

SYSTEMATIC REVIEW

Didactic strategies for meaningful learning in the Nursing Program: a systematic review

Estrategias didácticas para el aprendizaje significativo en la Carrera de Enfermería: una revisión sistemática

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ABSTRACT

Didactic strategies are a set of planned actions carried out by the teacher to achieve the learning objectives. This study focused on conducting a review aimed at analyzing the didactic strategies used to foster meaningful learning in nursing education. Its goal was to identify best practices and emerging trends, offering educators and pedagogy professionals a comprehensive and up-to-date perspective on how to facilitate deeper and more meaningful learning in higher education. An exploratory systematic review of the existing literature was conducted, analyzing and synthesizing research by various authors on the subject. The search was directed toward bibliographic databases and reliable academic sources such as Web of Science, Dialnet, Elsevier, SciELO, Scopus, Latindex, Redalyc, and Google Scholar. The study concludes that most students employ meaningful learning strategies. Positive trends were observed in approaches related to constructivist models, including: active learning, student-centered teaching, collaborative learning, information technology, research- or project-based learning, and concept mapping. These strategies enable students to express their opinions and develop critical thinking while reclaiming autonomy. Moreover, reflecting on their own learning and identifying areas of confusion promotes a deeper understanding of the subject matter.

Keywords: Meaningful Learning; Nursing; Didactic Strategies.

RESUMEN

Las estrategias didácticas son un conjunto de acciones planificadas realizadas por el docente para el logro de la consecución de los objetivos de aprendizaje. El presente estudio se enfocó en realizar una revisión, con el objetivo de analizar las estrategias didácticas utilizadas para el aprendizaje significativo en la carrera de Enfermería, identificando las mejores prácticas y tendencias, proporcionando a educadores y profesionales de la pedagogía una visión integral y actualizada sobre cómo facilitar un aprendizaje más profundo y significativo en el ámbito de la educación superior. Se realizó una revisión sistemática exploratoria de la literatura existente, analizando y sintetizando las investigaciones de otros autores referentes al tema. La búsqueda se direccionó a las bases de datos bibliográficas y buscadores de fuentes confiables: Web of Science, Dialnet, Elsevier, SciELO, Scopus, Latindex, Redalyc, Google Académico. Se concluye que., la mayoría de los estudiantes emplean estrategias de aprendizaje significativas. Se observaron tendencias positivas en los temas relacionados con las estrategias principalmente de modelos constructivistas como: aprendizaje activo, enseñanza centrada en el estudiante, aprendizaje colaborativo, tecnología de la información, aprendizaje basado en la investigación o proyectos y mapas conceptuales, porque les permiten a los estudiantes expresar sus opiniones y desarrollar el pensamiento crítico, recuperando su autonomía, mientras que reflexionar sobre el aprendizaje e identificar áreas de confusión promueve una comprensión más profunda de este.

Palabras clave: Aprendizaje Significativo; Enfermería; Estrategias Didácticas.

INTRODUCTION

Teaching strategies promote active, critical, and meaningful learning and the development of cognitive and practical skills. In higher education, they are pedagogical approaches and teaching methods designed to facilitate effective learning. These strategies are intended to promote active, critical, and meaningful learning and to foster the development of cognitive and practical skills that students can apply in their academic and professional futures. For a better understanding, it is necessary to mention the etymology of the term didactics. According to Addine, the term didactics comes from the Greek *didaktikos*, which means “that which teaches” and concerns instruction.

In today’s educational landscape, it is more important than ever to adopt strategies that promote deep understanding and retention for the development of meaningful learning. For this reason, education worldwide continues to undergo profound changes in the development of educational models, whose fundamental purpose is to achieve effective and meaningful learning in students and not just the acquisition of knowledge.⁽¹⁾

It is common to find students in learning environments who are struggling to learn, which is ultimately reflected in their poor academic performance. These results are a problem for education, particularly when it comes to students who exhibit inadequate academic performance in subjects that are crucial to their development. The issue has been raised by numerous studies that have focused on determining the reasons for poor student performance.⁽²⁾

According to Ausubel⁽³⁾ for understanding educational work, “it is necessary to take into consideration three elements of the educational process: teachers and their way of teaching; the structure of the knowledge that makes up the curriculum and the way in which it is produced; and the social framework in which the educational process takes place”. For this reason, the modern challenge of reinventing educational processes has been taken up by many educators, and one of these learning strategies is meaningful learning.

