Educational Gamification as an Alternative for Teaching High School Students of the Sucre Mieles" Educational Unit

Erlen Jacqueline Ferrín-Rodríguez
Universidad Laica Eloy Alfaro de Manabí Dirección de Posgrado, Cooperación y Relaciones Internacionales, Chone, anabí, Ecuador
Corresponding author email: erien.ferin@pg.uleam.edu.ec

Eliécer Francisco Castillo Bravo
Universidad Laica Eloy Alfaro de Manabí, Manabí – Ecuador
Email: eliecer.castillo@uleam.edu.ec

Abstract---The investigation was related to educational gamification as an alternative for teaching high school students of the "Sucre Mieles" Educational Unit, the connection between Gamification and teaching in students will help to have a better understanding and development of the tool. Its objective was to determine the importance of gamification in the teaching process of Geography to the institution's upper-basic students to improve their learning. The research was applied with a focus on quantitative, the methods used were inductive and deductive. A level of correlational research and the type of experimental research that enhanced the research were determined. Information was collected through a knowledge test on 20 students from the control group and 20 from the experimental group. The results presented show that by using technological resources the interest of students is aroused. At the same time, a positive impact is evident on the learning of this subject, which is always difficult for students to understand and, therefore, to learn. Finally, it is concluded that The Google map application helped the students to observe the knowledge of the geographical elements and the level of learning that the students achieved, which contributed to improving their perception regarding the study of this subject and is ability to create and manipulate tools appropriate to their educational level.
Keywords---basic education, education, Gamification, teaching.

Introduction

Through this project, it was possible to obtain information about educational gamification as an alternative for teaching high school students of the "Sucre Mieles" Educational Unit; allowing better advancement in the use of techniques in which the knowledge and skills of students will be improved.

It is necessary to apply the use of gamification techniques because through it the students can benefit from having greater discernment in their learning; In addition, it will allow them to properly handle the tool since the use of technology will be easy, useful, and in turn will help them to have an adequate application and appropriate knowledge and skills that will be of great help in their education.

Education in general currently faces a series of changes in all areas of its management, be it social, technological, environmental, cultural, or political. In this context, new forms of teaching are given way, new paradigms that show how important the implementation of good practices is at all educational levels and especially the basic level.

One of the greatest purposes that a teacher has is the daily work in the classroom, training individuals capable of having active participation during the educational process, that is, an active, creative participation, in such a way as to achieve significant learning in all areas of knowledge. However, the teaching strategies frequently used by teachers fall into what is called obsolescence, which generates demotivation in the student (Rapp et al., 2019).

Current educational trends encourage the incorporation of educational gamification as an alternative to teaching. The aim is to improve educational conditions through greater interrelation in fields such as the use of educational dynamics. Quality teaching, especially those related to basic education, is based on recognizing the successful experiences that various teachers have developed during the exercise of their profession, which have allowed us to know and recognize the results, experiences, and positive effects in the development of educational objectives.

In this sense, in the research carried out in Mexico and called "Gamification as an alternative to promote the active participation of the student", Chávez (2023), identifies that another of the positive factors was the didactics used by teachers on topics related to oral expression. Without a doubt, one of the most worrying aspects is the so-called stage fright, meaning that students cannot express themselves in public. Through play, students were able to express their ideas and knowledge. At the same time, his behavior also improved (p. 5).

The research carried out in Mexico related to the appropriate gamification tools to understand the study of social sciences. Ortiz et al. (2021), point out that the educational resource Google Maps, through its appropriate and oriented use, guarantees an optimal educational process, since it promotes encounters between human beings and their local, regional, national, and international reality from the application of a cartographic tool, proposing cognitive spaces to observe, describe, compare and analyze the information provided by this application (p. 8).

In the research carried out in Ecuador, related to gamification strategies and their contribution to the treatment of schoolchildren. In this regard, Mora et al. (2023), identify that, by developing recreational and outdoor activities, students are given the possibility of getting involved in games that will fundamentally contribute to reducing their stress load, consequently, their academic performance is favored. At the same time, these exercises stimulate movement and the consequences of stress degrade as you continue to exercise continuously (p. 26).

According to the results obtained from the research carried out in Manabí called The Use of gamification on Digital Platforms as a means of Teaching Academic Subjects to students of Intermediate Educational Level and carried out by Velasco & Tuarez (2021), it is deduced that, in the new normal of digital and online education, teachers frequently use digital tools, which shows that the classes taught are supported by applications that seek to energize teaching and reinforce learning. However, in teaching work, activities are proposed that do not include gamification, since a discrepancy in the results has been observed. Although teachers are familiar with or have heard of this teaching methodology, they likely do not know how to implement it in their classes, and most students are unaware of its benefits. (p. 1043).

