Using Flashcards as a Didactic Resource for Teaching Statistics: The Experience in a Particular Didactics Course

Las tarjetas como recurso didáctico para la enseñanza de la estadística: La experiencia en un curso de didáctica específica

O Uso de Flashcards como Recurso Didático no Ensino da Estatística: A Experiência em um Curso Particular de Didática

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Abstract: The aim of the systematization was to create a collection of cards by a group of students. These cards would serve as a didactic resource in teaching statistical or probabilistic concepts in the Costa Rican secondary education curricula. The experience involved 26 mathematics teachers in training who participated in a Didactic Statistics Course that focused on materials and resources for teaching Statistics and Probability. The task involved creating a collection of cards to be used as a didactic resource for teaching topics in these areas. Additionally, an exhibition was held to share the prepared material with the participants. This provided an opportunity to receive feedback on possible improvements in both preparation and implementation. Participants also answered a questionnaire, which aimed to gather information on challenges, opportunities, and options for improving the classroom experience. The main results indicated that these activities contribute to the development of skills and present a challenge for teachers in training. By actively engaging in the learning process, they become key participants. To facilitate a meaningful transformation of the professional work of teaching staff in Statistics, it is crucial to implement activities that will create relevant resources adapted to student contexts. This approach promotes the development of competences that foster critical thinking and problem-solving abilities.

Keywords: Education, Statistics, Didactic material, Active learning, Evaluation

Resumen: La sistematización tuvo como finalidad la creación de una colección de tarjetas, por parte del grupo de estudiantes, para ser empleadas como recurso didáctico en la enseñanza de un concepto estadístico o probabilístico del currículo de la educación secundaria costarricense. La experiencia se llevó a cabo con 26 docentes de matemática en formación en el contexto de un curso de didáctica de la estadística en la que se abordó la temática sobre materiales y recursos para la enseñanza de la Estadística y la Probabilidad. El trabajo asignado consistió en crear una colección de tarjetas que pudieran utilizarse como recurso didáctico para la enseñanza de un tema de estas áreas, realizar una exposición en la que se pudiera compartir con el resto del grupo el material elaborado de modo que esto permitiera recibir realimentación para una posible mejora en su confección e implementación y responder un cuestionario que brindara información sobre retos, oportunidades y opciones de mejora de la experiencia de aula. Entre los principales resultados, se obtuvo que este tipo de actividades contribuye con el desarrollo de habilidades y constituyen un reto para el profesorado en formación

pues los convierte en actores directos de su proceso de aprendizaje. Así, para una adecuada transformación del quehacer profesional del profesorado en Estadística es importante implementar actividades que permitan la elaboración de recursos pertinentes y adaptados a los contextos de aprendizaje de cada estudiante, favoreciendo consigo el desarrollo de competencias que fomenten el pensamiento crítico y la resolución de problemas.

Palabras claves: Educación, Estadística, Material didáctico, Aprendizaje activo, Evaluación

Resumo: O objetivo da sistematização foi a criação de uma coleção de flashcards por grupo de estudantes. Esses flashcards iriam servir como recurso didático no ensino de conceitos estatísticos ou probabilísticos nos currículos do ensino médio na Costa Rica. A experiência envolveu 26 professores de matemática em formação que participaram de um curso de didática estatística que teve como foco materiais e recursos para o ensino de Estatística e Probabilidades. A tarefa envolveu a criação de uma coleção de flashcards a serem utilizadas como recurso didático no ensino de temas nessas áreas. Além disso, foi realizada uma exposição para compartilhar o material preparado com os participantes. Isto proporcionou uma oportunidade de receber feedback sobre possíveis melhorias tanto na preparação como na implementação. Os participantes também responderam a um questionário, que teve como objetivo coletar informações sobre desafios, oportunidades e opções para aprimorar a experiência na sala de aula. Os principais resultados indicaram que essas atividades contribuem sim para o desenvolvimento de competências e apresentam um desafio para os professores em formação. Ao se envolverem ativamente no processo de aprendizagem, eles se tornam participantes chave. A fim de facilitar uma transformação significativa do trabalho profissional do corpo docente em Estatística, é crucial implementar atividades que permitam a criação de recursos relevantes e adaptados aos contextos dos estudantes. Esta abordagem promove o desenvolvimento de competências que estimulam o pensamento crítico e a capacidade de resolução de problemas.

