



The implementation of active methodologies and their impact on the development of skills and competencies for the current job market

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Abstract

The study explores the use of active methodologies in higher education, with a particular focus on their impact on the development of soft skills. These methodologies, which place the student at the center of the learning process, promote a deeper understanding of academic content while increasing motivation and participation in the classroom. The main objective of the research was to identify the degree programs and campuses of the National Technical University that employ these methodologies and to highlight their importance in developing key competencies needed in today's competitive job market. The findings suggest that, although these methodologies significantly contribute to strengthening essential skills such as assertive communication, teamwork, and problem-solving, their effectiveness largely depends on crucial factors such as the adequate preparation of the teaching staff and the institutional support provided to educational programs.

KEYWORDS: SOFT SKILLS, ACTIVE METHODOLOGIES, ACTIVE LEARNING

Introduction

The importance of acquiring skills and competencies in an increasingly demanding business environment highlights the need for universities to implement active methodologies to promote the comprehensive education of students. These methodologies, through experiential learning, facilitate the acquisition of soft skills and essential competencies for today's job market. Additionally, it is important for educators to manage relevant conceptual elements in the classroom to optimize the educational process. Molina (2020) and Aquino (2022) discuss the importance of adapting to changes in work environments and developing soft skills to improve the employability of university students. On the other hand, Gómez (2019) emphasizes the need for innovation and adaptation in a world characterized by constant changes, highlighting the importance of innovation and adaptability for future professional success. In this context, the incorporation of active learning in teaching is crucial to promoting student autonomy and the development of competencies necessary for their professional future.

Theoretical Framework

The integration of soft skills in university education is crucial given the increasing demand from businesses for competent employees. This educational perspective highlights that meaningful learning

occurs when students lead their own process, with the teacher acting as a guide. The use of active methodologies, such as the Freinet approach or Project-Based Learning, promotes experimentation and the development of soft skills, including interpersonal communication. These methodologies improve academic performance by fostering acquired and innate abilities. Additionally, studies like that of Zepeda (2022) confirm that strategies such as gamification boost these skills, though areas for improvement in decision-making and critical thinking are noted. In this new approach, the student takes the central role in their learning, while the teacher acts as a facilitator. In summary, the objective is to organize and manage learning processes so that the student becomes an active protagonist. Furthermore, Martinez (2007) highlights that meaningful learning requires that the content be relevant and that the student be willing to engage.

Method

The study follows a quantitative approach, conducted with a sample of 283 randomly selected students from a population of 1,341 students from the Guanacaste campus, Corobicí and Liberia sites. A confidence level of 94% and a margin of error of 5% were used.

A validated questionnaire with Cronbach's alpha coefficient and literature review was employed. The data were analyzed using Data Studio, an interactive tool for detailing information. The sample size was calculated using the following formula:

$$n = \frac{N Z^2 p (1-p)}{(N-1) E^2 + Z^2 p (1-p)}$$

Where:

n is the required sample size.

N is the population size (1,341).

Z is the critical value from the standard normal distribution for the confidence level.

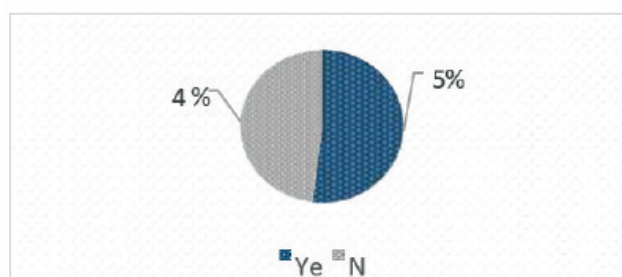
For a 94% confidence level, p is the estimated proportion of the population with the characteristic of interest. $p=0.5$ to maximize the sample size. E is the margin of error (5%, i.e., 0.05).

Therefore, the necessary sample size for a population of 1,341, with a 95% confidence level and a 5% margin of error, is approximately 283.

