

Evaluation of Innovative Pedagogical Strategies to Improve the Learning Experience in Higher Education

Graciela Pérez Morán¹, Dr. Rosas Amadeo Amaya Saucedo², Ana Guadalupe Sánchez Medina³, Jeaneth Magali Palomino Infante⁴, Dr. Luis Santiago García Merino⁵, Jenny Juana Barraza Torres⁶

Abstract

A documentary review was carried out on the production and publication of research papers related to the study of the variables Pedagogical Strategies, Innovation, Learning and Higher Education. The purpose of the bibliometric analysis proposed in this document was to know the main characteristics of the volume of publications registered in the Scopus database during the period 2017-2022, achieving the identification of 162 publications. The information provided by this platform was organized through graphs and figures, categorizing the information by Year of Publication, Country of Origin, Area of Knowledge and Type of Publication. Once these characteristics have been described, the position of different authors on the proposed topic is referenced through a qualitative analysis. Among the main findings made through this research, it is found that Spain, with 35 publications, was the country with the highest scientific production registered in the name of authors affiliated with institutions of that nation. The Area of Knowledge that made the greatest contribution to the construction of bibliographic material related to the study of Pedagogical Strategies based on ICT and Education, was Social Sciences with 119 published documents, and the most used Publication Type during the period indicated above were Journal Articles with 58% of the total scientific production.

Keywords: *pedagogical strategies, innovation, learning, higher education.*

1. Introduction

The landscape of higher education, which has been significantly transforming learning models under the traditional paradigm, this evolution of pedagogical education driven by the new advances of new technologies recent in this decade has allowed the demography of students in undergraduate training to adapt to changing social needs. From the perspective of higher education, it has become essential for institutions to evolve and innovate the pedagogical strategies implemented in the academic load, allowing for new pedagogical models focused on changing learning that in turn partially and constantly improve the experience of students within the training classrooms. Educational establishments where their traditional teaching and pedagogy model is based on the implementation of conferences is no longer enough to satisfy the educational demands of students who do not meet their expectations based on the absorption of new knowledge, the era of technology where information is at the fingertips of students, it is important for

¹ Universidad Católica Los Ángeles de Chimbote, ORCID: <https://orcid.org/000-0002-8497-5686>

² Universidad Católica Los Ángeles de Chimbote, ORCID: <https://orcid.org/0000-0002-8638-6834>

³ Universidad Ricardo Palma, ORCID <http://orcid.org/0000-0002-5327-4465>

⁴ Universidad Católica Los Ángeles de Chimbote, ORCID <https://orcid.org/000-0002-0304-2244>

⁵ Instituto de Investigación, Innovación, Ciencia y Tecnología, ORCID <https://orcid.org/000-0001-9392-2474>

⁶ Universidad Católica Los Ángeles de Chimbote, ORCID: <https://orcid.org/000-0002-0834-4663>

higher education institutions to address these needs and allow them to In order to face the challenges and better prepare for the academic complexities of this century, higher education institutions are using new information technologies to develop new pedagogical strategies based on innovation.

The approach of developing innovative pedagogical strategies focuses on addressing a range of teaching approaches and methodologies which seeks to engage students in a proactive way, promote critical thinking and in turn allow students to be more autonomous. These innovation-based strategies represent a change in the traditional paradigms of education, marking a before and after for many generations, placing students at the center of the experience offered by universities. This generates that students arrive at higher education with a diversity of backgrounds in pedagogical models, learning styles and teaching idealism, which seeks that students achieve adaptability in their training process where the educational experience is constantly changing.

This transformation towards innovative pedagogical strategies is not simply about being able to introduce technologies into the training models offered by higher education, it is about allowing a comprehensive re-evaluation of how knowledge has been imparted and how teaching-learning has been carried out, although technology is an essential pillar in modern education in recent decades. This allows teachers to exploit new methods for teaching, such as the integration of active learning in the classroom, learning based on inquiry and teamwork, formulation of academic projects and interdisciplinary approach, these as well as other teaching ideas manage to improve educational experiences allowing them to be more attractive and relevant and meaningful for students.