At the higher basic education level, they present learning difficulties due to inadequate methods and strategies that limit their performance, since the teachings transmitted by teachers do not have the desired scope. In such a situation, students, by not understanding certain actions used by teachers, could relapse into disinterest in learning the subject. In this sense, gamification is presented as a feasible didactic strategy to be implemented, as it generates interest, interaction and active participation (Oinas et al., 2018).

In this context, the use of gamification is important because it arises from the need to look for novel strategies that awaken the interest and commitment of students in their educational process. It is also important in the educational context, since technology is used to support teaching processes, generating skills and competencies in students in the area of Social Sciences. Therefore, this research will benefit the students and teachers of the "Sucre Mieles" educational unit because it will provide techniques and strategies on how to make classes dynamic and students motivated to obtain dynamic learning in different subjects (Meirink et al., 2009).

In this article, the following question is raised that highlighted the research: How does gamification influence the teaching-learning process of the students of the upper basic school of the "Sucre Mieles" educational unit?

For this purpose, the general objective is proposed: Determine the importance of gamification in the teaching-learning process of the upper elementary students of the "Sucre Mieles" educational unit to improve their learning. At the same time, the specific objectives are detailed: O1 Analyze the theoretical and methodological foundations of gamification in the teaching-learning process in students. O2. Investigate the current state of gamification as a learning strategy in high school students of the "Sucre Mieles" educational unit? O3. Create gamification technological resources as a learning strategy that awakens the interest of students.

Materials and Methods

The research adopted a quantitative approach. On the other hand, the methodologies used were related to the inductive method, through which the information collected is organized and analyzed, with the purpose of drawing conclusions starting from the particular scope of the problem raised until reaching the general one. At the same time, these methodologies were also related to the deductive method with which the current situation of the teaching-learning process of social sciences in high school students of the "Sucre Mieles" Educational Unit of the Cojimíes parish, Pedernales canton, Manabí province could be evidenced.

With respect to the types of research used during the investigation, it was determined that this study presented a descriptive level; It was carried out through a knowledge test to the students (control and experimental group). At first, a demonstration class was given to the control group, using traditional teaching material (Text, maps, sphere). In a second moment, a demonstration class was held for the experimental group, developing strategies with the use of technology for teaching geography through the Google Maps application. The population was made up of 214 students and the sample was simply random and was represented by two groups of 20 students each.

Analysis and Discussion of the Results

Gamification

Gamification is an avant-garde tool that the teacher can use in advanced educational level subjects Heredia et al. (2020), to stimulate students' interest in learning, and for this to be reflected in the student's academic performance.

Therefore, Candel et al. (2022), state that, currently, gamification is firmly established in the educational field, where it evolves, adapting to mobile devices and new technologies, thus demonstrating that the educational environment is an exceptional and innovative method of learning (p. 3).

In this way, Roldán (2021), indicates that the use of novel educational approaches offers alternatives to acquire knowledge of the curriculum while promoting competency-focused education. However, the combination of educational techniques should not be limited only to the incorporation of novelties, but the most comprehensive and effective learning is that which integrates both traditional and innovative methodologies (p. 171).

In this sense, the teacher assumes the role of counselor and mentor of the students' learning process Ordoñez et al. (2021); However, to achieve this, it is necessary to have knowledge of various methodologies that support the implementation of teaching strategies, where educational materials contribute to improving the teaching and learning process (p. 4).

This teaching strategy has a positive impact on the perception that students have of social science subjects, improving the vision of a large number of subjects in the study Corrales (2020).

It is highlighted that, through the use of game techniques, students develop the ability to reflect on history, which helps them analyze and understand the characteristics of the characters, the historical context, and the places where the events narrated Chapa & Cedillo (2022) occur. In addition, these activities encourage the critical evaluation of the attitudes of the characters, as well as historical, political, economic, and social events, among other aspects. (p. 146).

The teaching

Teaching is viewed as a system of intentional interaction that involves the application of educational tactics to promote learning processes. In this way, the components that make up this variable become evident both inside and outside the classroom, they support the educational work of the teacher and the progress of the students, they ensure the effective administration of any educational institution, and supervise the correct implementation of pedagogical activities (Gómez et al., 2022).

Thus, education in the school environment is distinguished by educational transformation, seen as a form of communication, which makes it possible to explore the adaptation of the educational approach, the relevance and authentic influence of the use of new communication and information technologies in the classroom (Tena et al., 2021).