Results

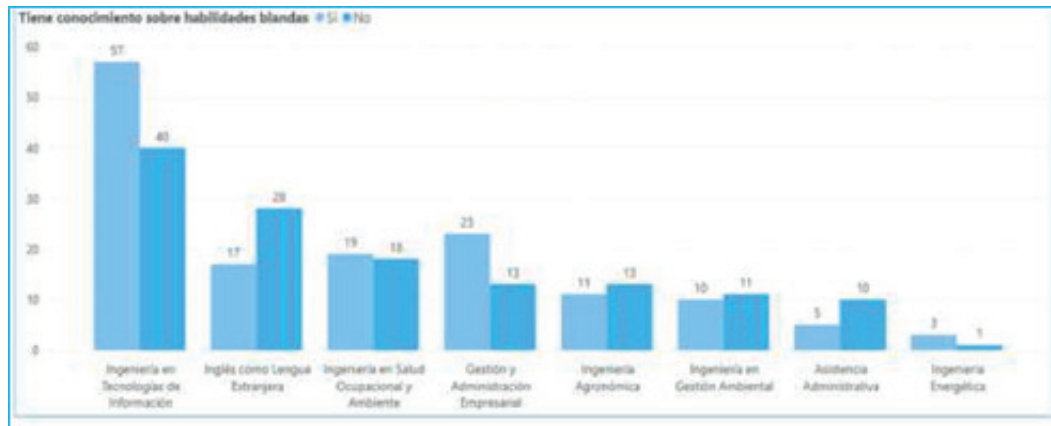
Knowledge of Soft Skills

Figure 1. Knowledge of soft skills



Note: Self-prepared.

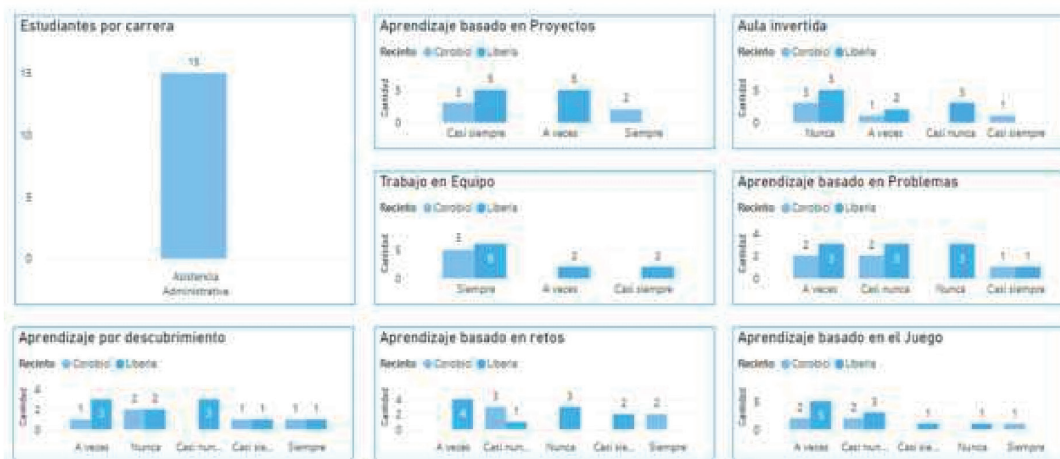
Figure 2. Knowledge of soft skills by degree programs.



Note: Self-prepared.

Active Methodologies Most Used by Degree Programs

Figure 3. Active methodologies most used in the Administrative Assistance program.



Note: Self-prepared.

Figure 4. Active methodologies used in the Business Management and Administration program



Note: Self-prepared.

Figure 5. Active methodologies most used in the Agronomic Engineering program.



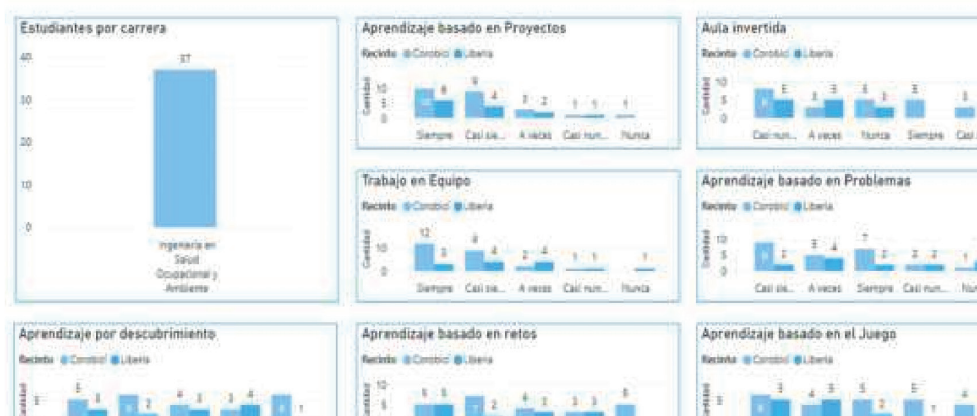
Note: Self-prepared.

Figure 6. Active methodologies most used in the Business Management Engineering program.



Note: Self-prepared.

Figure 7. Active methodologies most used in the Occupational and Environmental Health Engineering program.