As soon as we inquire about innovative pedagogical strategies gaining a large field in higher education, it is important to focus on their theoretical foundations, empirical evidence and their effectiveness for the integration of these avant-garde strategies based on pedagogy to be successful. It is important that by integrating these innovative strategies with a holistic approach, universities achieve adaptability to the constant learning needs present in students and thus be able to provide in a comprehensive way a learning experience that is not only informative but also transformative, allowing educators to empower students to focus on their individual abilities. teamwork and develop critical thinking, this with the purpose of improving the learning experience in higher education. For this reason, this article seeks to describe the main characteristics of the compendium of publications indexed in the Scopus database related to the variables Pedagogical Strategies, Innovation, Learning and Higher Education, as well. Such as the description of the position of certain authors affiliated with institutions, during the period between 2017 and 2022.

2. General Objective

To analyze, from a bibliometric and bibliographic perspective, the preparation and publication of research papers in high-impact journals indexed in the Scopus database on the variables Pedagogical Strategies, Innovation, Learning and Higher Education, during the period 2017-2022.

3. Methodology

This article is carried out through a research with a mixed orientation that combines the quantitative and qualitative method.

On the one hand, a quantitative analysis of the information selected in Scopus is carried out under a bibliometric approach of the scientific production corresponding to the study of Pedagogical Strategies, Innovation, Learning and Higher Education.

A qualitative perspective, examples of some research works published in the area of study mentioned above, based on a bibliographic approach that allows describing the position of different authors on the proposed topic. It is important to note that the entire search was carried out through Scopus, managing to establish the parameters referenced in *Figure 1*.

3.1. Methodological design

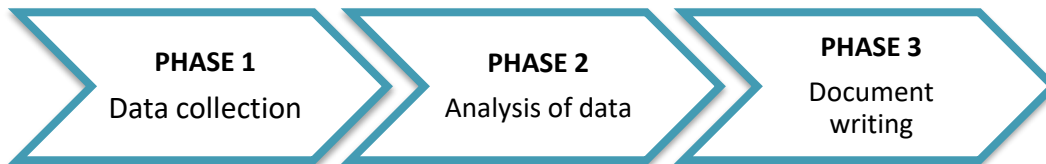


Figure 1. Methodological design
Source: Authors' own creation

3.1.1 Phase 1: Data collection

Data collection was carried out from the Search tool on the Scopus website, where 86 publications were obtained from the following filters:

TITLE-ABS-KEY (pedagogical AND strategies, AND innovation, AND learning, AND higher AND education) AND PUBYEAR > 2016 AND PUBYEAR < 2023

- Published documents whose study variables are related to the study of Pedagogical Strategies, Innovation, Learning and Higher Education.
- Limited to the years 2017-2022.
- Without distinction of country of origin.
- Without distinction of area of knowledge.
- No distinction of type of publication.

3.1.2 Phase 2: Construction of analytical material

The information collected in Scopus during the previous phase is organized and then classified by graphs, figures and tables as follows:

- Co-occurrence of words.
- Year of publication.
- Country of origin of the publication.
- Area of knowledge.
- Type of publication.

3.1.3 Phase 3: Drafting of conclusions and outcome document

In this phase, the results of the previous results are analysed, resulting in the determination of conclusions and, consequently, the obtaining of the final document.

4. Results

4.1 Co-occurrence of words

Figure 2 shows the co-occurrence of keywords found in the publications identified in the Scopus database.