According to Chávez⁽⁴⁾, “Meaningful learning strategies are the study techniques that students apply to acquire new knowledge. Such strategies include recirculation, elaboration, organization, and retrieval”. Moreira⁽⁵⁾, for his part, indicates that meaningful learning “is the acquisition of new knowledge with meaning, understanding, critical thinking, and the possibility of using that knowledge in explanations, arguments, and the solution of situations or problems”.

In the Republic of Ecuador, studies such as those by Quiroz et al.⁽⁶⁾ have demonstrated countless difficulties in student learning; However, it has been observed that with the implementation of Information and Communication Technologies (ICT), strategies are being used to achieve meaningful learning, demonstrating that technological resources provide a creative means for the development of educational activities inside and outside the classroom, as a system for improving learning.

What are the teaching strategies for meaningful learning in nursing students?

It is essential to ensure that the training of future nurses is increasingly active and of the highest quality. To achieve this, it is necessary to know the teaching strategies that can be used. For this reason, in this systematic review, the author set out to analyze the teaching strategies most frequently used for meaningful learning in nursing students.

METHOD

The methodology of this scientific research work is exploratory systematic review. According to Manchado et al.⁽⁷⁾, review studies are works that systematically present scientific evidence that determines the relationship between variables that answer specific questions.

Search criteria

The search for studies was conducted in the following bibliographic databases and reliable source search engines: Web of Science, Dialnet, Elsevier, SciELO, Scopus, Latindex, Redalyc, and Google Scholar. The following keywords were used: Meaningful learning; Nursing; Teaching strategies; Systematic review; The publication period considered was from 1983 to August 2023; Scientific articles from systematic literature reviews, original descriptive, quantitative, exploratory, correlational descriptive, and qualitative studies were used, in both Spanish and English. The Price index was used to ensure that a higher percentage of references were found among those published in the last five years.

Inclusion criteria

- Bibliographic databases and reliable source search engines: Web of Science, Dialnet, Elsevier, SciELO, Scopus, Latindex, Redalyc, and Google Scholar.

- Keywords: Meaningful learning; Nursing; Teaching strategies; Systematic review.
- Publication period from 1983 to August 2023, regardless of the country of publication.
- Systematic review articles and original articles.

Exclusion criteria

- Duplicate articles.

Article selection process.

We started with a total of 149 000 results published in the databases selected for this review, filtered (0,16 s) according to the topic of study and published in Spanish or English. The search for information was specified from 1983 to August 2023, filtering a total of 16 100 results (0,09 s), of which those that most closely matched the topic were considered by quickly reading the title and abstract, This allowed us to select 65 articles for a full reading, also observing components external to the text itself, such as titles, subtitles, and headings, among others.

Of the 65 articles selected, 40 duplicates were excluded using the Zotero method, leaving a total of 20, which were subjected to a bibliometric analysis as described by a study taking into account the names of the authors, countries, and languages. Other content included information on methodology, sample size and composition, objectives, results, conclusions, and references. The credibility of the writer was sought, and preference was given to articles that had a greater number of bibliographic citations.