Palavras-chave: Educação, Estatística, Material didático, Aprendizagem ativa, Avaliação

INTRODUCTION

The amount of information generated by modern societies makes Statistics play a crucial role in data-driven decision making at both individual and community levels. Statistical knowledge is essential for data analysis and statistical skills to summarize, interpret, and disseminate the resulting information (Moreira and Samá, 2014). Similarly, in a world where quantitative information is constantly generated, the study of statistics provides students with tools and ideas to respond appropriately (Ben-Zvi & Garfield, 2008).

On the other hand, Statistics Education emerges as a distinct discipline in which a growing body of research has provided a series of contributions focused on improving the teaching and learning of statistics and probability (Tishkovskaya & Lancaster, 2012). This discipline provides tools for people to solve problems inherent to the context, thereby achieving better performance in the face of the challenges posed by societies. Hence, to understand the surrounding context, statistical education becomes an essential skill (Legaki *et al.*, 2020).

In this regard, there have been advances to improve the teaching and learning of the discipline, in particular highlighting the contributions of the American Statistical Association (ASA). In 2005, ASA approved and in 2016 updated the Guidelines for Assessment and Instruction in Statistics Education (GAISE). These guidelines incorporate a series of recommendations for introductory statistics courses at the university level (GAISE College Report) and for statistics education in Pre-K-12 years (GAISE Pre-K-12 Report) (Carver *et al.*, 2016).

Among the recommendations of the ASA for Statistics Education at the university level, the importance of the students' active participation in their own learning is introduced. Therefore, among the six recommendations for teaching statistics in introductory courses, ASA stipulates the promotion of active learning, noting that incorporating this type of methodologies allows students to discover, construct, and understand important statistical ideas. Additionally, it mentions that activities, projects, and interesting datasets can help faculty involve students (Carver *et al.*, 2016).

Active learning is a broad concept that often refers to motivational and student-centered teaching methods. These methods are led by an individual who is responsible for planning activities (Mitchell et al., 2017). Moreover, there are currents that regard active learning as an instructional approach that guides the learning process. Active learning encompasses not only actions that students undertake on their own, but also, to some extent, involves the organization and supervision of instructors (Hartikainen et al., 2019). Conversely, Drew and Mackie (2011) assert that in certain contexts, active learning has also been understood as a learning approach rather than an instructional process. Thus, active learning is a broad pedagogical construct often used within the overall lifelong learning discourse where there is no clarity and consensus regarding its meaning (Drew & Mackie, 2011).

Notwithstanding this lack of clarity regarding its meaning, the numerous methods this concept considers generally refer to a combination of increased physical activity or interaction, deeper processing, elaboration, or explanation of materials, planning of learning activities, formulation of questions, metacognitive monitoring, and social collaboration (Markant, *et al.*, 2016). This provides students with the opportunity to actively engage in their learning process. In addition, it allows reducing lectures and stimulating more participatory work, as it promotes the development of classes focused on learning rather than content, and aims to obtain meaningful products beyond exams, encouraging authentic evaluation processes.

This type of evaluation is characterized by generating critical and creative thinking skills that students will require in their professional careers and that are ideal for addressing complex problems where there is no single correct answer. Therefore, this evaluative model offers greater benefits in terms of quality of learning compared to traditional methods (Villarroel & Bruna, 2019).

Authentic assessment is theoretically grounded on contextualized learning and constructivist theories, which emphasize the need for students to actively participate in the learning process by developing activities in which complex real-world problems can be addressed (Farrel, 2020). Thus, an authentic assessment activity requires students to use their skills and knowledge to demonstrate their ability to analyze the task and synthesize, with the understanding that the potentially correct answer may not always be evident or obvious (Ashford-Rowe *et al.*, 2014). Consequently, authentic assessment is characterized by several features, including reality, complexity, and meaning (Thomas, 2021), as it requires students to stimulate their mode of reasoning and solve problems inherent to their field (Koretsky *et al.*, 2022). According to the literature, authentic assessment should set a challenging task, foster outcomes in terms of an action or product, ensure the transmission of knowledge, incorporate metacognition as one of its components, promote the ability to discuss and provide feedback, and include the opportunity for collaboration (Ashford-Rowe *et al.*, 2014). Vos (2015), on the contrary, points out that, from different authentic assessment frameworks, the possibility of knowing the assessment criteria in advance, opportunities for development and constant feedback, a variety of activities to be executed, opportunities for reflection, as well as interaction and collaboration are suggested as common characteristics.

