**Research Paper**

Use and implementation of the Kahoot! in self-assessment activities

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**ABSTRACT**

In WEB 2.0 there are numerous applications and with them a diversity of educational proposals with a playful approach. The application of gamification in the classroom makes a traditional class a relaxed and entertaining learning meeting, raising the participation of students producing their interest in learning. Educational games with content are consistent or adaptable to the topic you want to practice. In the current research, a quasi-experimental design of a correlational type with quantitative orientation was used, the objective is to share the results obtained with the implementation of the Kahoot! in the classroom with self-assessment activities. The use of Kahoot!, generated interest and approval in the students due to the very nature of the application, awakening an environment of healthy competition between them, which motivated them to apply in the study thus achieving an increase in the competences raised. Based on the results obtained in the study, students find it interesting, motivating, attractive among others, the implementation of WEB 2.0 applications in the classroom, thereby increasing their skills.

**Key words:** Gamification, self-learning, Kahoot!

**INTRODUCTION**

Information and Communication Technologies (ICT), as a tool in education, at present, provide teachers with a great variety of teaching strategies to implement in the classroom and attract student attention. A large majority of digital natives have access to different mobile devices. Thus making use of that option is an opportunity for the teacher to motivate the student to actively participate in their class, generating learning.

With technological advances, a wide range of applications have been developed to support learning, created with the fundamentals of Web 2.0 based on the Internet, which, in addition to interaction, allow immediate results to be achieved by the user. Educational games with content are consistent or adaptable to the topic you want to practice, providing the teacher with the results obtained immediately by the student for analysis.

Gamification is a fun and fun learning teaching strategy. It emanates from anglicism "gamification" has more to do with motivation, fun, reward and others, than with the game (Pérez, Carlos, García, Piqueras y Collado, s /F).

According to Prieto et al. (2014), gamification "is the application of conceptual elements of videogame design to environments other than gaming such as business, commercial marketing or education." Applying motivation in education motivates and involves the student in the different activities that take place in the classroom. Play and play, learn and repeat, interaction and feedback are among other strategies that gamification uses to make learning fun.

The main purpose of this research work is to share the results obtained with the use and implementation of the Kahoot! application with self-learning activities. In the same way, the results obtained from the satisfaction survey applied to the student are completed by completing the Learning Unit of Programming Fundamentals in which the said application was implemented, with the purpose of complementing the teaching-learning strategies based on the constructivist approach of Vygostskque. It encompasses three aspects: action learning, socialization and collaboration.
DEVELOPING

Background

The term gamification had its origin in the digital media industry in 2008. However, it was until the second half of 2010 that industry characters and conferences popularized it, that is how it began to be accepted and recognized. The word gamification oscillates between two ideas: one focused on the appropriation of society by videogames, the elements and the influence of the game in the daily life of the user. The other is that videogames are designed to entertain and keep the user committed to the game, by designing them more pleasantly and for educational purposes, can motivate and engage the user (Deterding et al., 2011).

According to Zichermann and Cunningham s / f, gamification is the buzzword, which can have several meanings depending on each person. They define gamification as a process that frames the thought, mechanics, aesthetics, motivation and behavior that provide experiences through play with educational content. Turning the experience into a game, including a reward for achievement produces an unprecedented change in behavior. The games by their nature are motivating; with the game, the user manages to enter the environment and feel part of the game, finding fun and satisfaction. Therefore, knowing the motivation of the player is the main point in the construction of a gamified system.

"The general objective of gamification as a methodological strategy for teacher improvement in the university classroom, aims to have a positive impact on the student being able to fully achieve specific learning objectives. So the teacher must encourage students to learn by gamified means, in which an effective link between the elements of the game and educational action is implemented"(Oliva, 2017). That is, the teacher must involve students in the process of building their own learning through a fun, attractive and challenging application. The application of gamification in the classroom makes a traditional class a relaxed and entertaining learning meeting, raising the participation of students producing their interest in learning.

