Strengthening Digital Competencies: Recommended Practical Strategies for Teachers Using Neo LMS in Latin America

—

Patricia Herrera López
patriciahl17@gmail.com
ORCID: 0009-0004-0954-2743

CYPHER LEARING. Estado de México, Ixtapaluca. México

— *Abstract*—

In the current digital era, the mastery of digital skills by teachers is fundamental to enhancing student learning. This study addresses the need through the analysis of the implementation of pedagogical strategies with the NEO LMS platform in Latin America. The research evaluated how the effective use of NEO LMS can improve teachers' digital skills and, in turn, enrich the learning experience of students in online, virtual, and face-to-face modalities.

Through a qualitative approach and a non-experimental cross-sectional design, the study collected data from 549 teachers at educational events in countries such as Mexico, Peru, and Colombia. The strategies examined included gamification, adaptive learning, flipped classroom, competency-based learning, and microlearning, taught in masterclasses designed to provide practical and applicable training.

The findings reveal that most participants highly valued the relevance and applicability of the presented pedagogical strategies, reporting a positive impact on teaching practice and student learning. Specifically, it was observed that learning about these strategies and their proper implementation contributed to a more effective use of the NEO LMS tools, which in turn favored a higher quality educational experience.

Despite the positive results, the study identifies the need for continuous training and evaluation for teachers. The adoption and effectiveness of new tools and pedagogical approaches require constant commitment and sustained effort to ensure optimal long-term results. The research underscores the importance of well-designed pedagogical strategies and teacher training as key elements to improve teaching and learning in digital environments, emphasizing the relevance of these practices in the continuous improvement of virtual education.

This study contributes to the understanding of how focused training and the implementation of specific pedagogical strategies can significantly improve the digital competencies of teachers in Latin America, offering valuable insights for future research and educational practices in the region.

Keywords:
Distance learning; NEO LMS; Pedagogical strategies; Educational technology; Technology-mediated education

The use of educational platforms has impacted teaching and learning processes since the emergence of distance education as a modality of virtual or online education, which has been fundamental to providing another type of education. However, it has been observed that teachers who have access to NEO LMS are not yet prepared to properly use these tools due to a lack of knowledge of their use or due to the implementation of a new methodological model in virtual environments. This contributes to the improper design of their virtual classes.

In this regard, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) published a report in 2020 that notes that the transition to online education during the pandemic has accentuated existing inequalities in access to education in Latin America and the Caribbean. According to the report, limited access to technology and connectivity are the main obstacles to online education in the region. In addition, the lack of technology training for teachers and the lack of preparation of students for online learning have also contributed to the educational lag.

Likewise, in CYPHER LEARNING[1] It has been observed closely that some of the problems in teachers are the ignorance of learning strategies and the inappropriate use of the tools of the NEO LMS platform, as well as their non-homologated use for the development of learning environments, where the construction of knowledge in students is observed so that learning experiences are innovative. On the other hand, this can reduce teacher workload by using automation to keep students motivated and engaged in the process, so teachers can save time, improve efficiency, and improve learning. This has been one of the reasons why customers opt for another LMS or stop including a technology-mediated learning environment because they feel overwhelmed by the lack of knowledge and implementation of technology in their schools, universities, or companies. Although technological education in Latin America, in many cases, is still an issue under construction, strategies must be implemented to adapt to the Latin American environment and improve teaching programs to make them even more personalized. This will help counteract the fear of implementing technology in educational processes. The implementation of teaching strategies was mostly successful, but a continuous and sustained approach is required to ensure optimal long-term results.

---

1   CYPHER LEARNING is a company that provides learning management systems (LMS) for businesses, schools, and other organizations. The company offers three different LMS products: NEO, MATRIX, and INDIE. NEO is a cloud-based LMS that includes features like gamification, automation, and custom learning paths.

The findings of the research indicate that the vast majority of participating teachers valued the information received as relevant and applicable to their educational practice. The implementation of this knowledge in their virtual teaching environment had a positive impact on the student's learning process. Although the implementation of the teaching strategies was mostly successful, the need to maintain a constant and sustained approach to ensure optimal long-term results is underlined. In this sense, the mastery and proper application of teaching strategies are effective tools to improve the teaching practice and academic performance of students.

USE OF TECHNOLOGY FOR DEMOCRATIZATION AND ACCESS TO KNOWLEDGE

Educational platforms are computer systems developed specifically for the administration of online training. These tools allow the comprehensive management of courses, activities, content, students, assessments, and other relevant aspects of the virtual learning process. Overall, they are software applications that facilitate the administration of online courses, providing the possibility of creating, publishing, and managing access to content, as well as promoting communication and collaboration between teachers and students.

