Digitalization of Classrooms: A Comparative Study on Teachers' Perceptions about the Use of Digital Teaching Materials in Early Childhood and Primary Education

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Abstract: The incorporation of digital didactic materials into the teaching and learning process of students, both in Early Childhood and Primary Education, inevitably entails changes. Some of them concern teacher training, others the interactions and roles of the members of the educational community, and others the innovation, a priori, of the educational process itself. In this context, characterized by the digitization of classrooms, questions arise that this research aims to answer: What vision do teachers have of the incorporation of these media? In what learning situations are they used and for what purposes? Are there differences between the use of digital resources in the infant and primary school stages? This article aims to analyze and compare the perceptions of teachers in two different contexts: the Autonomous Community of the Canary Islands and the Valencian Community. By means of a qualitative study, the focus is on knowing the teachers' assessment of the usefulness of these resources and on identifying the uses given to them in classroom practices. The results show how, despite the widespread use of digital materials in both stages, some teachers are rethinking their use with students at an early age.

Keywords: teachers' perceptions; digital materials; digitalization; early childhood education; primary education; comparative study

1. Introduction

1.1. Educational Resources in the Digital Society

In the context of today's society, we can observe a rapid transformation driven by the penetration and expansion of digital technology in various aspects of life. The influence of digital technology is evident in multiple forms, such as mobile devices, social networks, artificial intelligence, or big data, and it is fundamentally changing not only the traditional methods of producing, storing, disseminating, and consuming information but also our behaviors and patterns of cultural socialization [1].

Print culture is steadily receding in the face of the relentless advancement of digital technology [2]. We find ourselves in an era in which printed books and other cultural media are giving way to the expansion and ubiquity of next-generation media. These technologies are leading to a profound transformation in our conception and format of culture. This process is referred to as "digital colonialism" by [3] and characterized as the intrusion of technology into all cultural domains that were previously dominated by books, newspapers, and other printed documents.

Historically, books represented a technology that condensed information, ideas, and knowledge into a set of paper pages, creating autonomous and tangible cultural works. In contrast, the internet is characterized by the dissemination of fragmented, interconnected, and constantly edited cultural works. This distinction symbolizes the transition from a "solid" culture based on books to a "liquid" culture within the digital ecosystem [4].

Digitization has facilitated the creation and distribution of audiovisual content, democratizing the production of multimedia materials [5]. Access to cultural works, such as films and songs, is nearly instant and often free. Knowledge is no longer static but ephemeral and adaptable, extending beyond textual literacy. Cultural industries, including textbook publishers, face challenges due to the ubiquity of digital technologies. Open access to educational content has emerged, transforming the nature of digital educational materials [6]. These changes have led to greater flexibility in education, adapting to the current digital culture.

1.2. The Digital Transformation of Educational Resources

The evolution of educational materials in the digital era and the aim to describe what these resources are and what they offer have been the subject of study in numerous research endeavors over the past decade. Some works [7] have emphasized that educational materials serve multiple functions in the educational context:

1. They are tools that incorporate technological and semantic dimensions, intended to facilitate teaching and learning processes;
2. They fulfill various pedagogical and curricular functions, including class preparation, support during teaching, and assessment;
3. They stimulate learning experiences, enabling students to acquire knowledge.

In this context, educational materials are defined as cultural objects, whether physical or digital, created with the purpose of facilitating learning in educational settings [6]. These materials mediate between knowledge and the learning process, and their interaction occurs in an educational environment influenced by various factors, such as teaching methodology and the availability of resources. The distinction between digital and traditional educational materials has generated considerable debate. In the international literature, there is no single conceptualization, and terms like "learning objects" [8], "digital learning resources" [9], or "open educational resources" [10] have been used.

These digital materials offer unique experiences of cultural communication and knowledge acquisition. Hypertexts, 3D graphics, virtual worlds, video lessons, simulations, and other technologies represent a diverse range of expressive codes and forms of communication that differ significantly from written communication in printed documents. In the educational context, digital materials can be integrated into the curriculum, facilitate communication and social interaction, be flexible and adaptive, cater to users' needs, and promote active knowledge construction by students [11].