In WEB 2.0 there are numerous applications and with them a diversity of educational proposals with a playful approach. Based on the possibilities offered by gamification, teachers are finding an option in the resources offered by ICTs and social networks in terms of teaching - learning to motivate students, encouraging teamwork, interaction, reflection and attention in the classroom but above all a mechanism that strengthens and facilitates meaningful learning.

The potential of applying gamification in the classroom is demonstrated by different authors. According to Olivia (2007), gamification is a motivating tool that arouses the student’s interest in learning by encouraging the achievement of the skills of the learning unit, showing both the teacher and the student the level of knowledge acquired. In the same way, Moreno (2015) believes that implementing gamification for self-evaluation promotes the development and practice of student skills. Moreover, Rodriguez (2018) mentions that gamification facilitates the interaction between teachers, students and content.

RESEARCH METHODS

In the current research, a quasi-experimental design of a correlational type with quantitative orientation was used, the objective is to share the results obtained with the implementation of the Kahoot! in the classroom, with self-learning and self-evaluation activities. The sample group was previously formed and assigned by the authorities of the Academic Unit of Basic Sciences and Engineering (UACBI). Students were motivated with the idea of improving their final grades and of self-evaluating their learning, measuring their own capacity when carrying out the activities of the Learning Unit of Programming Fundamentals, knowing their progress and deficiencies, and assessing the knowledge acquired.

The target population was the second semester students of the UACBI Control and Computing program who used Kahoot! in the Learning Unit of Programming Fundamentals, students from the Autonomous University of Nayarit, who attended the semester from January to June 2019. The sample initially included 25 students, although at the end of the semester they only completed project 19, analyzing only the results provided by the latter. Five instruments of self-evaluation and one of user satisfaction were developed.

In the Kahoot app! A self-assessment instrument was developed for each of the chapters that make up the Learning Unit of Programming Fundamentals with a maximum of 25 questions focused on assessing one's own capacity when performing this or that activity and evaluating the achievement of the competence stipulated in each of the chapters.

The questions in the user satisfaction instrument are measured using four-point Likert scales: "Always" (1) "Almost Always" (3), "Sometimes" (2) and "Never" (4). The internal consistency of each factor was evaluated by calculating Cronbach's Alpha. The validity of the construct was assessed by analyzing its main components and a pilot study. The results were used to make modifications to the measuring instrument. Finally, the user satisfaction instrument was made up of 6 questions focused on obtaining information on the use and operation of the Kahoot! App.

Procedure

The project was carried out for 14 weeks from February 4 to May 31, 2019. In the first week supported by a presentation, students were shown how the project would
be executed. Clear and precise instructions were given on how the application that would be implemented would be worked, the mobile or desktop devices where they could run it, as well as the purpose of the playful tools for meaningful learning. In the second week, the functionality of the App was explained, a practice was carried out and doubts were resolved. From the third week to the thirteenth week and only at the conclusion of the contents of each chapter, the self-assessments were applied through Kahoot!. In the week 14 supported by the App Google Form, the satisfaction survey was applied. The results obtained were transferred to a data matrix in Excel, and then transferred to the Statistical Package for the Social Sciences (SPPS) software for analysis.

Self-evaluation design with Kahoot!

It is a free and fun game-based application that promotes group learning that is conducive to deepen, understand and master meaningful learning. Games are designed very easily, with three types of games; Multiple Choice, Classification (choose the correct order) and Competitive. Multiple Choice can be created with a maximum of four responses and a minimum of two, and the correct one should be noted. Classification the question is designed with four answer options and the correct order. Competitively, one can set four answers per question and giving or not giving value to each of them. In each type of game, the user will be able to see a leaderboard that shows the 5 players with the highest score. It is important to note that all games can be enriched with images, videos and diagrams. Teachers and students can create and share their games. Play from your cell phones or any mobile device with Internet access ("Kahoot! | Learning Games | Make Learning Awesome!", S / f).

