

UPDATE OF PEDAGOGICAL COMPETENCES FOR TEACHERS IN VIRTUAL
ENVIRONMENTS OF THE POSTGRADUATE GRADUATE IN HIGHER
EDUCATION IN CHILE

*ATUALIZAÇÃO DE COMPETÊNCIAS PEDAGÓGICAS PARA PROFESSORES EM
AMBIENTES VIRTUAIS DE PÓS-GRADUAÇÃO EM ENSINO SUPERIOR NO CHILE*

*ACTUALIZACIÓN DE COMPETENCIAS PEDAGÓGICAS PARA DOCENTES EN
ENTORNOS VIRTUALES DEL POSTGRADO EN EDUCACIÓN SUPERIOR EN CHILE*



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How to reference this article:

CATALÁN, J. P.; PÉREZ, E. Update of pedagogical competences for teachers in virtual environments of the postgraduate graduate in Higher Education in Chile. **Revista Ibero-Americana de Estudos em Educação**, Araraquara, v. 18, n. 00, e023061, 2023. e-ISSN: 1982-5587. DOI: <https://doi.org/10.21723/riace.v18i00.17894>



| Submitted: 23/03/2023
| Revisions required: 06/07/2023
| Approved: 13/08/2023
| Published: 11/09/2023

Editor: Prof. Dr. José Luís Bizelli
Deputy Executive Editor: Prof. Dr. José Anderson Santos Cruz

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ABSTRACT: The current research project aimed to know the pedagogical competencies of the Postgraduate in Teaching for Higher Education after analyzing these competencies to generate audiovisual didactic resources that promoted innovation in teachers and compliance with the student-centered learning profile. Therefore, the authors do qualitative research to identify the teachers' essential competencies. Based on the results, appropriate resources were doing to strengthen their training, the chosen instruments being the podcast, video capsule, and infographics. According to the survey applied and analysis of the results obtained in the evaluation of the validating experts who passed 90% and from the teachers (100%), we concluded that the acquisition of digital skills had favored the teaching practice of the students of the postgraduate, improving their teaching strategies, their praxis and facilitating the acquisition of learning by their students.

KEYWORDS: Innovation in education. ICT. Digital active methodologies. Higher Education. Pedagogical competences.

RESUMO: O presente projeto de pesquisa buscou conhecer as competências pedagógicas dos professores da pós-graduação em Docência para o Ensino Superior e, após a análise, produzir um portal de recursos didáticos audiovisuais que promovesse a inovação nos docentes e a efetivação do perfil de aprendizagem voltado ao estudante da Universidade Andrés Bello. Foi realizada uma pesquisa qualitativa para identificar as competências básicas dos professores e, com base nos resultados, foram elaborados recursos adequados para fortalecer a formação dos professores, sendo eles, podcast, cápsulas de vídeo e infográfico. De acordo com o questionário e análise dos resultados obtidos na avaliação dos especialistas, que aprovaram em 90%, e por parte dos docentes (100%), concluiu-se que a aquisição de competências digitais tem favorecido a prática docente dos alunos da pós-graduação, melhorando suas estratégias de ensino, sua práxis e facilitando a aquisição de aprendizado por seus alunos.

PALAVRAS-CHAVE: Inovação em educação. TIC. Metodologias ativas digitais. Ensino Superior. Competências pedagógicas.

RESUMEN: El presente proyecto de investigación buscó conocer las competencias pedagógicas de los docentes del Postgrado en Docencia para la Educación Superior, y tras el análisis generar recursos didácticos audiovisuales que promovieran la innovación en los docentes y el cumplimiento del perfil de aprendizaje centrado en el estudiante. Se realizó una investigación cualitativa para identificar las competencias básicas de los docentes, y con base en los resultados se elaboraron recursos apropiados para fortalecer su formación, siendo los instrumentos elegidos el podcast, video cápsula y la infografía. De acuerdo con la encuesta aplicada y el análisis de los resultados obtenidos en la evaluación de los expertos validadores quienes aprueban en un 90% y de parte de los docentes (100%), se concluyó que la adquisición de competencias digitales ha favorecido el ejercicio de la práctica docente de los estudiantes del postgrado, mejorando sus competencias pedagógicas.