In recent years, various studies on science and technology have highlighted the relationship between education and learning, including the development of educational technology, the use of ICT in the educational process, the impact of technological platforms on education, the influence of the Internet on educational processes, models and modalities of distance education, and the phenomenon of virtual education (Edel-Navarro, 2010). These studies have found that the use of technology has given rise to a new style of learning: distance education in its online, virtual, or hybrid modality.

This learning style has several advantages, considered democratization is the most important, since "it also enables and diversifies the educational offer to meet current training needs" (Casas, 2011). In this way, education can be provided to a greater number of people, seeking equal opportunities in a diversified way.

Online education is a form of training delivered over the Internet. It is composed of a series of courses or programs that can be taken from anywhere and at any time since they are accessed through a computer with an Internet connection. Online education is an increasingly used alternative to getting a quality education as it offers great schedule flexibility and allows students to learn at their own pace. On the other hand, hybrid education is a teaching modality in which different learning styles are mixed, such as face-to-face and online. This form of education allows students to learn flexibly and adapt to their needs. It is worth mentioning that this new form

of learning is becoming increasingly popular, especially after the pandemic, because it allows students to learn in various ways, using different means (Obesso, & Núñez. 2020).

As has been observed, access to the Internet constitutes one of the most powerful tools in all areas, especially in education, because it is possible to create pedagogical environments with digital tools to bring education of greater quality and scope. However, there is still a marked digital divide in Latin America, so little is yet known about the development of skills and competencies for the use of technology.

LANDSCAPE OF TEACHERS' DIGITAL SKILLS BEFORE AND AFTER THE PANDEMIC

Until 2017, it was known that Latin America did not have the technological skills necessary to integrate ICT into teaching. According to the report "ICT in Education: Latin America and the Caribbean" published by UNESCO, only 36% of teachers had experience using ICT for teaching, while the remaining 64% had no idea how to use it. In addition, only 16% of teachers had internet access at home, limiting their ability to integrate ICT into teaching. According to the report, this situation was because education systems in the region were not prepared to integrate ICT effectively. (Hinostroza, 2017)

2.2. The University and Entrepreneurship

Awareness of the importance of entrepreneurship is a task that must be addressed daily. In universities, it is a priority to highlight the fact that new companies promote the economic growth of a territory, due to the creation of new jobs and the increase in income from the payment of taxes, the increase in exports, and an increase in productivity, (Pérez & Solíz, 2020). "Entrepreneurship is an important vehicle for the growth and economic development of countries and young people are the ones who usually lead it" (Kantis, 2017, p.120).

On the other hand, in the post-pandemic context, entities such as UNESCO, the United Nations Children's Fund (UNICEF), and the World Bank have carried out various investigations in the ministries of education to know the current state of education worldwide. In their executive summary "What have we learned? Highlights from a survey of ministries of education on national responses to COVID-19" have found that the continued use of technology to accompany and complement learning is critical. Among these aspects, the study has collected that "almost all the countries that responded to the survey reported remote learning as part of their response in education

to COVID-19, using online platforms, television/radio programs, and printed materials" (Vercellino, 2022).

These common-order institutions provide information to observe what are the areas of pain that require efforts, such as monitoring school dropout and student disengagement, the ongoing role of distance learning, recovery plans and monitoring their effectiveness, new approaches, and the changing role of learning assessments, skill development, and teachers' support, among others (Vercellino, 2022).

In Latin America, digitalization is a powerful tool to overcome the structural challenges of the region, as it drives the creation of new sectors, quality jobs, capacity development, and innovation, according to the study "Latin American Economic Outlook 2020: Digital Transformation for Better Reconstruction", published by the Economic Commission for America and the Caribbean (ECLAC) and the Organization for Economic Cooperation and Development (OECD).

TEACHING STRATEGIES FOR
TECHNOLOGY-MEDIATED DISTANCE EDUCATION

In this regard, the use of learning strategies is of great value for technology-mediated educational processes, Capita (2009) learning strategies can be used to learn content in any situation for the acquisition of knowledge, whether at school, at home, or in any other context. These strategies are "educational practices that have to do with how cognitive development occurs, the elements that influence it; memory function, motivation; how knowledge transfer occurs; and learning classes" (Schunk, 1997, p. 18).

