

Learning Transfer in Initial Teacher Education: A Systematic Review of Evidence and Key Factors

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Abstract: The transfer of learning from teacher education programmes to professional practice is a critical factor in improving educational quality. However, evidence on how this transfer occurs and which factors facilitate or hinder it remains fragmented. This study provides a systematic review of research on learning transfer in initial teacher education.

A systematic search was conducted across Scopus, Web of Science, ERIC, and Dialnet, following PRISMA guidelines. After applying inclusion and exclusion criteria, 14 empirical studies were selected for analysis.

The findings identify four key dimensions influencing learning transfer: the gap between university training and school contexts, the presence of facilitating factors (e.g., active learning and contextualized training), barriers that hinder transfer, and the role of key actors such as school-based mentors.

The results highlight the need to strengthen practice-oriented approaches in teacher education and to provide structured opportunities for applying theoretical knowledge in real educational settings. This review contributes to the field by synthesizing current evidence and identifying key directions for improving the effectiveness of teacher education programmes.

Keywords: Learning transfer; teacher education; prácticum; professional practice; systematic review

EN **Transferencia del aprendizaje en la formación inicial docente: una revisión sistemática de evidencias y factores clave**

Resumen: La transferencia del aprendizaje desde la formación inicial docente a la práctica profesional constituye un factor clave para la mejora de la calidad educativa. Sin embargo, la evidencia sobre cómo se produce este proceso y qué factores lo favorecen o dificultan sigue siendo fragmentada. Este estudio presenta una revisión sistemática de la literatura sobre la transferencia del aprendizaje en la formación inicial docente.

Se realizó una búsqueda sistemática en Scopus, Web of Science, ERIC y Dialnet, siguiendo las directrices PRISMA. Tras aplicar los criterios de inclusión y exclusión, se seleccionaron 14 estudios empíricos para su análisis.

Los resultados identifican cuatro dimensiones clave que influyen en la transferencia: la brecha entre la formación universitaria y el contexto escolar, la presencia de factores facilitadores (como el aprendizaje activo y contextualizado), los obstáculos que dificultan la transferencia y el papel de agentes clave como los tutores de prácticas.

Los hallazgos ponen de manifiesto la necesidad de reforzar enfoques formativos orientados a la práctica y de generar oportunidades estructuradas para la aplicación del conocimiento en contextos reales. Esta revisión contribuye al campo al sintetizar la evidencia disponible y señalar líneas de mejora en la formación docente.

Palabras clave: transferencia del aprendizaje; formación docente; prácticas educativas; práctica profesional; revisión sistemática

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1. Introduction

The concept of training transfer is often linked to the concept of transfer of learning, understood as the transmission of skills and knowledge among different situations or contexts where such learning is applied (Cano, 2016; Mwamwenda, 2020).

Originally, the term transfer was defined as the degree in which learning influences the response to a task or situation (Blume et al., 2010). This transfer is more likely to occur when the tasks to be performed are similar to those of the learning situation, leading to a process called generalization. It is necessary to define a framework that determines what characterizes the knowledge and skills to be transferred, as well as the potential closeness between the learning context and the possibility to be applied in other contexts.

The importance and relevance of a conceptual framework regarding this type of transfer requires articulating cognitive, social, and contextual dimensions (Fauth & González-Martínez, 2021). In this way, the construction of learning environments or scenarios that promote the mobilization of knowledge strengthens the training action of those who wish to put such knowledge into practice in specific professional contexts.

Similarly, Barnett and Ceci (2002) established the taxonomy of transfer, based mainly on contextual and content dimensions of this concept. Therefore, considering the characteristics of transfer involves focusing attention on the content (what is transferred) and the context (from and to where it is transferred).

The content factor, in turn, can be divided into certain dimensions such as the generalization of what is learned towards transfer contexts; the nature of the evaluated performance, i.e., how the behavior should be produced; and, finally, the memory demands of the task. These last refer to the need to perform a task automatically, which requires previous selection and reflection about the most appropriate behavior (Barnett & Ceci, 2002).

What is referred to these dimensions can be strengthened by understanding that teachers not only transfer information or content, but also shape genuine pedagogical experiences in which this knowledge is deeply internalized (Roy et al., 2024). This highlights the importance of a didactic framework that addresses both the disciplinary aspects and the diverse cognitive and affective demands of the learning process.

The context of transfer includes aspects such as the domain of knowledge, which focuses on the acquired knowledge; the task modality in which that knowledge is applied; the social context, regarding to knowledge acquired in collaboration with others; and the physical context, understood as the place where the knowledge or skill is transferred. It also includes the functional context, constituting the function of the learning achieved; and finally, the temporal context, understood as the time elapsed between the learning phase and the application phase (Renta, 2013).

It is also important to consider exploring transfer mechanisms in initial teaching internships that emphasize collaboration and peer interaction (Cera-Torrenegra, 2024). This approach fosters the understanding that collaborative work among students and the corresponding comparison of experiences promotes the ability to adapt acquired knowledge.

When analyzing the term “transfer of learning,” authors such as Pamies-Berenguer et al. (2022) define it as the degree to which learners in a training program effectively apply the knowledge, attitudes, and skills they have previously acquired during their work performance. In other words, it refers to the extent to which an individual has the ability to generalize the learning achieved in their job (Huang et al., 2015). In this sense, and within the context of higher education, the impact of this transfer of learning lies in the willingness of teachers to apply their skills in the teaching and learning process of their students (Jiang et al., 2012).