Kahoot! implementation

Only the Multiple Choice and Classification games were used. The format and design implemented was striking and fun for the student. The number of questions asked depended on the topic to be developed. Some short videos were added, work binases were formed and prizes were implemented to the first 3 places of the classification table. In the design, it was sought that each one represents a different experience for the student, funny images were included that would highlight the theme. Figure 1 shows an example of the Multiple Choice Game and the Ranking game.

Thus, to increase the motivation of the student, different game strategies were generated:

- Considering the contents in Chapters I, III, IV and V, an individual participation per game was agreed,
- In Chapter II, because it is the most extensive, team forms were resolved: 5 of 3 participants and 2 teams with 2 participants.
- A 4-point reward was awarded to the team with the highest score, 3 to the second and one to the third place in the leaderboard in Kahoot!
- Finally, it was agreed to review the scores obtained by all the teams in addition to collating those questions with incorrect answers.

RESULTS OF THE INVESTIGATION

From the moment, the first approach was given with the Kahoot App! great interest was perceived by the students. They all agreed on its implementation to perform the self-assessments. The possibility of using the application through their mobile devices was interesting and stimulating for its execution.

Use of the Kahoot tool: At the end of the project implementation period, information was obtained on the results achieved in each of the five self-assessments carried out by the students. Figure 2 shows the percentage of students who received a grade of one hundred (100): in Cap I 32%, Cap II 33%, Cap III 42%, Cap IV 50% and Cap V 56%, and on the other hand, those who reached a rating in...
This confirms the report of Table 1: Table 1 shows the results obtained to the question: Do you consider that the activities carried out in Kahoot! are useful for learning? 13 of the respondents answered Always, 53% Almost Always and 32% Sometimes (100 to 80) the results achieved in each self-assessment applied in the programming fundamentals learning unit. While in the range from seventy-nine to sixty (79-60) the results obtained were: Cap I 28%, Cap II 19%, Cap III 25%, Cap IV 18% and Cap V 11%, highlighting in Chapters I, II and III a minimum of grades in the range of (59-0) percent that all students to a greater or lesser degree said that the majority of students achieved grades in the range of (59-0) where it was held in Cap I 1%, Cap II 2% and Cap III 1% and in (Zero) 5% in Chapter I. Recapitulating it can be said that the majority of students achieved grades in the range of 100 to 80 (Cap I 28%, Cap II 74%, Cap III 74%, Cap IV 82% and Cap V 89%).

After all, positive results are displayed in the self-assessments used by students with the Kahoot! Application, generally achieving satisfactory grades of 78%, sufficient 13% and the remaining 9% disapproval (the institution establishes the scale of approval from 100 to 60 and disapproval from 59 to 0). This confirms the report of Martínez and Pérez (2015) that these training activities are not only motivating, attractive and challenging, they also achieve an increase in skills.

Satisfaction survey: Regarding the satisfaction survey in response to the question: Have you used a gamification tool in the classroom before? 16% of the students responded Always, 53% Almost Always and 32% Sometimes (Table 1). This indicates that all students to a greater or lesser degree have used an application for educational purposes.

Table 2: Table 2 shows the results obtained to the question: Do you consider that the activities carried out in Kahoot! are useful for learning? 13 of the respondents answered Always (68%), 5 more expressed Nearly Always (26%) and only 1 said Never (5%). Proving that 95% considered the
Kahoot App! which favored them in their learning of the Unit of Programming Fundamentals. When planning the question: would you like this type of tool to be implemented in other Learning Units? Table 3 shows that 95% of the students stated that if they would like this type of educational tools to be implemented in the different Learning Units contained in their learning plan studies.

When students were asked if they would suggest to other teachers the use of Kahoot! for the topics addressed in class, 12 participants stated Always (65%), 6 Almost Always (32%) and 1 Never (5%) (Table 4). The results showed that 95% of respondents are in favor of proposing the implementation of the Kahoot! App to other teachers.

The results obtained by asking: Rate or degree at which you like this application? Although one participant (5%) thought that it was only pleasant to use the application, the remaining 95% (11 Always and 7 Almost Always) looked forward to the benefits offered by the application in the self-process evaluation benefiting a person in learning (Table 5).