Teaching and learning strategies are a set of procedures that a teacher can use in the classroom to promote the learning of their students; each strategy has its characteristics and advantages, so the teacher must choose the one that best suits the needs of their students and in the context in which they are since teaching strategies are those that aim to facilitate their learning. There are teaching strategies that cannot be adapted to face-to-face environments or environments mediated with technology, but even more so using educational platforms, so the appropriate strategies must be chosen according to the context in which the learning takes place, considering among other things, the student's profile, technological resources, and their conscious and intentional planning aimed at a learning objective.

METHODOLOGY

Objective

The objective of this research is to recommend some teaching strategies that can be used in conjunction with the NEO LMS tools, to observe their use and benefit the strategies offered to teachers who use the LMS.

The research is intended to help other interventions or compatible methodological research, to enable access to the information and results obtained. Likewise, the study aims to contribute to studies that are carried out at the Latin American level on methodological and pedagogical principles implemented with the use of NEO LMS, which can benefit teachers and students who use it, and that these strategies can be implemented in other platforms with the same characteristics.

Participants

For this research, a simple random non-probabilistic sampling was used, since, according to López (2004), it is characterized because each unit that makes up the population has the same possibility of being selected. Different teachers from universities and colleges were requested to be part of the study for our sample.

Tools

Initially, the information on the platform was used to observe the level of participation and learning outcomes of each teacher. In a second moment, a Google Drive survey (idem) was sent by email to all the teachers who participated to retrieve information on the implementation of the strategy and whether improvements were obtained in the use of the tools, in addition to whether the above helped their students in acquiring their knowledge regarding the subject that was taught.

The study analyzed which teaching strategies are suitable for the formation of virtual environments using NEO LMS and that they can favor student learning. For this, a non-experimental design was used that was applied transversally, since according to Hernández-Sampieri et al., (2010), non-experimental research is based on categories, concepts, variables, events, communities, or contexts that occur without the direct intervention of the researcher, that is, without the researcher altering the object of research. Since it is not intended to test the previously established hypothesis, as well as the objectives set, this work was prepared under the methodological approach of the qualitative methodological approach of the qualitative approach.

In this research, statistical information was collected on the participation of teachers in the different events. The masterclass' objective was to provide teachers with a unique and high-quality educational experience and offer them an opportunity to develop their skills and knowledge about the different strategies that could be actively implemented in their educational environments. In total, 5 Masterclasses were taught about teaching strategies: Gamification, Adaptive Learning, Flipped Classroom, Competence-Based Learning, and Microlearning. These Masterclasses were held throughout 2022 and were replicated twice, obtaining the following information.

A total of 549 teachers from different Latin American countries (Argentina, Colombia, Ecuador, Madagascar, Mexico, Peru, Puerto Rico, and Venezuela) participated, who had access to an NEO LMS platform to create content and implement teaching strategies. The participating teachers taught levels from basic to postgraduate education.

Total Participants per Country

	Argentina	Colombia	Ecuador	Madagascar	México	Perú	Puerto Rico	Venezuela
■ Participants	1	10	2	6	384	140	1	5
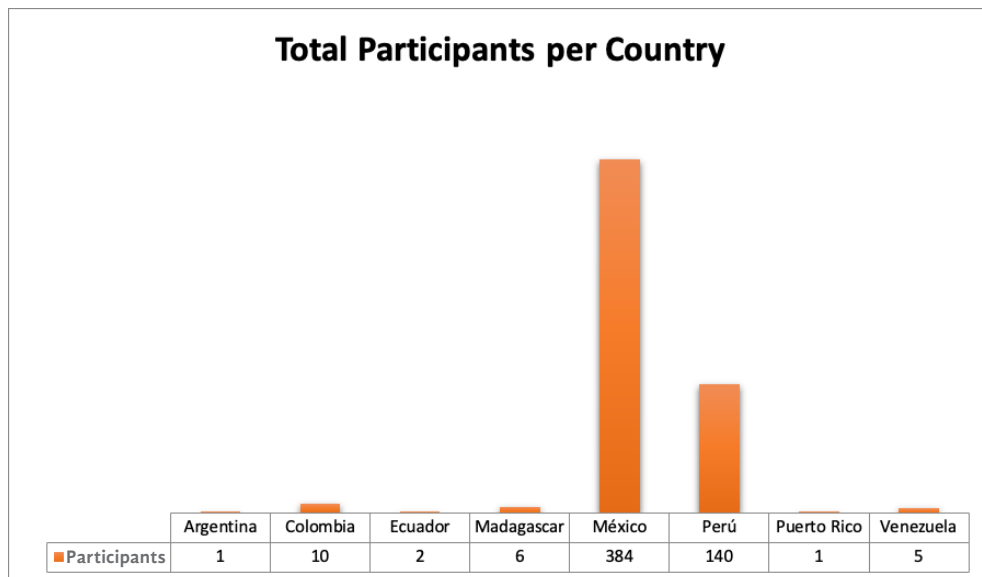
Note. Own elaboration based on empirical data.