PALABRAS CLAVE: Innovación en educación. TIC. Metodologías activas digitales. Educación Superior. Competencias pedagógicas.

Introduction

Higher Education in Chile includes universities, professional institutes and technical training centers, which is constantly reviewed based on quality assurance and, therefore, accreditation, with the National Accreditation Commission (CNA) being the body responsible for implementing the new criteria and quality standards (BERNASCONI *et al.*, 2020). One of the postgraduate programs reviewed by the CNA is the Postgraduate Degree in Teaching for Higher Education. This is a postgraduate course that provides pedagogical skills to teach in higher education in accordance with the new challenges of the 21st century, contributing to the improvement of academic quality, complementing the students' vision so that they experience the development of skills and knowledge, with which they can teach at a high level.

In context, it is necessary to update pedagogical skills in virtual environments, the integration and mastery of Information and Communication Technologies (hereinafter ICT) by teaching staff as a fundamental part of their training, since it is precisely the audiovisual language that makes part of the student's educational trajectory. Following this logic, it is coherent to think about the creation of pedagogical support tools of an audiovisual nature, since through the use of this shared language it is possible to favor the integration of concepts and teaching tools, for a population of teachers who need to be continually trained in pedagogical processes that involve ICT, given that one of the essential skills is digital competence (VIÑOLES-COSENTINO *et al.*, 2022).

Bruno and Dell'Aversana (2018) point out that teaching in higher education cannot be assumed or defined only based on theory, but, based on the teaching exercise itself, from what Schön proposes as reflective practice. In other words, a teacher's training must be focused not only on the acquisition of knowledge, but must also be enhanced through continuous reflection on their work and teaching strategies and is a fundamental part not only in their continued training, but also in the search for innovations and opportunities for improvement.

The current lack of definition of the functions of a university professor makes the task of characterizing their professional skills difficult, however, in terms of most of their functions and in accordance with what is proposed in this research project, it can be established that the professor must design learning resources according to the professional profile of their students and the planning of the discipline program, guide their students by promoting learning, evaluate the coherence and relevance of their assessments, develop virtual digital resources for students who take blended or virtual, collaboratively contribute to teaching improvements based on reflection and continuous training. Taking these teaching skills into account, there is no doubt

that the challenge arises in the face of constant changes in pedagogical practice through reflection in and on practice (BRUNO; DELL'AVERSANA, 2018) where the teacher becomes a researcher of his own practice pedagogical.

In today's society, also called the knowledge society, information has become one of the main values, with education being precisely a transcendental way of acquiring it. This is strong and increasingly marked by the presence of so-called ICTs, which accompany and renew educational processes in all contexts (GÓMEZ-TRIGUEROS; PONSODA; DÍEZ, 2021), becoming, from 2019 onwards, indispensable to continue to the educational processes of millions of students.

In relation to the above and in order to establish the knowledge or skills that teaching staff must handle for the integration of ICT in the classroom, Bruno and Dell'Aversana (2018) highlight the importance of certain essential conditions to establish a learning environment conducive, as this leads to better training and preparation of future professionals. Furthermore, we must consider the paradigm shift in teacher training, which requires the inclusion of ICT (GÓMEZ-TRIGUEROS; PONSODA; DÍEZ, 2021) as a basic element of their training, for which educators must be in constant training. The integration of ICT allows teachers to teach in a constructive way, taking into account the context in which teaching takes place, in a creative way, to creatively resolve pedagogical decision-making. Following this logic, Viñoles-Cosentino *et al.* (2022) highlight that there is no single way to integrate ICT into the curriculum, but that there are multiple ways that depend on factors such as knowledge, context, subject area, experience, among others.

Therefore, the teacher must be trained in the disciplinary, pedagogical and technological area (FERNÁNDEZ *et al.*, 2019). There are multiple and varied meanings regarding the concept of ICT, however, we can say that ICT is a social achievement that facilitates information and communication processes, thanks to various technological developments, in favor of the construction and expansion of knowledge that results in satisfying the needs of members of a given social organization, and which made it possible to promote the use of various audiovisual media, making them more accessible and easy to use, and which opened up a range of possibilities at the educational level (MARINO-JIMÉNEZ; TORRES-RAVELLO; VALDIVIA-LLERENA, 2020). Multiple studies in educational psychology have revealed the advantages of using audiovisual resources in the classroom, emphasizing the simultaneity with which information is perceived through the senses. Audiovisual media and ICT, used as a teaching tool, not only allow communication and the generation of learning, but also allow giving new

meaning to students' everyday culture (HIDALGO NAVARRETE; ALIAGA ZEGARRA, 2020).