1.3. The Teacher's Role in the Face of Digital Didactic Materials (DDM)

Contemporary society demands a new role for education professionals, one not constrained by conventions or rigidities imposed by publishers. Educators must assume a new role when it comes to the incorporation of digital didactic materials, involving the creation of digital resources with clear educational objectives, collaborating with other professionals to share experiences, and developing proposals that promote students' digital competencies [12]. This approach seeks to provide greater flexibility in teaching, adapt materials to various student needs, and stimulate their involvement in knowledge creation [13]. The integration of technology in education must overcome emotional barriers and demonstrate its utility in the teaching and learning process [14].

In Early Childhood Education, policies promoting information and communication technologies (ICT) have been well-received by educators. They combine digital didactic materials (DDM) with printed materials and hands-on, playful activities. The seamless integration of DDM with other resources aligns with the needs of students in this stage [15–17]. Teachers believe that the use of DDM motivates young children, improves their attention, and enhances their academic performance, in line with previous studies [18–22]. The introduction of technology in early childhood education is seen as necessary in today's society; however, there are concerns about its long-term effects on the development of young children, which currently spark a debate regarding its incorporation in early learning [23].

Primary school teachers have a positive view of the use of DDM in the classroom [24]. They believe that these resources motivate students by combining images, videos, interaction, and text into a single element, in addition to accommodating different learning styles and social diversity in the classroom. DDM should promote interdisciplinarity, linguistic and cultural identity, and the inclusion of diverse groups [25]. However, in practice, educators often combine printed materials with digital resources, reflecting a hybrid approach. Information and communication technologies (ICT) play a key role in the digital literacy of teachers, students, and families [26]. The use of DDM enriches the teaching and learning process by helping achieve educational goals, selecting content, adapting it to student needs, creating learning conditions, and enhancing the quality of education [27].

As mentioned above, the potential of DDM is evident and the perception of teachers has already been recorded by other authors; however, the particularity of this study and its main motivation is to establish comparisons between the two stages. The decision to carry out this research, despite being the culmination of a long history of research on digital transformation in schools, aims to go a step further.

On the one hand, there was a dearth of studies directly comparing the perceptions of pre-primary and primary school teachers on the use of learning materials. The lack of comparative research may have left unanswered questions about differences or similarities in pedagogical practices between these educational stages which we aim to answer in this research.

On the other hand, it is felt that understanding the perceptions of teachers at each of the stages will inevitably help to identify areas where professional development needs to be improved. If, for example, teachers at one stage feel that they do not have sufficient training in the effective use of certain materials or resources, opportunities may arise to offer specific training programs or to investigate existing training schemes.

Finally, we certainly believe that understanding how teachers at different stages perceive and use learning materials will have direct implications for students' learning, and comparing these will especially improve students' educational transition processes by deepening the development of students' digital competence.

2. Materials and Methods

In the development of this study, questions were raised, such as: What is the use of DDM in Early Childhood and Primary Education classrooms? How do teachers assess the DDM they use? Are teaching innovation and the creation of didactic resources perceived as strategies for professional development? And what are the implications of using digital materials and resources in changing the pedagogical model?

The following section describes the context, the means, and the instruments through which these questions were addressed.

