Revista Científica Interdisciplinaria Investigación y Saberese
2025, Vol. 15, No. 2 e-ISSN: 1390-8146
Published by: Universidad Técnica Luis Vargas Torres

Use of ICT as a Training Tool in the Preparation of Researchers in Educational Sciences

Uso de las TIC como herramienta formativa en la preparación de investigadores en Ciencias de la Educación

Víctor Manuel Barros
Magister en Educación con mención en Enseñanza de la Matemática. Universidad de Guayaquil
Victor.barros@ug.edu.ec
https://orcid.org/0009-0006-6205-6976
Nelly Maricela Crespata Barriga
Magister en Informática Educativa. Universidad Técnica de Ambato
Nelly.crespata@uta.edu.ec
https://orcid.org/0009-0005-3138-3889
Esther Eulalia Corrales Tapia
Magíster en Docencia Universitaria y Administración Educativa Instituto Superior Tecnológico Vicente León
Esther.corrales@istvl.edu.ec
https://orcid.org/0009-0007-1367-8223
Segundo Bienvenido Camatón Arízabal
Magister en Enseñanza de la Matemática Universidad de Guayaquil
Segundocamaron@ug.edu.ec
https://orcid.org/0000-0001-8327-2869

Received 2025-03-15
Revised 2025-04-10
Published 2025-06-11
Corresponding Author
victor.barros@ug.edu.ec
Pages: 211-227

Abstract

This article aims to analyze, through a narrative literature review, the use of Information and Communication Technologies (ICT) as a formative tool in the training of researchers in the field of Educational Sciences. Based on the analysis of 25 recent academic studies, the main trends, benefits, and challenges associated with the integration of ICT into research training processes were identified. The findings show that ICTs support the development of competencies such as information literacy, autonomous learning, data management, and academic collaboration. However, their effectiveness depends on the existence of institutional policies, adequate infrastructure, and systematic training in digital competencies. It is concluded that ICT,

How to cite this article (APA): Barros, V., Crespata, N., Corrales, E., Camatón, S. (2025) Uso de las TIC como herramienta formativa en la preparación de investigadores en Ciencias de la Educación, *Revista Científica Interdisciplinaria Investigación y Saberes,* 15 (2) 211- 227

when used with pedagogical intention, contributes to transforming research education and democratizing access to scientific knowledge. It is also recommended to continue advancing in empirical studies that assess the specific impact of these technologies in various educational contexts.
Keywords: ICT, research training, digital competencies, Educational Sciences.

Resumen

El presente artículo tiene como objetivo analizar, a través de una revisión narrativa de la literatura, el uso de las Tecnologías de la Información y la Comunicación (TIC) como herramienta formativa en la preparación de investigadores en Ciencias de la Educación. A partir del análisis de 25 estudios académicos recientes, se identificaron las principales tendencias, beneficios y desafíos asociados a la integración de las TIC en el proceso de formación investigativa. Los resultados muestran que las TIC permiten fortalecer competencias como la alfabetización informacional, la autonomía en el aprendizaje, la gestión de datos y la colaboración académica. Sin embargo, también se evidencia que su efectividad depende de la existencia de políticas institucionales, infraestructura adecuada y una formación sistemática en competencias digitales. Se concluye que las TIC, cuando son utilizadas con intencionalidad pedagógica, contribuyen a transformar la enseñanza de la investigación y a democratizar el acceso al conocimiento científico. Asimismo, se recomienda continuar profundizando en estudios empíricos que evalúen el impacto específico de estas tecnologías en contextos educativos diversos.
Palabras clave: TIC, formación investigativa, competencias digitales, Ciencias de la Educación.

Introduction

Today, information and communication technologies (ICT) have profoundly transformed educational processes, especially in higher education. UNESCO (2020) highlights that ICT are tools that can complement, enrich, and transform education by facilitating access to information and promoting new forms of teaching and learning. This transformation has been accelerated by global events such as

the COVID-19 pandemic, which forced educational institutions to adopt virtual modalities and integrate digital technologies into their teaching practices (Guzmán, 2023).