The concept of training transfer is highly complex, due to its big dynamism and the existence of multiple factors that influence it (Pamies-Berenguer, et al., 2022).

In addition to the contextual and cognitive elements mentioned above, it is important to highlight the role of reflective practice, which can be understood as a metacognitive analysis process that allows the constant adjustment of training interventions or methodologies (León González & Cordero Arroyo, 2024). This approach makes it possible to identify the gaps between what is learned and what is applied in the educational context, enabling the strengthening of transfer.

Among the factors involved in the transfer of learning's production, the importance of maintenance stands out (Blume et al., 2010; De Rijdt et al., 2013), which is identified as the continued and sustained application of acquired knowledge over time. In turn, authors such as Ford and Weissbein (1997), cited by Cano (2016), point to the factor of adaptability, referring to the development of adaptive strategies for acquired knowledge to provide behavioral responses to a wide variety of contexts. To consider the factors that facilitate the transfer of learning, Cano (2016) highlights three main areas:

- Factors of design: there is a direct influence between the design of the training program and the possibility of producing transfer, considering aspects such as the contents, the evaluation system itself, the duration, the methodologies used, the climate, etc.

- Factors focused on the characteristics of people: characteristics such as the learning style, motivation, self-efficacy and the value placed on training, are related to the transfer of knowledge.
- Factors related to the work environment: it is necessary to promote transfer opportunities in order to apply the learning acquired.

Furthermore, in the current context, it is relevant to consider the training modality factor, which could influence in the adoption of certain practices, such as online learning or cooperative strategies (Fauth & González-Martínez, 2021). Thus, the characteristics or conditions of the learning environment can foster motivation and the acquisition of certain necessary skills for the workplace.

This reinforces the idea that sociocultural factors help to understand how transfer is linked to the trajectory of future teachers, which is observed in evaluations that consider the relevance of the training received and the continuity in professional internships (Roy et al., 2024).

Therefore, knowledge transfer in teacher training is a complex process that requires future teachers not only to acquire theoretical knowledge but also to apply it effectively in the classroom. Along these ideas, Darling-Hammond (2006) argues that one of the main challenges lies in the difficulties that teachers in the learning process experience when trying to transfer knowledge acquired in academic settings to daily practice, due to the disconnection between theory and classroom reality. Thus, when adequate integration is achieved, knowledge transfer allows teachers to adapt their pedagogical practices to the needs of their students, a process that is facilitated when reflection and feedback strategies are implemented, enabling teachers in the learning process to evaluate their methods and improve their application in the classroom (Korthagen, 2010).

Understanding transfer in this field is also framed within the ability of the teaching staff to modify their teaching strategies and confront previous assumptions, so that theory becomes a vital resource for educational innovation (Aguirre-Mejía et al., 2023).

In line with these ideas, Gegenfurtner (2011) emphasizes the importance of practical experiences in facilitating knowledge transfer in teacher training. According to this author, training programs that offer opportunities for future teachers to practice in real-world contexts, under the supervision of experienced mentors, achieve greater effectiveness in applying what they have learned. These practice experiences enable future teachers to develop transferable skills that allow them to adapt to the diverse demands of the educational environment. To this end, these authors argue that guided reflection and constant feedback are key elements in ensuring that theoretical knowledge translates into effective classroom practices.

Related to the above, the need to incorporate active teaching, learning, and assessment methodologies, geared towards the practical transformation of teachers' knowledge, has also been highlighted (Roy et al., 2024). This not only strengthens the responsibility and autonomy of teachers in training but it also fosters a culture of continuous improvement in educational institutions.

To better understand how knowledge transfer in teacher training has been studied, systematic reviews of the scientific literature provide a rigorous approach, allowing the identification of key trends, best practices, and even potential gaps in the subject matter. It is important to note that systematic literature reviews offer a solid foundation derived from the synthesis of scientific publications developed in a specific field of study. They emerged with the primary objective of contributing new concepts, summarizing evidence, and highlighting research gaps in an area of interest (Baker, 2016).

Although literature exists on the transfer of teacher training, there are few literature reviews that assess different perspectives, and few that rigorously and systematically organize the scientific evidence found. Studies such as the one presented here are important for the field of education, because they employ meticulous processes of exploration, selection, and analysis of papers on the topic of interest. In this sense, this research will not only fill gaps in current understanding, but also identify key areas for future research and practices that can significantly improve knowledge transfer in teacher training.

Regarding the existence of systematic reviews addressing the same topic, the work of Buenestado-Fernández et al. (2023) can be mentioned, which addresses the applicability of knowledge in specific educational processes. The paper focuses on the scientific production concerning the institutionalization of inclusive education in the Spanish context. Among the contributions of this systematic review, it is worth highlighting that it provides a model applicable to university teacher training centered on transfer, with repercussions in inclusive practices and policies within the university setting.

Also noteworthy is the work of Révai (2020), which is based on a literature review and case descriptions. The text highlights that knowledge creation is a fundamental step involving the combination of formal and practical knowledge. While researchers contribute the formal knowledge produced by research, teachers contribute the knowledge derived from their context and experience. Furthermore, it mentions that knowledge transfer involves mobilizing research and integrating it into teaching practice, which is crucial for improving educational outcomes.

