International Research Journal of Management, IT & Social Sciences
Available online at https://sloap.org/journals/index.php/irjmis/
Vol. 12 No. 1, January 2025, pages: 1-8
ISSN: 2395-7492
https://doi.org/10.21744/irjmis.v12n1.2481

Playful Strategies in Teaching and Learning Probabilities in Elementary School

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Article history:

Submitted: 09 September 2024
Revised: 27 October 2024
Accepted: 18 November 2024

Keywords:

learning;
Mathematics;
playful games;
teaching;

Abstract

Basic education in Ecuador has undergone various changes, becoming one of the main challenges to identify playful strategies that strengthen teaching, mainly about probabilities. The objective was to promote the application of recreational games as a teaching strategy, to improve the learning of probabilities in the applied statistics course in 7th-year basic students of the Fiscomisional Educational Unit "Cinco de Mayo". The research is of a quasi-experimental, applied, and quantitative type, where 84 students of year 7 “A” and “B” collaborated, to whom a knowledge test about probabilities was applied in two different groups, where in the middle of these evaluations only The first group benefited from the recreational games. Thus, significant disparities were found between the two groups. The result was that the application of games as a recreational strategy improves the learning of probabilities, as well as their dimensions.

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1 Introduction

The purpose of this project is to generate an important theoretical, practical, and conceptual base regarding playful strategies in the teaching and learning of probabilities in high school. When talking conceptually about playful strategies, one can say Playful strategies are activities that include educational games, group dynamics, use of dramas, board games, etc., these tools are used by teachers to reinforce learning, knowledge and skills of students inside or outside the classroom. For (Chi-Cauich, 2018).

In this sense, playful strategies constitute the new way of doing education, since they allow teachers to use different pedagogical tools, allowing the teaching-learning process to be more dynamic, fun, and pedagogical for students. Therefore, every time the teacher uses playful strategies, the students' learning level is higher and this in turn allows for a harmonious and pedagogical relationship between the teacher and the students. In relation to the project presented, teaching at the level of basic secondary education must and must be understood as a creative process through which teachers, who fulfill the mission of teaching and students who fulfill the task of learning, interact with the purpose of acquiring knowledge, which is why their execution allows the creation of new concepts, strategies and pedagogical resources for teaching-learning (Ochoa, 2013).

Based on the above, it is considered necessary to execute the project and at the same time train and strengthen the Mathematics teacher, which can provide relevant information to propose actions through which the teacher's training can be improved. For this purpose, the use of teaching strategies by teachers in the area of Mathematics was projected as a problem, taking into account that this will improve the learning of students in the seventh year of Middle Basic Education of the Fiscomisional Educational Unit “Cinco de May. It is important to know that playful strategies are techniques that are used to make learning and teaching more attractive and entertaining. These strategies may include the use of games, recreational activities, and other forms of interactive learning. Some examples of playful strategies are:

Game-based learning is when games are used to teach concepts and skills, practical activities these are practical activities that are carried out in order to reinforce learning, cooperative learning allows encourages teamwork to solve problems or projects, simulations: this strategy allows you to use simulations to recreate real situations and make learning more interactive, role-playing: role-playing games are used to practice social and communication skills, educational board games: specially designed board games are used to teach concepts and skills , educational online games: online games are used to teach concepts and skills, augmented and virtual reality: augmented and virtual reality technologies are used to create immersive learning experiences, project-based learning: learning is encouraged through the completion of projects that integrate various areas of knowledge, based learning in problems: problems and challenges are presented that students must solve to learn concepts and skills. It is important to mention that playful strategies can vary depending on the context and the group of students, where the strategies that best adapt to the needs and interests of the students must be chosen (Tandler et al., 2024; Proyer et al., 2019; Bakar et al., 2010; Mahendra, 2016).

2 Materials and Methods

The inductive method was used, which allowed the generalization of the premises that supported the execution of the project and its conclusions, the analytical method helped the development of the research hypothesis, in addition to the synthetic method that, with its application, the conclusions and verification could be made. Of the hypothesis. The bibliographic review for the theoretical and systematic search of information related to the declared variables, in addition to the statistician who helped select the sample, tabulate data and graphs through which a better perspective of the problem raised was obtained, with a descriptive approach. To measure and describe the learning results of the students of the “Cinco de Mayo” Educational Unit who participated in the demonstrations. This may include grades, participation levels, and changes in odds. The explanatory is to identify the most effective pedagogical practices in the implementation of playful strategies to improve learning in elementary school, which can serve to develop recommendations and guidelines for teaching probabilities.