Methods

The methodology used responds to qualitative research based on a case study with an action research design that considers the perception of the subjects under study about the intervention (NÚÑEZ-ROJAS *et al.*, 2021). The approach to the problem explains the lack of updating of pedagogical skills in virtual environments in the delivery of the student-centered teaching process of teachers who teach online in the Postgraduate Program in Teaching for Higher Education at a Chilean university. The research incorporates the use of audiovisual media to update teaching pedagogical skills, aiming to facilitate the understanding of learning processes for teachers, supporting them from the path of learning styles, planning of teaching activities and assessment for learning, seeking to be the scaffolding in updating pedagogical knowledge that points to innovation and learning in current contexts (ROIG-VILA, 2020).

To carry out the project, the following specific objectives were proposed:

- 1) Identify pedagogical skills of teachers who teach online classes in the Postgraduate Program in Teaching for Higher Education.
- 2) Develop audiovisual resources to develop pedagogical skills for a student-centered learning process in teachers of the postgraduate program in Teaching for Higher Education.
- 3) Assess the relevance of audiovisual resources in contributing to the development of pedagogical skills in teachers in the Postgraduate Program in Teaching for Higher Education.

Information was obtained about the skills of teachers studying postgraduate studies in University Teaching, through a survey in Office Forms (<https://forms.office.com/r/eUJxkVxVHs>), which made it possible to identify teachers' pedagogical skills in virtual environments. To demonstrate the impact of the intervention, experts were validated to evaluate the material generated by teachers and a forum was held to learn about participants' impressions about the use of digital tools.

Discussion

After the pandemic, we saw how education and teaching practices underwent important transformations. Not only for programs or study centers, but also for teachers, in the skills they must teach their students, including digital skills as a basis, in order to train professionals capable of facing the changes that the post-digital society demands (HUESO-ROMERO *et al.*, 2021), since technology has become one of our vital needs (JANDRIĆ *et al.*, 2019). As we leave behind the teacher-centered learning model for a student-centered model, we must also be concerned with teacher training to change its paradigm and facilitate the acquisition of skills necessary for 21st century professionals. Therefore, we are facing a new crossroads for the acquisition of learning, finding ourselves in the need to incorporate teaching resources mediated by technology, changing our perception when using technology as a necessary tool in teaching practice.

It is, therefore, important to contextualize postgraduate teachers in Teaching for Higher Education in light of the educational needs of the 21st century, which is why the proposal for this project arose from this need, considering that digital skills are the basis of the student-centered educational model and which requires him to acquire basic skills to achieve his professional profile.

Within the professional profile of the Postgraduate Degree in Teaching for Higher Education, the teacher must:

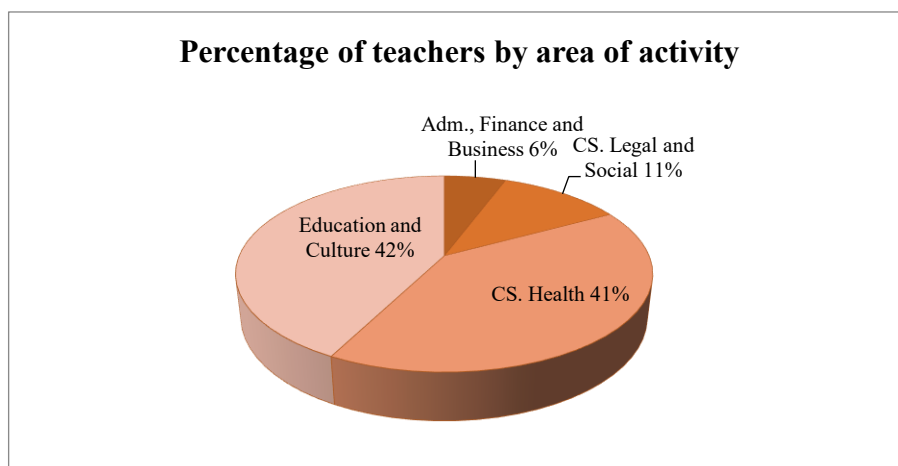
- Have skills to design, implement and evaluate teaching practices that are grounded and coherent with their performance context.
- Be a caring professional who generates innovative and challenging educational experiences.
- Have the ability to work collaboratively and value diversity as an enriching element of educational practice.
- Furthermore, it is possible to provide quality teaching focused on learning students' skills, in the different scenarios and contexts of Higher Education.