The systematic review presented in this paper is an original work, not a replication or update of previous research. While it shares similarities with other studies, such as that by Buenestado-Fernández et al. (2023), in its focus on teacher training in higher education, it distinguishes itself by addressing the topic from a broader perspective and not limiting itself to a specific area like inclusive education. This general approach allows for the exploration of a wider range of aspects related to knowledge transfer, offering a comprehensive view that significantly contributes to the understanding and improvement of teacher training in diverse educational contexts.

Finally, this systematic review differs from Révai's (2020) study by focusing specifically on the context of initial teacher training rather than in-service teachers. Furthermore, this work offers greater methodological rigor by specifying the publication years of the selected documents, which contrasts with Révai's broader and less delimited approach, as he does not specify time periods or employ the PRISMA-Protocols in his analysis. These differences empathize the structured and methodical approach of this review, allowing for a more precise and contextualized synthesis of the existing literature on teacher training in higher education contexts.

2. Method

2.1. Objective

The objective of this paper is to systematically review publications that address the transfer of teacher training in higher education.

2.2. Procedure

This research employed a systematic literature review methodology, using the PRISMA 2020 statement checklist (which was not registered) through the various stages it suggests. Each stage is detailed below:

Stage 1: Defining the research question and objectives

The following research question has been defined: What are the characteristics and contributions of research papers related to the transfer of teacher training in higher education?

Based on this question, the following objectives have been developed:

General objective: to systematically review publications that address the transfer of teacher training in higher education.

Specific objectives:

- To determine the characteristics of the research papers selected according to the inclusion and exclusion criteria defined for this purpose.
- To determine the contributions of these papers regarding the transfer of teacher training in higher education.
- To identify the projections or future lines of research that may arise from the analysis of this literature.

Stage 2: Databases and eligibility criteria

To achieve the objectives of this research, high-quality databases have been selected. These are the following: Web of Science, Scopus, ERIC through ProQuest, and Dialnet, the latter due to its specialization in Spanish-language scientific literature.

The eligibility criteria were organized as follows:

- Inclusion criteria:
 - Research papers
 - Languages spoken: English, Spanish, and Portuguese
 - Papers published from the year 2000 onwards
- Exclusion criteria
 - The paper does not primarily address knowledge transfer in teacher training.
 - The paper is not contextualized in higher education.
 - The paper is not about initial teacher training.

Stage 3: Search strategy

For this stage, the key concepts that best answer the research question have been defined. These have been organized using Boolean operators, resulting in the following formula: ((“teach* transfer*” OR “formation transfer*” OR “training transfer*” OR “knowledge transfer*”) AND (“higher education” OR “university*” OR “education”) AND (“preservice teacher” OR “teacher educator training” OR “teaching practice” OR “student teachers”)).

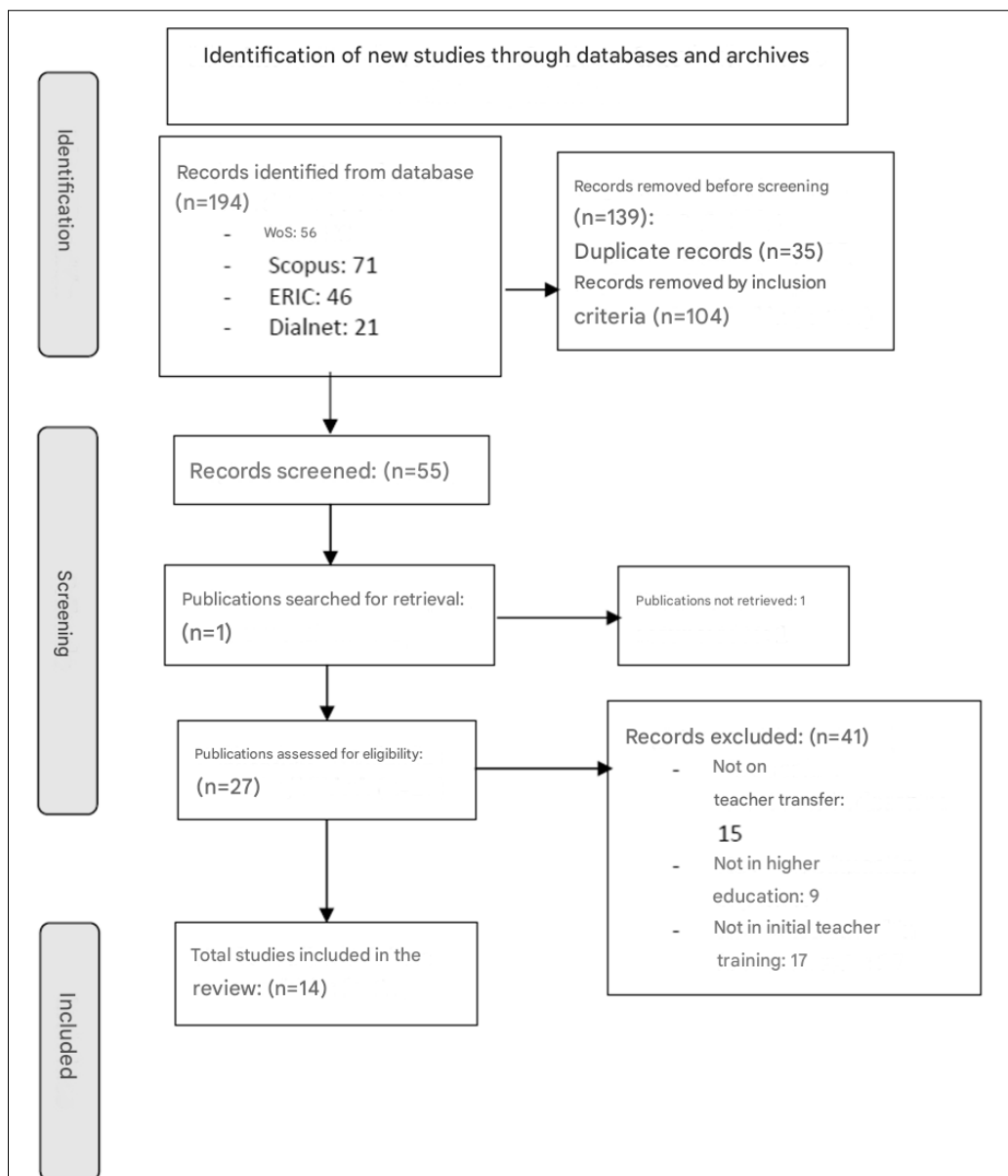
With this, the search was carried out during May 2024 in the aforementioned databases, which yielded, as a first result, a total of 194 publications.

