ADVANCES IN BUILDING EDUCATION
INNOVACIÓN EDUCATIVA EN EDIFICACIÓN

Implementation of practical cases in the subject of Tutorial Action in the Degree of Primary Education at the University of Granada: A constructivist methodology

Implementación de casos prácticos en la asignatura de Acción Tutorial en el Grado de Educación Primaria de la Universidad de Granada: Una metodología constructivista

Jennifer Serrano-García [1*], Fátima Zahra Rakdani-Arif Billah [2]

[1] University of Granada, Faculty of Education Sciences, Spain, jenniserrano@ugr.es
[*] University Campus of Cartuja 18071 Granada, +34 692327505
[2] University of Granada, Faculty of Education Sciences, Spain, rakdani@ugr.es

Received: 21/11/2024 | Accepted: 08/12/2024 | Publication date: 30/12/2024
DOI:10.20868/abe.2024.3.5409

HIGHLIGHTS

- De un aprendizaje pasivo a una construcción activa: Una revolución metodológica.
- Innovación docente para fomentar el pensamiento crítico en futuros maestros.
- El papel de los docentes universitarios en el fomento de la motivación y el pensamiento crítico.
- Metodologías activas: El futuro de la educación superior.
- From passive learning to active construction: A methodological revolution.
- Teaching innovation to foster critical thinking in future teachers.
- The role of university teachers in fostering motivation and critical thinking.
- Active methodologies: The future of higher education.

RESUMEN

Existen numerosos estudios en el campo de la educación que destacan la importancia de trabajar con los estudiantes universitarios a través de metodologías activas, en las que ellos mismos construyan su propio aprendizaje. Sin embargo, la realidad es otra. El gran volumen de trabajo invisible que realiza el profesorado universitario, unido a la importancia que se da a la investigación para asumir un rol prestigioso y estable, así como la falta de vocación docente, ha provocado una importante deficiencia en la calidad educativa. Esto ha limitado la implementación de prácticas pedagógicas innovadoras y ha afectado negativamente al desarrollo integral de los estudiantes. De ahí la necesidad de implementar esta innovación pedagógica, que se llevó a cabo con estudiantes universitarios de educación primaria. Esta práctica permitió incorporar situaciones prácticas e hipotéticas en el proceso de enseñanza-aprendizaje de los futuros docentes para fomentar su pensamiento crítico, motivación y trabajo en equipo.

Palabras clave: *Metodologías activas; Educación superior; Pensamiento crítico; Calidad educativa; Trabajo en equipo; Desarrollo integral.*

ABSTRACT

There are numerous studies in the field of education that highlight the importance of working with university students through active methodologies, in which they themselves construct their own learning. However, the reality is different. The large volume of invisible work carried out by university teaching staff, together with the importance given to research in order to assume a prestigious and stable role, as well as the lack of vocation in teaching, has led to a significant deficiency in educational quality. This has limited the implementation of innovative pedagogical practices and has negatively affected the holistic development of students. Hence the need to implement this teaching innovation, which was carried out with university students in primary education. This practice made it possible to incorporate practical and hypothetical situations into the teaching-learning process of future teachers in order to encourage their critical thinking, motivation and teamwork.

Keywords: *A Active methodologies; Higher education; Critical thinking; Educational quality; Teamwork; Integral development.*

1. INTRODUCTION

In Spain, higher education teachers are embracing a new and renewed vision in the way they teach, increasingly adopting active methodologies (Nicolaou et al., 2024; Suprapti et al., 2021; Yang, 2024). These methodologies are characterized by the integration of Learning and Knowledge Technologies (LKT), Technologies for Empowerment and Participation (TEC), experiential learning, and Artificial Intelligence (AI) (Ocaña-Fernández et al., 2019; García-Peña et al., 2020). This shift reflects a profound change in the teaching approach of university educators, who aim to adapt to the demands of contemporary society. In this context, technology and innovation play a pivotal role in the teaching-learning process, fostering an environment where students can actively engage with their education.