2.1. Context and Research Purpose

The analysis presented in this article is part of a comparative study between two projects focused on the use of Digital Didactic Materials (DDM) in the school environment. The projects are: "Escuela@ Digit@l: La Escuela de la Sociedad Digital: análisis y propuestas para la producción y uso de los contenidos digitales educativos (EDU2015-64593-R)" [Digital School: The School of the Digital Society: analysis and proposals for the production and use of educational digital content], which focuses on Primary Education, and the project "Infanci@ Digit@l: Los materiales didácticos digitales en la Educación Infantil. Análisis y propuestas para su uso en la escuela y el hogar (RTI2018-093397-B-100)" [Digital Childhood: Digital didactic materials in Early Childhood Education. Analysis and proposals for their use at school and at home], which, in turn, is situated in the field of Early Childhood Education (Figure 1). The objective of this study is to analyze and contrast the perceptions of teachers in Early Childhood and Primary Education regarding the assessment and use of DDM in two different contexts: the Autonomous Community of the Canary Islands and the Valencian Community.
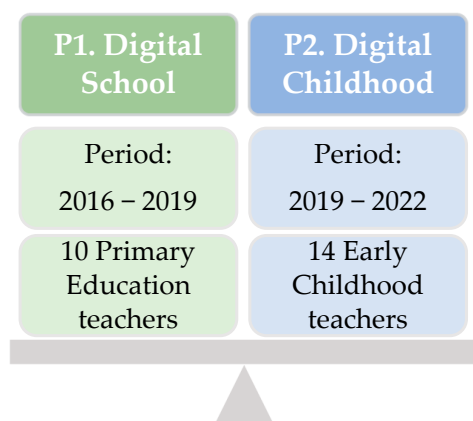
Figure 1. Comparative process: project, duration, and sample.

2.2. Methodology

The methodological development of both projects was mixed, but the specific studies focused on in this research were qualitative in nature, so the results presented in this article are qualitative. Following the guidelines of [28] and [29], an approach to reality, understanding, and description of social phenomena was sought. The projects aimed for an eclectic approach to the school through various research approaches and techniques to explore the perspectives of different educational agents.

The approach was holistic and critical, aiming to overcome the technocentric view in which didactic materials were almost exclusively evaluated for their effects on various variables of individual learning, considering instead issues related to educational policies and practices and their impact on educational change.

2.3. Participants

Specifically, the study focused on teaching staff and aimed to identify the visions and representations of Early Childhood and Primary Education teachers in each of the communities involved regarding the didactic potential of digital materials and content, as well as the uses derived from them in both stages.

The sample consisted of a total of 24 teachers, 14 from the Canary Islands (8 from Early Childhood and 6 from Primary) and 10 from Valencia (4 from Primary and 6 from Early Childhood). They had to meet a series of criteria: (a) gender parity, (b) belonging to centers with various ownership types (private, public, and subsidized), (c) covering all socio-geographic possibilities (rural, urban, or semi-urban environments), (d) extensive teaching experience of at least 5 years, and (e) different roles in the school (cycle or stage coordinators, class teachers, specialists, support teachers, and members of the management team), as reflected in Table 1.

Table 1. Sample distribution.

Autonomous Region	Stage	Ownership	Type of School	Teachers
Canary Islands	Primary	Public		5
		Charter school		1
	Early Childhood	Public	Rural	3
		Public	Urban	2
		Charter school	Semi-urban	1
		Charter school	Urban	1
		Private	Urban	1

Table 1. *Cont.*

Autonomous Region	Stage	Ownership	Type of School	Teachers
Valencia	Primary	Public		2
		Charter school		2
	Early Childhood	Charter school	Urban	2
		Public	Semi-urban	1
		Public	CAES (Specialized*)*	2
		Various	Educational Psychopedagogical Service	1

2.4. Instruments

Data collection was carried out through discussion groups with teaching staff, understood, according to [30], as a qualitative technique for gathering information from social research that "seeks to capture social reality through debate or discussion in small groups" (p. 35). Depending on the circumstances of each case, semi-structured individual in-depth interviews were also used. These interviews, as described by [31], offer an acceptable degree of flexibility to accommodate the interviewees while motivating the interlocutor, clarifying terms, identifying ambiguities, and reducing formalities. The script design used in both data collection instruments was developed by the research team members of both projects. For validation, it underwent review by experts from both the national and international contexts. Once validated, data collection was initiated.