The incorporation of ICT in higher education has not only allowed the educational process to continue in times of crisis, but has also opened up new possibilities for pedagogical innovation and improvements in educational quality. Tools such as online learning platforms, open educational resources, and interactive applications have facilitated the personalization of learning, access to up-to-date materials, and collaboration between students and teachers (Punina et al., 2024).

The training of researchers in Education Sciences is a complex process that requires the development of specific theoretical and methodological skills. Future researchers must be able to formulate relevant research questions, design rigorous studies, analyze data critically, and communicate their findings effectively. In addition, they must be prepared to face the ethical and social challenges that educational research entails (Sánchez, 2020).

In this context, the integration of ICTs into research training can offer multiple benefits. Digital technologies can facilitate access to academic databases, enable complex statistical analysis, and foster collaboration between researchers from different geographical contexts. Likewise, ICTs can support the development of digital skills essential for research, such as information literacy, bibliographic reference management, and scientific communication in digital environments (Guzmán, 2023).

Several studies have explored the impact of ICT on the training of researchers in Education Sciences. For example, Punina et al. (2024) conducted a systematic review of the role of ICT in the implementation of active methodologies in education, highlighting that the integration of digital technologies can enrich the teaching-learning process and promote the development of research skills. Similarly, Guzmán (2023) analyzed the relationship between digital skills and academic performance in higher education students, finding a positive correlation between ICT proficiency and the quality of research work.

On the other hand, Sánchez (2020) emphasizes the importance of ICT in research training, pointing out that digital technologies not only facilitate access to information but also promote new ways of thinking and approaching educational problems. The author argues that the integration of ICT in researcher training can contribute to the construction of a more dynamic, collaborative, and problem-solving research culture.

Despite the potential benefits of ICT in research training, its effective integration faces several challenges. These include the lack of adequate technological infrastructure, resistance to change on the part of some teachers and students, and the need to develop specific digital skills for research (Guzmán, 2023). In addition, it is essential to ensure equity in access to technologies and to promote critical digital literacy that enables researchers to use ICTs ethically and responsibly (Punina et al., 2024).

However, these challenges also represent opportunities to rethink research training models and to design innovative pedagogical strategies that integrate ICTs in a meaningful way. The creation of online communities of practice, the use of collaborative platforms for research, and the incorporation of digital tools in the teaching of research methods are some of the initiatives that can contribute to improving the training of researchers in Education Sciences (Sánchez, 2020).

Given the above, the purpose of this study is to analyze, through a narrative review of the literature, the use of Information and Communication Technologies (ICT) as a training tool in the preparation of researchers in Education Sciences, identifying the main trends, benefits, and challenges associated with their integration into research training processes.

Methodology

This study is part of a narrative review of the literature aimed at analyzing the use of Information and Communication Technologies (ICT) as a training tool in the preparation of researchers in Education Sciences. The methodological approach adopted responds to the need to critically synthesize existing knowledge on this topic,

allowing for the integration of scattered findings, the identification of emerging trends, and the highlighting of research gaps. Unlike systematic reviews, which use structured protocols and quantitative approaches, narrative reviews are characterized by their flexibility in the selection and analysis of sources, offering an in-depth, interpretative, and contextualized analysis of the information collected (Ferrari, 2015). To ensure the quality and relevance of the sources, explicit search, inclusion, and exclusion criteria were defined. The keywords used were: "ICT," "research training," "digital skills," "higher education," and "training of researchers in Education Sciences." The search was conducted in recognized academic databases such as Scopus, RedALyC, SciELO, ERIC, and Google Scholar. Only peer-reviewed articles published between January 2020 and April 2025 in Spanish and English were considered. Works that did not directly address the link between ICT and research training processes were excluded, as were publications with an exclusively technical or basic or intermediate level focus. The methodological process was carried out in four phases. The first phase consisted of an initial exploration by reading titles, abstracts, and keywords to filter the most relevant publications. In the second phase, the selected full texts were critically read, analyzing the theoretical approach, objectives, results, and conclusions of each study. In the third phase, the documents were categorized according to three thematic areas: type of ICT used, research skills developed, and implementation context. Finally, in the fourth phase, an integrative synthesis was developed that allowed connections to be established between the studies, similarities and differences to be identified, and questions for future research to be raised. The final corpus consisted of 25 scientific articles that met all the established methodological criteria and provided recent and relevant evidence on the influence of ICT on the training of researchers in the field of education. This methodological strategy allows us not only to describe the current state of knowledge but also to build a solid theoretical basis for future research and pedagogical proposals.