According to Ley et al. (2021), education has to adapt to new approaches to the educational process that are distinguished by the dynamic participation of students, who are guided and mediated by the teacher in the construction of knowledge, the promotion of skills that allow them to reason and interpret theory in its practical application to reality. (p. 11). Consequently, Bonilla et al. (2020), point out that, in the teaching process applying the competency approach, the educational sequences or activities begin by exploring the initial knowledge that the students have, therefore, these aspects are related to the social environment of the learning environment, where the teacher must use his creativity in the educational and novel process to adapt his teaching activities to the context.

Thus, Peralta & Guamán (2020), summarize that in the teaching and learning process of Social Sciences, History represents the duality of historical time, its events, and prominent figures, Geography contributes to the analysis of the interactions between humanity and nature, as well as the use that societies have made and make of the environment; while Civic Education focuses on the ethical dimension of these Geography and History contents; This

evaluative perspective gives meaning to human behavior at different times and places, as well as its relationships with the environment and its culture (p.4)

In this way, Arias (2020), suggests that the teaching of social sciences and history in primary and secondary schools is not carried out individually, but occurs mainly in the context of the interaction of large groups of students who come to the classroom with their own experiences. The recognition of their values, prejudices, expectations, sensitivities, and aspirations implies cultural knowledge and an emotional connection on the part of teachers in the area with their students, without which this educational practice sees its possibilities significantly diminished. (p.87).

A control group was selected to carry out the research that was focused on investigating the use of technological resources that arouse the interest of students. Where, the information presented corresponds to the development of an educational activity using traditionalist strategies for teaching Geography. Table 1 shows the results obtained from learning with the traditional method.

Table 1
Learning results with the traditional method.

Quantitative scales of results - Without Gamification			
N°	Scale	Amount	Percentage (%)
1	AAR - Achieve the required learning	4	25
2	PAR - Close to achieving the required learning	11	55
3	NAR - Does not achieve the required learning	5	30

Source: Use Data obtained from the standardized test applied to 20 students

Of the data obtained from students' knowledge tests through the traditional method, 55% achieved he PAR - Close to achieving the required learning, which is equivalent to 11 students, 30% NAR - Does not reach the required learning, which is equivalent to 5 students, while 20% AAR - Achieves the required learning, which is equivalent to 4 of them, the result of learning with the traditional method is shown.

With the application of the Gamification tool, it was observed that the technological educational resource was important to create activities that promote student learning, where only adequate preparation and planning of learning activities is required. Table 2 shows the learning results with Gamification tools.

Table 2
Learning results with Gamification tools

Quantitative scales of results - With Gamification			
N°	Scale	Amount	Percentage (%)
1	GIVE - Master the required learning	11	55
2	AAR - Achieve the required learning	5	25
3	PAR - Close to achieving the required learning	4	20

Source: Use Data obtained from the standardized test applied to 20 students

From the data obtained in the application of the knowledge test, it was verified that 55% of the students obtained their learning in the DAR - Master the learning which is equivalent to 11 students, 25% obtained AAR - Achieve the required learning which corresponds to 5 of them; while 20%, which is equivalent to 4 people, have obtained the PAR - Close to achieving the required learning, through the application of the technology tool favorable results have been obtained in which they contribute to the improvement of a much more active and participatory educational strategy so that students can have better knowledge and skills in the subject of social and greater knowledge.

Experimental group, the research focused on investigating the use of technological resources that arouse the interest of students. Demonstrate the impact of virtual environments on the learning of this subject, which is always difficult for students to understand and, therefore, to learn.

Discussion

Although, through the use of the traditional method; A very discouraging disadvantage could be verified in the student group that did not use the Gamification tool because low knowledge could be observed at the time of applying the knowledge test. The importance of the added support provided by digital tools such as Gamification and

improving student teaching is evident, recognizing previous research that highlights the need to integrate technology in the classroom to optimize the educational process.

The most common difficulties that arise in the teaching-learning process is the obsolescence of the teaching strategies used by teachers, where an important segment still develops traditionalist methodologies. That is, inadequate methods and strategies are implemented that limit student performance since the teachings transmitted do not have the desired results. In this regard, Noro (2019), identifies that obsolescence is wear and tear, the loss of effectiveness and functions, as well as the progressive deterioration of methodologies that become obsolete and require replacement by others with greater effectiveness (p. 3).

The research focused on determining the importance of gamification in the teaching-learning process of high school students of the "Sucre Mieles" Educational Unit of the Cojimíes parish, Pedernales canton, Manabí province, to improve their learning. At the same time, it focused on showing that technological resources arouse the interest of students. In the author's opinion, meaningful learning is directly related to the implementation of new and better teaching strategies that develop the student's intrinsic and extrinsic motivation (Cedeño-Rivadeneira & Mendoza-Loor, 2024).