Once again, when reviewing the profile of this postgraduate course, the need to provide postgraduate students with the tools necessary for their practice becomes evident.

For the project described here, the sample consisted of 210 teachers. 60% of teachers are women and 51% have been teaching for 11 years or more. Within the sample group, 67%

have a postgraduate degree. Regarding the ages of teachers, 11% are under 30 years old. The area of activity is located in Administration, Finance and Business, Legal and Social Sciences, Health Sciences and Education and Culture (Fig.1).

Figure 1 – Circular frequency graph according to the teachers' area of activity



Source: Own preparation

Another aspect to be considered is that the sample includes teachers from three levels of training (Table 1). When the basic cycle is conducive to a bachelor's degree, the intermediate cycle to a degree and the professional cycle to a professional career title. This shows that, in the sample, the teachers surveyed are working with higher education students in the last levels of their career, when they are in the process of obtaining their professional title, followed by the first years (basic cycle). Hence the importance of knowing how qualified teachers are in the digital skills necessary to comply with the Chilean educational model and the graduation profile.

To understand teaching skills, a questionnaire with a Likert scale was applied for five response levels: 1 = Totally disagree, 2 = Disagree, 3 = Undecided, 4 = Agree and 5 = Completely agree. The research was divided into 51 questions, which are demarcated into four dimensions that correspond to the technical-pedagogical, relational, disciplinary and evaluative areas, for a Teaching-Centered Model (13 items), Learning-Centered Model (18 items) and Teaching-Centered Skills (20 items).

The analysis indicates that 48 % of teachers use a teaching-focused model, manifesting strong roots in teaching behaviors and attitudes that are strongly teacher-centered, while 55% identify with a learning-focused model for their teaching practice, with 72% of teachers to declare that they have basic teaching skills. To inquire about teachers' digital skills, interviews

and forums were held at the beginning of the course, in order to learn about and identify (in general) the digital tools they were using in their teaching practice. It is evident, after the initial activity, that although teachers are clear about learning models, the teacher-centered model is still strongly rooted, with classes that use ICT tools only to evaluate or present a topic, without giving much participation to the student, and carrying out more of an expository speech than allowing the student to create their own learning, not giving rise to monitoring students in the learning process.

Table 1 – Percentage of distribution of teachers according to higher education training levels

Training Cycle	Percentage
Basic Cycle	30%
Intermediate Cycle	21%
Professional Cycle	49%

Source: Own preparation

To analyze the reliability and internal consistency of the research applied to teachers, the Cronbach coefficient analysis was carried out (Table 2), observing that high reliability was obtained for both the research questions and for each model, obtaining higher values to 0.8 on each of the scales.

Given these results, three audiovisual strategies were chosen: podcast, video capsule and infographics to reinforce teachers' digital skills. The choice is justified by the fact that the podcast in education, as Sethi, Lettelleir and Mays (2023) indicate, can be a teaching tool that infers educational content intended by the teacher, which is why the research team decided to implement four podcasts as key to the pedagogical training meeting, familiarizing teachers with the topics that will be covered in this instance. Among the main advantages of using video in teaching-learning processes are the possibility of transmitting information in a creative way, fulfilling an important motivating function for students (YZIDI, 2019). The importance of the quality of the production of video capsules is directly related to the impact they have on the target audience and the reframing of their content (MARINO-JIMÉNEZ; TORRES-RAVELLO; VALDIVIA-LLERENA, 2020), for this the rigor of the proposal visual and sound must be at an attractive level for the consumer, in the same way, for the research team it is essential to subtitle them to have a much more inclusive product. Given the organizational structure of information in an infographic, it becomes an element of information transmission, delivering content to the user that acquires meaning through the graphic, and allows him to

assimilate and learn it (SIMON DOLZ, 2020). The use of infographics in the educational field is still recent and unprecedented, and has two aspects, on the one hand, its use in the classroom as a way of presenting information and attracting students' attention; and, on the other, bring the student closer to its creation and, thus, develop the skills to search, obtain and process information, that is, develop digital competence and information processing (FERNÁNDEZ MÁRQUEZ *et al.*, 2019; JALENIAUSKIENE; KASPERIUNIENE, 2023).