3 Results and Discussions

Playful strategies with educational methods that use play and recreation as main tools to facilitate meaningful learning and skill development in students. These strategies take advantage of the natural motivation that individuals have towards play to improve the understanding of concepts, the acquisition of skills, and the application of knowledge in various areas of the educational curriculum. Playful strategies are very important for the teaching-learning process because it make it easier to acquire significant knowledge by developing skills and abilities through natural motivation in different games, allowing you to acquire knowledge and use it in different areas of study (Farias & Rojas Velásquez, 2010).

Every strategy has a series of characteristics that assign it its share within the educational process. Its character, advance planning, and the achievement of specific objectives. In its design, planning, and execution, a set of activities must be anticipated that will bring it to life in the learning process, and its connection with the environment where the boy or girl develops is essential.

To design a strategy you must know

- What do you want to encourage in the student, that is, what skills to develop?
- How is the process going to develop?
- What resources do you have?

The role of the early childhood educator is to provide activities and experiences that, connect as much as possible with the needs, interests and motivations of the children, make it easier for them to learn and develop. For education to be effective, currently, identified as the knowledge society, which requires individuals prepared in four pillars: Learning to know, learning to be, learning to do, and learning to live together. Considering this precept allows the design of playful pedagogical strategies to be energized.

Learn to know: This type of learning tends to master the instruments of knowledge themselves, it can be considered a means and a human goal; It consists of each person learning to understand the world around them, to live with dignity, develop as a professional and relate to others, with the goal of the pleasure of knowing. However, the knowledge is multiple, it is difficult to know everything. Learn to know yourself: It involves learning to learn, exercising memory, attention, and thinking. From a young age, you must learn to focus your attention on things and people. The exercise of memory is a preventive way of momentary information from the media, we must be selective in the choice of information, and exercise associative memory. Learn to do: Learning to know and to do are similar terms, but learning to do is aimed primarily at vocational training. The dominance of the cognitive and informational dimensions in industrial production systems makes the notion of professional qualification somewhat obsolete, between operators and technicians, and tends to achieve personal competence (Derboven et al., 2016; Alt, 2023; Barrocas et al., 2023; Boysen et al., 2022).

Learn to be: Education must contribute to the overall development of the person: body and mind, intelligence, sensitivity, aesthetic sense, and individual responsibility. All human beings must be able to equip themselves with autonomous and critical thinking and make their own judgment, to determine for themselves what they should do in the different circumstances of life. In a world that is constantly changing, one of whose main drivers seems to be both social and economic innovation, a special place must be given to imagination and creativity.

Characteristics of playful strategies

When a student uses a strategy, he can adapt his behavior, we refer to what he thinks and does in the requests made to him, which is why we must consider.

- Perform conscious reflection on the purpose or objective of the task.
- Plan what you are going to do and how you will carry it out.
- Carry out the assigned task or activity.
- Evaluate your performance.
- Accumulate knowledge about in which situations you can use that strategy again.

Teaching-learning process

Learning and teaching are processes that occur continuously in the life of every human being, which is why we cannot talk about one without talking about the other. Both processes are brought together around a central axis, the teaching-learning process, which structures them in a unit of meaning (Gómez-Pablos et al., 2017). The teaching-learning process involves constant communication between the student and the teacher where the teacher must have that true vocation of wanting to teach and the student wanting to learn. On the other hand, teachers must also plan the activities and strategies that are carried out. They will be implemented in the classroom to obtain improved teaching-learning in students, with the objective that the latter acquire knowledge, skills, values or attitudes. The main stages of the teaching-learning process are described below:

- Diagnosis or initial analysis: At this stage, the teacher evaluates the needs, prior knowledge, and individual characteristics of the students, this allows the teaching process to be adequately planned to adapt to the specific level and context of the students.
- Planning: It is the phase in which the teacher designs the strategies, methods, resources and evaluations that will be used to facilitate learning. Here the educational objectives are established and the general structure of the course or teaching session is determined.
- Implementation: During this stage, the teacher carries out the planned teaching activities and this may include explanations, demonstrations, discussions, and practical activities, among other educational methods, it is crucial that the teacher adapts his teaching according to the responses and needs of the students.
- Assessment: Evaluation occurs continuously throughout the entire teaching-learning process; various methods are used to measure progress and achievement of objectives by students.
- Feedback: It is the process by which information is provided to students about their performance and progress, effective feedback is essential
- to guide and motivate students towards deeper and more meaningful learning.
- Reflection: Both the teacher and the students reflect on the teaching-learning process, this includes reviewing what has been learned, identifying strengths and areas for improvement, as well as adjusting strategies for future educational experiences.