To the question: Do you consider yourself dependent on your cell phone? The majority of the students represented by 8 (42%) responded that they almost always use their cell phone, another 6 (32%) always responded, 4 (21%) sometimes and 1 (5%) never. The above shows that 74% of them constantly use their cell phone, 21% sometimes and finally 5% do not like to use the cell phone (Table 6).

Analyzing carefully the answers of the students in the satisfaction survey, it can be observed that the highest scores are around the option Always and Almost Always, highlighting the response of the participant that 4 of the

### Table 3: Implementation of applications in other learning units.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cumulative frequency</th>
<th>Accumulated percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>13</td>
<td>68</td>
<td>13</td>
<td>68</td>
</tr>
<tr>
<td>Almost always</td>
<td>5</td>
<td>26</td>
<td>18</td>
<td>95</td>
</tr>
<tr>
<td>Sometimes</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>95</td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td>5</td>
<td>19</td>
<td>100</td>
</tr>
</tbody>
</table>

### Table 4: Suggestion on the use of Kahoot!

<table>
<thead>
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<th>Percentage</th>
<th>Cumulative frequency</th>
<th>Accumulated percentage</th>
</tr>
</thead>
<tbody>
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<td>Always</td>
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<td>63</td>
<td>12</td>
<td>63</td>
</tr>
<tr>
<td>Almost always</td>
<td>6</td>
<td>32</td>
<td>18</td>
<td>95</td>
</tr>
<tr>
<td>Sometimes</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>95</td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td>5</td>
<td>19</td>
<td>100</td>
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</table>

### Table 5: Suggestion on the use of Kahoot!

<table>
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<th>Accumulated percentage</th>
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</thead>
<tbody>
<tr>
<td>Always</td>
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<td>58</td>
<td>11</td>
<td>58</td>
</tr>
<tr>
<td>Almost always</td>
<td>7</td>
<td>37</td>
<td>18</td>
<td>95</td>
</tr>
<tr>
<td>Sometimes</td>
<td>1</td>
<td>5</td>
<td>19</td>
<td>100</td>
</tr>
<tr>
<td>Never</td>
<td>0</td>
<td>0</td>
<td>19</td>
<td>100</td>
</tr>
</tbody>
</table>

### Table 6: Dependents of the cell phone.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cumulative frequency</th>
<th>Accumulated percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>6</td>
<td>32</td>
<td>6</td>
<td>32</td>
</tr>
<tr>
<td>Almost always</td>
<td>8</td>
<td>42</td>
<td>14</td>
<td>74</td>
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<tr>
<td>Sometimes</td>
<td>4</td>
<td>21</td>
<td>18</td>
<td>95</td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td>5</td>
<td>19</td>
<td>100</td>
</tr>
</tbody>
</table>
questions asked before answered Never, based on the question Do you consider yourself dependent on your cell phone? Do not like to use the cell phone therefore it is difficult to participate and use any educational application of WEB 2.0. In generating the results, they guarantee the interest and approval of the students for the implementation of this type of applications in the classroom.

CONCLUSIONS

There is no doubt that the internet has made available to all various tools for gamification, facilitating the implementation of some of them in self-assessment activities, taking advantage of the increasing dependence on mobile devices that is increasing among students.

As shown in this study, gamification generates an addiction by getting the user involved, however it is essential to obtain favorable results for the implementation of applications that respond to the needs of the Learning Unit and the motivation of the student.

Starting from the pedagogical approaches, the teacher’s role should be to guide the student in the various constructivist activities of the learning process, using and adopting the techniques, tools and strategies that he considers most appropriate in the teaching process according to his philosophy.

The use of Kahoot! in self-evaluation activities generated interest and approval in the students due to the very nature of the application aroused an environment of healthy competition among the students, which motivated them to apply in the study, thus achieving an increase in competencies.

Therefore, according to the results of the study, students find it interesting, motivating and among others, the implementation of WEB 2.0 applications in the classroom, thereby increasing their skills.

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