Each of the digital strategies used and developed by postgraduate teachers was subjected to the judgment of experts in the teaching area, regarding their relevance with regard to formal and content aspects, who consider in their analysis that the results are very satisfactory. Among the suggestions are positive comments, highlighting the relevance, the time used (podcast), the ease of generating expectations in the receiver, the adequate time for acquiring and retaining the content of the video capsules.

Table 2 – Analysis of the Cronbach coefficient for the questionnaire with teachers

Reliability	Cronbach coefficient
Survey questions (51 questions)	0.847
Teaching-Centered Model (13 questions)	0.849
Learning-Centered Model (18 questions)	0.839
Teaching Skills (20 questions)	0.901

Source: Own preparation

Once the information from the experts' evaluation had been analyzed, the postgraduate teaching professors met again to analyze the results obtained after using the three digital strategies used in the course and, through a new forum, they commented on the experience and the relevance of using these strategies for the acquisition of learning by their students, concluding that, in order to improve teaching-learning strategies, it is necessary to adapt to the changes that education brings in the 21st century to the point that digital strategies must accompany the teaching exercise, being facilitators in the acquisition of learning and knowledge, and that teaching reflection must be a constant exercise.

The incorporation of ICT is a fundamental point in making changes in teaching practice, as it directly impacts students. Now, if we consider that this change is close to the reality of highly connected students in the 21st century, this paradigm shift towards the use of ICT in teaching enriches teaching practice and facilitates the acquisition of learning.

By analyzing pedagogical skills for teaching in higher education, from a qualitative perspective using the technique of discourse analysis, through semi-structured interviews and exhaustive analysis of the speeches of university professors from different disciplines, the key skills that teachers consider fundamental to their teaching practice at higher education. The pedagogical skills identified in this study were grouped into six main categories: "Content Mastery", "Innovative Teaching Methodologies", "Course Design and Planning", "Assessment and Feedback", "Educational Technology" and "Inclusion and Diversity". Each of these categories was analyzed in detail, highlighting the specific dimensions and characteristics that teachers considered critical for their professional development and for improving their teaching practice, which are presented in Table 3.

Table 3 – Analysis of specific dimensions and characteristics that teachers consider critical for their professional development

Pedagogical skills	Challenges of Teaching in Higher Education
Content mastery	- Stay up to date in an ever-evolving field. - Adapt the content to different subjects and levels.
Teaching methodologies	- Integrate innovative approaches to capture students' attention. - Adapt methodologies to meet individual needs.
Course design and planning	- Define clear and measurable learning objectives. - Sequencing content in a logical and progressive manner.
Assessment and feedback	- Design authentic assessments that measure practical skills. - Provide constructive and timely feedback.
Educational technology	- Integrate technological tools effectively in the classroom. - Stay up to date with new educational technologies.
Inclusion and diversity	- Serve students with different learning styles. - Create an inclusive and respectful environment in the classroom.
Active and collaborative learning	- Encourage student participation. - Facilitate collaboration between students.
Communication skills	- Communicate clearly and effectively with students. - Encourage open communication and feedback.
Reflection and continuous improvement	- Constantly reflect on your own teaching practice. - Be open to training and continuous professional development.