The information analysis procedure was carried out using matrices to categorize the data obtained from the literal transcriptions of each of the instruments. In this work, we specifically focus on the teachers' opinions related to the analysis categories: 1. Evaluation of DDM and 2. Use of DDM, from both projects in the two autonomous communities (Figure 2).
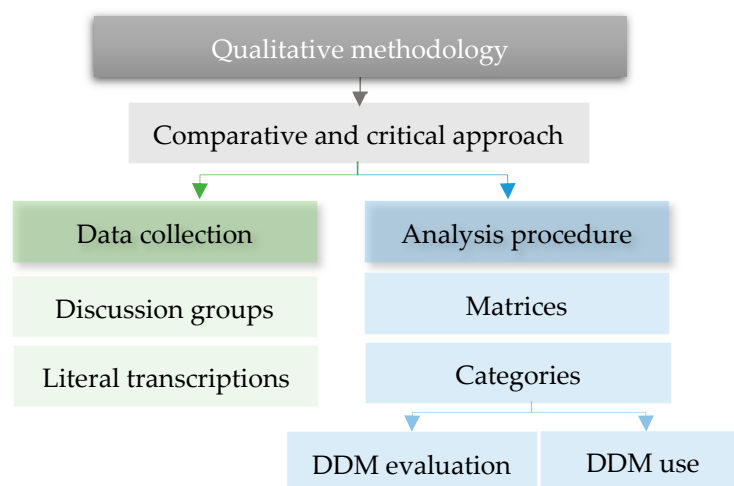

Figure 2. Methodological synthesis: approach, data collection, and analysis.

3. Results

The use of DDM by teaching staff in childhood and primary classrooms, as well as their own assessment, is analyzed below, first in the Valencian context and later in the Canary Islands.

3.1. Teachers in the Valencian Community

3.1.1. Early Childhood Teachers

Regarding their assessment, the interviewed teachers agreed that the technological equipment available in their schools and classrooms was sufficient and adequate. Despite mentioning various devices, they all referred to the Interactive Digital Whiteboard (IDW) as the most commonly used. In this regard, it is interesting to note that half of the teaching staff pointed out significant differences between the available equipment and its use in the teaching and learning process. One of the main reasons was the insufficient teacher training, considered to be the key to successful technology integration in schools.

Another area of significant convergence was the importance of the availability of various resources in the Early Childhood Education stage, especially manipulative resources that allow for experiential learning, which is crucial for this stage. Therefore, although the overall assessment of DDM was positive, they were not considered fundamental resources for learning in early childhood.

They also mentioned common problems in school life, such as a lack of connectivity or network power, which, in some cases, created significant difficulties due to the daily work dependency in the classrooms.

Finally, there was a certain consensus in highlighting one of the main strengths of these materials, which is the motivation they generate among students. This value was recognized both by teachers and families but reflected a somewhat reductionist view regarding the didactic potential of digital media.

As for noteworthy differences, one of the cases was in the process of replacing IDWs with projectors, and in another case, it was considered that the availability of devices for early childhood students would be interesting to further incorporate DDM into the teaching and learning process of students. One of the interviewed teachers commented on the reasons he considered the use of devices in the classroom positive: "The reasons are because we are in a world that moves at lightning speed, and in my school [...] It is necessary because in the future they will have to use it, and they will have to use a computer or a mobile device. I do see it as necessary" (V_EC_IT4).

There were also differences in the assessment of the role of families. Ultimately, because, as the other key socializing agent, they can impose different rules regarding the use of technology at home. These rules were considered much more lenient and less conducive to the development and learning process of their children.

Overall, it is worth highlighting the positive assessment of the interviewed teachers regarding DDM due to the resulting student motivation. On the other hand, the need for rules and parental control to prevent abuse in the family context was also emphasized.

Regarding the use of digital resources in the classrooms, despite the overall positive assessment of their potential, teachers had a critical view of the resources and their utilization. They also agreed on the perception of potential risks that may arise and need to be taken into consideration.

The most notable differences were found in the diversity of sources used, with some teachers relying heavily on traditional publishers and resources available online. Some teachers exclusively used resources provided by traditional publishers, while others combined or solely used open resources shared by other teachers. An exception was one teacher who acknowledged using exclusively self-created resources.