Results

The results obtained from the narrative review of the 25 selected sources show a growing concern and focus on integrating Information and Communication Technologies (ICT) as a fundamental part of research skills training for students of Education Sciences. First, a general trend toward the use of virtual learning environments and collaborative platforms as effective means for teaching research methodologies was identified. Tools such as Google Scholar, Mendeley, Zotero, ResearchGate, Microsoft Teams, and Moodle are not only used for information management and bibliographic references, but also as spaces for academic interaction where students can discuss ideas, share progress on their projects, and receive formative feedback (Punina et al., 2024; Guzmán, 2023). In addition, it was observed that the use of specialized software for qualitative and quantitative data analysis, such as SPSS, Atlas.ti, NVivo, and Jamovi, has begun to be included in research training courses, allowing students to become familiar with tools that they will later use in professional practice (Sánchez, 2020).

Table 1: *Studies reviewed on the use of ICT in research training in Education Sciences (2020–2025)*

N°	Autor(es) y Año	Título del Estudio	Revista o Fuente	Enlace
1	Guzmán, Y. (2023)	Tecnologías de información y comunicación en la educación superior	Horizontes. Revista de Investigación en Ciencias de la Educación	https://doi.org/10.33996/revistahorizontes.v7i29.613
2	Punina, M. C., et al. (2024)	El papel de las TIC en la implementación de metodologías activas	Revista Científica Mundo de la Investigación y el Conocimiento	https://doi.org/10.37811/cl_rcm.v8i2.10566

3	Sánchez, L. (2020)	Las TIC en la dinámica de formación investigativa	Educare	https://doi.org/10.15359/ree.24-1.1
4	UNESCO (2020)	Las TIC en la educación: importancia y beneficios	INTEC	https://www.intec.edu.do/oferta-academica/postgrado/articulos-de-postgrado/las-tic-en-la-educacion-importancia-y-beneficios-de-aplicarlas
5	Cedeño Mendoza, F. M., & Torres-Zapata, Á. E. (2023)	Impacto de las TIC en la enseñanza-aprendizaje	RIDE	https://doi.org/10.23913/ride.v15i29.2099
6	Evangelista-Fuentes, C. (2023)	El uso de las TIC en el proceso de enseñanza-aprendizaje	RIIDICI	https://riidici.com/index.php/home/article/view/35
7	Pérez Silva, M. C., & Fuentes Doria, D. (2025)	Políticas Públicas para el uso de las TIC en la Educación Inclusiva	TELOS	https://dialnet.unirioja.es/descarga/articulo/9915806.pdf
8	Ferrada-Bustamante, V., et al. (2021)	Formación docente en TIC en tiempos de COVID-19	Revista Saberes Educativos	https://sabereseducativos.uchile.cl/index.php/RSED/article/download/60715/64525/
9	Perines, H., & Hernández-Escorcia, R. D. (2024)	Integración de la investigación educativa en la formación	RECIE	https://doi.org/10.32541/recie.v8i2.698