Source: Own preparation

After analyzing the directions and characteristics, it is evident in relation to "Content Mastery", that teachers highlighted the importance of in-depth and updated knowledge in their areas of study to provide a relevant and quality education to their students. The ability to integrate research with teaching and encourage critical thinking also emerged as a fundamental competence in this dimension. Regarding "Innovative Teaching Methodologies", teachers emphasized the need to adopt creative and adaptive pedagogical approaches to promote active and meaningful learning. The use of strategies such as project-based learning, gamification and collaborative learning was highlighted as an effective means of maintaining student interest and engagement. For "Course design and planning" it was presented as another critical dimension in teaching practice. Teachers recognized the importance of establishing clear learning objectives, sequencing content logically, and appropriately selecting teaching activities to achieve a coherent and effective learning experience. Regarding "Assessment and feedback", it was found that teachers value the implementation of authentic and meaningful assessments that go beyond memorizing data. Timely and constructive feedback has been identified as a key strategy for guiding student progress and promoting academic growth. Regarding "Educational Technology", teachers expressed the need to effectively incorporate technological tools into the classroom to enrich the learning experience. However, the need for continuous training in the use of these tools and adaptation to constant technological innovations was identified. Finally, the dimension "Inclusion and diversity" was highlighted as a central competence for higher education teachers. Sensitivity and the ability to create an inclusive environment that respects student diversity was considered essential to students' academic and personal success.

In summary, this qualitative study focusing on discourse analysis made it possible to identify and analyze the fundamental pedagogical skills that higher education teachers consider fundamental in their teaching practice. The results obtained provide a comprehensive and reflective view of the training of teachers who are increasingly qualified and qualified to face the challenges of the current educational context. Likewise, it is expected that this research will contribute to the continuous improvement of the quality of teaching in higher education and serve as a starting point for future research and the development of educational policies aimed at strengthening university education.

We see as a conclusion of this project that active digital methodologies are necessary for teachers (PÉREZ; CATALÃO, 2022). To this end, it requires learning influencers capable of exerting a positive influence on the acquisition of learning for their students, guiding them to be protagonists in the construction of knowledge, and for this, active digital methodologies,

according to Gil-Quintana (2023, p. 16, our translation), "based on connected, participatory and empowered learning" are fundamental. To achieve this objective, teachers must be constantly updated in relation to the use of technology, which is why their training becomes very important throughout their teaching career.

In this 21st century, teachers not only need disciplinary knowledge for their work (LEVY; MORANDI, 2022), but also the ability to face changes with the necessary tools, which implies the incorporation of new teaching resources to generate learning in its students mediated by technology, adapting to the new scenarios that the post-pandemic left us with. This implies that knowledge about a subject is not the only thing needed in the classroom, you also need a teacher who knows how to transmit this knowledge and allows the student to create and build learning, always accompanied by a teacher who is attentive to changes that are experienced, attentive to the use of new tools, teachers must not only know the technology, but also know when and how to use it. This implies, then, that being a teacher is an arduous and challenging task at this time, and that it needs not only our disciplinary knowledge, but also how we adapt to changes and face them, we are, according to Paulo Freire, agents of change from our classrooms. Therefore, let's adapt this to 21st century with the tools it provides us to facilitate and support our teaching practice.

Final remarks

After analyzing the results obtained, it is concluded that the objective of identifying teachers' skills has been fulfilled, highlighting their level of general knowledge about digital strategies.

The objective of developing digital strategies for the development of pedagogical skills in a student-centered learning model and its relevance with regard to its application is met, a fact that was verified through validation with expert validators and teacher evaluation postgraduate courses in relation to the acquisition of new skills.

Although there is reluctance on the part of teachers in the face of the paradigm shift that leaves behind the teacher-centered model, after the development of the project and the individual conversations they had with them, a better willingness to incorporate ICT into their teaching was observed and a growing desire to acquire digital skills.

Projections

It remains as a projection and complement to the work carried out to apply a conclusion survey after the acquisition of pedagogical skills instead of the forum, and to carry out a *focus group* that allows demonstrating the effect of the acquisition of teaching skills of postgraduate students on their own students.