Although it has not yet been convincingly demonstrated whether authentic assessment leads to the achievement of greater learning benefits compared to other forms of assessment (Vos, 2015), it has been mentioned that its implementation contributes to improving student engagement and satisfaction, as well as strengthening their efforts to achieve academic goals (Sokhanvar *et al.*, 2021). In addition, findings from various studies confirm that the use of strategies that promote active learning enhances performance (Freeman et al., 2014; Nurbavliyev *et al.*, 2022). Evidence in the areas of science, technology, engineering, and mathematics (STEM) supports the possibility of replacing traditional lessons with courses designed to promote active learning. This evidence also suggests that equity in higher education may be favored by innovations implemented in instructional strategies (Theobald *et al.*, 2020). However, given the diversity of methods involved, it is difficult to identify the causal factors leading to differences in performance when active learning is employed or to predict whether such effects can be generalized

to other types of activities (Markant, *et al.*, 2016). Therefore, the implementation of active learning and empirical research on its effects on learning outcomes require systematic attention (Hartikainen *et al.*, 2019).

Other factors that enhance the educational process include the utilization of didactic materials; these are used to acquire significant learning (Manrique & Gallego, 2013). Concrete didactic materials refer to any object, teachers or students use during their respective teaching and learning processes to achieve specific objectives (Villaroel & Sgreccia, 2011). As an example of didactic material, manipulative resources and other objects that facilitate classroom activities are considered.

In the case of statistics and probability teaching, manipulative materials are grouped into four main types: balls, roulette wheels, dice, and decks of cards or card collections (Batanero, 2001). The collection of cards represents a versatile type of material that can include information from multiple attributes of the elementary statistical units and can be used to study concepts such as probability, association, or independence of variables, among others (Batanero, 2001). The use of manipulable materials constitutes a learning method in itself that should lead to a more effective learning process (Alsina, 2018). This is because interacting with real elements activates a desire to learn and stimulate, among other fundamental aspects in personal development, the improvement of memory, motor skills, and cognitive abilities (Manrique & Gallego, 2013).

There are other recommendations that have been proposed for teaching statistics and probability, such as project-based learning, which can be used to promote the skills and abilities of the discipline, as project-based work aims to motivate students to discuss and interpret results and reflect on statistical concepts (Moreira & Samá, 2014).

In the case of Statistics Education, effective student learning can be guided by a series of strategies that the responsible teaching staff should include during the process (Ruiz-Barrantes & Gallardo-Allen, 2023). Therefore, the contributions resulting from the various research processes aim to be integrated into teaching practice to improve the educational experience of students enrolled in Statistics courses (Aguilar *et al.*, 2021).

In Costa Rica, primary and secondary education programs are organized into five mathematical domains, including Statistics and Probability. These domains are intended to be strengthened throughout the academic years, as they enable the organization and preparation of information in various settings, thereby facilitating decision-making in uncertain situations (Ministry of Public Education, 2012).

To meet the demands of secondary education institutions, the School of Mathematics at the National University implemented the Bachelor's Degree and Post-Bachelor's Certificate program in Mathematics Education (BLEM-2017) in 2017. This program is competency-based and includes two courses in Statistics and Probability, as well as a course focused on the didactics of mathematics. Through these courses, the aim is to promote the incorporation of technological and didactic resources among the teaching staff in training in order to enhance educational processes (Universidad Nacional, 2017).

Particularly, in the field of Statistical Didactics, the offered course aims to provide teacher training resources that enable the organization and planning of the teaching and learning of concepts related to Statistics and Probability in school mathematics. This is achieved by connecting these concepts with theoretical tools from Didactics of Mathematics and Didactics of Statistics and Probability (Universidad Nacional, 2017). This is because of the limited or nonexistent training in specific didactics of mathematics among teachers, which highlights the need to promote their knowledge of statistical didactics. It is important to emphasize that training is required in the use of manipulative materials, games, technological resources, and different graphics than those proposed in secondary education curricula (Muñiz-Rodríguez & Rodríguez-Muñiz, 2021). Through this approach, BLEM-2017 aims to provide teachers with activities that facilitate the development of teaching resources, in order to equip them with tools that

enable the incorporation of different options in their statistics classes, thus contributing to promote their professional growth and support teaching practice in this discipline.

