ORIGINAL ARTICLE

Enhancing Student Engagement and Learning Outcomes through Faculty's Active Learning Practices

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Abstract

The implementation of active learning practices in Higher Education Institutions (HEI)has become increasingly prevalent as educators strive to enhance student engagement and improve learning outcomes. engagement and improve learning outcomes. This article explores various active learning practices employed by faculty to enhance student engagement and improve learning outcomes. The data for the survey was collected through an online self-administered questionnaire by faculty members from an Argentinian state university (*n*=27). The main result of this article highlights the importance of creating interactive and student-centered learning environments through the implementation of various active learning strategies. In conclusion, the utilization of active learning practices by faculty members represents a powerful pedagogical approach that can transform higher education. By creating dynamic, interactive, and student-centered learning environments, faculty members can optimize student engagement and improve learning outcomes. Thus, it is imperative for HEIs to recognize the value of active learning and provide the necessary support for faculty members to embrace and implement these practices effectively.

Keywords: Active learning; Learning outcomes; Student engagement; Higher education.

Introduction

Traditional passive learning approaches, where students passively receive information through lectures, have limitations in promoting deep understanding, critical thinking, and problem-solving skills. Active learning, on the other hand, encourages students to become active participants in their own learning process. In recent years, the concept of active learning has expanded beyond traditional classroom settings. While face-to-face interactions remain crucial, the integration of technology has opened new possibilities for fostering student engagement and participation outside of the physical classroom environment (Vera *et al*., 2022).

With the advancements in educational technology, teachers now have access to a wide range of tools and platforms that can facilitate active learning beyond the confines of traditional classroom walls. Online discussion boards, collaborative document sharing, virtual simulations, and interactive multimedia resources are just a few examples of how technology can be leveraged to promote active learning.

By incorporating technology into their teaching practices, educators can create interactive and dynamic learning experiences that encourage students to actively participate in their own learning process. Whether through online forums where students can engage in meaningful discussions, virtual reality simulations that allow them to explore real-world scenarios, or multimedia presentations that cater to diverse learning styles, technology provides avenues for students to interact with course content in engaging and interactive ways

Faculty members, as facilitators of knowledge, have embraced various active learning strategies to foster student engagement, collaboration, and knowledge retention. Therefore, the role of a faculty in the class needs to be changed from providing knowledge to encouraging learners to involve in active tasks during the lesson time (McClean & Crowe, 2017; Siani, 2017). Furthermore, the new generations of students are much more multimodal and have their own ways of processing new learning. Precisely, active methodologies (interactive methods) respond to this new reality (Vera *et al.,* 2022).

Defining active learning strategies

Active learning methodology is an approach to learning and teachimg that emphasizes student engagement, participation, and active involvement in the learning process (Vera, 2023). It moves away from traditional passive instruction, where students are seen as passive recipients of knowledge, and instead promotes a student-centered approach where students take an active role in constructing their understanding of the subject matter. Active learning has been also understood as an approach to learning, therefore, focusing on a learning process instead of an instructional process (Hartikainen *et al.,* 2019). As a matter of fact, "Any methodological strategy that involves making autonomous and reflective decisions and solving problems could be considered an active methodology" (Vera, 2022, p. 51).

In active learning, students are encouraged to think critically, analyze information, and apply their knowledge in practical situations. Rather than solely relying on lectures and textbooks, active learning incorporates a variety of interactive activities and techniques to enhance learning outcomes. These may include group discussions, problem-solving exercises, case studies, simulations, role-playing, debates, and hands-on experiments.

The underlying principle of active learning is that students learn best when they are actively engaged in the learning process. By actively participating and interacting with the content and their peers, students are more likely to retain information, develop a deeper understanding of concepts, and acquire critical thinking and problem-solving skills. Active learning also promotes higher levels of student motivation, as it allows for personalization, relevance, and a sense of ownership over the learning experience. According to Vera & Tejada (2021):

> To invigorate higher education classrooms, faculty members should set aside their teacher-centered approach and allow their students to become more independent learners. In their classrooms, teachers and students together should create learning communities on shared goals, shared resources and shared patters and norms for participating as legitimate members of the communities. In their interactions with each other, both teachers and students assume identities and roles, which allows them to develop understandings of what constitutes not only the substance of what is to be learned, but also the very process of learning itself. (p. 62)

Furthermore, active learning methodologies are flexible and can be adapted to various disciplines and learning environments. They encourage students to explore and discover knowledge, rather than simply memorizing facts. Active learning also promotes collaboration and communication skills, as students are often required to work together in groups, exchange ideas, and articulate their thoughts.