Stage 4: Selection process

From the 194 eligible papers, the online software Rayyan.ai was used to process duplicate files, filter according to inclusion criteria, and review the documents collaboratively among all authors using the aforementioned eligibility criteria. This tool also allowed each member of the research team to make their selection anonymously, and then share their decisions to reach agreements regarding the final eligibility of documents. This helps to reduce the bias that can arise in this type of research.

As previously mentioned, a total of 194 documents were obtained in the first phase. After applying filters based on inclusion criteria (year, publication type, and language), 90 papers remained. Subsequently,

duplicate papers were excluded, leaving a total of 55 documents. These 55 documents were then analyzed using the exclusion criteria, resulting in a final selection of 14 documents for this review. Figure 1 graphically represents this information using the corresponding flowchart.



Note: Adapted from “Declaración PRISMA 2020: una guía actualizada para la publicación de revisiones sistemáticas”, por M.J. Page et al., 2021. *Revista Española de Cardiología*, 74 (9).

Figure 1. PRISMA-based flowchart.

3. Results

The results of the systematic review will be presented in accordance with the specific research objectives, which allow the general objective to be met.

Regarding the objective “To determine the characteristics of the research papers selected according to the inclusion and exclusion criteria defined for this purpose,” it can be noted that none of the fourteen selected papers share authorship or a journal of publication. Publication in English (12) predominates over Spanish (2), and the years with the highest number of publications are 2022 (3) and 2018 (3).

Regarding methodology, there is a diversity in the approaches adopted by the authors, although there is a clear inclination towards qualitative studies, especially case studies, which seek to explore in depth the specific dynamics and individual experiences in particular teacher training contexts.

Table 1 presents the main characteristics of the 14 selected items.

Table 1. Characterization of papers selected for the systematic review

Title	Authorship	Year	Journal	Language	Methodology
Paper 1	Sepp, A., Ruismäki, H., & Hietanen, L.	2023	Research Studies in Music Education	English	Qualitative/Case study
Paper 2	J. Jitsupa, R. Siriprichayakorn, C. Yakaew, N. Songsom & P. Nilsook.	2022	Journal of Education and Learning	English	Mixed/Stop Motion Technique according to the Early Childhood Imagineering Model (ECIM) process
Paper 3	Mpu, Y., Roy, I. & Hackmack, K.	2022	Research in Social Sciences and Technology	English	Qualitative/Case study
Paper 4	Mardiah, A., Rahmawati, Y., Harun, FKC & Hadiana, D.	2022	Issues in Educational Research	English	Qualitative/Case study
Paper 5	Chala-Bejarano, PA, Castañeda-Peña, H., Rodríguez-Uribe, M., & Salazar-Sierra, A.	2021	Educación y Educadores	Spanish	Qualitative/ descriptive exploratory, with analysis of narrative events.
Paper 6	Chan, C.	2019	Teaching and Teacher Education	English	Qualitative/Does not specify a particular design
Paper 7	Hurlbut, AR. & Tunks, J.	2018	New Waves-Educational Research and Development Journal	English	Qualitative/Case study
Paper 8	Sendurur, E.	2018	Egitim Arastirmalari - Eurasian Journal of Educational Research	English	Qualitative/Case study
Paper 9	Ding, M. & Heffernan, K.	2018	International Journal of Mathematical Education in Science and Technology	English	Qualitative/Case study
Paper 10	Kap, M. & Pesciarelli, S.	2017	FACES: Revista de la Facultad de Ciencias Económicas y Sociales	Spanish	Mixed (with a qualitative predominance)/ Survey design
Paper 11	Sadaf, A., Newby, T.J. & Ertmer, P.A.	2016	Educational Technology Research and Development	English	Mixed/ Explanatory sequential design
Paper 12	Bahcivan, E. & Kapucu, S.	2014	International Journal of Environmental and Science Education	English	Quantitative/ Survey design
Paper 13	Stürmer, K., Könings KD & Seidel T.	2013	British Journal of Educational Psychology	English	Quantitative/ Quasi-Experimental (pre and post test)
Paper 14	Kim, D., & Blankenship, R. J.	2013	Journal of Educational Computing Research	English	Qualitative/Case study