Figure 1. Total Participants per Country

During the events, learning strategies were selected that could be used in a complementary way with the NEO LMS functionalities. These strategies were taught through a Masterclass, in which teachers initially participated as students and subsequently applied them in their virtual teaching environment. The strategies provided are described below.

Gamification: "refers to a process of improvement, with possibilities to provide gaming experiences and to support the activities carried out by users" (Contreras & Erguía, 2017).

This strategy is used to motivate and engage students in the tasks they need to accomplish. Gamification involves the application of game mechanics to non-game situations, allowing people to become more actively involved in them. One of the benefits is increased motivation, improved concentration, and increased productivity.

The objective of gamification is to generate an emotional response in the participant that leads him to actively get involved in the situation. In this way, it is sought that people learn and get involved in a more committed way in the activities in which they participate. Gamification is an increasingly used strategy in education, work motivation, and people management.

This learning strategy would be thought to be optimal only for early, middle, and higher education levels. However, interest in its implementation for postgraduate levels was observed at the event, to motivate students, through a game narrative of interest.

Adaptive learning: "uses new technologies and digital tools to personalize the teaching-learning process and adapt the work proposal to the needs and characteristics of students" (Morillo, 2016).

This learning strategy uses new technologies to analyze responses as data obtained from students to adapt teaching to the personal needs of each student. Thanks to this methodology, the student can learn through solving real problems, since the adaptive system provides personalized learning based on the difficulties they encounter.

One of the main objectives of this type of learning is to improve the quality of education because it allows identifying the needs of each student and offering them more personalized training. In this way, the student can significantly improve their academic performance.

In adaptive learning, there is a continuous and two-way interaction between the student and the platform, which allows the student to know at all times what they are learning, what they have to improve, and what activities they must do to achieve it. In this way, student autonomy is promoted and individual learning is enhanced. (Morillo, 2016).

In this strategy, it was observed that its implementation is laborious, since having a detailed design of the paths that the student wants to travel, in such a way that, the teacher can observe what contents and resources are required to build or look for if the courses are curated[2], for their implementation and, in this way, automate the LMS, so the search or creation of

---

2   Content curation in education refers to the process of effectively selecting, organizing, and presenting educational resources available online to meet students' learning needs and facilitate teaching by educators.

resources must be rough to have a differentiation of paths and automation that will be carried out.

For face-to-face and hybrid use, the Flipped classroom learning strategy is suggested, it is a teaching methodology in which the teacher teaches the subject outside the classroom and students learn it by solving problems and studying materials online at home. "The flipped classroom is a teaching method whose main objective is for the student to assume a much more active role in their learning process than the one they have traditionally occupied" (Aguilera et al., 2017).

Flipped learning is a teaching methodology in which the student has access to information before class, usually via the Internet or digital resources. During class, the teacher guides the students through the information and uses questions and activities to help students understand and apply what they have learned.

For this strategy, it is important that the teacher carries out an analysis of the resources available to the student within their home since access and connectivity will be essential to carry out the strategy and that it does not become a limitation for the student, due to the lack of resources in their home.

The competency-based learning strategy is an educational methodology proposed by Professor César Coll and his colleagues. According to the theory of Juan Ignacio Pozo and Miguel Ángel Santos, this strategy is based on the constructivist approach to learning, which proposes that learning is an active and autonomous process that is carried out through the construction of knowledge by the student.

The competency-based learning strategy focuses on developing students' skills, rather than simply conveying information. According to Díaz Barriga, competency-based education seeks to develop practical and theoretical skills in students so that they can apply them in real situations.

To implement this strategy, the objectives and competencies that students are expected to acquire must be defined. In addition, learning situations should be created in which students can apply their skills and knowledge in real contexts. As well as encouraging students' participation in their learning process constant feedback should be provided to help them improve and develop their competencies. The competency-based learning strategy focuses on the development of practical and theoretical skills in students and seeks to provide learning situations that allow them to apply their knowledge in real contexts.