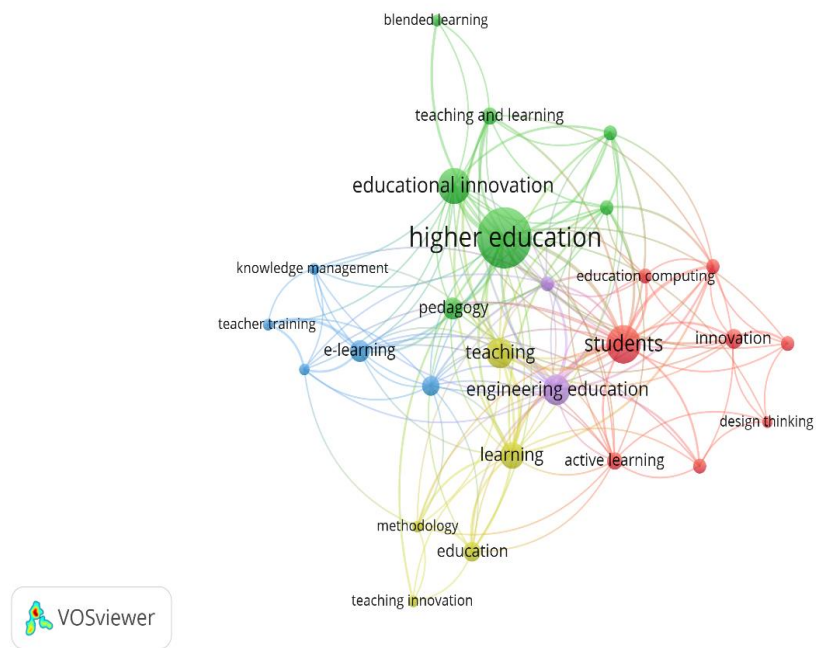


Figure 2. Co-occurrence of words

Source: Authors' own elaboration (2023); based on data exported from Scopus.

Higher Education was the most frequently used keyword within the studies identified through the execution of Phase 1 of the Methodological Design proposed for the development of this article. Educational Innovation is among the most frequently used variables, associated with variables such as Teachers, Pedagogy, Innovation, Methodology, Engineering Education, E-learning, Active Learning. The justification for these innovations is multifaceted. Students are looking for educational experiences that are more interactive, relevant, and engaging. They hope to develop not only subject-specific knowledge, but also critical thinking skills, problem-solving skills, and a variety of practical competencies that will prepare them for the demands of the workforce and society. In addition, the traditional model of disseminating knowledge through lectures and textbooks has become less effective in the age of information abundance, where information is available at the click of a button. Innovative pedagogical strategies aim to transform education into a dynamic, student-centered endeavor that equips students with the skills and mindset needed to thrive in a rapidly changing world.

4.2 Distribution of scientific production by year of publication

Figure 3 shows how scientific production is distributed according to the year of publication.

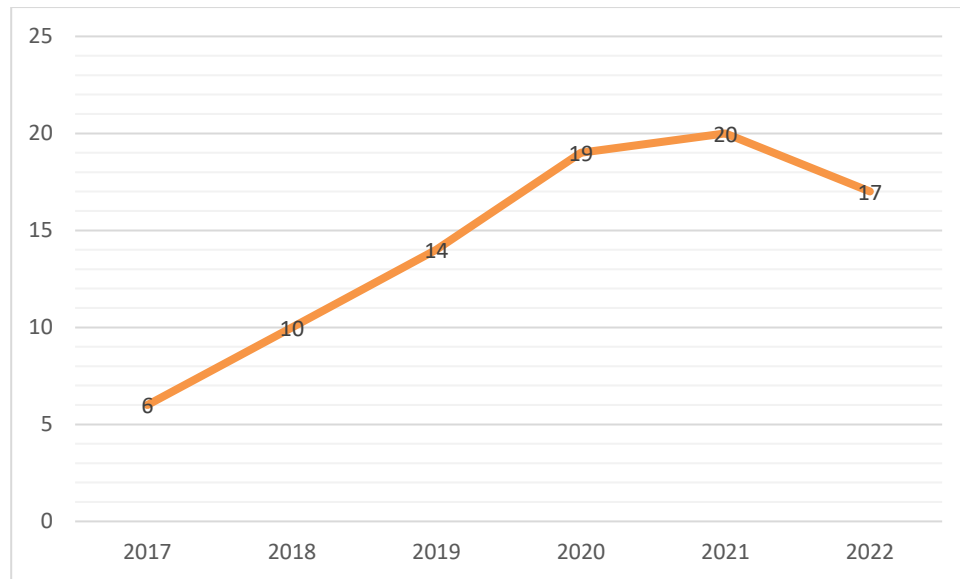


Figure 3. Distribution of scientific production by year of publication.

Source: Authors' own elaboration (2023); based on data exported from Scopus

Among the main characteristics evidenced through the distribution of scientific production by year of publication, the number of publications registered in Scopus was in 2021, reaching a total of 20 documents published in journals indexed on this platform. This can be explained thanks to articles such as the one entitled "ePortfolio to promote networked learning: an experience in the Latin American context" the present study aimed to reveal the impacts of the use of the ePortfolio as a tool of Information and Communication Technologies (ICT) in the training process to improve the Principles of Network Learning (NLP) in the particular architectural pedagogy. The research had a descriptive methodology with a qualitative approach through a perception survey applied to a sample of students from eight cohorts of the same training cycle (second year) in an ADS during the years 2015-2018. The study kept the fidelity of its design and implementation stable during this time, allowing data from eight instances. The results allow us to observe relationships between the dimensions of the training process and NLP, with indicators to improve this relationship, while observing transformations linked to the conception, implementation and projection of the ePortfolio. The conclusions are related to the ability of the ePortfolio to close strategic gaps in the formative learning process to design, organize, and provide feedback to improve NLP, creating training strategies that promote autonomous learning, connections, identities, needs, aspirations, and career goals of students. (Roco, 2022)

4.3 Distribution of scientific output by country of origin

Figure 4 shows how scientific production is distributed according to the country of origin of the institutions to which the authors are affiliated.