However, the immense workload of university professors (Yslado-Méndez et al., 2020; Murillo-Torrecilla, 2008; Odalis-Ania et al., 2020) often creates a contradiction between their intentions and the practical use of constructivist methodologies in their classrooms. This contradiction poses a significant ethical and professional challenge, as educators strive for excellence while also addressing the need to

comply with the demands of research and the pursuit of a prestigious, stable role. This challenge becomes even more pressing in light of the Sustainable Development Goal 4 of the 2030 Agenda (United Nations, n.d.), which focuses on "Ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all."

In fields related to Health Sciences, Technology, Engineering, and Natural Sciences, the increasing integration of active methodologies is evident. These methodologies place students at the center of the teaching-learning process (Nicolaou et al., 2024; Mujumdar et al., 2024; Yang, 2024; Barrows, 1986; Woods, 1996; Lavado-Puente et al., 2023), and include approaches such as problem-based learning (PBL), collaborative work, project-based learning, the use of virtual laboratories (Vasconcelos et al., 2023; Mujumdar et al., 2024), and practice in real and virtual learning environments (Ghani et al., 2023; Tinmaz & Lee, 2020). These methodologies provide students with the opportunity to engage in real or simulated situations they might encounter in their future careers, facilitating not only theoretical knowledge acquisition but also the development of practical skills, problem-solving abilities, and competencies relevant to their professional life (Andriani et al., 2023). Moreover, these approaches foster more meaningful and long-lasting learning by actively involving students in constructing their knowledge and applying the concepts learned (Freeman et al., 2014; Prince, 2004; Cooper & Robinson, 2000; Michaelsen et al., 2002).

However, in the Humanities, Social and Legal Sciences, and particularly in education-related degrees, while active methodologies are known and studied, many professors still prefer to use traditional approaches. This preference is partly due to time constraints when planning and preparing lessons, as well as the lack of resources in higher education institutions, such as access to technology, teaching materials, and adequate learning spaces. Furthermore, the absence of practical training in these methodologies often leads to a lack of confidence in applying them. It is crucial that educational institutions and faculty members adopt innovative and fresh approaches to teaching, reflecting on how to overcome these challenges. This involves embracing contemporary educational thinking that is adapted to the needs and challenges of the 21st century, while encouraging the adoption of more effective and updated pedagogical strategies.

These circumstances have a direct negative impact on university students, limiting their learning potential and hindering their preparation for the challenges of the contemporary world. Traditional methodologies often promote passive learning by focusing on the one-way transmission of knowledge, which leads to less engagement and participation from students in their educational processes (Martín-Alguacil et al., 2024; Aparicio-Gómez et al., 2024). Moreover, these methods tend to limit the development of critical thinking, prioritizing rote memorization rather than reflective analysis and critical evaluation (Andriani et al., 2023). Consequently, students may lack the practical skills essential in today's work environment, such as teamwork and problem-solving abilities.

The lack of active participation and interaction in the classroom often results in student demotivation and disengagement, further impacting their academic performance and attitude towards learning. These inherent limitations of traditional methodologies underscore the need to adopt more innovative, student-centered pedagogical approaches to maximize learning outcomes and effectively

prepare students for the challenges of today's world (Andriani et al., 2023).

Therefore, the integration of active methodologies such as Flipped Classroom (FC) and PBL in the Primary Education Degree, through real and hypothetical case studies related to the subject Tutorial Action in Primary Education, has become increasingly necessary. This approach will renew the perspective on the training of future Primary Education teachers, providing them with practical tools and meaningful experiences to shape their future professional development. This research focuses on incorporating case studies into the Tutorial Action subject, providing an experiential learning perspective for university students to foster critical reflection, enhance problem-solving skills, and improve decision-making in real educational contexts. Through these innovative pedagogical methods, the goal is to equip future educators with the tools needed to create a more engaged, reflective, and problem-solving-oriented student body.