Thus, implementing active learning methodologies may require a shift in the traditional role of the instructor (Arcos-Alonso, *et al.,* 2022; Vera, 2022). Instead of being the sole authority figure delivering information, the instructor becomes a facilitator, guiding and supporting students in their learning journey The instructor's role is to create a stimulating and inclusive learning environment, design meaningful learning activities, provide feedback, and encourage reflection.

Overall, active learning methodology fosters a student-centered approach that promotes deeper understanding, critical thinking, problem-solving skills, and engagement in the learning process. It aligns with the notion that students are active participants in their own education and prepares them for the complex challenges they may face in their academic and professional lives.

In this context, Constructivism and Social Learning Theory provide a robust theoretical foundation for understanding and implementing faculty's active learning practices (Kudryashova *et al*., 2016; Vera, 2016). These two theories complement each other and offer valuable insights into the cognitive and social processes involved in active learning, as explained below:

- **Constructivism:** This approach posits that learning is an active, constructive process where individuals actively build their understanding and knowledge through experiences and interactions with the environment. According to constructivist principles, faculty's active learning practices align with the idea that students are active participants in constructing their knowledge. By engaging students in hands-on activities, discussions, and problem-solving exercises, faculty facilitate the construction of meaning and the development of cognitive structures.

- **Social Learning Theory:** This theory emphasizes the importance of social interaction and observational learning in the learning process. According to this theory, individuals learn through observing and imitating others, and their learning is influenced by the social context in which they operate. In the context of active learning, faculty's practices such as collaborative learning and group work align with social learning principles by providing opportunities for students to interact, observe, and learn from one another. Peer-to-peer learning and collaboration foster the exchange of ideas, knowledge sharing, and the development of social and communication skills.

The application of Constructivist Learning Theory and Social Learning Theory on higher education focus on individual knowledge construction with social learning theory's emphasis on social interaction and observation. It acknowledges that active learning practices involve both individual cognitive processes and social dynamics. Students actively construct their understanding of concepts and ideas while also benefiting from collaborative learning experiences and the observation of their peers' perspectives and problem-solving strategies.

By grounding faculty's active learning practices within this theoretical framework, educators can gain a deeper understanding of the underlying cognitive and social processes at work. This understanding can inform instructional design, pedagogical strategies, and assessment approaches, leading to more effective implementation of active learning practices and improved student engagement and learning outcomes.

Practical Strategies for Active Learning Implementation

Active learning practices offer several advantages over traditional teaching methods. First and foremost, active learning enhances student engagement by involving them in hands-on activities, discussions, and group work. This engagement promotes deeper understanding, active participation, and increased motivation among students. Active learning also cultivates critical thinking skills, as students are encouraged to analyze, evaluate, and synthesize information rather than simply memorize facts. Furthermore, it fosters effective communication and teamwork, preparing students for real-world collaborative environments. The following are the most common active learning strategies used in higher education, including project-based learning:

- **Flipped Classroom:** In a flipped classroom model, faculty provide pre-recorded lectures or readings for students to review before class. Class time is then dedicated to interactive activities such as group discussions, problem-solving exercises, and application of concepts. This approach ensures that students come prepared and allows for more meaningful engagement during face-to-face sessions.

- **Collaborative Learning:** Faculty can organize group projects, case studies, or problem-solving activities that require students to work together in teams. This fosters peer-to-peer learning, encourages diverse perspectives, and promotes effective communication and teamwork skills.

- **Inquiry-Based Learning:** By posing open-ended questions and guiding students through the process of discovery, faculty can stimulate curiosity and critical thinking. This approach encourages students to explore, analyze, and draw conclusions independently, thus developing their problem-solving and research skills.

- **Use of Technology:** Leveraging digital tools and platforms, such as online discussion boards, virtual simulations, and interactive quizzes, can enhance active learning experiences. These technologies provide opportunities for students to actively engage with course content and collaborate with peers beyond the physical classroom.

- **Project-Based Learning (PBL):** This is a dynamic and immersive approach that actively engages students in authentic, real-world projects. In PBL, students work collaboratively to tackle complex problems or challenges that mirror those encountered in professional settings. By actively applying their knowledge and skills to address these real-world scenarios, students gain a deeper understanding of the subject matter and develop essential skills that go beyond mere memorization.