Note: Self-prepared.

Figure 8. Active methodologies most used in the Information Technology Engineering program.

Note: Self-prepared.

Student Perception of the Application of Active Methodologies for the Development of Skills and Competencies

Figure 9. Comparative analysis between the Liberia and Corobici campuses on students' perception of the application of active methodologies for the development of skills and competencies

Note: Self-prepared.

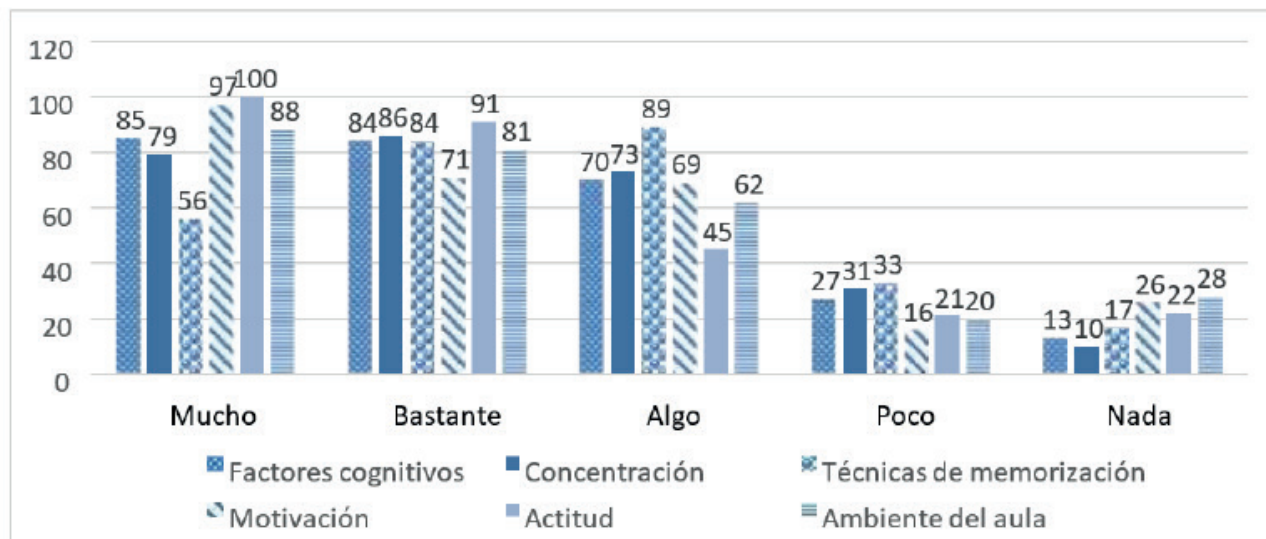
Use of Active Methodologies to Increase Motivation and Improve Class Dynamics

Figure 10. Comparative analysis between the Liberia and Corobici campuses on whether the use of active methodologies contributes to increased motivation and improved class dynamics.

Note: Self-prepared.

Factors Affecting Student Learning

Figure 11. Factors affecting student learning.



Note: Self-prepared.

Discussion

This study demonstrates that active methodologies, by centering the learning process on the student, improve class dynamics and increase student motivation. By fostering a collaborative environment, they facilitate the acquisition of essential competencies such as effective communication, critical thinking, and teamwork. The literature supports that active participation in education is linked to the development of soft skills, which are fundamental for professional success (Freeman et al., 2014; Prince, 2004).

The effectiveness of these methodologies largely depends on the adaptability of educators, who must adjust strategies to meet the needs and characteristics of students and their contexts. A flexible approach is key to maximizing their impact on competency acquisition (Johnson et al., 2019).

The study highlights variations in the perception of soft skills across different degree programs and campuses, underscoring the need to implement pedagogical strategies tailored to each group. This ensures comprehensive education that responds to the specific demands of each discipline (Bovill, 2014). For the success of active methodologies, both innovative pedagogical design and institutional support that ensures their contextualized and effective application are required.

Conclusions

Active methodologies in higher education have proven effective in improving student participation and the development of key competencies such as communication and teamwork. These strategies place the student at the center of learning, promoting a collaborative environment that meets the demands of today's job market. However, their success largely depends on the ability of educators to adapt to the specific needs of their students and the necessary institutional support for their effective implementation. Flexibility and contextualization are essential to maximizing their impact on comprehensive education.

Limitations and Future Research

There is an emphasis on the need to continue researching and exploring new ways to effectively integrate these methodologies into the university context for continuous innovation and improvement in teaching and learning.

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