1.1. Objetives and research questions

For this reason, the following objectives have been set: a) To implement a constructivist methodology through the use of case studies in the subject of Tutorial Action in Primary Education; b) To promote critical thinking, motivation, and teamwork among Primary Education students; c) To encourage active learning by employing methodologies such as PBL and FC; d) To assess the impact of these methodologies on the professional preparation of future educators, with a focus on their ability to solve real-world problems and foster critical reflection.

Additionally, the following research questions have been formulated:

1) How does the use of active methodologies influence the comprehension and application of the content in the subject of Tutorial Action in Primary Education?

2) In what ways does working with practical cases (real and hypothetical) contribute to the development of critical thinking and decision-making in students?

3) What is the impact of collaborative learning on the professional preparation of future Primary Education teachers?

2. MATERIALS AND METHODS

2.1 Methodological design

This study employs a qualitative method, of a descriptive nature and cross-sectional design, which allows the exploration of the study's phenomena without manipulating the variables. In this regard, the qualitative approach is relevant for understanding the experiences, perceptions, and meanings of students enrolled in the Primary Education Degree, through a learning experience, and without interpreting numerical data (Creswell, 2014). The descriptive design, in turn, is aimed at detailing the characteristics of the subjects, behaviours, or situations observed, without intervening in or attempting to manipulate them (Hernández et al., 2014). As it is a cross-sectional study, data is collected at a single point in time, which allows for obtaining a specific and precise view of the situation in question, without considering its evolution over a period (Tabachnick & Fidell, 2013).

2.2. Population and sample

The sampling method used in this study is non-probabilistic purposive sampling, which means that the researchers deliberately selected participants based on their ease of access and specific criteria that made their inclusion in the

sample convenient. In this case, the sample consisted of a total of 68 students, of which 83.82% (n=57) were male and 16.18% (n=11) were female. All participants were enrolled in the Bachelor's Degree in Primary Education and, specifically, in the subject Tutorial Action in Primary Education, which is part of the syllabus for the third year of the degree, as outlined in the academic programme of the University of Granada (n.d.).

2.2 Procedure

The present study was developed following six fundamental phases: 1) Material planning; 2) Preparation of the subject through Flipped Classroom; 3) Introduction and presentation of the case study; 4) Resolution of the case study; 5) Evaluation and feedback on the resolution of the case study and 6) Final groups reflection, which are framed in Figure 1.

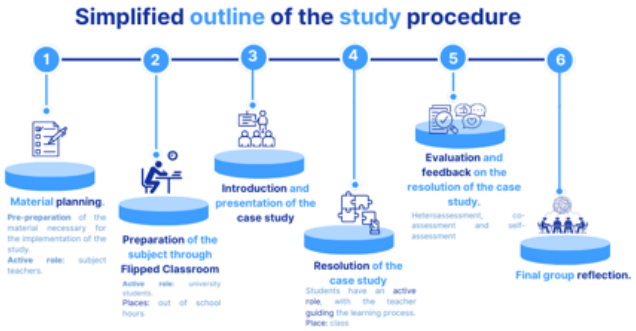


Fig. 1: *Simplified outline of the study procedure (Source: Own elaboration)*

Phase 1: Material planning.

In this phase, both the researchers and university lecturers collaboratively focused on preparing the necessary materials for the execution of this teaching innovation project. Specifically, they developed a series of case studies addressing key topics outlined in the course Tutorial Action in Primary Education (University of Granada, 2024). A total of ten distinct case studies were created, each designed to engage students with real-world scenarios relevant to their future roles as educators.

Following the development of the case studies, a meticulous planning process ensued. This involved selecting the most suitable teaching methodologies for the implementation of the case studies. In particular, the team focused on identifying appropriate approaches that would foster active learning and critical thinking among students. Additionally, they carefully formed working groups, taking into consideration group size, the distribution of roles and responsibilities, and the creation of heterogeneous groups. The aim was to ensure a diversity of skills and knowledge within each group, fostering an inclusive and collaborative learning environment.