Faculty Development for promoting active learning

In today's rapidly changing world, education has become more crucial than ever in equipping students with the skills and knowledge they need to thrive. It is essential to recognize education as a complex ecosystem that encompasses a wide range of interconnected elements, with the learning process at its core. At the heart of this process are dedicated teachers, who possess specialized knowledge in various disciplines and serve as the driving force behind student learning and development (Ashwin, 2020).

Faculty development plays a pivotal role in ensuring that educators have the necessary tools and competencies to deliver effective instruction in the 21st century. To successfully implement active learning practices, it is imperative that faculty members engage in continuous professional development and receive ongoing support. Institutions can take proactive measures by organizing workshops, seminars, and mentoring programs aimed at equipping faculty with the pedagogical knowledge and skills required for active learning. These initiatives provide opportunities for educators to deepen their understanding of active learning methodologies, explore innovative teaching techniques, and share experiences and insights with their peers.

Therefore, collaboration among faculty members is a vital component of effective faculty development. By fostering a culture of collaboration, institutions encourage the sharing of best practices and the exchange of ideas among educators. Collaborative efforts enable faculty members to tap into a collective pool of expertise, allowing them to enhance their teaching methodologies and adapt to the diverse needs of students. The development of a supportive community of educators fosters an environment where innovative ideas can flourish and where continuous improvement is embraced.

Administrators also play a critical role in promoting faculty development and the successful implementation of active learning strategies. By providing necessary resources and incentives, administrators demonstrate their commitment to fostering a culture of active learning within the institution. This can include allocating funding for educational technology tools, creating dedicated spaces for collaboration and experimentation, and recognizing and rewarding faculty members for their efforts in adopting and refining active learning practices.

To successfully implement active learning practices, faculty members need continuous professional development and support. Institutions can facilitate this by organizing workshops, seminars, and mentoring programs to equip faculty with the necessary pedagogical knowledge and skills. Collaboration among faculty members is also essential, as it fosters the sharing of best practices and the development of a supportive community. Additionally, administrators should provide resources and incentives to encourage faculty members to experiment with active learning strategies and continually improve their teaching methodologies.

Investing in faculty development signifies an institution's dedication to delivering high-quality education that aligns with modern learning principles. Ongoing professional development empowers teachers to stay abreast of the latest educational research, instructional methods, and technological advancements. By continuously refining their teaching approaches and incorporating active learning methodologies, faculty members create dynamic and engaging learning environments that cater to the diverse needs and learning styles of students. The ultimate beneficiaries of this investment are the students themselves, who experience enhanced educational experiences, improved academic outcomes, and the development of crucial skills necessary for their future success.

Method and materials

This is a quantitative-descriptive, cross-sectional study. In this regard, a descriptive design focuses more on the "What" of the research subject rather than the "Why" of the research subject. In other words, it describes the research topic without covering the "Why" it occurs (Vera, 2021). This approach has been chosen to facilitate access to the respondents through a Likert-based questionnaire, which was shared with faculty members participating in a specialization course on active learning at a state university in Argentina.

The participants' positive feedback regarding the questionnaire used in this study indicates that it was well-designed and user-friendly. This is a crucial aspect of research as it ensures that participants can easily comprehend and respond to the questionnaire, leading to accurate and reliable data collection.

The ease of reading the questionnaire implies that the language and formatting used were clear and accessible to the participants. As Hamed (2019), it is critical the questionnaires are easy to read and complete. This is important as it prevents any potential misunderstandings or misinterpretations of the questions, ensuring that participants can provide accurate and meaningful responses.

Moreover, the participants found the questionnaire easy to complete, suggesting that the structure and organization of the questionnaire were well-planned. The questions likely flowed logically, allowing participants to progress through the questionnaire smoothly without feeling overwhelmed or confused. This enhances the overall quality of the data collected and ensures that participants can provide thoughtful and comprehensive responses.

Population and Sample

The accessible population for this study consisted of faculty members who participated in a specialization course on active learning conducted by the author at the Faculty of Agricultural Sciences at a public university in Argentina (*n*=27). A response rate of 100% was obtained, with 4 males and 23 females (15% and 85%, respectively), with an average age of 42 years (SD=10.6).