Considering the elements described above, this systematization aimed to present an overview of the teacher training experience in designing didactic resources for teaching a subject related to Statistics or Probability. Furthermore, it was deemed important that the teaching staff at this level of education be aware of the significance of having different resources or materials for conducting classroom tasks to contribute to the secondary school student learning process of a particular topic in the field of Statistics and Probability. In addition, teachers in training were involved in processes promoting active learning through the design of products or specific evidence that contribute to conducting class sessions in the area of Statistics and Probability in Costa Rican secondary education.

This is how the systematization aimed to create a collection of cards, designed by mathematics teachers in training, to serve as a didactic resource for teaching statistical or probabilistic concepts in the Costa Rican secondary education curriculum within the framework of a specific didactics course to promote the implementation of active learning methodologies and authentic evaluation.

DEVELOPMENT OF THE EXPERIENCE

The experience was conducted at the National University during the first semester of 2022 and involved the participation of 26 students who enrolled the course Didactics of Statistics and Probability. This course is taught in the third year of the Bachelor's Degree and Post-Bachelor's Certificate program in Mathematics Education, which implements a competency-based curriculum. Its implementation involved the selection of knowledge of resources and materials for teaching Statistics and Probability. In addition, the participants represented the entire population of students enrolled in the course, as the proposed activity was included as part of the evaluation criteria initially considered.

Three activities were proposed to facilitate the experience: the creation and presentation of the material, and the administration of a questionnaire aimed at gathering information regarding students' opinion about the experience. Through this set of activities, the goal was for students to actively engage in the learning process by solving a specific problem that is relevant to real life, with a certain level of complexity and significance. This would be achieved by creating a specific product, which was the design of a learning activity using cards as a teaching resource for statistical or probabilistic concepts in school mathematics. The aim was to stimulate the development of skills and to promote collaborative learning.

For the evaluation of the experience, a rubric was constructed and shared with the students, specifying each of the aspects to evaluate. The aspects were originality, the quality of the materials used, their content (level at which it would be used, conceptual elements of the knowledge or content, skills to be developed, and instructions for use), and their relevance as a teaching resource. Each item was evaluated on a scale of 0 to 10 points, with 10 being the highest score to obtain. Moreover, while exposing the materials, the students and the teacher provided feedback on each group, thus enhancing the preparation and use of the material.

Activity 1: Preparation of the material

During the master lecture on the conceptual aspects of knowledge of resources and materials for teaching Statistics and Probability, emphasizing to the students that decks of cards are frequently used as part of the didactic resources that in training teachers use in the teaching of statistics and probability. Hence, the idea of creating a card collection was put forth to serve as a resource for teaching topics in the area of statistics and probability, but in a format different from traditional card decks. It was specified that the material should consist of a set of cards in printed format, so that it could be used anywhere,

including low-income areas where access to information technology was limited or non-existent. In addition, the participants were told that they should accomplish the task in groups, they could use any type of specific material, and they could choose the topic freely according to their preferences. However, the topic should be in line with the topics established in the Costa Rican secondary education curriculum. To carry out the task, 4 groups of four people and 2 groups of 5 people were formed. These people voluntarily associated themselves. The production of the cards was suggested using a material of a certain level of quality, with the intention that they would be long-lasting and could be used when the group of trainee teachers had the opportunity to practice their career. It was also indicated that the material should include the following aspects:

- Name of the resource.
- Subject in which it could be used.
- Educational level for which it was intended.
- General and specific skills to enhance as stipulated by the Ministry of Public Education in the curricula.
- Description of the material.
- Usage instructions.

Activity 2: Presentation of the material

At this stage, each group of students had to present their work to the rest of the class, providing a space for sharing the results obtained, enabling discussion on potential ways to enhance the material and the possibility of extending the use of the resources to other contexts.

Activity 3: Administration of the questionnaire

At the conclusion of activities 1 and 2, the students were required to complete a survey to gather information about the progress of the experience. To accomplish this, a questionnaire was created. It included a set of questions intended to investigate general characteristics of the student body, positive and negative aspects, challenges and opportunities of the activity, usefulness of the material, as well as the overall opinion about the implementation of this type of strategies in the course. Two experts in education validated the questionnaire. They provided a series of suggestions that enabled enhancements to the wording and structure of the instrument.