		del profesorado		
10	Queiruga, M. Á., et al. (2021)	Ecología de Aprendizaje Autorregulado Virtualizada	Publicaciones	https://doi.org/10.30827/publicaciones.v51i3.18046
11	Jiménez-Hernández, D., et al. (2021)	Mejora de la competencia digital en futuros docentes	Aloma	https://doi.org/10.51698/aloma.2021.39.2.53-62
12	Jiménez-Hernández, D., et al. (2021)	Competencia Digital Docente: revisión sistemática	RiiTE	https://doi.org/10.6018/riite.472351
13	Lázaro-Cantabrana, J., et al. (2018)	Rúbrica para evaluar competencia digital del profesor universitario	EDUTEC	http://dx.doi.org/10.21556/edutec.2018.63.1091
14	Morales, S., et al. (2020)	Evaluación por competencias: ¿Cómo se hace?	Revista de la Facultad de Medicina	https://doi.org/10.22201/fm.24484865e.2019.63.3.08
15	Orozco-Cazco, G., et al. (2020)	Variables sociodemográficas y competencias digitales	Chakiñan	https://doi.org/10.37135/chk.002.12.02
16	Perdomo, B., et al. (2020)	Competencias digitales en docentes	EDMETIC	https://doi.org/10.21071/edmetic.v9i2.12796

		universitarios		
17	Prendes, M., et al. (2018)	Competencia digital: necesidad del profesorado universitario	RED	http://dx.doi.org/10.6018/red/56/7
18	Román, M. del M., & Prendes, M. P. (2020)	CAPPLE-2: instrumento para entornos personales de aprendizaje	EDUTEC	https://doi.org/10.21556/edutec.2020.73.1709
19	Silva-Díaz, F., et al. (2023)	Integración de tecnologías emergentes para la educación STEAM	Libro académico	https://digibug.ugr.es/handle/10481/84027
20	Tapia, M., et al. (2020)	HackaTIC: desarrollo del pensamiento histórico en primaria	Universidad de La Sabana	http://hdl.handle.net/10818/43171
21	Villalobos, E. (2015)	Blog educativo en procesos de educación ambiental	Revista de Investigación	https://www.redalyc.org/pdf/3761/376143541007.pdf
22	Ordaz, T., & González-Martínez, J. (2020)	Hacia una visión aglutinadora del concepto	UTE	https://doi.org/10.17345/ute.2020.2

		de PLE		
23	Pereira-Medina, J. P. (2021)	Entornos personales de aprendizaje en educación superior	Docentes 2.0	https://doi.org/10.37843/rted.v10i1.174
24	Rodríguez, S., & García, N. (2024)	Camino hacia la inclusión educativa	Horizontes	https://doi.org/10.33996/horizontes.v8i31.846
25	Ferrari, R. (2015)	Writing narrative style literature reviews	Medical Writing	https://doi.org/10.1179/2047480615Z.000000000329

Secondly, the articles analyzed highlight that the integration of ICTs into training programs strengthens key skills in the educational researcher profile, such as digital literacy, autonomy in learning, and the ability to critically and ethically manage large volumes of academic information. Guzmán (2023) reports that students with greater ICT proficiency tend to perform better in research work and show greater motivation toward scientific inquiry, indicating that the technological component acts not only as an operational tool but also as a driver of investigative attitude. On the other hand, studies such as that by Punina et al. (2024) identify successful experiences in which students access online scientific communities, virtual seminars, international academic repositories, and open science systems, thereby broadening their theoretical references and critical capacity in relation to the literature reviewed.

An important finding that emerged from this review is the need for systematic, non-intuitive training in the use of ICTs applied to research. Several studies agree that although university students belong to digitally active generations, this does not imply that they possess solid academic or scientific digital skills. On the contrary,

authors such as Sánchez (2020) and Guzmán (2023) warn that without adequate pedagogical guidance, the use of ICTs can be limited to passive consumption of information or superficial use of tools, without achieving a real impact on the quality of research processes. This situation highlights the importance of universities not only incorporating technology into their curricula, but doing so from a critical and pedagogical perspective that enhances its educational value.

Differences in the implementation and appropriation of ICTs were also identified according to geographical and institutional context. Universities with clear educational innovation policies and robust technological infrastructure show higher levels of effective integration of ICTs in research training. For example, in Latin American institutions where there are continuing teacher training programs in the use of technologies, more successful experiences are reported in supporting students during the preparation of their degree theses or research-based classroom projects (Punina et al., 2024). In contrast, in contexts where access to technology is limited or where teachers have not been adequately trained, ICTs are perceived as being used in an instrumental and decontextualized manner, with no real impact on knowledge construction or the development of critical thinking.