It was noted during the masterclass that many teachers were unaware of the competency-based approach. Knowledge of competency-based assessment will be important for the implementation of this strategy because the creation of tasks and assessments where the learning products are observed by the student will be essential for the effective development of skills.

Microlearning is a learning strategy that is based on the delivery of educational content in small doses or segments of information, designed to be consumed quickly and efficiently. This learning modality adapts to the needs of people today, who demand access to relevant and updated information immediately and when they need it. Through microlearning, students can access educational materials at any time and place, through different digital devices, which allows greater flexibility and autonomy in the learning process.

Microlearning cannot be used as a traditional class, since the approach is aimed at learning from 10 to 15 minutes at most, so this strategy serves as a refresher learning or small learning topics.

According to data from the Statistic Brain Research Institute, in 2000 the human attention span was 12 seconds; by 2015, it was modified to 8,25 seconds, so microlearning also allows better retention of information, so it focuses on specific topics and is presented clearly and concisely. Microlearning is a teaching strategy that adapts to the needs of current students, allowing more efficient access to information and improving long-term knowledge retention.

PROCEDURE

First Stage

In the first stage of the research, the following results were obtained. The teachers' participation in the masterclass was as follows:

Gamification 119, Competency-Based Learning 137, Adaptive Learning 92, Flipped Classroom 96, Microlearning 78 enrolled teachers.

Masterclass impartidas							
países participantes	A1. Administración de competencias en NEO	A2. Administración de competencias en NEO	B1. Uso de las herramientas de Gamificación dentro de un curso	C1. Aprendizaje Adaptativo	D1. Aula invertida	E1. Microlearning	Total, general
Argentina	1						1
Colombia	4		3	2	1		10
Ecuador			1		1		2
Madagascar	1	1	1	1	1	1	6
México	86	7	86	72	69	62	382
Perú	24	12	27	16	22	14	115
Puerto Rico					1		1
Venezuela	1		1	1	1	1	5
Total, general	117	20	119	92	96	78	522
Total de personas participantes en las diferentes Masterclass							

Note. Own elaboration based on empirical data.

Figure 2. Masterclass taught

There were two types of events that were held, face-to-face events in the institutions and the presentation of virtual masterclasses. However, the greatest documentation gathered was obtained from the masterclass, since in this way it was possible to extract information from the results of the implementation and improvement in teachers' classes.

So the masterclass aimed to carry out continuous training of NEO tools, which as mentioned were based on innovative pedagogical foundations for teachers to carry out their praxis within their virtual classrooms and get the best out of the tools that NEO provides.

Each masterclass was proposed to be presented in a period of no more than 15 to 20 days within our NEO platform provided by the company, for the opening a virtual Webinar was held, where the subject was specifically discussed and instructions on the masterclass were given. Each masterclass had the recording of the opening Webinar, as well as resources such as digital materials and manuals to help teachers learn more about the subject and, above all, implement NEO tools for the teaching strategy. The evaluation consisted of a summative evaluation, the teacher had to answer the exams, in addition to uploading a final product to the platform, which consisted of uploading evidence of the conformation of their virtual classroom, through a screenshot or the same link to access it, since the teacher had to demonstrate the implementation and conformation of the learning strategy that was seen in the masterclass; these learning products had a learning rubric where the standards to be evaluated were shown, if the teacher complied with each element he passed the masterclass. It is worth mentioning that some teachers participated in all the masterclasses, but others only participated in those that were of interest to them, since as mentioned above, teachers taught classes of different educational levels.

Of a total of 549 teachers registered, only 416 completed the master-classes promptly, it was observed that teachers who did not complete the masterclass only registered for the course and lasted a short time browsing the platform, others registered, but never entered. The following general averages were obtained from each masterclass.

Teachers' grade averages obtained in the masterclass	
Masterclass Name	**Average** **Percentage%**
A1. NEO Skills Administration (Masterclass)	84.3
A2. NEO Skills Administration (Masterclass)	86.9
B1. Use of Gamification tools in class (Masterclass)	81.6
C1. Adaptive Learning (Masterclass)	96.1
D1.	92.0
E1. Flipped classroom (Masterclass)	88.6
Overall total	88.4