REFERENCES

- BERNASCONI, A. *et al.* Aseguramiento de la calidad y la nueva Ley de Educación Superior. **Temas de la Agenda Pública**, Centro de Políticas Públicas UC, v. 15, n. 125, p. 1-14, 2020.
- BRUNO A.; DELL' AVERSANA, G. Reflective practicum in higher education: The influence of the learning environment on the quality of learning. **Assessment and Evaluation in Higher Education**, v. 43, n. 3, p. 348-358, 2018.
- FERNÁNDEZ MÁRQUEZ, E. *et al.* **La competencia digital en la docencia universitaria**. Barcelona, España: Ediciones OCTAEDRO, S.L., 2019.
- GIL-QUINTANA, J. (coord.). **Píldoras de Innovación Educativa en contextos universitarios**. Una perspectiva desde la Investigación-Acción. Barcelona, España: Ediciones OCTAEDRO, S.L., 2023.
- GÓMEZ-TRIGUEROS, I. M.; PONSODA, S.; DÍEZ, R. Towards an Insertion of Technologies: The Need to Train in Digital Teaching Competence. **International and Multidisciplinary Journal of Social Sciences**, v. 10, n. 3, p. 64-87, 2021.
- HIDALGO NAVARRETE, J.; ALIAGA ZEGARRA, S. E. Análisis de las estrategias didácticas para el diseño, selección, producción, utilización y validación de recursos educativos audiovisuales interactivos en una institución educativa. estudio inicial. **Revista Electrónica De Investigación y Docencia (REID)**, n. 23, p. 79–98, 2020.
- HUESO-ROMERO, J. J. *et al.* The Social and Transfer Massive Open Online Course: Post-Digital Learning. **Future Internet**, v. 13, n. 5, p. 119, 2021.
- JALENIAUSKIENE, E.; KASPERIUNIENE, J. Infographics in higher education: A scoping review. **E-Learning and Digital Media**, v. 20, n. 2, p. 191–206, 2023.
- JANDRIĆ, P. *et al.* Ciencia postdigital y educación. Communiars. **Revista de Imagen, Artes y Educación Crítica y Social**, n. 2, p. 11-21, 2019.
- LEVY, E.; MORANDI, G. **Formación docente universitaria**. Un desafío postergado. Colección Que se Pinte de Pueblo. Buenos Aires, Argentina: CLACSO, IEC-CONADU, 2022.

MARINO-JIMÉNEZ, M.; TORRES-RAVELLO, C.; VALDIVIA-LLERENA, G. Educación y medios audiovisuales: una reflexión sistémica para su implementación, fortalecimiento y sostenibilidad. **Propósitos y Representaciones**, v. 8, n. 1, e438, 2020.

NÚÑEZ-ROJAS, N. *et al.* Formación de competencias docentes desde la investigación-acción. **Formación Universitaria**, v. 14, n. 4, p. 133-142, 2021.

PÉREZ, E.; CATALÁN, J. P. Propuesta Docente implementando las TIC con metodologías activo-participativas en la asignatura Biología Celular para Enfermería. **RIIED**, v. 3, n. 1, p. 11-22, 2022.

ROIG-VILA, R. (Ed.). **La docencia en la Enseñanza Superior**. Nuevas aportaciones desde la investigación e innovación educativas. Barcelona, España: Ediciones OCTAEDRO, S.L., 2020.

SETHI, N.; LETTELLEIR, J.; MAYS, K. A. Incorporation of podcast as an adjunctive study material for national board examination: A preliminary study. **J Dent Educ.**, v. 87, p. 1042–1046, 2023.

SIMON DOLZ, Y. Methodology for the use of didactic infographics in the postgraduate pedagogical process of the center for the study of technologies and systems. **Conrado**, Cienfuegos, v. 16, n. 74, p. 12-21, 2020.

VIÑOLES-COSENTINO, V., SÁNCHEZ-CABALLÉ, A.; ESTEVE-MON, F. M. Desarrollo de la competencia digital docente en contextos universitarios. Una revisión sistemática, REICE. **Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación**, v. 20, n. 2, p. 11-27, 2022.

YZIDI, F. Z. El podcast como herramienta creativa para desarrollar el aprendizaje y autoaprendizaje del E / LE. **Trans**, n. 23, 2019.

CRediT Author Statement

Acknowledgments: Not applicable.

Financing: Not applicable

Conflicts of interest: There are no conflicts of interest.

Ethical approval: Data ethics were respected, but no ethics committee.

Availability of data and material: The results are attached in PDF as a database.

Authors' contribution: The work was carried out in a collaborative and balanced way between the two researchers.

Processing and editing: Editora Ibero-Americana de Educação.
Proofreading, formatting, normalization and translation.