Moreover, the planning phase included the design of the case study resolution process, which outlined the steps students would follow to engage with and solve the case studies. This was complemented by the definition of assessment instruments, ensuring that the evaluation process was comprehensive and aligned with the goals of the teaching innovation. The assessment strategy included a combination of co-assessment, self-assessment, and hetero-assessment to provide a well-rounded evaluation of students' performance.

Finally, the most suitable mode of resolution for these experiential practices was determined. This decision was based on the understanding that active, student-centered learning requires a dynamic and adaptable approach that would best support the development of the students' problem-solving and critical thinking abilities in a collaborative setting.

Phase 2: Preparation of the subject through Flipped classroom

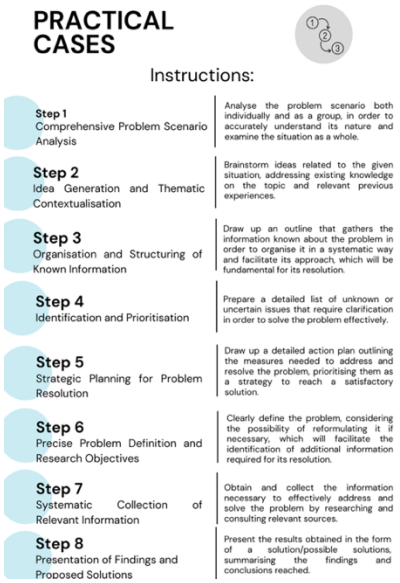
Through the institution's official platform, university students were provided with the

opportunity to access and engage with each of the subject's contents individually, autonomously, and outside the established teaching hours. For one week, the students enrolled in the "Tutorial Action in Primary Education" module dedicated themselves to reading the content comprehensively and highlighting the most relevant aspects. Additionally, they were tasked with deepening their understanding of the subject by creating assignments such as infographics, concept maps, glossaries of key terms, formulating questions on the topic, or presenting examples linked to specific aspects of the subject.

Phase 3: Introduction and presentation of the case study

During the scheduled classroom session for the subject, the instructor dedicated the first part of the lesson to addressing any doubts or questions students had regarding the content they had previously studied at home, which constituted the second phase of the learning process. This session served as an opportunity to clarify concepts, ensuring that the students had a solid understanding before progressing further. After resolving these queries, the teacher moved on to the second part of the session, where the focus shifted to introducing the case study that directly aligned with the content covered by the students in the previous phase (Figure 2).

The teacher provided students with clear and detailed instructions on how to approach the case study, ensuring they understood the steps they needed to follow for its resolution. To facilitate collaborative learning, the teacher organised the class into heterogeneous groups, encouraging a diversity of skills and perspectives. As the students worked on solving the case, the teacher was actively engaged in the classroom, offering immediate feedback when required. This approach was designed to help students stay on track, clarify any misunderstandings, and guide them towards deeper comprehension and successful completion of the case study. This interactive model was essential in promoting an engaging and dynamic learning environment, where students were supported throughout their problem-solving process.



PRACTICAL CASE 1

Since the beginning of the school year, we have been confronted with the situation of a student who has identified herself as a woman. This student, who now prefers to be called Raquel, has chosen to wear female clothing and use the girls' toilets. However, this decision has generated disagreement among some parents, who have expressed their dissatisfaction both to us, the tutors, and to the school principal. In addition, Raquel has experienced social rejection from her classmates and from the school, facing repeated insults. As a result of this situation, Raquel has stopped attending classes regularly and her academic performance has declined significantly.

In response to this problem, a specific action plan and tutorial attention is required as part of our work as tutors.