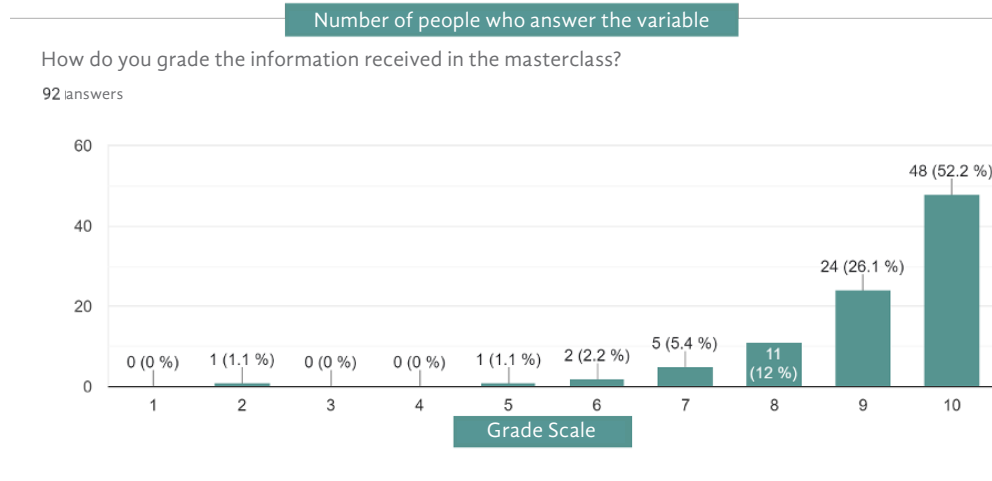Note. Own elaboration based on empirical data.

Figure 3. Teachers' grade averages obtained in the masterclass

RESULTS

Second Stage

In the second stage of the research, and after four months of masterclasses, a survey was sent on Google Drive to all the teachers who completed the masterclasses, to give time in its implementation and observation of the interaction with the students and their learning. We asked the teacher to answer the survey three times to obtain the highest number of answers, it is worth mentioning that of the 416 teachers who completed the masterclass, only 92 answers could be obtained, thus obtaining 90% reliability. The questions asked were about the variables required to be observed, thus obtaining the following research results.

In the first variable, we got to know if the information that the teacher received from the masterclass was pertinent, clear, current, and applicable to the educational process. Which was scored with 10 for 52.2%, 26.1% with 9, 5.4% with 7, and the rest between 5 and 6.
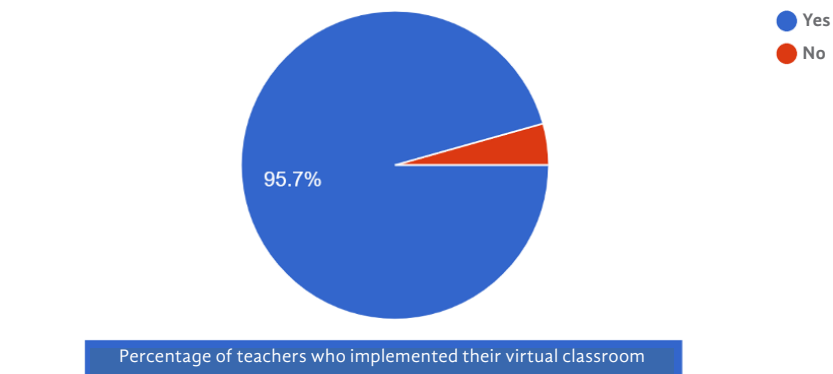
Note. Own elaboration based on empirical data.

Figure 4. Number of people who answered the variable

For the second variable let us know if the teacher implemented what was learned in the masterclass in his virtual classroom; both the characteristics and the necessary tools were scored in the evaluation rubric, of which 95.7% did implement it and 4.3% did not implement it.

Note. Own elaboration based on empirical data.

Regarding the previous variable, it was verified that what was learned about teaching strategies in the masterclass helped 91.2% of teachers improve the use of LMS tools, and that 8.8% had no benefit in increasing their use.
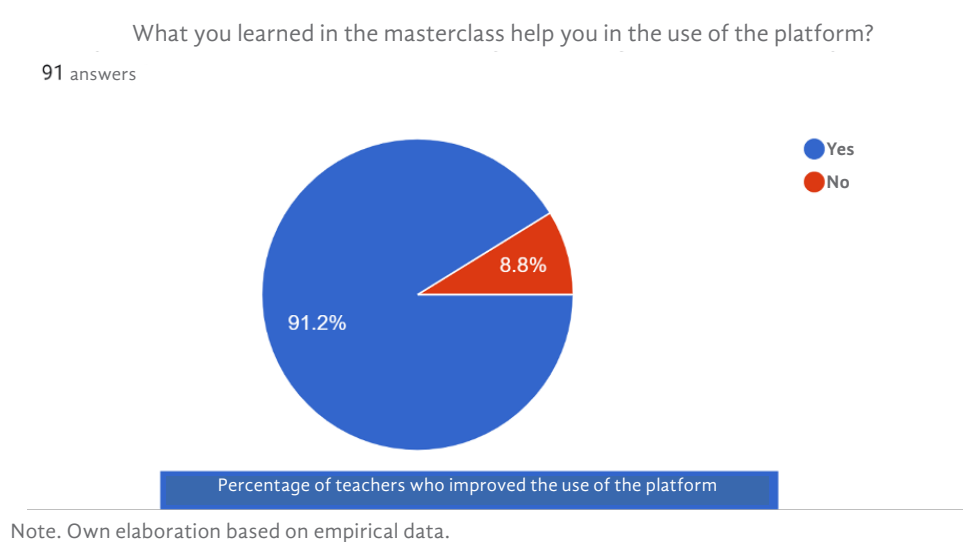
What you learned in the masterclass help you in the use of the platform?