Results

Table 1 presents the results of a survey conducted to explore the perceptions of educators regarding the incorporation of active learning strategies in the classroom. The survey consisted of ten questions that aimed to assess various aspects of active learning and its impact on student engagement, problem-solving skills, critical thinking, and the development of generic competencies. The mean and standard deviation values provide insights into the participants' average ratings and the level of agreement or variability in their responses. This table serves as a valuable resource for understanding the educators' perspectives and can inform future discussions and decisions related to the implementation of active learning approaches in educational settings. The data presented in Table 1 were collected and analyzed by the researchers as part of their own study.

Table 1: *Survey results*

Questions	N	Mean	SD
1. Incorporating active learning in the classroom requires more rigorous planning on the part of the teachers.	28	4.296	0.823
2. Active learning is an effective way to improve student engagement.	28	4.741	0.526
3. Active learning can enhance students' ability to solve complex problems.	28	4.815	0.396
4. Active learning can improve students' ability to apply what they have learned to real-life situations.	28	4.778	0.424
5. Implementing active learning may require additional effort from teachers.	28	4.296	0.953
6. Active learning can help students develop critical thinking skills.	28	4.815	0.396
7. Active learning is an effective strategy for enhancing students' academic performance.	28	4.407	0.694
8. Active learning requires authentic assessment of what has been learned, moving away from traditional tests.	28	4.704	1.072
9. Active learning can be more challenging to implement than traditional learning.	28	3.999	1.252
10. Active learning promotes the development of various generic competencies (communication, teamwork, etc.).	28	4.704	0.465

Source: Own elaboration

According to the data above, it can be observed that participants generally agreed that active learning has positive effects on student engagement, problem-solving skills, real-life application, critical thinking, and the development of generic competencies. However, implementing active learning and authentic assessment were perceived as more challenging by the participants, as indicated by lower mean scores and higher standard deviations. These findings suggest the need for further exploration and support in implementing active learning strategies effectively in educational settings. Upon further analysis of the provided data, several patterns and insights can be observed:

- **Consistency of responses:** Across multiple indicators, the mean scores are consistently high, indicating that the participants generally agree on the positive effects of active learning. This suggests a consensus among the respondents regarding the benefits of active learning in various aspects of education.

- **Effectiveness of active learning:** Indicators such as improving student engagement, enhancing problem-solving abilities, and promoting critical thinking skills all received high mean scores (above 4.700). This indicates that the participants perceive active learning as an effective approach to achieving these educational goals.

- **Challenges in implementation:** The indicator regarding the challenges of implementing active learning received a relatively lower mean score (3.999) compared to the other indicators. Additionally, it has a higher standard deviation (1.252), suggesting a greater variability in participants' perceptions. This indicates that while active learning is viewed as effective, it may also present difficulties and barriers during implementation.

- **Rigorous planning and additional effort:** The indicators related to the planning required for active learning and the additional effort needed from teachers received mean scores around 4.300. These findings suggest that participants recognize the need for careful planning and increased effort on the part of teachers when incorporating active learning into their teaching practices.

- **Authentic assessment:** The indicator pertaining to authentic assessment in active learning received a mean score of 4.704, indicating that participants acknowledge the importance of moving away from traditional tests and adopting assessment methods that align with the principles of active learning. However, the high standard deviation (1.072) suggests some variability in participants' perceptions of this aspect.

- **Development of generic competencies:** The indicator related to the development of generic competencies, such as communication and teamwork, received a mean score of 4.704, reflecting participants' recognition of active learning's potential to foster these skills.

Furthermore, the analysis underscores the potential benefits of active learning in enhancing student engagement, critical thinking, problem-solving skills, and overall learning outcomes. The positive perceptions expressed by both educators and students highlight the value of active learning as an effective instructional approach.

However, the study also identifies several challenges that need to be addressed for successful implementation. These challenges include the need for adequate planning and preparation, ensuring sufficient teacher effort and commitment, and the development of appropriate assessment methods to evaluate student performance accurately. The findings emphasize the importance of providing ongoing support, professional development, and access to resources for educators to effectively incorporate active learning strategies into their teaching practices.

This study further suggests that institutional support and a collaborative culture are essential for the widespread adoption of active learning. Institutions should provide faculty members with the necessary infrastructure, technological tools, and pedagogical guidance to facilitate the implementation of active learning approaches. Additionally, the study highlights the importance of creating a supportive learning environment that encourages student participation, collaboration, and active engagement.

Overall, the analysis highlights the positive perceptions of active learning's effectiveness in various educational aspects. However, it also underscores the challenges associated with its implementation, emphasizing the need for careful planning, teacher effort, and the design of authentic assessment methods. The findings suggest the importance of providing support, training, and resources to educators to successfully integrate active learning into their classrooms and maximize its benefits for students' learning outcomes.