In summary, the use of digital resources was related to various times and situations, as some teachers only used them on specific occasions, while others used them regularly throughout the day. This situation was linked to each teacher's conception of what education in this stage is or should be. Some opted for a combination of multiple materials, while others chose digital devices as a representation of innovation and adaptation to an increasingly digitized society.

3.1.2. Primary Education Teachers

As for their assessment, the teaching staff considered that, in the current context, working with DDM is essential for students. Therefore, it is unthinkable today not to consider or include digital devices and resources available in the educational process.

However, some teachers pointed out that simply using digital educational material did not guarantee that student learning will occur. Multiple variables and determining factors must be taken into account for learning to take place. Furthermore, teachers also agreed that working with DDM per se did not imply a change or enrichment of the process compared to working with paper-based or other traditional materials. To truly differentiate them from printed materials and not simply digitize them, the use of the materials must also change to fully exploit its potential and offer a different form of education.

Regarding their daily use, teachers emphasized the utility of DDM in the classroom, as these materials offered many possibilities. On one hand, they claimed that DDM promoted the adaptability of content, and on the other, they contributed to curriculum implementation. Therefore, they considered DDM to be a very practical tool for addressing the needs of the current context and students themselves through work based on novelty and relevance.

In this sense, it was highlighted that it is important to complement daily practice in the classroom with DDM with other manipulative materials to ensure the quality of the teaching and learning process. Thus, although their presence in classrooms was common, it was not typically integrated into all work proposals, but rather their presence varied depending on the subjects. Likewise, some teachers also worked with complementary DDM from the Internet, but without fully embracing digital materials such as digital textbooks and others.

3.1.3. Comparative Analysis between Stages

At a contrastive level, it is necessary to highlight that teachers' attitudes towards resources, in general, regardless of the stages, did not appear to depend on the type of school, or even the gender of those who participated in the interview. However, all agreed that the introduction and use of technology in the everyday life of the classroom was usually determined by the attitude and beliefs of the teachers who decided to acquire and use it.

On the other hand, there was some disagreement in the assessment of DDM as a pedagogical resource by teachers in Early Childhood Education and Primary Education. For the former, the use of these media, despite playing a motivating role for students, should be measured and complemented with other resources that promote more hands-on and experiential learning. In contrast, the latter, who agreed on the motivational aspect they provide, had more confidence in their potential and considered them essential in the current teaching and learning process. However, they emphasized that the use of these resources and the changes made in educational practice were much more relevant than the media themselves. Therefore, greater teacher training in this area is necessary, which will in turn contribute to the development of digital teaching competence.

3.2. Teachers in the Canary Islands
3.2.1. Early Childhood Teachers

In this case, two different profiles were observed regarding the use of DDM in the field of Early Childhood Education in the Canary Islands. The first profile consisted of teachers who strongly supported the integration of digital materials into their teaching, but they did so cautiously and adapted to the psychosocial needs of their students. In contrast, the second group was composed of teachers who had a clear preference for hands-on materials and sensory learning approaches. They used DDM as a supplement, but not frequently, and their use was adjusted to the characteristics of their students. Teachers stated that their students had digital competence that allowed them to handle mobile phones and tablets, but they did not provide examples beyond touch technology and icon

recognition. Furthermore, they believed that the development of digital competence was not a priority in the curriculum for Early Childhood Education. The perspective of these educators regarding the use of digital didactic materials in a home environment differed from that of families. In general, teachers pointed out excessive and unsupervised use of electronic devices at home, which are not intended for educational purposes but for games, applications, and videos with inappropriate themes for children.

Some teachers from public schools mentioned insufficient connectivity, and tablets were only available on certain days of the week for classroom use. In contrast, private and charter schools had solid connectivity and sufficient Information and Communication Technology (ICT) tools that allowed them to incorporate DDM into teaching.