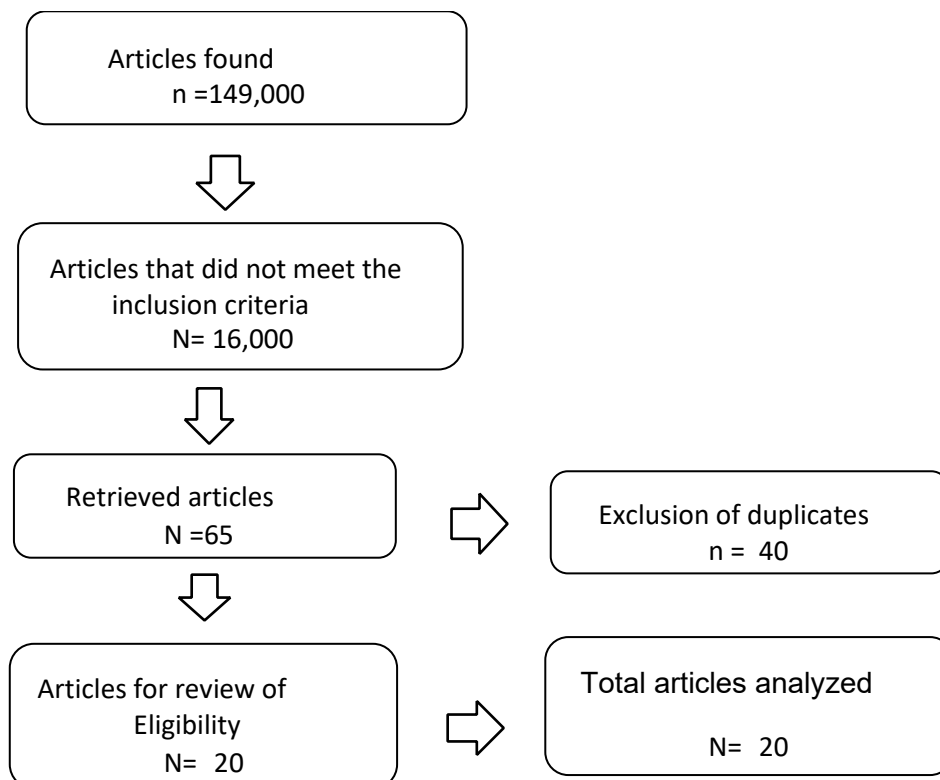


Figure 1. Article selection process

RESULTS

From selected publications from various countries, relevant information was obtained at the global level and at the local level in countries located in Latin America and at the national level.

According to table 1, 30 % of the selected studies were conducted in Ecuador, followed by 20 % in Colombia, with the remaining countries accounting for less than 11 %. The articles studied were grouped and classified according to factors, taking into account their recurring attributes, where the following was established.

According to the above, 37,50 % of the studies consulted correspond to Teaching Strategies, and 62,50 % represent the variable Meaningful Learning. Each of these studies focuses on effective teaching strategies for meaningful learning in the active construction of meaning, the relevance of content, organization, and interaction. These studies seek to achieve a deep and lasting understanding of concepts, resulting in more meaningful learning for nursing students.

Table 1. Publications by country		
Country	No. of articles	%
Baja California	1	5
Colombia	4	20
Ecuador	6	30
Peru	2	10
Costa Rica	2	10
Spain	2	10
Argentina	1	5
Mexico	1	5
Venezuela	1	5
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Table 2. Classification of articles analyzed using study variables		
Variables	Articles containing the variables	No. of articles
Teaching strategies	(2,8,9,10,11,12,5,13,14)	9 studies (37,50 %)
Meaningful learning	(4,8,15,9,10,16,17,18,12,5,13,19,20,21,22)	15 articles (62,50 %)

According to table 3, 50 % correspond to descriptive, quantitative, exploratory, and descriptive correlational studies, 30 % to bibliographic review research, and 20 % to other types of studies. Each type of study has its specific purpose and focus in the research. The choice of study type depends on the research question and resources.

Table 3. Methodology used in the articles analyzed		
Methodology	Authors	%
Review of (Intriago, Rivadeneria, and Zambrano, 2	(23,12,20,14)	4 articles (20 %)
Quantitative descriptive studies, exploratory, correlational descriptive.	(2,4,15,9,10,16,17) (18,21)	10 articles (50 %)
Qualitative studies	(8,11,5,13,19,22)	6 articles (30 %)

Table 4 shows the authors, year of publication, country, and teaching strategies.

Table 4. Description of the studies analyzed			
Authors	Year of publication	Country	Teaching strategies
Araya, N.	(2014).	Costa Rica	Constructivist Teaching Strategies: prior knowledge, teacher as mediator of the learning process, teaching strategies focused on the the student, collaborative work
Baque, R.; Portilla, F.	(2021).	Ecuador	Application of innovative teaching strategies that enable the acquisition of meaningful learning as a tool for teachers to use in teaching students.
Chávez, M.	(2016).	Colombia	Memory; Developing mnemonics, taking notes on the most relevant aspects of the information to be learned, and relating this information to everyday life are examples of this group of strategies.