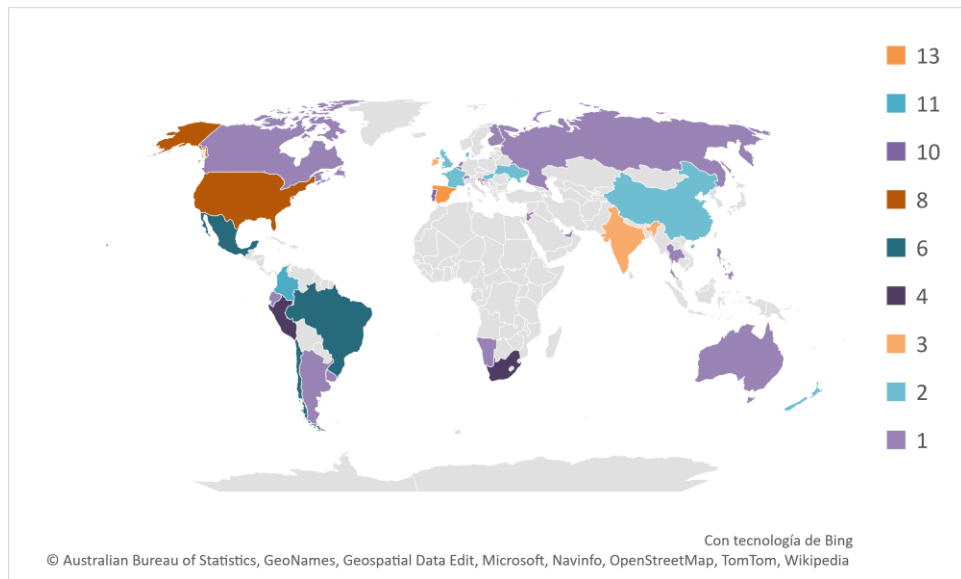


Figure 4. Distribution of scientific production by country of origin.

Source: Authors' own elaboration (2023); based on data provided by Scopus.

Within the distribution of scientific production by country of origin, the registrations from institutions were taken into account, establishing Spain as the country of this community, with the highest number of publications indexed in Scopus during the period 2017-2022, with a total of 13 publications in total. In second place, Colombia with 11 scientific papers, and Portugal occupying third place presenting to the scientific community, with a total of 10 documents among which is the article entitled "A study of the impacts of cybersickness by virtual reality and a strategy for improvement in the virtual learning experience of university students in general." This article aims to present a preliminary study on the understanding of VR MS, termed cyberdisease, in the context of teaching and learning (T&L) at the University of Nottingham, Ningbo, China. Design/methodology/approach: A virtual reality-based virtual classroom content was developed and tested for 60 university students who had equal access to the same virtual reality equipment. A two-step data collection was carried out for the participants, comprising qualitative and quantitative measures. Aspects of how gender influences cyber severity and how academic background affects the learning experience were investigated and analyzed using the statistical method of analysis of variance F-test. Findings: The results showed that approximately 47% of participants had experienced cyberdisease, of which 64% were women. With a confidence level of 95% ($\alpha = 5\%$), the p-value obtained and the statistical value F for the respective categories of gender and discipline of study against the symptoms of cyberdisease confirmed the level of significance between the two variables compared. In addition, it is worth noting that the speed of virtual movement, the angle of perspective, and the visual properties of the virtual environment were selected as the top three factors that caused cybersickness. (Mareta, 2022)

4.4 Distribution of scientific production by area of knowledge

Figure 5 shows the distribution of the elaboration of scientific publications based on the area of knowledge through which the different research methodologies are implemented.