The results of the activity led to the creation of different materials to be used in teaching and learning processes of Statistical topics, such as graphical interpretation (Figure 1. a) or position measurements (Figure 1. b).

Figure 1. a) presents part of the material titled interpretation deck, which consists of 36 cards showing tabular representations, graphs (frequency polygons, histograms, or others) and comments derived from these representations. The deck is designed to be used in groups of three people as a game in which one card is hidden at the beginning and the others are dealt among the members of the participating group. Then, each member takes a card from the adjacent individual with the intention of forming pairs that correspond to the representation and interpretation of aspects of it. The game ends when no more pairs can be formed, because the only card left among the participants corresponds to the card that was previously hidden. This material was constructed to be used in the ninth grade and its objective is for students to interpret the information provided by a histogram, polygon, or frequency distribution chart after synthesizing a group of quantitative data.

Likewise, Figure. 1b) refers to a set of 28 cards designed in the format of a domino game with two sections. In these sections, datasets appear with the symbol of a statistical measure to estimate, or a real number representing the value of one of the requested statistical measures. The objective of the game is to arrange the cards so that the central tendency measure of a dataset at one end of the card matches the numerical value of the measure at the corresponding end of the card. The cards will be placed on a board, which can be made of paper, so that they form a path that must be traversed from an initial side to a final side. The group that builds the path most swiftly will be the winner. This material was proposed to be used in tenth grade. It aims to promote the execution of the calculation of statistical measures of position corresponding to a group of data.

Figure 1

Examples of cards produced by two groups of students.

Note: The figure was created from the images provided by the students.

In a class following the oral presentations, the students answered a series of questions through a questionnaire aimed at gathering relevant information on the process of preparing the material. One of the aspects highlighted with emphasis by the participants was the role of the Costa Rican secondary school teacher that each student had to assume during the completion of the task. This situation helped each participant to comprehend basic aspects involved in preparing a Statistics class using concrete material. In this regard, participant 6 said the following about the activity: "It taught us that there are different ways to use cards for teaching, reviewing, or reflecting on topics."

The activity also provided specific information on the development of skills and the challenges involved in producing material as a didactic resource. Concerning this aspect, the teachers in training recognized that these activities promote the development of creativity and a taste for work. "To do a job like this, you need imagination and dedication. I really enjoyed working on this" (Participant 3). However, it is important to note that, while this type of activity stimulates creativity, this becomes a major challenge for some people. "The challenge can be originality and creativity when you have to plan and prepare it" (Participant 15), since not all people find it easy to create something new if they have not experienced different learning stimulation processes.

Furthermore, emphasis was placed on the potential utility of employing this type of material within teaching and learning processes. In this regard, Participant 16 stated this: "Of course it would be very useful

since reasoning and learning through manipulative games attracts students' attention." The activity also provided an opportunity to reflect on different ways in which a teaching resource can be used to promote more dynamic classes and stimulate learning. "It is totally accurate, given that, on many occasions, the class becomes boring and this activity allows us to get more attention from the students and improve their learning process" (Participant 22).

Additionally, the students provided general feedback on the proposed activity. Here, the benefits of integrating active learning strategies in the classroom were highlighted. "This activity is very useful, because, if it is done in the best way, it is material that we have for the future" (Participant 1). Moreover, besides the benefits that can be derived from the implementation of these activities, it is important to point out the fostering of skills such as creativity and inventiveness. In this particular case, participant 8 stated the following: "My general opinion is that this is quite beneficial, given that, as I mentioned, it generates creativity, inventiveness, and dedication of the teacher." The comments reflect the importance of exercising the educational task using different forms of teaching in order to strengthen teachers' work with tools that allow them to explore different ways of learning. "Thinking about how such material can be used in various subjects, considering that producing the material can be expensive. However, it is useful to perform different activities where students can apply knowledge" (Participant 11).

Other relevant reflections that could be extracted were related to opportunities for improvement in the implementation of the activity. The students stated that, in future implementations, the time allocated for their execution could be evaluated, as they considered that the time was not sufficient. "As I mentioned earlier, we need more time for the realization of this" (Participant 3). In this regard, it should be noted that this type of planning and construction of materials for didactic purposes requires, initially, a significant investment of time. However, this has several positive implications, such as the educational benefits for learning concepts and the possibility of using them at different times because they are made with durable materials.