Fernández, E.; Cevallos, H.	(2022)	Ecuador	Role-playing; comic strips or cartoons; summary tables; illustrations, inference, join together, think and share.
Gómez, O.; Carrillo, G.; Cárdenas, D.	(2017)	Colombia	Students interact in an inductive process of argumentation and reflection incorporating previous content from epistemology and construction of narratives of nursing situations
Intriago, M.; Rivadeneria, M.; Zambrano, J.	(2022)	Ecuador	Links acquired knowledge to everyday activities; cooperativism, experiences grouped under the heading of self-managed pedagogies, and pedagogical concepts based on contemporary philosophy and psychology.
Martínez, L.; Estrada, E.; Moreno, A.; Pulido, N.	(2021)		Constructivist strategies: Strategies that link theory with practice and can be put into practice in real life. Strategies that promote the use of skills and practice, reflective reading strategies.
Martínez, R.; Wolhein, L.	(2019)	Mexico	Solution strategy; Case study
Martínez, W.; Vallejo, P.; Moya, M.	(2020)	Ecuador	Constructivist model, students create their own learning through prior knowledge.
Martínez, L.	(2020)	Mexico	Research-oriented strategy; strategies applying information technologies; international health-oriented strategy; problem-based learning.
Moncini, R.; Pirela, .	(2021)	Venezuela	Constructivist and interaction with others, relating new knowledge to prior knowledge, individualized teaching, collaborative learning.
Moreira, H.; Bravo, R. (2022).	(2022)	Ecuador	Digital and/or physical portfolios
Muñoz, S. (2023).	(2023)	Spain	Collaborative work
Parra, P.; Mejía, E. (2022).	(2022)	Peru	Observation
Penagos, D. (2017).	(2017)	Colombia	Research-oriented strategy
Vallejo, P.; Zambrano (2019). G.; Vallejo, P.; Bravo,	(2019)	Ecuador	Strategies based on a neurodidactic approach

DISCUSSION

Students can relate everything they have seen in class to a real-life context, thanks to the strategies most commonly used by the Mexicali Language Faculty, which promote the relationship between prior learning and new learning. It can be concluded that there are no bad or ineffective strategies; even traditional approaches are effective and provide positive results for student learning.⁽²⁾ Consequently, for Baque et al.⁽¹³⁾, the term meaningful learning refers to a learning strategy that fosters meaningful learning that is connected to the student's socio-educational context.

Meaningful learning is a theoretical construct that teachers have learned to use and leverage, particularly at the higher level of education, even if evidence suggests that it is complementary to many other disciplines that should be the responsibility of university professors. Meaningful learning cannot occur without motivation and interaction because learning occurs gradually and non-linearly. According to the results of the study by Intriago et al.⁽²³⁾, after reviewing the current state of meaningful learning at the Technical University of Manabí, it is believed that the process itself should focus on the potential or benefits of the theories highlighted by Asubel⁽³⁾.

Similarly, Carneros et al.⁽¹⁹⁾ indicates that meaningful learning is a type of knowledge acquisition where students begin with a prior selection and continue to gather information until they conclude with an analysis of the information obtained through the study of the context, connecting prior information with everyday experiences. This conceptual learning is considered the application of meaning to an abstract idea and not just the relationship between a concept and a defined image.⁽¹³⁾ According to Arias et al.⁽²¹⁾, motivation is required for the development of new pedagogical strategies that allow case studies to be mastered by students, a crucial educational technique in professional nursing training.

Moncini et al.⁽⁵⁾ show that, in order to achieve adequate meaningful learning, it is necessary to develop strategies that are applicable to the reality and context in which university students normally find themselves. This means that, in order to have initial learning or representations in this case, personal experiences must be developed to adapt them to new knowledge and make them easier to understand, which will lead to more complex learning in the future.

According to Carneros⁽²⁴⁾, a meaningful learning process is one in which the learner collects information, selects, organizes, and establishes connections with prior knowledge. The fact that people learn by memorizing things means that, instead of learning, this knowledge is easily forgotten and difficult to recall. However, if new knowledge is clear in the cognitive structure, it is easier to retain.