Fig. 2: *Exemplification of a case study used in the subject (Source: Own elaboration)*

Phase 4: Resolution of the practical case

At this point, each of the class groups of the subject were in the process of solving the practical case study. For this, the students used a reference template provided by the teacher before starting the activity, in order to guide them in the optimal resolution of the case study. This

template included a set of detailed instructions for the students (see Figure 3).

Fig. 3: *Instructions for solving the case studies (Source: Own elaboration)*

These instructions were based on the use of the so-called Problem Based Learning (PBL) methodology. This methodology gives a leading role to the student, who assumes an active role in the teaching process. It is based on problem posing and problem solving as the main driver of learning. Instead of transmitting knowledge passively, PBL seeks to actively involve students in the construction of their own knowledge through the resolution of real-world problems or complex situations that stimulate their reflection and critical analysis (Barrows, 1986; Nicolaou et al., 2024; Lavado-Puente, 2023; Woods, 1996; Mujumdar et al., 2024; Vasconcelos et al., 2023).

It is important to note that, despite providing clear instructions, the teacher was available to offer additional guidance if needed. This guidance could include techniques for solving the case, key clues and relevant aspects to consider. Therefore, one of the teacher's roles was to guide the entire learning process of the class group, with the aim of achieving positive outcomes for the university students.

Phase 5: Evaluation and feedback on the resolution of the case study

After solving the case study, each working group was dedicated to the elaboration of a final report that gathered the results and conclusions obtained. This document also addressed the difficulties experienced at group level during the resolution of the case study. In addition, a critical reflection on the process of elaboration and work carried out using Problem Based Learning (PBL) was included, detailing both the positive and negative aspects of this methodology.

Next, a working group representative was assigned to give a brief explanation of the process they had followed to solve the problem posed in the activity. In this case, it was the educational situation presented in Figure 2 of this study. At this point, the teacher gave immediate feedback on the resolution of the case study and asked questions and/or made comments for improvement by applying the well-known hetero-evaluation. At the same time, classmates also made comments, both positive and constructive, to the group representatives and, in addition, assessed the work of classmates using what is known in class as the "evaluation traffic light".

Green was considered that the way the practical problem was solved was flawless and there were no areas for improvement. Yellow was when there were aspects to improve or that had not been taken into account and that were important for solving the case study. Red, on the other hand, meant that the way of solving the problem was not correct or that the instructions given by the teacher in phase 4 had not been followed. Therefore, the main idea was not to give a grade, i.e. that the classmates should give a numerical grade to the classmates, but to give comments to the classmates on the elaboration of the case study, in order to guide the evaluation from a constructive and peer perspective, thus giving

rise to co-evaluation. Finally, the students themselves, who developed and solved the case study, had to include positive and negative aspects of the case study, as well as give themselves a grade. For this, criteria related to the way the work group worked, the way they followed the instructions given by the teacher and the final result of the case study were taken into account.

Phase 6. Final group reflection

In this last phase, the university students carried out a group reflection on several key aspects: a) the way in which the practice was developed, drawing up a collective SWOT analysis of the methodology used, which encouraged critical analysis among the students; b) the usefulness of working with practical cases, both real and hypothetical, in the university environment; and c) effective collaboration and communication among the group members, underlining the importance of teamwork in their professional training. In addition, the tutorial action teaching staff carried out a self-evaluation of the teaching initiative, with the aim of identifying strengths and areas for improvement, as well as to establish proposals for improvement for the next academic year.

3. RESULTD AND CONCLUSIONS

This teaching innovation at the Faculty of Educational Sciences of the University of Granada, with the incorporation of case studies in the subject of Tutorial Action in Primary Education, has proven to offer eminent benefits in university teaching practice.

1. Application of subject knowledge: The case studies allowed students to apply the concepts and theories learned in the classroom to real or simulated situations, which facilitated a more effective understanding and retention of information.

2. Practical skills development: By facing real problems and challenges, students developed practical skills such as problem solving, decision making, critical analysis and creative thinking.

3. Preparation for the world of work: Working with case studies helped students gain practical experience and skills relevant to their future career, thus better preparing them to face the challenges of the world of work.