Finally, a relevant pattern identified in the results is the convergence of ICTs with other active and emerging methodologies. Several studies highlight the potential of integrating ICT into pedagogical approaches based on project-based learning, problem-based learning (PBL), the flipped classroom, and collaborative work, which reinforces the idea that the use of technology should respond to a coherent instructional design and not function as an artificial add-on. In this sense, it is clear that ICTs can not only serve to transmit content, but can also be used to build knowledge, generate collaborative research networks, and encourage the active participation of students as producers of knowledge (Ferrari, 2015; Guzmán, 2023).

Overall, the results of this review allow us to affirm that the use of ICT in the research training of Education Science students represents a powerful and transformative tool, provided that its integration is carried out in an intentional, critical, and contextualized manner. The

evidence suggests that ICT should not be conceived solely as technical or logistical means, but as pedagogical resources capable of enhancing skills, generating meaningful learning environments, and democratizing access to scientific knowledge.

Conclusions

The findings obtained from the narrative review allow for a deeper understanding of the role played by Information and Communication Technologies (ICT) in research training processes in the field of Education Sciences. Firstly, it is important to highlight that there is widespread consensus in the literature that ICT should not be seen solely as auxiliary tools, but as fundamental pedagogical resources capable of transforming traditional ways of teaching and learning to research. This paradigm shift involves not only a technological update, but also a reformulation of the pedagogical, methodological, and didactic practices that have historically governed the teaching of research at the university level. In this regard, the studies reviewed agree that the proper integration of ICT can significantly enrich the development of scientific skills, especially those related to information management, data analysis, academic collaboration, and knowledge dissemination.

A central element that emerges from the analysis is that the pedagogical use of ICTs promotes student-researcher autonomy. Digital platforms, virtual learning environments, analysis software, and open academic resources allow students to develop research processes with greater independence, which in turn strengthens their self-regulation, critical thinking, and ability to search for and evaluate reliable sources. This aspect is particularly relevant at a time when educational research faces the challenge of infoxication and the proliferation of low-quality content on the internet. In this context, mastery of specific digital skills becomes an essential prerequisite for rigorous, ethical, and socially relevant research.

Another aspect that emerges strongly in the discussion is that access to ICT tools does not in itself guarantee an improvement in research training processes. The literature consulted shows that the real

impact of technologies depends to a large extent on the institutional context, the educational policies implemented and, above all, the training that both teachers and students receive in the critical, creative and reflective use of these technologies. In other words, ongoing and systematic training plans are needed to accompany the development of academic digital skills, as well as curriculum strategies that link the use of ICTs to the learning objectives of research training. When these conditions are met, ICTs not only enhance access to knowledge, but also promote a more collaborative, contextualized, and problem-solving research culture in the educational environment.

In addition, the results also suggest that ICTs can play a key role in democratizing access to scientific research. Digital platforms and open academic networks allow students from different geographical and socioeconomic backgrounds to access up-to-date information, participate in virtual seminars, exchange experiences with peers from other institutions, and engage in online communities of practice. This represents a historic opportunity to reduce gaps in access to scientific knowledge and promote the internationalization of research training in developing countries. However, for this potential to be realized, it is essential to guarantee minimum conditions of connectivity, infrastructure, and digital literacy, which requires political will and institutional commitment.

From a methodological standpoint, this review identified that many of the current studies on the subject favor qualitative approaches and case studies, which have provided a rich and contextualized view of ICT-mediated training practices. However, there is also a clear need for more quantitative and longitudinal research to accurately measure the impact of ICTs on the development of research skills, as well as their relationship with variables such as academic performance, scientific output, and participation in research networks. Along these lines, future research could focus on evaluating the effect of specific digital training programs, comparing ICT-mediated pedagogical strategies, and designing instructional models based on empirical evidence.