Self-regulated learning promotes meaningful learning because it is designed to generate didactic autonomy in students in pursuit of learning through research, which requires the involvement of multiple areas, including mental structures play an important role, requiring adequate stimulation from the teacher in order to generate in the student the possibility of being motivated to learn from a collaborative and cooperative perspective, so that they do not learn in isolation, but rather in the company of their peers, combined with their life experiences, generating synergy that converges in the achievement of group goals.⁽²⁵⁾

Thus, the instructional strategies used by teachers to enhance their students' cognitive skills should seek to develop education in a comprehensive manner and offer learning experiences that encourage students to favor communication skills to develop and reorganize information based on observation, deduction, induction, reflection, research, and interpretation to make sound decisions that lead to the transformation of the immediate and medium context.⁽¹⁰⁾ For this reason, it is crucial that teaching strategies be used in nursing practice in the clinical setting, given that many of them depend on learning and its adaptation to specific requirements.⁽¹⁴⁾ Based on the above, it was decided to use each student's prior knowledge as a reference point for applying the strategy that best suits their individual learning level and thus achieve good results.

The learning process is structured around several components, each of which plays an important role in the transfer of knowledge from one agent to another. The teacher or other education professional should be the primary facilitator of the subject, and alongside them is the student, whose goal is to fit the content into their cognitive structure in order to understand it and thus acquire knowledge.⁽⁴⁾ Different factors can influence this process, and their effects have the potential to be positive or negative. Most of the time, students experience difficulties during the learning process, which is evident in their academic performance.

According to the study by Chávez et al.⁽⁴⁾, the participants' study method is not significant for them because, although they can learn something from the content, they do not incorporate the new knowledge into their previous cognitive structure as they should, nor do they demonstrate it in their academic performance. The results show that 81,2 % of students include some of the meaningful learning strategies when studying. Consequently, knowledge has a greater chance of obtaining favorable results, which indicates the relevance of the anchoring or subsuming concepts proposed in Ausubel's constructivist theory of meaningful learning as an essential requirement for appropriating recent knowledge. According to Gómez et al.⁽²⁰⁾ critical evaluation of the situation is necessary for learning to take place and for experiences to be transformed, so that one's own perception can be changed towards new ways of thinking and acting.

Educational methodology, educational materials, and teaching strategies must engage students in the current context of higher education if they are to be involved and result in meaningful learning. Therefore, it is necessary to devote time and space in the teaching plan to observation and reflection on the learning process itself, so that this results in the integration of not only theoretical content but also behavioral and procedural content.⁽¹⁶⁾

This is corroborated by the case study by Martínez et al.⁽¹¹⁾, who determine that the origin of this problem-solving approach lies in the choice by teachers of a teaching strategy focused on the lecture within a traditional teaching model. This leads to a situation in which students face difficulties in learning, specifically in understanding, analyzing, reflecting on, and interpreting the material when it is applied. As a result, learning becomes knowledge that can be applied in a variety of contexts.

The results of teaching and learning reveal the weaknesses of teachers and students; therefore, it is argued that classroom management should implement teaching strategies that allow teachers to communicate content and make it more understandable to students. This will create more welcoming and private learning environments based on meaningful and functional learning.⁽⁸⁾ In reality, meaningful learning will have an impact on education because it will develop the interpersonal skills necessary for daily life and the world of work. It will accompany a school that demands quality with a generation that has other higher performance indicators in education, where teachers will have a great opportunity to enhance methodological and technical strategies.⁽¹⁵⁾

Moreira et al.⁽⁹⁾ in their study, identified that the lack of application of strategies resulted in students not receiving the knowledge required by the educational system. This provided a theoretical basis for meaningful learning in virtual environments, showing that, in order to generate meaningful learning in our studies, it is necessary to apply creative, individual, or collaborative teaching strategies or tools that contribute to strengthening the teaching process, thereby impacting the learning of students.