Teaching in education

Teaching is a process in which various knowledge is transmitted. To achieve a good reception of these, methods are used that facilitate the understanding of each technique and skill for students. The teacher as a leader must motivate and guide his students so that they participate in classes to ensure that they have better learning. He must apply various techniques and strategies so that the student can acquire better knowledge. Here are some key aspects of teaching in education:

- Educational objectives: Transmit knowledge, skills, attitudes, and values that are relevant to the comprehensive development of students; these objectives may be aligned with educational standards, established curricula or institutional goals.
- Methodologies and strategies: Teachers use it to facilitate student learning; these can include master classes, group discussions, practical activities, collaborative projects, use of educational technology, among other pedagogical techniques.
- Adaptation to the student: A crucial aspect of effective teaching is the teacher's ability to adapt his or her approach to the individual needs of students; this may involve differentiating instruction to address different learning styles, proficiency levels, and learning rates.
- Interaction and communication: Effective teaching involves meaningful interaction between the teacher and students, this creates a positive learning environment and encourages active participation of students in their own educational process.
- Evaluation and feedback: During the teaching process, various assessment methods are used to measure students' progress and achievement, the feedback provided by the teacher is crucial to guide students, identify areas of improvement, and reinforce learning.

- Teacher professional development: To be effective, they must participate in continuous professional development, this implies updating themselves in educational methodologies, technology applied to education, and classroom management, among other relevant aspects to improve their pedagogical practice.
- Educational context: Teaching is also influenced by the broader educational context, which includes educational policies, available resources, school culture, and social expectations, teachers must adapt to maximize the impact of their teaching.

Mathematics teachers

The person who fulfills the teaching role is responsible for educating others. In the most basic sense, providing education consists of providing information and developing explanations so that students can assimilate the content (Merino-Armero et al., 2022). The teacher must create a positive environment in the classroom, he must be understanding and generate confidence in his students and there can be a better interaction between him and the students, he must always be innovating, using new strategies and methods that help them. Students develop new skills by drawing the attention of students so that they achieve better learning (Castro & Carvajal, 2010). We asked whether the teacher carried out a motivation before starting to teach his class. The results are shown in Figure 1.

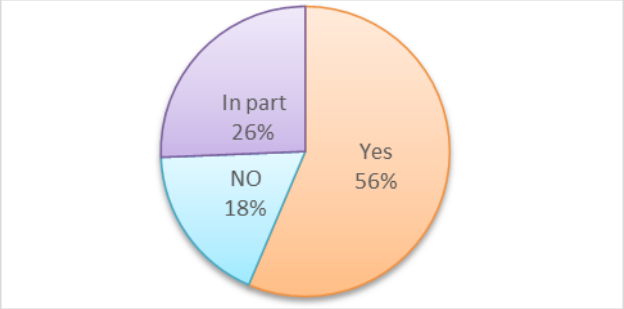

Figure 1. Provide motivation before starting

The range of many of the students demonstrated that 56% responded yes, 26% declared in part, as well as a minority of 18% answered no, which is to say that, if the majority of students comply, this is how There is a very majority group surveyed. We asked if the teacher explained how the class was going to be conducted, what he was going to do, and how he was going to do it. The results are shown in Figure 2.

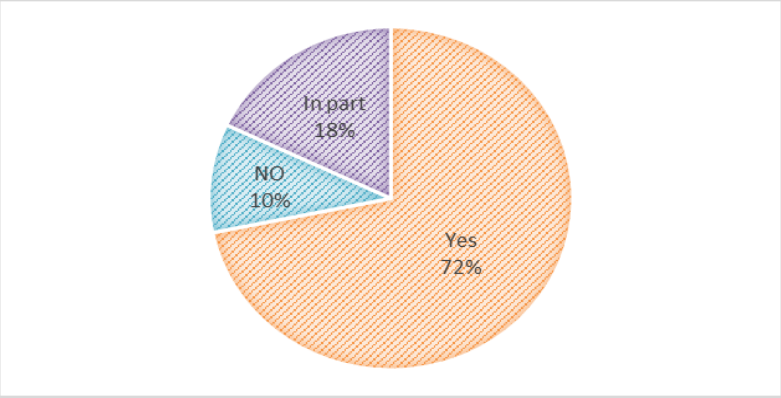

Figure 2. The teacher gives an explanation

The range of many of the students demonstrated that 72% answered yes, 18% declared in part, and also a minority of 10% answered no, demonstrating that, if the majority of students comply, it is so that We have a very majority group surveyed. Figure 3 shows the results of the question related to its connection with the new content of its class.

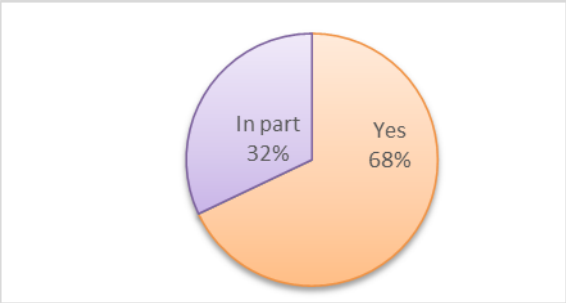

Figure 3. Linking to the new content of your class

The range of many of the students demonstrated that 68% responded yes, 32% declared in part, as well as a minority of 0% answered no, which is to say that, if the majority of students comply, it is so that We have a very majority group surveyed. The students were asked if the teacher uses recreational resources to introduce the topic by interacting with the students. Figure 4 shows the results obtained.

