RESEARCH RESULTS

By consulting relevant literature, comparing the experimental results, it can be seen that Class A is better engaged and knowledgeable in the classroom than Class B. Most students believe that Kahoot improve their interest and knowledge. The specific research results and tabular data are as follows:

Part 1: Results from the first questionnaire to explore the effect of Kahoot digital platform for teaching university Safety Course on students 'engagement.

Since students 'engagement were divided into behavioral involvement, cognitive engagement and emotional involvement, the contents of questionnaire were designed from these three aspects, and the results are shown in Table 1, Table 2 and Table 3.

Table 1 Average and Average difference of students' engagement surveys

	Topic	Average of Class A	Average of Class B	Mean difference
concentration	1.In the safety class, I will listen attentively.	4.54	4.5	0.04
concentration	2.In safety class, I will try to complete the task after the teacher assigns it.	4.72	4.39	0.33
Study	3.If I encounter difficult problems, I will take the initiative to ask the teacher for advice or discuss with my classmates.	4.5	4.34	0.16
Study	4.When doing exercises or tests, if I encounter difficult problems, I will continue to study them.	4.53	4.38	0.15

According to the above data analysis results, the scores of class A and class B students at the level of behavioral participation are at a medium level, and the average score of class A is significantly higher than that of class B, because in class A, both in-class exercises and after-school tasks are completed on Kahoot, Kahoot with dynamic music, realistic situations, instant feedback, Competition between peers, etc. undoubtedly increases students' interest and increases their behavioral participation. In general, Class A scored higher than Class B in terms of concentration and research, especially in promoting student task completion and active learning, Kahoot played a significant role.

Table 2 Average and Average difference of students' cognitive engagement surveys

	Topic	Average of Class A	Average of Class B	Average difference
Shallow	5.In the safety class, I learned as much as the teacher taught me, and followed the teacher's instructions exactly.	4.23	4.14	0.09
Shallow	6. I think it's better to memorize knowledge by memorizing.	3.85	3.48	0.37
Deep	7.I think memorizing knowledge points is more important than understanding.	4.08	3.55	0.53
Deep	8.In safety class, I try to connect what I have learned in the text to real life.	4.57	4.39	0.18

In terms of cognitive engagement, Class A and Class B scored at the lower middle level, and Class A scored significantly higher than Class B in both shallow and deep levels. The seventh question scores were all at the middle level, Class A was significantly higher than Class B, and the average score of the two was 0.53 points, and the students in Class A thought that memorizing the text would help them do the exercises in Kahoot and achieve high scores. Contrary to my initial wishes, I hope that they will first understand the text, and then help them practice with the help of the gameplay of the Kahoot platform, so that they can acquire some knowledge in the enjoyable practice. The Kahoot exercise in the experiment only played the function of detection, and did not play a role in helping students learn. Therefore, in the future teaching design, teachers need to pay attention to how to balance students' sense of competition. On the other hand, it can also be seen that Kahoot images and game modes can help promote deep cognitive engagement.

Table3 Average and Average difference of students' emotional engagement Survey

	Topic	Average of Class A	Average of Class B	Average difference
A sense of fun	9.I am interested in learning safety knowledge.	4.5	4.3	0.2
A sense of fun	10.I enjoyed the safety class activities.	4.47	4.03	0.44
A sense of accomplishment	11.I am excited to answer the teacher's questions.	4.55	4.15	0.4
A sense of accomplishment	12.I can use safety knowledge to deal with difficulties in life, and I feel very successful.	4.53	4.47	0.06
Feelings of anxiety	13.In safety class, I was afraid that my teacher would ask me to answer questions.	2.34	2.34	0
Feelings of anxiety	14.I don't like taking safety classes.	2.54	2.12	0.42

According to the above data analysis results, the average score of the two classes in terms of emotional participation is quite different, the average score of class A is significantly higher than that of class B. Overall, students in Class A were more likely to participate in safe classrooms than students in Class B, but the differences varied along various dimensions. In terms of emotional involvement, the difference between the experimental class and the control class was the greatest in "sense of fun", followed by "sense of anxiety", and finally "sense of achievement". It can be seen that Kahoot plays an important role in student participation in safe classrooms at the university.