91 answers

Note. Own elaboration based on empirical data.

Figure 6. Percentage of teachers who improved the use of the platform

To verify if the implementation of the teaching strategy in conjunction with the NEO tools impacted the learning of the students of the participating teachers, 85.9% observed it did help the learning of their students, while 14.1% did not observe benefits.
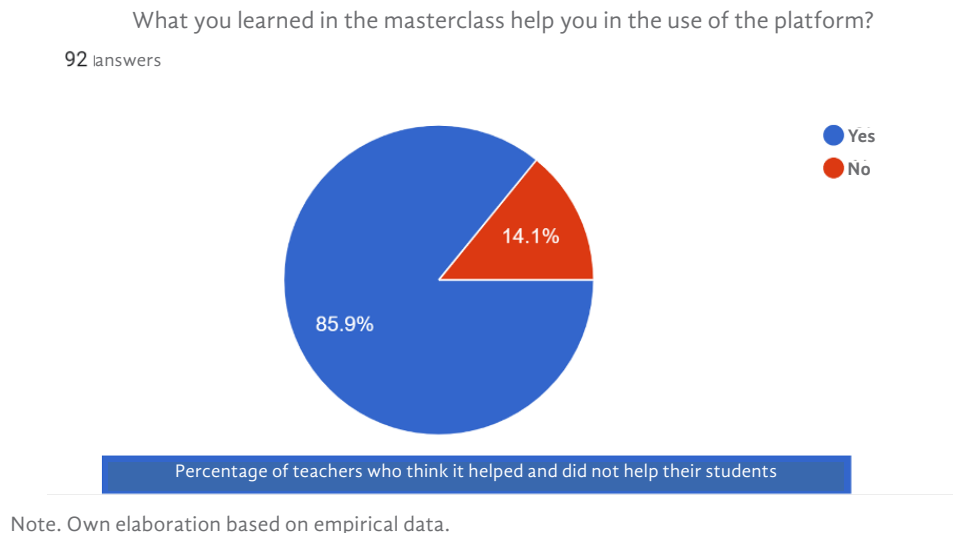
What you learned in the masterclass help you in the use of the platform?

92 lanswers

Note. Own elaboration based on empirical data.

Figure 7. Percentage of teachers who think it helped and did not help their students

The analysis of the survey revealed a significant positive response from teachers towards the training received, with 90% reliability, based on 92 responses. Calculating confidence intervals for these ratios suggests that the effectiveness of implemented pedagogical strategies, including gamification and adaptive learning, is consistently high in different educational contexts.

However, when performing an analysis of variance, ANOVA, to compare the average grades obtained in each masterclass, it was identified that adaptive learning and flipped classrooms were particularly effective, indicating that these strategies may have a more pronounced impact on improving teachers' digital skills and student learning.

Using multiple regression analysis, we examined how the combination of variables, such as the teacher's country of origin, the educational level at which they teach, and the specific teaching strategy influence the perception of improvement in digital skills and student learning. The results suggest that while the country of origin has a moderate effect, the level of education taught and the specific pedagogical strategy are significant predictors of success, underlining the importance of tailoring pedagogical strategies to the specific educational context.

Discussion of these results encompasses several key dimensions. First, the regional contextualization highlights how variability in access to technology and internet infrastructure in Latin America can influence the effectiveness of the implementation of digital pedagogical strategies. These factors should be considered by education systems when generalizing and applying these findings.

In terms of pedagogical implications, the study reinforces the need for teacher training in pedagogical strategies that enhance the use of LMS platforms such as NEO. The adaptability and customization of these strategies to meet the specific needs of students and teachers emerge as crucial elements for educational success.