The preference for use by teachers was again divided into two currents: on one hand, some gave greater importance to traditional and hands-on resources, and DDM were used less frequently. On the other hand, there was a motivated group that promoted computational thinking and artificial intelligence, using activities both offline and through tablets to make students more proactive and creative. It is worth noting that the latter profile corresponded to the youngest teacher in the group who worked in a public institution.

Regarding the teachers' preference for use, two scenarios were also identified. Some showed a preference for more traditional activities, while others had a more favorable view of working with digital technology, especially with gamified applications like Quizizz. Some teachers argued that students' boredom with the educational use of tablets was due to excessive use of them at home, but for individual gaming.

Teachers referred to a variety of digital resources used in their educational practice, including blogs related to Montessori pedagogy, pages and materials from the educational portal of the Canary Islands Ministry of Education, and tools such as Genial.ly, Canva, and Google Classroom. In some cases, YouTube was also used for projecting Zumba and yoga classes through the Interactive Whiteboard (PDI), video tutorials, educational videos, and digital materials created or adapted by themselves for teaching. In general, teachers associated the advantages of DDM with their appropriate and well-directed use. The importance of maintaining a balance between traditional and digital resources was emphasized, considering the latter as supplements in the learning process. One of the interviewed teachers commented on this relationship between both formats: "Well, I value it like on a scale, and I put them both equally. Both the digital and the printed, one complements the other. I think that by balancing everything, the classroom works very well. If you know how to carry it out" (C_EC_IT06).

The teaching group agreed that digital resources facilitated communication with families in general, thanks to the availability of videos and digital platforms. However, they also acknowledged that, at times, extra effort was required to train families in the use and management of these tools, specifically in the case of Google Classroom and Telegram. They also agreed that digital media was useful for coordinating with the rest of the teaching team, using platforms for cooperative work and virtual meetings. Some mentioned that in the network of educational centers to which they belong, they had platforms for sharing materials, participating in webinars, and holding meetings, and resources were evaluated based on aspects such as creativity, interest, curiosity, desire to learn, achieving objectives, etc.

In conclusion, teachers recognized the advantage of using DDM to familiarize students with the type of teaching they will experience in the future and with various digital platforms. This approach helps to address diversity and effectively personalize learning.

3.2.2. Primary Education Teachers

The overall evaluation of Digital Didactic Materials (DDM) in the Primary Education stage reflected their transformative potential in teaching and learning. DDM stood out for their ability to provide multiple sources of information, motivate students, and enhance more effective communication between teachers and students. Moreover, teachers recognized them as essential tools for addressing diversity in learning rhythms and promoting

student content creation. This indicates a shift towards an educational model in which students take an active role as content creators, which is considered crucial for preparing competent individuals in a digitized society.

Teachers showed a preference for DDM, although they did not completely rule out other traditional materials such as textbooks. They emphasized the need to diversify resources to empower students in their learning process. There is a transition towards the use of digital technologies, although without completely giving up the possibilities offered by conventional materials. On the other hand, students preferred materials created by teachers and/or themselves, whether they were digital or analog. It was emphasized that involvement and effective learning occurred when students were actively involved in creating their own resources. Furthermore, the interviewed teachers highlighted that access to information and the ability to search, retrieve, and share knowledge were promoted through digital materials. Specifically, one of the contributions from a primary education teacher addressed the importance of the role of students in content creation: "They are an essential tool: they motivate students, capture their attention, place students and teachers on the same communicational level, and facilitate teaching tasks. The key is content creation, and that students face non-passive situations in which they generate their own knowledge" C_PE_IT2).

Regarding the preference between textbooks and digital books, certain teachers pointed out how students showed greater interest in materials they can manipulate and interact with, such as interactive digital books. Interaction and adaptability of DDM were highly valued characteristics by teachers. The importance of integrating DDM effectively into a pedagogical context and aligning them with learning objectives was emphasized.