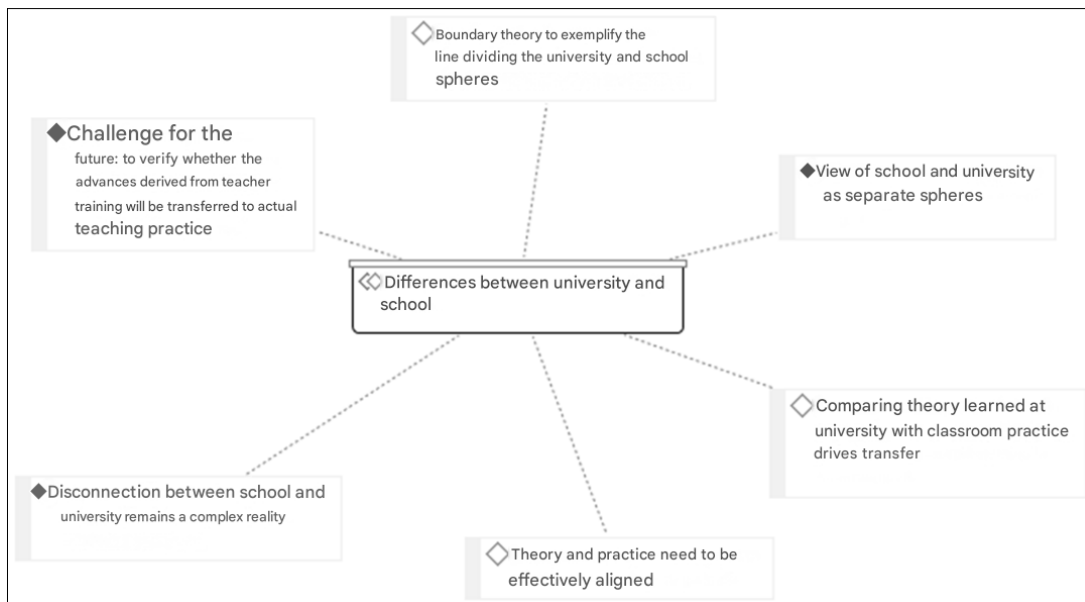
Note. Original work

In relation to the specific objective, “To determine the contributions of these papers regarding the transfer of teacher training in higher education,” the results and conclusions of each of the selected documents were analyzed. To this end, a narrative analysis based on a qualitative synthesis was conducted using Atlas.ti v8 software. This program facilitated the identification of the essential areas of each paper in relation to its findings and conclusions.

In this way, the 14 selected documents were introduced into the software to then proceed to identify relevant codes through an inductive process, which totaled 26.

Once the original list of codes was obtained, they were grouped into families according to their thematic affinity. In this way, the following four families were identified: 1) differences between university and school (7 codes), 2) elements that facilitate knowledge transfer (9 codes), 3) elements that hinder transfer (8 codes), and 4) key roles to enhance transfer (5 codes).

Below there is a visual map of each family, followed by a detailed explanation of each one.



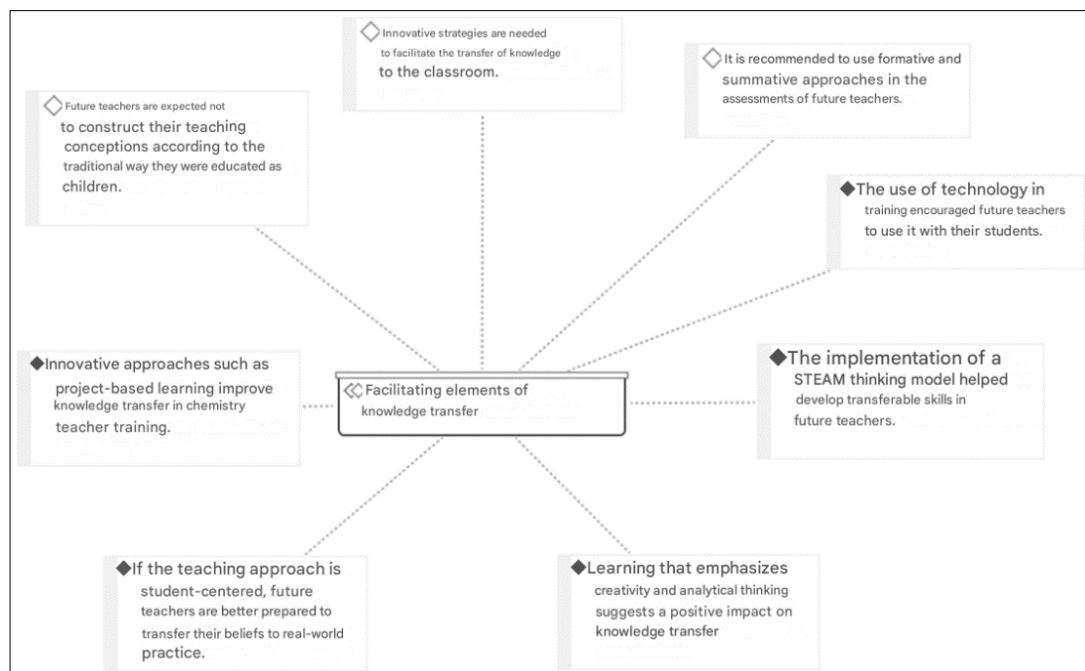
Note: Created by the authors using Atlas.ti v8 software.