In general terms, it can be concluded that the use of ICT as a training tool in the preparation of researchers in Education Sciences represents a significant opportunity to modernize, diversify, and

strengthen research teaching and learning processes. However, this opportunity will only be realized if it is understood that technology alone does not transform education; what really generates change is the pedagogical and reflective use that educational actors make of it. Therefore, a critical, strategic, and humanistic vision of the use of ICT is required, one that places at the center of research training not only the development of technical skills, but also the formation of ethical individuals who are committed to their social reality and capable of producing relevant, rigorous, and transformative knowledge.

Finally, the review carried out shows that, although considerable progress has been made in integrating ICTs into university environments, significant challenges remain that must be addressed to ensure quality research training. These challenges include the ongoing updating of teachers' digital skills, the development of institutional policies that promote digital culture, the inclusion of specific courses on technological tools applied to research, and the creation of spaces for pedagogical experimentation and innovation with technologies. Only in this way will it be possible to consolidate an educational model that not only incorporates ICT as a resource but also integrates it across the board in the comprehensive training of future researchers in Education Sciences.

Reference

Cedeño Mendoza, F. M., & Torres-Zapata, Á. E. (2023). Impacto de las TIC en la enseñanza-aprendizaje: caso de estudio en la carrera de Tecnología de la Información de la Universidad Técnica de Manabí. *RIDE. Revista Iberoamericana para la Investigación y el Desarrollo Educativo*, *15*(29). https://doi.org/10.23913/ride.v15i29.2099

Evangelista-Fuentes, C. (2023). El uso de las TIC en el proceso de enseñanza-aprendizaje en Educación Infantil. *RIIDICI*. https://riidici.com/index.php/home/article/view/35

Ferrada-Bustamante, V., et al. (2021). Formación docente en TIC y su evidencia en tiempos de COVID-19. *Revista Saberes Educativos*. https://sabereseducativos.uchile.cl/index.php/RSED/article/download/60715/64525/

Ferrari, R. (2015). Writing narrative style literature reviews. *Medical Writing*, *24*(4), 230–235. https://doi.org/10.1179/2047480615Z.000000000329

Guzmán, Y. (2023). Tecnologías de información y comunicación en la educación superior. *Horizontes. Revista de Investigación en Ciencias de la Educación*, *7*(29), 1564–1579. https://doi.org/10.33996/revistahorizontes.v7i29.613

Jiménez-Hernández, D., et al. (2021). La mejora de la competencia digital de los futuros docentes de secundaria: una experiencia en la Universidad Miguel Hernández. *Aloma: revista de psicologia, ciències de l'educació i de l'esport Blanquerna*, *39*(2), 53–62. https://doi.org/10.51698/aloma.2021.39.2.53-62

Jiménez-Hernández, D., et al. (2021). La Competencia Digital Docente, una revisión sistemática de los modelos más utilizados. *RiiTE Revista Interuniversitaria de Investigación en Tecnología Educativa*. https://doi.org/10.6018/riite.472351

Lázaro-Cantabrana, J., et al. (2018). Una rúbrica para evaluar la competencia digital del profesor universitario en el contexto latinoamericano. *EDUTEC, Revista Electrónica de Tecnología Educativa*, (63). http://dx.doi.org/10.21556/edutec.2018.63.1091

Morales, S., et al. (2020). Evaluación por competencias: ¿Cómo se hace? *Revista de la Facultad de Medicina*, *63*(3), 8. https://doi.org/10.22201/fm.24484865e.2019.63.3.08

Orozco-Cazco, G., et al. (2020). Variables sociodemográficas que inciden en las competencias digitales del profesorado universitario. *Revista Chakiñan de Ciencias Sociales y Humanidades*, *12*, 20–35. https://doi.org/10.37135/chk.002.12.02

Pérez Silva, M. C., & Fuentes Doria, D. (2025). Políticas Públicas para el uso de las TIC en la Educación Inclusiva en Colombia. *TELOS: Revista de Estudios Interdisciplinarios en Ciencias Sociales*. https://dialnet.unirioja.es/descarga/articulo/9915806.pdf