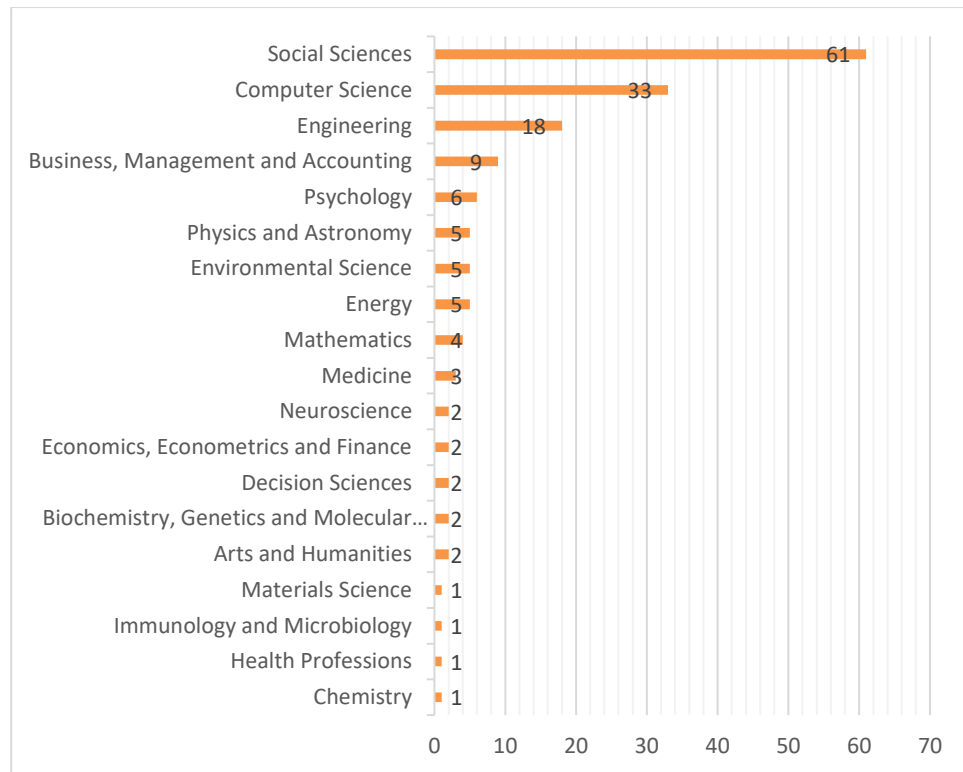


Figure 5. Distribution of scientific production by area of knowledge.

Source: Authors' own elaboration (2023); based on data provided by Scopus

Social Sciences was the area of knowledge with the highest number of publications registered in Scopus, with a total of 61 documents that have based their methodologies Pedagogical Strategies, Innovation, Learning and Higher Education. In second place, Computer Science with 33 articles and Engineering in third place with 18. The above can be explained thanks to the contribution and study of different branches, the article with the greatest impact was registered by Social Sciences entitled "Serious games as a method to improve participation in learning: students' perception of online higher education during COVID-19" This study presents a method developed in this regard, In other words, serious games were used as a complement to synchronous online classes to ensure the continuity of pedagogical activities in a physiology program at the Andrés Bello University, Chile. The use of serious games is a strategy in the field of gamification, which is a commonly used learning strategy for online teaching as required by COVID-19. This study is quantitative in nature and surveyed 108 second-year nursing students to determine their perception of this innovation. The results show that the students valued the proposed innovative pedagogical model well in terms of motivation and commitment. In addition, they reported that the model can serve as a meaningful learning experience. These insights suggest that the model is an efficient strategy for implementing physiology curricula in the context of online teaching. In addition, the results imply that the model should be applied to other courses and disciplines of the undergraduate program and support that it is a valid strategy for face-to-face teaching. Finally, the finding points to the model's potential to be explored as a learning strategy in the post-COVID-19 era of education.(Arias-Calderón, 2022)

4.5 Type of publication

In the following graph, you will see the distribution of the bibliographic finding according to the type of publication made by each of the authors found in Scopus.