Figure 2. Semantic family "Differences between University and school."

This first theme highlights how the gap between the university and the reality of schools influences knowledge transfer (Chan, 2019). This author draws on boundary theory to conceptualize the experience of teachers who cross the boundary (physical or metaphorical) between the university and school environments and the difficulties they face in this transition.

Along the same lines, Chala-Bejarano et al. (2021) argue that comparing theory learned at university with classroom practice is a significant driver of transfer and innovation in teaching methodology. They also emphasize the importance of reflection, feedback, and self-efficacy in the knowledge transfer process within teacher training.

Furthermore, Mpu et al. (2022) indicate that it is important to effectively align theory with practice to ensure that future teachers can meaningfully apply what they have learned at university in a real school setting, especially knowledge acquired virtually. In this regard, Stürmer et al. (2013) state that future research should focus on how the advancements derived from teacher training are transferred to teaching practice and whether these advancements are sustainable over time.



Note: Created by the authors using Atlas.ti v8 software

Figure 3. Semantic family "Elements that facilitate knowledge transfer."

Figure 3 refers to the elements that facilitate knowledge transfer. One of these involves the use of technology through Web 2.0 tools, which, according to Sadaf et al. (2016), encourage future teachers to continue

using them later with their own students. Kim & Blankenship (2013) also mention the importance of virtual environments, but in this case, to promote self-regulated learning behaviors.

Along the same lines, Mpu et al. (2022) argue that the STEAM (Science, Technology, Engineering, Arts & Mathematics) design thinking model in the development of interdisciplinary projects promotes participation and the acquisition of transferable tools in future teachers. Similarly, Mardiah et al. (2022) also mention STEAM design, which helped develop transferable skills in future teachers in their research. Their study focused on understanding how future chemistry teachers engage with and respond to learning that emphasizes creative and analytical processes, suggesting a positive impact on knowledge transfer. These authors maintain that learning that emphasizes creative and analytical processes goes hand in hand with the use of innovative methodologies, such as Project-Based Learning (PBL).

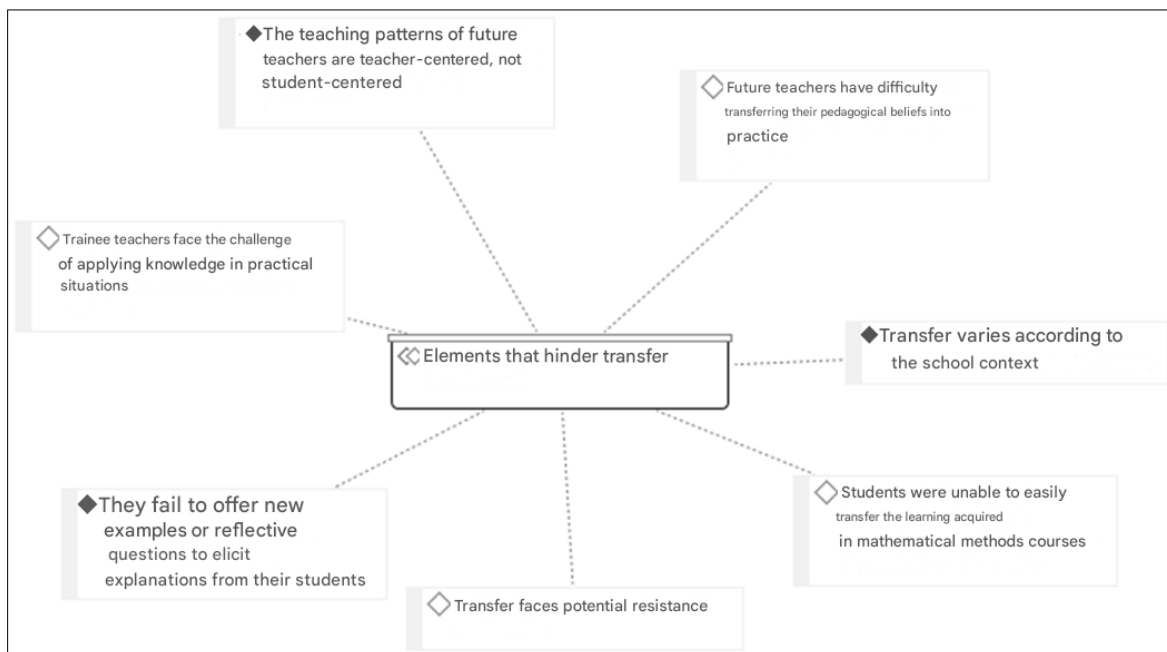
In line with these ideas, Ding & Heffernan (2018) highlight the need to find innovative ways to support the learning of future teachers in teacher education, such as the use of spaced learning strategies to solidify knowledge and facilitate its transfer to the classroom.