Part 2: Results from the second questionnaire to explore the effect of Kahoot digital platform for teaching university Safety Course on students 'interest, is only for students in class A.

This part of the study aims to explore students' attitude towards Kahoot, including students' experience, students' learning effect and reasons. The research results are mainly analyzed from these three aspects, and the specific data are shown in Figure 2, Figure 3, Figure 4 and Figure 5.

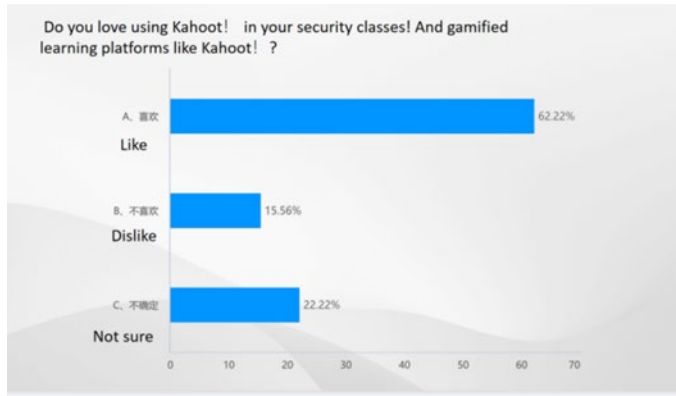


Figure 2 The answer to “Do you love using Kahoot in your security classes! And gamified learning platforms like Kahoot?”

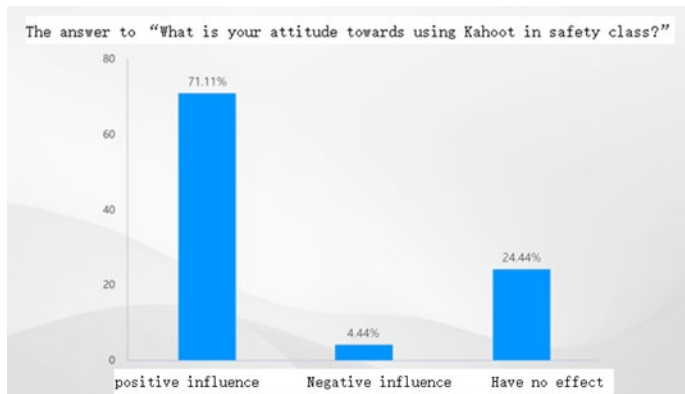


Figure 3 The answer to “What is your attitude towards using Kahoot in security classes?”

The questionnaire asked students whether they like to use Kahoot learning platform in the classroom, and the results of the survey are shown in Figure 2, 62.22% of students said they liked this type of learning platform, 22.22% of students said they were unsure, and 15.56% of students said they did not like it. As shown in Figure 3, 71.11% of students were positive, 24.44% were neutral, and 4.44% were negative. Overall, most students enjoy the Kahoot learning style and are positive about integrating and Kahoot into the security classroom, but for students with weak information technology skills, this learning style has less impact and is not very attractive.

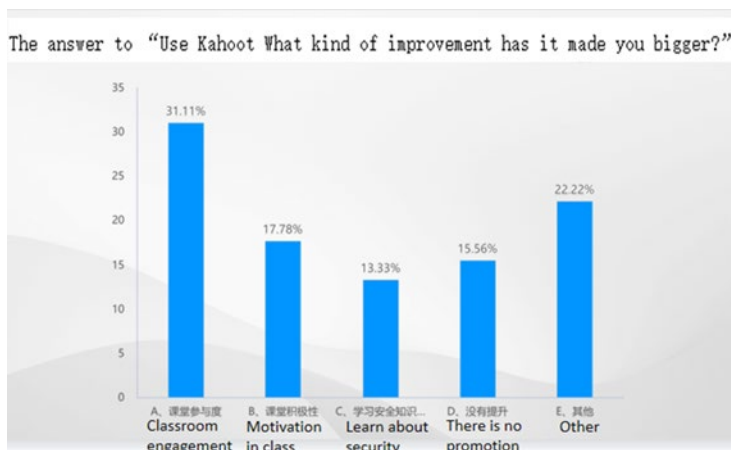


Figure 4 The answer to “Use Kahoot What kind of improvement has it made you bigger?”