The sustainability and scalability of these improvements represent a challenge and an opportunity. The study suggests the need for institutional engagement to integrate these strategies into regular educational practice and explore mechanisms to extend the benefits to a wider audience.

Finally, the discussion points to future research that should explore the long-term effects of the training received the comparison between different LMS platforms, and the impact of pedagogical strategies in various academic disciplines. These research areas could provide a more complete understanding of how to maximize the potential of educational technologies in Latin America.

This detailed analysis and discussion underscores the complexity and potential of implementing digital pedagogical strategies in varied educational settings, highlighting the importance of an adaptive and sustained approach to improving education through technology.

CONCLUSIONS

In conclusion, teaching strategies are essential for online education, as they allow teachers to provide an effective and quality educational experience to students. Implementing these strategies can improve teaching practice and student learning, which in turn can have a positive impact on their academic performance and future success. Teachers must be constantly trained and updated on these strategies to be able to adapt to changes in the educational environment and provide a high-quality education.

The research results show that most of the teachers who participated in the masterclass found the information received relevant, clear, current, and applicable in the educational process. In addition, the vast majority implemented what they learned in their virtual classroom, using the necessary features and tools according to the assessment rubric. It was also noted that learning about learning strategies helped improve the use of LMS tools and that this had a positive impact on student learning from participating teachers. These results indicate that learning about the teaching strategies taught in the masterclass was effective in providing teachers with knowledge and skills that they were able to apply in their educational practice and benefit their students. However, some teachers who did not obtain benefits or did not implement what they learned in the masterclass were also identified, which could indicate the need to continue working on teacher training and support to ensure greater adoption and effectiveness of the new educational tools and approaches. As noted, appropriate and effective teaching strategies allow students to actively engage in the learning process, which helps them better understand concepts and retain information more effectively. If these strategies are effective, they can improve students' ability to retain and remember information, especially in environments considered dehumanized such as distance education. Likewise, if the strategies are creative and stimulating, they can help motivate students and keep their interest in the learning process, as well as be adapted to meet the specific needs of students and ensure that the material is presented. In this sense, the use of learning strategies is of great value clearly and effectively.

Overall, the results suggest that the learning of teaching strategies had a positive impact on teaching practice and student learning, but continuous evaluations and improvements should continue to be made to ensure optimal results in the implementation of the tools and approaches learned. Thus, the results indicate that learning about teaching strategies and implementing them appropriately will be effective in improving teaching practice and student learning, but an ongoing and sustained approach is required to ensure long-term effectiveness.

REFERENCES

Aguilera-Ruiz, C., Manzano-León, A., Martínez-Moreno, I., del Carmen Lozano-Segura, M., y Yanicelli, C. (2017). El modelo flipped classroom. *International Journal of Developmental and Educational Psychology, 4*(1), 261-266.

Capita, A. (2009). Las estrategias de aprendizaje. *Revista de innomacion y Experiencias educativas, 8.*

Casas, J. (2011). RIEOEI. *Educación a distancia modelo generador de mitos.* http://www.rieoei.org/deloslectores/482Almenara.pdf

Contreras Espinosa, R. S. y Eguia, J. L. (eds.) (2017). *Experiencias de gamificación en aulas.* Universitat Autònoma de Barcelona. https://ddd.uab.cat/pub/llibres/2018/188188/ebook15.pdf

Edel-Navarro, R. (2010). Entornos virtuales de aprendizaje: la contribución de" lo virtual" en la educación. *Revista mexicana de investigación educativa, 15*(44), 7-15.

Hernández-Sampieri, R., Fernández, C. y Baptista, P. (2010). *Metodología de la investigación* (5.a edición). McGraw-Hill.

Hinostroza, E. (2017). *TIC, educación y desarrollo social en América Latina y el Caribe.* Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura, (UNESCO).

López, P. (2004). Población muestra y muestreo. *Punto cero, 9*(08), 69-74.

Morillo L, Galisteo G. (2016). *Aprendizaje adaptativo.* Universidad de Valladolid. https://1library.co/document/oy8n4nwy-aprendizaje-adaptativo.html

Obesso Arias y Núñez (2020). *Libro de Actas. X Congreso Universitario Internacional sobre Contenidos, Investigación, Innovación y Docencia.* https://dialnet.unirioja.es/servlet/libro?codigo=824983

Vercellino, S. (2022). *Enseñar y aprender en contextos institucionales post COVID.*