4. Fostering critical thinking: Case studies present complex situations that require in-depth analysis and critical evaluation, which stimulated the development of critical thinking and effective problem solving skills.

5. Promotion of teamwork: The case studies involved group and joint decision-making, fostering collaboration, effective communication and teamwork, which are fundamental skills for working in primary schools.

6. Active and student-centred learning: Case study work involved active participation of students in their own learning, enabling them to develop a deeper and more meaningful understanding of concepts and principles.

7. Improved motivation and engagement: This teaching innovation promoted high student interest, resulting in increased motivation to actively participate in learning and, hand in hand, engagement with the subject.

In conclusion, this teaching innovation revealed significant improvements in students' understanding and ability to apply theoretical knowledge to practical situations. In addition, an increase in students' motivation and engagement with their learning was observed. These findings reinforce the importance of continuing to use case studies in the university educational environment and suggest possible areas of improvement for future implementations.

The results and their analysis should be as clear and concise as possible, and allow for understanding of the conclusions, which should be shown in the following section.

Based on the study conducted, it can be concluded that the implementation of practical case studies through active methodologies, such as FCI and PBL, proved to be an effective pedagogical strategy for fostering critical thinking, motivation, and teamwork among students. By integrating both real and hypothetical case studies into the learning experience, future Primary Education teachers were able to apply theoretical knowledge to practical situations, improving their problem-solving skills and preparing them for real-world challenges in education. This approach also allowed students to gain a deeper and more meaningful understanding of the course content through a learning process that encouraged collaboration and reflective analysis, both essential for the professional training of future educators.

Furthermore, this perspective not only contributed to the development of essential practical skills but also facilitated a more engaged and reflective learning environment, which is crucial for the professional development of future educators. The positive outcomes of this teaching innovation, including increased student motivation and their ability to actively engage in the learning process, suggest that continuing to implement and refine these methodologies could lead to significant improvements in both student learning outcomes and the overall quality of higher education. Thus, it reinforces the need for educational institutions to continue exploring and adopting innovative pedagogical approaches to keep responding to the evolving demands of 21st-century education.

3.1. Limitations

This study presents several limitations that should be considered when interpreting the results. Firstly, the sample used is non-probabilistic and convenient, which limits the generalisability of the findings to the broader population of Primary Education students in different academic or geographical contexts. The selection of participants, based on their accessibility and availability, may introduce bias into the sample, compromising the representativeness of the data obtained. Additionally, the absence of a longitudinal approach prevents a thorough examination of the long-term effects of implementing active methodologies, thus limiting the comprehensive understanding of their impact on the professional development of future teachers.

On the other hand, the study is conducted within a single educational context, restricting the ability to make comparisons between different academic settings or with students of other demographic characteristics. Furthermore, the evaluation of the impact of active methodologies is limited to the perceptions and self-assessments of both students and teachers, which may not accurately reflect the actual effects on learning outcomes and the professional preparation of the participants. Lastly, the use of qualitative approaches in certain phases of the study may introduce subjectivity in the interpretation of the data, reducing the objectivity and replicability of the study in similar contexts.

3.2. Limitations

Future lines of research stemming from this study could focus on evaluating the long-term impact of active methodologies, such as Flipped Classroom and Problem-Based Learning (PBL), on the professional development of future educators. A longitudinal approach would allow for the analysis of how the competencies acquired during university training, such as critical thinking, problem-solving abilities, and teamwork skills, are maintained and evolve throughout their careers as primary education teachers. Additionally, comparative research could explore the effectiveness of these methodologies in diverse educational contexts,

assessing whether the results remain consistent across different geographical settings, with students of varying demographic profiles, or within varied educational systems.