Furthermore, emphasis was placed on the importance of presenting the material as a group, as the group discussion allowed for feedback on the work done, with the aim of improving its preparation for potential implementation. "Among the positive aspects, I emphasize the opportunity to exchange ideas regarding the various ways a topic or material can be utilized in courses..." (Participant 12). This aspect is relevant because, in addition to the necessary collaborative work among the participants who formed the different groups plan, construct, and implement the didactic strategy, the opportunity to have these discussions with their peers enabled the teaching staff in training to generate reflection in the classroom regarding the design of the material and the potential impact on the outcomes of its application.

Finally, it is important to mention that, from this type of experience, the traditional role of the teaching staff as knowledge transmitter is transformed into one where their role as a guide is strengthened, as their participation during the process focused on addressing doubts, providing examples, and facilitating recommendations to guide the working groups in the preparation and presentation of the material.

SYNTHESIS AND FINAL THOUGHTS

The results of the experience highlight the importance of providing trainee teachers with activities that promote learning through didactic resources designed for specific learning situations, as this contributes to the development of skills and competencies necessary for their career. Among these professional skills, the first one that can be mentioned is the promotion of collaborative learning. This is demonstrated through group work where discussion, socialization, and sharing of knowledge and ideas occur to solve the given situation which involved the preparation of a collection of cards that could be used as a

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didactic resource for teaching a specific topic. Through this technique, skills are developed, and coordination processes are fostered among the participating individuals (Santos, 2021).

Secondly, the creation of material allows for the stimulation of creativity, as it encourages the design and production of diverse materials to facilitate the teaching and learning process. A relevant contribution of systematization lies in the fact that card collections, due to their versatility, were employed in topics where such materials are rarely used, such as statistical variables, graphical interpretation of frequency distributions, and calculation of statistical measures. It is important to highlight that no group created cards for teaching topics in the probability area, where their use is more common. In addition, this creation process leads to the incorporation of different strategies aimed at comprehending contents, which is not an easy task and is a challenge for teachers in training. In this regard, it is noted that people who teach statistics, aside understanding the topics themselves, must know how to make statistics understandable to others (Groth, 2017).

Thirdly, there is an alignment between the implementation of these activities and the creation of more dynamic classroom environments. It is the responsibility of the students to independently find a solution to the presented situation, which makes their role in the process more participatory and transforms them into agents of their own learning. Active learning enables the students themselves to provide practical solutions to the problems posed (Nurbavliyev *et al.*, 2022). In addition, by implementing active learning strategies in the classroom, teachers understand that the students are responsible for constructing a new comprehension of the content (Zamora *et al.*, 2022).

Fourth, the creation of materials that can be used as teaching resources in a statistics class allows the trainee teachers to solve a particular problem within their own context, with a certain level of complexity and meaningfulness. This is consistent with the idea of generating concrete products that make sense and can be used in different contexts. This type of activity is part of an evidence-based evaluation process that not only contemplates the mastery of content, but also contributes to developing the ability to incorporate knowledge to solve complex situations. Therefore, it is necessary to create assessment tasks that stimulate students' understanding and sensitivity to the presence and importance of mayor statistical ideas in different contexts (Garfield & Chance, 2000).

Fifth, authentic assessment, unlike traditional assessment, enabled the incorporation of learning situations that students in training will encounter in their professional practice, thus generating a feeling of satisfaction, development of skills, and greater understanding of the content (Maluenda *et al.*, 2021). At the same time, it provided the teaching staff with a clearer understanding of the students' knowledge and abilities, which contributes to the development of general competencies like teamwork and pedagogical competencies such as creating instructional materials to enhance mediation processes. Additionally, it ensures alignment between desired learning outcomes and what is assessed (Inga et al., 2019).

Finally, it should be emphasized that the creation of relevant resources adapted to the learning contexts of each student is part of the transformation of the professional practice of statistics teachers. These changes need to promote the development of skills that encourage critical thinking and problem-solving, which are fundamental aspects in managing quantitative and qualitative information generated by society. However, in order for students to learn to think critically, analyze information, communicate ideas, present arguments, and address new situations, it is necessary to encourage and allow them to engage in activities where they can repeat these processes multiple times in different contexts (Garfield & Ben-Zvi, 2007).

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