Learning effects: As shown in Figure 4, 31.11% of students believe that the Kahoot! learning platform has increased their participation in class, 17.78% of students believe that it has increased their learning motivation, 13.33% of students believe that it is helpful to master safety knowledge, 22.22% of students choose others, and 15.56% of students think it is not helpful. It can also be seen from the data that most students recognize the teaching effect of Kahoot learning platform, and it also promotes students' learning in different parts to varying degrees.

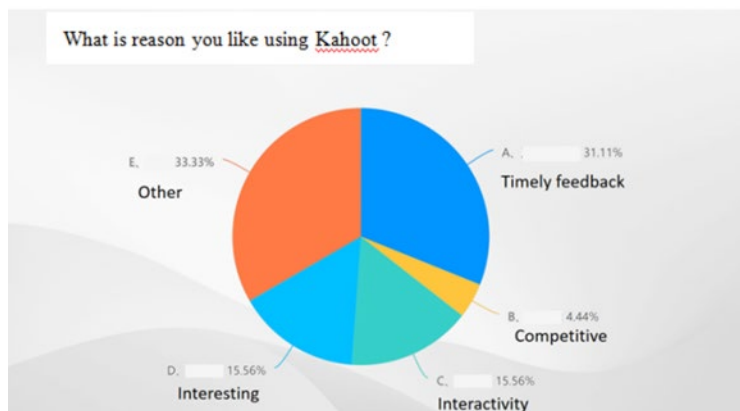


Figure 5 What is reason you like using Kahoot?

When investigating why students like to use the Kahoot learning platform, as shown in Figure, the survey results show that other accounts for 33.33%, timely feedback accounts for 31.11%, interactive and fun accounts for 15.56%, and competition accounts for the least, accounting for only 4.44%. Compared with its competitiveness, students prefer the fun, timely feedback and interactivity of Kahoot platform, compared with traditional teaching methods, the use of Kahoot learning platform is much more interesting and convenient, frequent interaction can improve the classroom atmosphere, timely feedback performance allows students to understand their learning situation in time, convenient for timely reinforcement to grasp their weaknesses. According to the results of this survey, most students enjoy using Kahoot in the safety classroom, and this learning model comes into the classroom with a positive view. In the process of using Kahoot plays an active role in stimulating students' interest in learning and increasing student participation.

Part 3: Results from the test.

In order to study the impact of the Kahoot digital platform form on the teaching of Safety Course on students' knowledge, two classes participating in the experiment were tested in the classroom according to the content of the experimental course, and the results are shown in Figure 6.