The information presented allowed us to determine two different approaches. The first approach corresponded to the development of an educational activity using traditionalist strategies for teaching Geography. The second approach corresponded to the impact of educational gamification using the Google Maps application as an alternative for teaching high school students at the "Sucre Mieles" Educational Unit. In this regard, Ausubel (1983), identifies that the student must relate the new knowledge with his cognitive structure, as the material he learns is potentially significant for him (p. 48).

For the first approach, a fundamental contradiction was established between the need to implement new and innovative didactic strategies for teaching Geography and the refusal to use, for example, virtual environments such as Google map to improve student learning. Consequently, the lack of updated methodological strategies makes the transfer of information to students difficult, much more so when it is a subject that requires dynamic didactic elements to ensure that students learn.

The results obtained in this first approach made it possible to show that a majority segment of the students participating in the control group did not clearly understand the explanation because they did not have additional didactic elements that would allow them to visualize and assimilate the knowledge shared by the teacher. On the other hand, the students of the first group (table #1) in the traditional method, 55% achieved he PAR - Close to achieving the required learning, which is equivalent to 11 students, 30% NAR - Does not reach the required learning, which is equivalent to 5 students, while 20% AAR - Achieves the required learning, which is equivalent to 4 of them, shows the result of learning with the traditional method, in which questions from the subject were used and were not properly answered; since the traditional method was used.

The results obtained in this second approach made it possible to show that a majority segment of the students participating in the experimental group had a better performance and clearly understood the explanation because the teacher used the Google map application from his cell phone, which allowed the students to visualize the different aspects explained, and it was verified that 55% of the students obtained their learning in the DAR – Master the required learning. On the other hand, the students in the experimental group were able to correctly identify that the Sagrada Familia is located in Spain, that the Pacific is the largest ocean in the world, that Russia is the largest country in the world, that China is the most populated country on Earth, New York is the city of skyscrapers, Mount Everest is the highest mountain in the world or the Galapagos Islands are located in the Pacific Ocean, thanks to the use of the Google map application.

Based on the results obtained, it was determined that with the use of virtual environments they can become gamification strategies for teaching Geography. Thanks to real-time satellite references and photographs of each place. From the point of view of Punina & Erreyes (2020), it is indicated that for the link between intrinsic motivation and meaningful learning to be more strengthened and beneficial for students, teachers should implement gamification strategies, providing permanent and real-time information (p. 113).

In this context, the Google Map application allowed the student to take a real reading of the different geographical elements required by the teacher, each time the information was presented by the application in real-time and graphically, which contributed to improving their perception regarding the study of Geography. Gamification strategies as an alternative for teaching allow the student to better engage in the activities that the teacher has designed. Therefore, based on the results obtained after using technological resources that arouse the interest of students, the viability of being faithful to the principles that should define a gamification project, as well as its suitability, was evident.

In relation to the theoretical foundation-based educational gamification as an alternative for teaching geography. It was possible to establish the most relevant topics of the research referred to the category of Gamification; This made it possible to define the conceptual principles of teacher preparation for teaching approaches for coexistence of teachers and students.

In relation to the use of educational Gamification, it will allow students to have adequate development since with the use of the tool they will be able to improve their learning, since they have not had appropriate knowledge of it. Teachers will be able to work properly and in a much more organized and appropriate way in the classroom, allowing students to be more efficient academically.

The research highlights the importance of gamification in the teaching-learning process of high school students of the "Sucre Mieles" educational unit to improve their learning. It should be noted that the obsolescence of the methodologies used by teachers is one of the main problems that the educational system has. Different authors consider the fact that, if students do not have an adequate level of motivation, they will not have meaningful learning, which is why better strategies are required for the student to grasp the message that the teacher shares.

The data presented evidence of the heterogeneity of the results obtained based on the comparison of a demonstration class to the control group, using traditional teaching material, and a demonstration class to the experimental group, developing Gamification strategies with the use of technology for teaching geography through the Google map application. It is precisely at this point that a clear divergence in the motivation to learn appears. It is evident that, at the experimental group level, the use of this application improves their participation and performance.

Conclusions

Learning Geography at the beginning of the educational process is of relevant importance, since at this stage where the teacher can develop in the student the habit and interest in research. The use of different virtual environments related to gamification allows the execution of an indeterminate number of research topics related to this subject, which minimizes the barriers that students have formed over time and has made Geography a tedious subject.

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