Furthermore, another important area for future research lies in the integration of technology and artificial intelligence in the application of active learning methodologies. Exploring how digital tools, learning platforms, and AI-based resources can enhance the learning experience and pedagogical outcomes would provide a deeper understanding of their potential. Similarly, research focused on teacher training could examine the effectiveness of professional development programmes that incorporate these active methodologies, in order to identify the most effective strategies for preparing educators for their successful implementation in the classroom. These research directions would contribute to advancing knowledge on how teacher professional development can facilitate the adoption of innovative pedagogical approaches and improve overall educational quality.

5. ACKNOWLEDGEMENTS

We would like to thank the students of the Degree in Primary Education, in particular those enrolled in the subject Tutorial Action in Primary Education in the 2023/2024 academic year, for their valuable participation in this study of educational innovation.

In addition, I acknowledge the support provided by the Spanish Ministry of Science and Innovation (MCIN/AEI/10.13039/501100011033) for the training of university professors (FPU), reference number FPU20/04914. I am also grateful for the support provided by the 'ESF Invest in your future' and 'NextGenerationEU/PRTR of the European Union' programmes. And the Project funded by the Consejería de Universidades, Investigación e Innovación, dependent on the Junta de Andalucía, called 'Interactive communities and hybrid learning environments to facilitate counselling and tutorial action in vulnerable young people in ARSSCIDA areas of Andalusia' (ProyExcel_00104).

6. REFERENCES

[1] Andriani, Y., Ramadona, y., Estiningtias, E. P., & Satriani, A. (2023). Interaksi Guru dan Siswa: Analisis Mendalam terhadap Kurangnya Motivasi Belajar di Kelas Akibat Metode Pengajaran Tradisional. *PIJAR: Jurnal Pendidikan Dan Pengajaran*, *1* (3), 487–493. https://doi.org/10.58540/pijar.v1i3.496.

[3] Aparicio-Gómez, O., Ostos-Ortiz, O., & Abadía-García, C. (2024). Convergence between emerging technologies and active methodologies in the university. *Journal of Technology and Science Education, 14* (1), 31-44. https://doi.org/10.3926/jotse.2508

[4] Barrows, H. S. (1986). A taxonomy of problem-based learning methods. *Medical Education, 20* (6), 481-486. https://doi.org/10.1111/j.1365-2923.1986.tb01386.x.

[5] Cooper, H. M., & Robinson, J. C. (2000). The argument for making large classes seem small. *New Directions for Teaching and Learning, 81*, 5-16. https//doi.org/10.1002/tl.8101.

[6] Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.). Sage Publications.

[7] Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences, 111* (23),

8410-8415. http://dz.doi.org/10.1073/pnas.1319030111.

[8] Ghani, E., Muhammad, K., Ali, M. M., Johari, R. J., & Sukmadilaga, C. (2023). Factors influencing effective smart learning environment in Malaysian universities. *Journal of Asian Scientific Research*, *13*(4), 195-208. https://doi.org/10.55493/5003.v13i4.4953.

[9] Hernández, R., Fernández, C., & Baptista, P. (2014). Metodología de la investigación (6th ed.). McGraw-Hill.

[10] Lavado-Puente, C.S., Quispe-Sanabria, E.M., Lavado-Meza, C., Huaraca-García, A.M. (2023). The effect of problem-based learning on developing mathematical skills in future administrative and systems professionals. *Formación Universitaria, 16* (6), 13–22. http://dx.doi.org/10.4067/S0718-50062023000600013.

[11] Martin-Alguacil, N., Avedillo, L., Mota-Blanco, R., & Gallego-Agundez, M. (2024). Student-Centered Learning: Some Issues and Recommendations for Its Implementation in a Traditional Curriculum Setting in Health Sciences. Education Sciences, 14(11), 1179. https://doi.org/10.3390/educsci14111179.

[12] Michaelsen, L. K., Knight, A. B., & Fink, L. D. (2002). *Team-Based Learning: A Transformative Use of Small Groups*. Greenwood Publishing Group.