In terms of the formal and pedagogical characteristics of DDM, teachers agreed that they should be flexible and adaptable to the educational reality. Interactivity, adaptability, and hyperlinks were particularly valued aspects since they helped address diversity in the classroom and promote motivation and collaborative learning. The pedagogical characteristics of DDM allowed teachers to adapt the material according to the specific needs of their group. The importance of guiding students in searching for and selecting material was emphasized, as well as ensuring that DDM were integrated into a pedagogical context with well-defined learning objectives aligned with assessment.

According to the participating teachers, the use of technology in the classroom offered numerous advantages, such as improving student engagement and enriching teaching. It facilitated communication between teachers and students through various channels, increases motivation, and allowed students to overcome shyness by presenting their work through digital media. Technology also enhanced accessibility, adaptability, and the digital and informational competence of students. However, difficulties also became evident. These included excessive technology use, which can negatively impact handwriting and careful reading. Unequal access to technology was presented as a concern, and it was observed that speed and lack of attention can affect spelling and conscious writing. The importance of teaching students to evaluate and curate content rather than simply "copy and paste" from the Internet was emphasized.

3.2.3. Comparative Analysis between Stages

Comparing the results obtained from interviews with both groups of teachers, similarities and discrepancies can be observed in the perspectives of teachers in these stages.

In both Early Childhood Education and Primary Education, the importance of digital competence was recognized, and the need to work on it in the classroom was acknowledged. Teachers were aware of the need to become familiar with digital technologies and resources, although there were variations in the depth of digital competence.

Regarding the evaluation of the integration of digital technologies, both in Early Childhood Education and Primary Education, teachers viewed the integration of DDM positively in their pedagogical practices. They believed that these resources can enhance motivation, adaptability, and diversity in learning. Emphasis was placed on the ability of

these resources to support different learning paces. Similarly, at both levels, a common challenge related to the excessive use of technology was identified, whether at home or in school. Excessive time spent on electronic devices was perceived as a factor that can negatively affect the educational experience and cognitive development.

Despite these similarities, there were diverse opinions among teachers in Early Childhood Education and Primary Education.

In Early Childhood Education, teachers noted that students had a limited level of technology use focused on tactile skills and icon recognition. In contrast, in Primary Education, there was greater interest among students in manipulating and interacting with digital materials, such as interactive digital books. This is relevant when establishing activities or selecting digital resources that match the characteristics of each student.

Regarding concerns or difficulties in dealing with technology in the classrooms, Early Childhood Education teachers mentioned the lack of connectivity in public schools and the excessive use of electronic devices by families as specific challenges. In the Primary Education stage, the challenges were more related to the need to teach students to evaluate and curate content and ensure equitable access to technology.

Finally, there was a division in the preferences for using DDM among Early Childhood Education teachers, with some showing a stronger inclination toward traditional methods. In Primary Education, teachers were more inclined toward the integration of DDM, although they did not completely reject traditional materials.

4. Discussion

In general, in both Early Childhood Education and Primary Education classrooms, Digital Didactic Materials have become valuable tools that teachers consider to enrich the teaching and learning process. The overall assessment was positive, and in accordance with [24], teachers believed that DDM bring dynamism to classroom activities due to the diversity of formats they offer. Consistent with [32], they are currently used to complement traditional materials, particularly to capture students' attention in a digitized world.

In line with [33], teachers from both communities agreed that DDM offer opportunities for personalization, adaptation to different learning styles, and the ability to motivate students through interactivity. However, challenges related to the need for continuous training and time management in selecting, adapting, and creating digital resources were identified, in line with [34].

Regarding the creation of digital teaching resources, some authors point out that it is closely related to teaching innovation. According to [35], the most innovative teachers are often those who frequently develop their digital materials and adapt them to the specific needs of their students. This creation allows teachers to have greater control not only over the content but also over the didactic and pedagogical objectives pursued, which undoubtedly contributes to improving the quality of learning.

As for the differences between Early Childhood Education and Primary Education, three significant aspects need to be considered: the students' developmental level, the pedagogical and curricular approach of each stage, and teacher training.