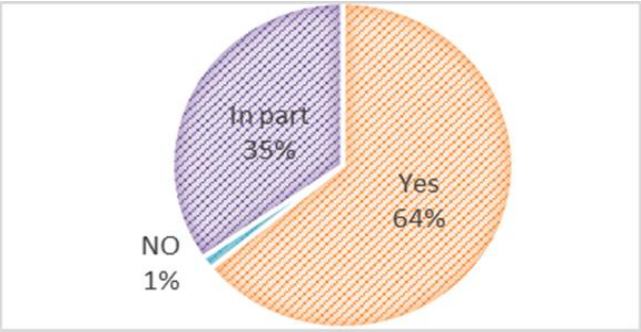

Figure 4. Use of recreational resources

The range of many of the students demonstrated that 64% answered yes, 35% declared in part, as well as a minority of 1% answered no, which is to say that, if the majority of students comply, this is how We have a very majority group surveyed. It was also asked if the teacher manipulates the recreational resources to carry out the class and explains how he is going to do it. It was also asked if the teacher manipulates the playful resources to carry out the class and explains how he is going to do it, as shown in Figure 5.

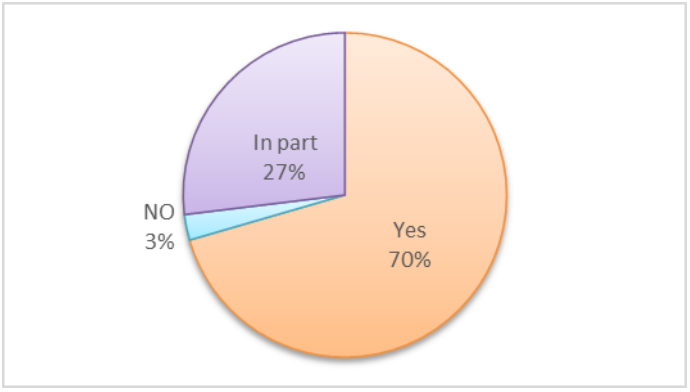

Figure 5. Manipulate the recreational resources to carry out the class

The range of most of the students demonstrated that 70% answered yes, 27% declared in part, and also a minority of 3% answered no, which is to say that, if the majority of students comply, this is how There is a very majority group surveyed. The results show a favorable trend towards the implementation of playful strategies in the classroom, which is essential to foster a dynamic and interactive learning environment. More than 50% of the students consider that the

teacher provides adequate motivation at the beginning of classes and provides clear explanations about the development of the class. This is essential, as proper preparation can improve student understanding and engagement.

The relationship between new and previous content is another positive aspect, with 68% of students perceiving an adequate connection. This demonstrates the teacher's ability to build meaningful learning, allowing students to relate concepts and reinforce their understanding. Regarding the use of recreational resources and strategies, a large majority of students consider that the teacher integrates them effectively, which not only facilitates teaching but also contributes to maintaining students' motivation and interest. However, although the general perception is positive, a considerable percentage (between 17% and 35%) indicates that the integration of these strategies could be more constant or effective. The teacher's abilities to use playful strategies are highly valued, with 79% of students considering this to be the case. However, some students believe that the selection of strategies is not always perfectly adapted to the educational level. This could suggest the need for more fine-tuning in planning to ensure that each strategy is aligned with the specific needs of the group (Brezovszky et al., 2019; Kangas et al., 2017; Størksen et al., 2023; Mahayukti et al., 2017).

4 Conclusion

Teachers are not fully trained to properly use recreational strategies since they have a theoretical and not a practical teaching method, when using these pedagogical resources such as; methods, strategies, and playful games (Dice), the teaching method is difficult for them due to the lack of experience with respect to the modern ludic strategies used by the modern teacher. Based on the surveys carried out on the students of the Fiscomisional Educational Unit “Cinco de Mayo”, the lack of playful strategies and methods that students need for better development of skills was realized; it was also detected in a significant percentage of students who The teacher does not use these pedagogical resources that help facilitate the understanding of prior knowledge of the topic to be discussed.

The teacher finds it difficult to use teaching materials since there are more facilities and comforts in the use of technology such as; touch screens, projectors, the use of the YouTube platform to project explanatory videos on the topic to be discussed in classes, it is because of this that teachers do not carry out recreational activities with students that allow them to de-stress and create an optimal learning environment.

Conflict of interest statement
The authors declared that they have no competing interests.

Statement of authorship
The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

Acknowledgments
We are grateful to two anonymous reviewers for their valuable comments on the earlier version of this paper.

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