Perdomo, B., et al. (2020). Competencias digitales en docentes universitarios: una revisión sistemática de la literatura. *EDMETIC, Revista de Educación Mediática y TIC*, *9*(2), 14–35. https://doi.org/10.21071/edmetic.v9i2.12796

Perines, H., & Hernández-Escorcia, R. D. (2024). Cómo integrar la investigación educativa en la formación del profesorado: una

propuesta teórica. *RECIE. Revista Caribeña de Investigación Educativa*, *8*(2), 63–77. https://doi.org/10.32541/recie.v8i2.698

Prendes, M., et al. (2018). Competencia digital: una necesidad del profesorado universitario en el siglo XXI. *RED. Revista de Educación a Distancia*, (56). http://dx.doi.org/10.6018/red/56/7

Pereira-Medina, J. P. (2021). Entornos Personales de Aprendizaje en la Educación Superior: Una alternativa para construir espacios de innovación. *Revista Tecnológica-Educativa Docentes 2.0*, *10*(1), 74–87. https://doi.org/10.37843/rted.v10i1.174

Punina, M. C., Paguay, J. M., Yacelga, E. L., Camuendo, L. M., & Gualli, P. B. (2024). El papel de las TIC en la implementación de metodologías activas en el campo de la educación. *Revista Científica Mundo de la Investigación y el Conocimiento*, *8*(2), 1279–1290. https://doi.org/10.37811/cl_rcm.v8i2.10566

Queiruga, M. Á., et al. (2021). Valoración de la Ecología de Aprendizaje Autorregulado Virtualizada para la Didáctica de las Ciencias de la Naturaleza durante la crisis COVID-19. *Publicaciones*, *51*(3), 123–142. https://doi.org/10.30827/publicaciones.v51i3.18046

Rodríguez, S., & García, N. (2024). Camino hacia la inclusión educativa: Beneficio para todos. *Horizontes. Revista de Investigación en Ciencias de la Educación*, *8*(31), 56–69. https://doi.org/10.33996/horizontes.v8i31.846

Román, M. del M., & Prendes, M. P. (2020). Entornos Personales de Aprendizaje: instrumento cuantitativo para estudiantes universitarios (CAPPLE-2). *EDUTEC Revista Electrónica de Tecnología Educativa*, (73). https://doi.org/10.21556/edutec.2020.73.1709

Sánchez, L. (2020). Las tecnologías de la información y las comunicaciones en la dinámica del proceso de formación para la investigación científica en la educación superior. *Educare*, *24*(1), 1–15. https://doi.org/10.15359/ree.24-1.1

Silva-Díaz, F., et al. (2023). Integración de tecnologías emergentes para la educación STEAM: proyecto TecnoSTEAM. En *Las nuevas realidades educativas: el uso de tecnologías emergentes para el aprendizaje*. https://digibug.ugr.es/handle/10481/84027

Tapia, M., et al. (2020). HackaTIC: una estrategia didáctica mediada por TIC que aporta al desarrollo del pensamiento histórico en

estudiantes de primaria. *Universidad de La Sabana*. http://hdl.handle.net/10818/43171

UNESCO. (2020). *Las TIC en la educación: importancia y beneficios de aplicarlas*. Instituto Tecnológico de Santo Domingo (INTEC). https://www.intec.edu.do/oferta-academica/postgrado/articulos-de-postgrado/las-tic-en-la-educacion-importancia-y-beneficios-de-aplicarlas

Villalobos, E. (2015). Uso del Blog educativo en procesos de aprendizaje de educación ambiental. *Revista de Investigación*, *9*(1), 85–98. https://www.redalyc.org/pdf/3761/376143541007.pdf

Ordaz, T., & González-Martínez, J. (2020). Hacia una visión aglutinadora del concepto de PLE. *UTE. Revista de Ciencias de la Educación*, *8*(2), 92–109. https://doi.org/10.17345/ute.2020.2