Conclusion

Based on the analysis of the previous data, it can be concluded that active learning is generally perceived as an effective approach to improving student engagement, problem-solving abilities, critical thinking skills, and the development of generic competencies. The high mean scores across these indicators indicate a consensus among the participants regarding the positive effects of active learning in these areas.

However, it is important to note that implementing active learning can pose challenges. The indicator regarding the difficulties of implementation received a lower mean score and higher standard deviation, suggesting that participants recognized the complexities and potential barriers associated with adopting active learning strategies in the classroom.

The findings also highlight the need for rigorous planning, additional effort from teachers, and the use of authentic assessment methods aligned with active learning principles. These factors contribute to successful implementation and maximization of the benefits of active learning.

To facilitate the successful integration of active learning, educational institutions should consider providing support, resources, and training to educators. By addressing the challenges and providing the necessary support, educators can effectively implement active learning strategies, enhancing students' educational experiences and outcomes.

In conclusion, this group of faculty members views active learning positively for its effectiveness in enhancing various aspects of education. While challenges in implementation exist, recognizing and addressing these challenges can lead to successful implementation and the realization of the potential benefits of active learning in the classroom.

References

Arcos-Alonso, A., Garcia-Alvarez, M & Azpuru, A. G., (2022). Macroeconomics and active methodologies in higher education: A possible pairing and a possible binomial. *Cypriot Journal of Educational Science, 17(*1), 193-204. https://doi.org/10.18844/cjes.v17i1.6695

Ashwin, P. (2020). *Transforming university education: A manifesto.* London: Bloomsbury.

Hamed T. (2019). What Is theBest Response Scale for Survey and Questionnaire Design; Review of Different Lengths of Rating Scale / Attitude Scale / Likert Scale. *International Journal of Academic Research in Management (IJARM), Helvetic Editions,* 8(1), 2-13. https://hal.archives-ouvertes.fr/hal-02557308/document

Hartikainen, S., HRintala, H., Pylväs , L. & Nokelainen, P. (2019). The Concept of Active Learning and the Measurement of Learning Outcomes: A Review of Research in Engineering Higher Education. *Educ. Sci. 9(*276; 1-19). https://files.eric.ed.gov/fulltext/EJ1238190.pdf

Kudryashova, A., Gorbatova, T., Rybushkina, S. & Ivanova, E. (2016). Teacher's Roles to Facilitate Active Learning. *Mediterranean Journal of Social Sciences, 7*(1). 460-466. https://www.researchgate.net/publication/289365649_Teacher's_Roles_to_Facilitate_Active_Learning#fullTextFileContent

McClean, S., & Crowe, W. (2017). Making room for interactivity: Using the cloud-based audience response system Nearpod to enhance engagement in lectures. *FEMS Microbiology Letters, 364(*6). https://doi.org/10.1093/femsle/fnx052

Siani, A. (2017). BYOD strategies in higher education: current knowledge, students' perspectives, and challenges. New *Directions in the Teaching of Physical Sciences, 12*. https://doi.org/10.29311/ndtps.v0i12.824

Vera F. (2016). Transformación curricular. El caso de una universidad privada chilena. *Revista Iberoamericana De Educación, 72*(2). https://doi.org/10.35362/rie72299

Vera, F. (2021). *Diseño descriptivo.* Glosario REDIIE. https://rediie.cl/estudio-descriptivo/

Vera, F. (2022). Implementación de metodologías activas en la educación superior mexicana: Análisis desde la perspectiva docente. *Revista Electrónica Transformar, 3*(3), 47–59. https://revistatransformar.cl/index.php/transformar/article/view/66

Vera, F. (2023). *Exploring the Synergy between Active Learning and Constructivism.* Allagi Observatory. https://allagi.cl/669-2/

Vera, F., & Tejada, E. (2020). Developing soft skills in undergraduate students: A case at a Chilean private university. *Revista Electrónica Transformar, 1(*1), 57–67. https://revistatransformar.cl/index.php/transformar/article/view/12

Vera, F., Morales, M. & Villanueva-Mascort, G. (2022). Aprendizaje activo versus enseñanza tradicional: Estudio de caso con estudiantes de grado de un Tecnológico mexicano. *Revista Electrónica Transformar, 3(*3), 4–15. https://www.revistatransformar.cl/index.php/transformar/article/view/62