[13] Mujumdar, S. B., Acharya, H., Shirwaikar, S., & Bafna, P. B. (2024). Assessing impact of problem-based learning using data mining to extract learning patterns. *Journal of Applied Research in Higher Education, 16 (2*), 610-628. http://dx.doi.org/10.1108/JARHE-05-2022-0165.

[14] Murillo-Torrecilla, F. J. (2008). La evaluación del profesorado universitario en España. *Revista Iberoamericana de Evaluación Educativa, 1* (3), 29-45. https://doi.org/10.15366/riee2008.1.3.003.

[15] Nicolaou, S. A., Televantou, I., Papageorgiou, A., Albert, A. P., Hitchings, A. W., McCrorie, P., & Nicolaou, P. (2024). Factors affecting pharmacology learning in integrated PBL in diverse medical students: a mixed methods study. *BMC Medical Education*, *24* (1), 1-17. https://doi.org/10.1186/s12909-024-05289-2.

[16] Ocaña-Fernández, Y., Valenzuela-Fernández, L. A., & Garro-Aburto, L. L. (2019). Inteligencia artificial y sus implicaciones en la educación superior. *Propósitos y Representaciones, 7* (2), 536-568. http://dx.doi.org/10.20511/pyr2019.v7n2.274.

[17] Odalis-Ania, A., Martín-Hernández, A., & Miranda-Álvarez, J. L. (2020). La superación profesional del profesor universitario a través de talleres. Un recurso valioso para su formación. *Revista Mapa, 4* (20). https://www.revistamapa.org/index.php/es/article/view/226.

[18] Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education, 93* (3), 223-231. https://doi.org/10.1002/j.2168-9830.2004.tb00809.x.

[19] García-Peña, V. R., Mora-Marcillo, A. B., & Ávila-Ramírez, J. A. (2020). La inteligencia artificial en la educación. *Dominio de las Ciencias, 6* (3), 28. https://doi.org/10.23857/dc.v6i3.1421.

[20] Suprapti, S., Nugroho, A., & Pembangunan, H. R. P. (2021). Flipped learning instruction to enhance university students' higher order thinking skills. *Jurnal Kependidikan: Jurnal Hasil Penelitian Dan Kajian Kepustakaan Di Bidang*

Pendidikan, Pengajaran Dan Pembelajaran, 7 (2), 261-269. https://e-journal.undikma.ac.id/index.php/jurnalkependidikan/article/view/3320/2596.

[21] Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson

[22] Tinmaz, H., & Lee, J. H. (2020). An analysis of users' preferences on learning management systems: a case on German versus Spanish students. *Smart Learning Environments, 7* (1), 30. https://doi.org/10.1186/s40561-020-00141-8.

[23] United States. (d.n.). Goal 4: Ensure inclusive, equitable, quality education and promote lifelong learning opportunities for all. https://www.un.org/sustainabledevelopment/es/education/.

[24] Vasconcelos, M. J., Caspurro, H., & Costa, N. (2023). Aprendizaje basado en problemas: la composición en el aula como desafío para aprender música. *Electronic Journal of Music in Education*, 52, 111-140. https://doi.org/10.7203/LEEME.52.26865.

[25] Woods, D. R. (1996). Problem-based learning: Helping students become active learners. *Family Medicine, 28* (6), 385-387. https://doi.org/10.1136/bmj.326.7384.328.

[26] Yang, B. (2024). Application of practice-based learning and improvement in standardized training of general practitioners. *BMC Medical Education, 24* (1), 214. https://doi.org/10.1186/s12909-024-05195-7.

[27] Yslado-Méndez, R. M., Ramírez-Asís, E. H., & Espinoza-Maguiña, M. R.(2020). Burnout, docencia e investigación en profesores universitarios de la Facultad de Ciencias Empresariales de Perú y España. *Educade: Revista de Educación en Contabilidad, Finanzas y Administración de Empresas*, (11), 3-19. http://dx.doi.org/10.12795/EDUCADE.2020.i11.02.