The negative results pose a challenge for student training. These skills are fundamental to shaping a non-traditional education that contributes to the formation of individuals capable of analyzing multiple social problems and contributing to their resolution.⁽¹⁸⁾ Similarly, the teacher responsible for supervising nursing students must be able to reaffirm their love and dedication to their profession and establish a rational

relationship with the highest ethical and moral standards in order to make critical judgments in their nursing care planning.⁽¹⁷⁾

The professional skills that nurses need to develop in order to handle situations and problems that arise in the workplace, as well as how to adapt to new technologies and changes in the field, can only be acquired through ongoing collaboration and efforts between teachers and students to produce meaningful learning outcomes. In support of the above, Gómez et al.⁽²²⁾ state that the current challenge in the nursing discipline is to innovate meaningful learning strategies for the integration of theory and practice. Nurses can make decisions consistent with the value system of their discipline in a timely and assertive manner in critical situations due to the development of critical thinking and theoretical orientation, which guide the nurse and facilitate the consolidation of disciplinary identity.

Newly acquired knowledge (potentially meaningful information), prior knowledge of the subject (pre-existing cognitive structure), and willingness to learn are the three components of a significantly developed learning process. According to Chávez et al.⁽⁴⁾, the following characteristics of meaningful learning can be found within the range:

1. The implementation of strategies is controlled and not automatic; it requires decision-making, advance planning, and supervision of their execution.
2. The application of learning strategies requires careful consideration of how they should be used.
3. In order for the same to apply, the learner must be able to choose wisely from the variety of tools and skills at their disposal.

According to Jiménez⁽²⁶⁾, in order to develop an instructional model through meaningful learning, students must be viewed as active and critical contributors to the development of their knowledge, their unique learning preferences must be addressed, and their desire for personal development must be supported. To do this, educators must have a command of the fundamental theories and teaching strategies that will benefit their students.

Ausubel sought the best learning methods so that the knowledge imparted to students would make as much sense as possible. I discovered meaningful learning when new information was connected to the person's prior knowledge. And repetitive learning, where connections are made between what has already been learned and the new information given to the student.⁽²⁷⁾ According to the authors, there are three key requirements that must be met for a student to produce meaningful learning: first, the student must have internal structure and organization; second, they must have prior knowledge that allows them to relate what they are learning in a meaningful way; and third, the student must be motivated to learn.

Here are some effective strategies that can help facilitate meaningful learning experiences, such as: Digital collaborative projects, which encourage teamwork and collaboration by assigning digital group projects that allow students to work together through technology; use of virtual reality to stimulate immersion and engagement in the learning experience, providing students with immersive digital environments; Use of games and programming activities that offer a more interactive way for students to understand concepts, allowing them to apply their knowledge immediately.

As a result, it was found that active learning strategies, such as problem-based learning and collaborative learning, promote student participation and increase knowledge retention. The integration of case studies and relevant examples from the real world into the curriculum was associated with a higher level of understanding and applicability of concepts. Providing timely and constructive feedback to students is essential for their development. Formative assessment methods and personalized feedback were effective in promoting learning. Educational technology has become a valuable resource.⁽²⁸⁾ The incorporation of online platforms, multimedia resources, and collaboration tools in the classroom improves access to information and interaction between students and teachers.⁽²⁹⁾

The people factor includes aptitude, motivation, and self-esteem. The sociocultural factor includes the family, which plays one of the most important roles in the educational world, as well as the environment in which students interact, which can have a significant impact on their learning process.⁽³⁰⁾

Ultimately, discussing the results of a study on teaching strategies in higher education can provide a clearer picture of how to improve the quality of teaching and learning at this level of education. These results can be useful for educators, administrators, and education policymakers in their efforts to provide high-quality and relevant higher education.⁽³¹⁾

CONCLUSIONS

The most popular strategies are those that encourage the connection between prior and new learning, which motivates students to put what they have learned into practice. These approaches are relevant to real life because they help students relate everything they see in class to something that happens in real life. The best strategies are constructivist because they allow students to express their opinions and develop critical thinking, regaining their autonomy, while reflecting on learning and identifying areas of confusion promotes a deeper understanding of it.

The above allows us to reflect that there is a need to transform education, so there are many areas of opportunity that can be exploited to carry out this important task, such as the development of meaningful learning. There is a continuing need to train teachers and students in new teaching strategies and their benefits, both explicit and implicit. However, it is essential to bear in mind that positive changes will not be achieved without the guidance and active participation of teachers throughout the process. On the other hand, it could generate dissatisfaction among students who perceive it as extra work or a waste of time.

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