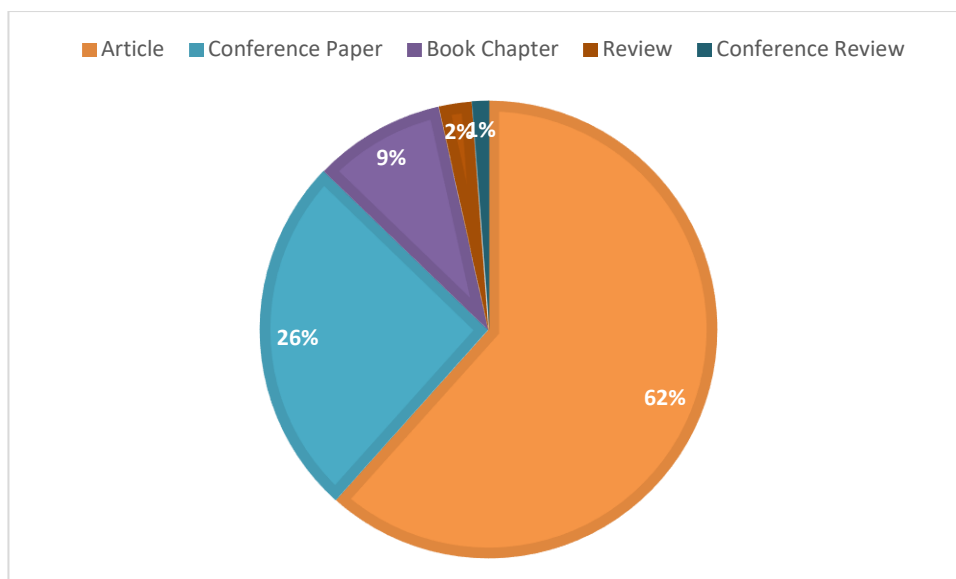


Figure 6. *Type of publication.*

Source: Authors' own elaboration (2023); based on data provided by Scopus.

The type of publication most frequently used by the researchers referenced in the body of this document was the one entitled Journal Articles with 62% of the total production identified for analysis, followed by Session Paper with 26%. Chapter of the Book are part of this classification, representing 9% of the research papers published during the period 2017-2022, in journals indexed in Scopus. In this last category, the one entitled "Differences and similarities between bilingual preschool programs" stands out. The objective of this study is to identify the differences and similarities between bilingual programs in three private bilingual preschools in Bogotá, Colombia. Their teaching techniques and how they influenced the quality of education were analyzed. In this context, "quality" is referred to as the practice of evaluating and comparing a service as a means of improving or updating it. In addition, teaching techniques, expectations, motivation, ethics and teaching actions that guaranteed the success of the educational process were studied. The findings showed that the institutions shared similar pedagogical and teaching methods, but differed in their goals and strategies for learning in the classroom. One of the schools that implemented the bilingual immersion program presented the highest quality of language results, which allows us to conclude that the skills acquired by its students would only require maintenance throughout their academic life in later careers.(Gómez-Zermeño, 2022)

5. Conclusions

Through the bibliometric analysis carried out in this research work, it was established that Spain was the country with the highest number of published records for the variables Pedagogical Strategies, Innovation, Learning and Higher Education. With a total of 13 publications in the Scopus database. In the same way, it was possible to establish that the application of theories framed in the area of Social Sciences, were used more frequently in the implementation and management of developing new innovative pedagogical strategies since these avant-garde strategies have the potential to be able to significantly revolutionize the experiences of students in their training process in universities. Institutions and educators adapt and manage to adopt new trends towards a more innovative and disciplinary approach, with this by incorporating these new pedagogical strategies, a more active learning is sought, allowing in turn to integrate to the academic loads of teaching a new approach based on new technologies which in turn allows each individual student to impart learning experiences in an experimental and technical way

focused on the needs of each individual student, making teaching more attractive, relevant and effective. These strategies focused on pedagogy not only focus on the various styles of teaching-learning but also focus their teaching individually on the difficulties and preferences of each student, in turn preparing them to face the challenges present in the dynamism of the present century. With this, it is sought that teachers impart in their teaching process the ability to focus on the skills of autonomy of each student, focus on critical thinking, problem solving, adaptability, since these skills are increasingly valuable in the labor market that is constantly changing.

However, the successful implementation of innovative pedagogical strategies requires careful planning, teacher development, and institutional support. It is not a one-size-fits-all solution and requires flexibility, experimentation, and continuous improvement. Ongoing evaluation of these strategies is crucial to measuring their impact on student learning outcomes. The future of higher education is intertwined with the adoption of innovative pedagogical strategies. By embracing change and harnessing the power of these methodologies, we can provide students with a transformative learning experience that sets them up for success in an ever-changing world. It is a journey that requires dedication, collaboration, and commitment to the highest standards of teaching and learning, which ultimately enriches the educational journey for both students and educators.

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