The assessment of learning is also important. For this, Mpu et al. (2022) recommend the use of formative and summative approaches in the assessment of students' competencies, as well as focusing on reflective feedback to improve their learning.

Similarly, authors like Sendurur (2018) argue for a student-centered, rather than teacher-centered, approach to teaching, which would encourage the use of active learning methodologies. This would better prepare future teachers to transfer their beliefs into real-world practice.

In the same way, for Bahcivan & Kapucu (2014) think that future teachers should not construct their teaching conceptions according to the traditional way in which they were educated, since if that model persists, that style will be transferred to their practice once they begin their working life.

According to these same authors, this highlights the need to adapt teaching and learning environments toward inquiry and argumentation. This would create new opportunities for future teachers to develop pedagogical skills that allow them to transfer and apply their knowledge, and in this way, moving toward less traditional approaches, such as the excessive use of memorization.



Note: Created by the authors using Atlas.ti v8 software

Figure 4. Semantic family "Elements that hinder transfer."

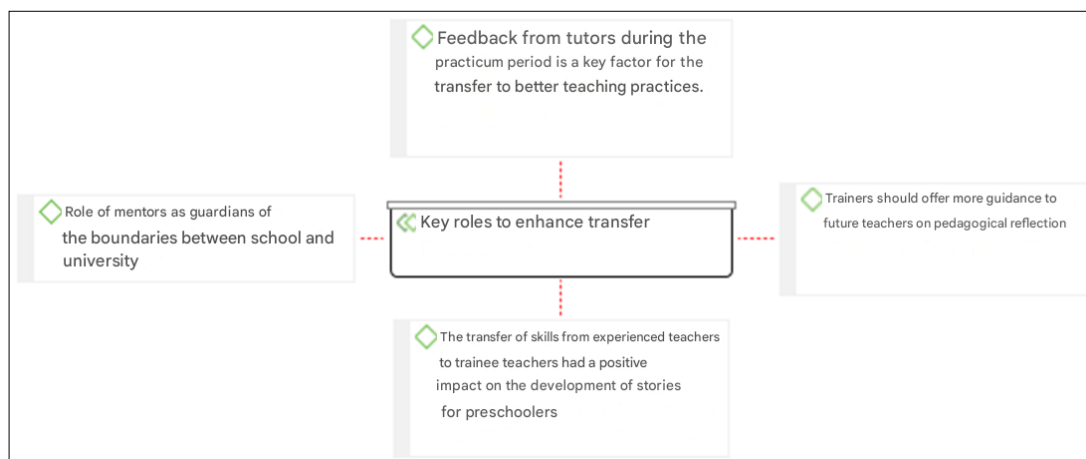
Regarding the factors that hinder transfer, according to Sendurur (2018), future teachers have difficulty transferring their beliefs into practice. This is explained by the fact that their teaching practices include teacher-centered rather than student-centered patterns, which limits the latter's opportunities for participation.

Furthermore, this author's study found little overlap between the beliefs acquired during university training and those put into practice by teachers in the learning process. It suggests that if future teachers had practiced student-centered approaches from the beginning of their university studies, they might have been better prepared to transfer their knowledge to real-world practice.

In line with this, Ding & Heffernan (2018) argue that trainee teachers demonstrate partial success in knowledge transfer, as they fail to offer new examples to their students or possible reflection questions.

On the other hand, Hurlbut & Tunks (2018) indicate that future teachers demonstrated limited prior knowledge of Response to Intervention (RTI) methodologies in a Mathematical Interaction Project. According to these authors, the teachers in the learning process were unable to transfer their learning, despite demonstrating an adequate understanding of assessment, intervention, and monitoring practices. The authors emphasize the need for RTI to be a fundamental element of university teacher training courses, especially

for understanding the main components of the educational intervention process to support students with special educational needs.



Note: Created by the authors using Atlas.ti v8 software

Figure 5. Semantic family "Key roles to enhance transfer."

According to some of the papers analyzed, knowledge transfer is facilitated by the actions of certain figures. One of these is the role of mentor teachers or facilitators who accompany future teachers during their practicum period, becoming role models for them (e.g., Sadaf et al., 2016).

In the mentoring model of Chan (2019), he argues that school mentors play a significant role in maintaining or dismantling boundaries, as their role either enables or limits the transfer of knowledge between school and university. For example, in her study, constant mentor supervision limited future teachers' opportunities to integrate university theories into their practice, while the autonomy and support offered by certain mentors facilitated a better connection between school and university boundaries.

Similarly, Chala-Bejarano et al. (2021) add that the feedback received from mentor or guide teachers during the internship period is a key factor for the transfer to new and better teaching practices.

Based on a specific experience, Jitsupa et al. (2022) conclude that the transfer of skills from experienced teachers to pre-service early childhood education teachers had a positive impact on the development of electronic stories for children. According to these authors, these results highlight the effectiveness of the Stop-Motion methodology and the importance of training and skills transfer in the creation of innovative educational content for preschool children.

For Sepp et al. (2023), another key figure in this issue is the teacher educator for future teachers. From their perspective, educators should offer future teachers more guidance on how to reflect on their activities and provide arguments for their potential pedagogical decisions in the real-world internship they will face.