1. Developmental Level:

Teachers in Early Childhood Education are typically more cautious when introducing digital materials. When they use them, they focus on simpler activities that promote the consumption of audiovisual material (such as music or animated videos), play, and guided digital exploration. This caution is related to concerns about technology use at a young age, as discussed in [23]. On the other hand, Primary Education teachers may perceive students as more capable of using technology and navigating digital environments. This can lead to a greater willingness to integrate digital materials into teaching and explore more advanced resources, as mentioned in [18].

2. Pedagogical and curricular approach:

Teachers in Early Childhood Education often believe that the focus at this stage should be on the development of social, emotional, and motor skills. They expect digital materials to align with these goals and tend to seek applications and digital resources that foster creativity and social interaction. However, they consider that more traditional or manipulative resources that contribute to exploration and experiential learning may be even more useful. Therefore, they view DDM as complements to practical activities and interaction and tend to avoid excessive screen time. In contrast, Primary Education teachers, who tend to focus more on achieving specific curricular objectives and have a more formal and structured learning perspective, perceive DDM as useful tools for teaching subjects such as mathematics, language, or science. They look for resources that align with the curriculum content and contribute to autonomous learning [36].

3. Teacher training and experience:

It is common for Early Childhood Education teachers, as suggested by other authors [37,38], to feel that they require more specific training in the use of DDM due to their limited experience in integrating technology in the classroom. On the other hand, Primary Education teachers often feel more comfortable with these resources, perceiving, at times, that they have more experience, even if it is self-taught and arises from collaborative and reflective work [39]. This makes them more willing to explore new digital tools.

As can be appreciated, the use of DDM in Early Childhood Education and Primary Education implies and requires a change in the traditional pedagogical model. The teacher-centered model must transform to give an active role to the student. Thus, access to information and the teacher's role as a guide and mentor are fundamental, promoting a more constructivist approach to learning [40,41]. However, this change in the model is not without its challenges. Altering roles requires teachers to adapt to new classroom dynamics and manage technological elements to ensure, as [42] stated, that the use of DDM is pedagogically effective.

5. Conclusions

In the context of the growing digitization of classrooms, this research has addressed fundamental questions regarding teachers' perspectives on the integration of digital media, the learning situations in which they are used, and potential differences in the use of digital resources between Early Childhood Education and Primary Education stages. The results reveal that Digital Didactic Materials (DDM) have solidified their position as valuable tools, enriching the teaching and learning process in both stages. Teachers' positive perception is grounded in the diversity of formats offered by DDM, contributing to the dynamism of classroom activities and complementing traditional materials. Although challenges related to continuous training in the selection and creation of digital resources are identified, there is consensus on the personalized learning opportunities and student motivation provided by DDM. Pedagogically, teachers in both stages seek to align DDM with specific objectives, whether fostering creativity and social interaction in Early Childhood Education or facilitating the teaching of specific subjects in Primary Education. Teacher training emerges as a decisive factor, with Early Childhood Education educators expressing the need for more specific training, while those in Primary Education, with perceived greater experience, show a willingness to explore new digital tools. Ultimately, the use of DDM in both stages implies a shift in the traditional pedagogical model, promoting a constructivist approach that assigns an active role to the student, redefining the teacher's role as a guide and mentor in the digital educational environment.

Despite the valuable findings obtained, it is important to acknowledge the inherent limitations of this research. Data collection was based on teachers' perceptions, which could introduce biases or limitations in representing the complete classroom practices. Additionally, there are identified opportunities to expand the research to Compulsory Secondary Education, exploring the use of digital educational resources in this stage. Considering the continuity of the analysis in subsequent educational levels will provide a more comprehensive and coherent understanding of the use of digital materials throughout

the educational journey. This approach would offer valuable insights into the evolution of pedagogical practices and teacher adaptation as students' progress in their education. Consequently, a future research agenda is proposed, encompassing direct observation in classrooms, and extending the study to Compulsory Secondary Education, enhancing our understanding of the impact of digital resources on the global educational landscape.

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