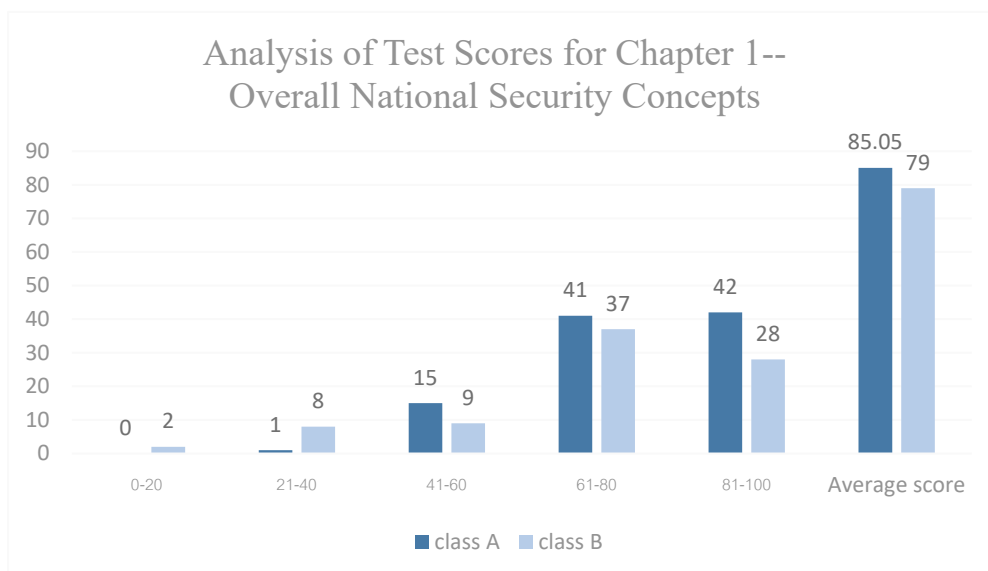


Figure 6 Analysis of Test Scores for Chapter 1--Overall National Security Concepts

According to the table of test results, it can be seen that class B has students with 0-20 points, and class A does not; 21-40 points, Class B is greater than Class A; 41-60 points, class A has 15 people, class B has 9 people, class A is greater than class B; 61-80 points, class A has 41 students, class B has 37 people, class A is greater than class B; 81-100 points, high score stage, the number of students in class A is greater than that of class B, and the average score of class A is higher than that of class B. In summary, the number of students with low scores in class A is small, and the number of students with high scores is large; Class B has a large number of low-scoring students and a small number of high-scoring students, and Class A has a good grasp of the knowledge points of the first chapter

DISCUSSION & CONCLUSION

This research on the effect of Kahoot digital platform for teaching Safety Course on knowledge, engagement and interest of students. The conclusion and discussion are as follows:

For a long time, the teacher-based teaching method has never faded out of the field of vision, although the country has been emphasizing curriculum reform, emphasizing quality education, but the balance of learning will always be tilted to "test scores". As a social practice, education should pay more attention to the cultivation and development of human subjectivity and emphasize students' participation in class. With the development of information technology, scholars continue to combine information technology with student engagement. Inspired by this, the author combined gamification teaching with safety course, and explored the influence of gamification teaching on safety course with the help of existing research results and Kahoot. The study examined the effect of Kahoot digital platform for teaching Safety Course on knowledge, engagement and interest of students. The study's respondents were first-year university students, and the majority of them were male (56.93%) and female were about 43.07%. The study examined the impact of kahoot on safety course, including student engagement, interest, and knowledge.

Through the design of experiment scheme, the implementation of experiment, the collection of data and the analysis of data, the conclusion is drawn that gamification teaching can improve the participation of college students in safe learning, but the degree is different. In addition, the author also investigated the students' attitude towards the gamified learning platform Kahoot after the experiment, and the survey results showed that 71.11% of the students liked this kind of gamified learning platform very much and held a positive attitude towards this kind of

gamified learning platform entering the classroom. Finally, after the experiment, the author also tested the students' mastery of the experiment content, and the results showed that the students who used kahoot to teach had higher scores.

The findings show that the use of kahoot in safety classes has a positive impact on student engagement, interest, and knowledge. Specifically, the research finds that kahoot provides more opportunities for students to participate in the classroom than traditional classroom models. Students are willing to actively interact with classmates or teachers and are more willing to show themselves. On the other hand, in terms of improving students' interest in learning, kahoot drives students well and stimulates their enthusiasm for learning through gamification teaching. In addition, kahoot serves as an excellent classroom exercise mode, making it easier for students to master knowledge.

This conclusion will help more teachers and researchers focus their attention on gamification platform, and then promote the improvement and application of gamification platform. At the same time, it also provides ideas for teachers to improve teaching, and it is expected that more scholars and front-line teachers will devote themselves to the research of gamification teaching in the future, so as to promote the development of education in our country.

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Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conflicts of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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