4. Discussion

This paper presents a systematic review of publications addressing the transfer of teacher training in higher education. This topic is well-established in the literature, and this review demonstrates its continued relevance in various contexts.

Due to the significant heterogeneity of studies, the search criteria were limited to research papers published from 2000 onward, excluding research focused on this topic but not addressing knowledge transfer in teacher training or contextualized in higher education or initial teacher training. Furthermore, the analyzed studies reflect variability in their objectives and methodologies. While some studies aim to understand how future teachers engage with and respond to learning that positively impacts knowledge transfer (e.g., Mardiah et al., 2022), others seek to describe how future teachers' pedagogical beliefs manifest themselves through internships in real-world contexts (e.g., Sendurur, 2018) or explore how future teachers transfer specialized knowledge to primary school classrooms (e.g., Ding & Heffernan, 2018).

In a methodological level, the analysis reinforces the idea that the methodological approaches in the analyzed papers are varied, encompassing both qualitative and quantitative studies. The relationship between the methodology used and the learning outcomes is fundamental to understand how knowledge transfer in teacher training can be improved.

Here, the prevalence of case studies underscores the importance of specific contexts tailored to individual needs in higher education. This reflects how differences in training contexts and the individual experiences of teachers in the learning influence significantly the transfer of knowledge and skills to their future work environments.

A common aspect of the studies examined is to point out the factors that must be considered for the transfer of training in Higher Education to occur, among which the following stand out:

- To focus the training on improving learning through more constructivist practices focused, as well, on the students (Sendurur, 2018), taking care of the perceived usefulness of the content by the students,

providing greater opportunities to apply the knowledge acquired (Stürmer, et al., 2013) and developing pedagogical skills (Bahcivan & Kapucu, 2014).

- To promote the practicality of the tools addressed, as well as to encourage the imagination and creativity of the students (Jitsupa, et al., 2022; Hurlbut & Tunks, 2018).
- To provide guidance during the teaching-learning process, through evaluation (formative, summative, reflective) (Mpu, et al., 2022) favoring pedagogical decision-making in the training of future teachers (Sepp, et al., 2023; Kim & Blankenship, 2013).
- To involve students in the search for solutions for the acquisition of new skills, such as effective communication, problem solving, and responsibility towards the teaching-learning process (Mardiah, et al., 2022).
- To offer opportunities for collaboration with other teachers, as well as institutions, where learning experiences can be shared, professional development can be fostered, and knowledge gained can be applied (Ding & Heffernan, 2018; Kap & Pesciarelli, 2017).

Regarding the potential limitations hindering knowledge transfer, it is worth mentioning the significant disconnection between the training context and the workplace or the context of knowledge application. This is a complex reality marked by considerable reluctance, which sometimes negatively impacts the transfer of training (Chala et al., 2021; Chan, 2019). This underscores the importance of linking theory and practice, which cannot be understood without teachers' willingness to continuously evaluate their strategies. This would help identify transfer as a key driver of improving educational quality (León González & Cordero Arroyo, 2024).

Thus, this disconnection manifests itself in several aspects, such as the lack of alignment between teacher training curricula and the actual demands of the school environment. This shows that teacher training programs do not always reflect the complex and dynamic realities of classrooms in the current context, which can result in insufficient transfer of acquired knowledge. Furthermore, resistance to change on the part of educational institutions can limit innovation and the application of new pedagogical methodologies that are essential for relevant and appropriate education, obscuring the student's central role in the learning process.

On the other hand, knowledge transfer is not simply a matter of transferring information; it requires consolidating the acquired experience, with students as the protagonists and constantly adapting to new scenarios (Cera-Torrenegra, 2024). It is essential to conceive of transfer as a dynamic and complex process, since practical learning involves a restructuring of teaching conceptions to generate significant innovations in pedagogical practice (Álvarez Cisternas, 2025).

5. Conclusions

These types of studies make a significant contribution to the topic of knowledge transfer, as they facilitate the identification of the factors that enable and hinder it. The 14 papers analyzed have yielded new perspectives, initiatives, and lines of research on knowledge transfer in teacher training. This allows for progress in developing policies, decisions, and strategies within universities that promote knowledge transfer, specifically for teachers in training.

It is at this point in the work that the final specific objective is addressed: "To identify the projections or future lines of research that may arise from the analysis of this literature." Among the projections that may emerge for teacher training from this work are the integration of hybrid teaching models, the optimization of practical training in simulated or real environments, and the need for mentors during the teacher induction process. It is also relevant to address the impact of new technologies and their role in knowledge transfer. Some of the works analyzed mention the role that web tools and virtual environments currently play in this regard. Therefore, future work could focus on the role of distance education, the use of digital platforms, or artificial intelligence as an emerging element that could influence the transfer of teacher training.

Other lines that could be addressed in the future would be the transfer of knowledge in the continuing training of teachers, or the impact of knowledge transfer in higher education from the perspective of the training of managers or educational management.

Finally, this work not only underscores the need for curricular reforms but also opens new avenues for research and action in the development of educational policies and strategies focused on improving systematically knowledge transfer. These changes would open real possibilities for transformation in higher education, where teacher training is not only more dynamic and applied but also more effective in preparing educators capable of adapting and thriving in a constantly evolving pedagogical environment. To this end, research is essential to identify best practices and methodologies that ensure the relevance and effectiveness of training programs.

6. References

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