

## Article

# Teachers' Beliefs about the Role of Digital Educational Resources in Educational Practice: A Qualitative Study

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**Abstract:** Information and Communication Technologies and Digital Educational Resources have undergone a rapid evolution and have been swiftly introduced into educational contexts. Teachers play a key role in integrating these technological resources into the classroom. The objective of the present study was to determine the value that teachers attribute to digital resources in their educational practice. Based on a qualitative methodology, the necessary information was obtained via an open-ended interview, in which a Spanish school's Early Childhood and Primary Education teachers participated. The results revealed that teachers value the integration of digital resources into the classroom, though no consensus was reached as to the suitable level of integration. Use satisfaction was mainly related to student motivation. Certain problems or limitations also came to light, however, linked to students' digital training. An important conclusion according to the perception of teachers is that the integration of digital resources in their educational practice was significant and improved the quality of the educational process.

**Keywords:** ICT; digital competence; teachers' beliefs; primary education; early childhood education



**Citation:** Alberola-Mulet, I.; Iglesias-Martínez, M.J.; Lozano-Cabezas, I. Teachers' Beliefs about the Role of Digital Educational Resources in Educational Practice: A Qualitative Study. *Educ. Sci.* **2021**, *11*, 239. <https://doi.org/10.3390/educsci11050239>

Academic Editors: Francisco D. Guillen-Gamez, Sandra Vázquez Toledo and Cecilia Latorre Cosculluela

Received: 22 March 2021  
Accepted: 13 May 2021  
Published: 17 May 2021

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## 1. Introduction

The education system has adapted to digital society [1,2]. Digital media and new technologies have been introduced in classrooms around the world, leading to teachers introducing and using Digital Educational Resources (DERs), and making school and DERs inseparable [3]. In recent years, many digital educational resources have been introduced into classrooms [4]. These materials are defined as resources designed for educational purposes, published in a digital format [5,6], and selected by teachers to fulfil various objectives: transmitting content, mediating the learning experience, provoking encounters, developing student skills, or making assessments [7]. Digital Educational Resources (DERs) and Information and Communications Technology (ICT) are a set of developed technologies that allow us to manage and interact with information and knowledge [8]. The use of ICT in educational contexts implies the search, creation, and selection of DER [9]. In this way, ICTs are the means of access to DERs [10,11], which allow for interaction with content, through which knowledge is passed on to students. Teachers are responsible for designing the teaching–learning process, in which, in addition to transmitting knowledge, they must develop students' skills and competencies through the use of ICT and digital educational resources; they should be employed as a means of transformation, allowing students to actively build knowledge via collaborative and authentic learning activities that enable exploration [4]. These skills and competencies, essential in society today, are as follows: collaboration, communication, digital literacy, citizenship, problem-solving, and critical, creative, and productive thinking [12].

In today's current context, generated by the COVID-19 health crisis, blended or hybrid learning has naturally gained prominence. In recent years, ordinary schooling has undergone a similar process, and teachers have had to take a big step forward in integrating technological resources into the classroom. Fortunately, technologies have

rapidly evolved; they have gone from a first integration, called e-learning 1.0, in which platforms were used as mere repositories, to e-learning 2.0, which is focused on social networks and collaboration, and to e-learning 3.0, characterised by artificial intelligence and machine learning. In addition, so-called “deep learning”, as e-learning 4.0 has been coined, has emerged. This latest evolution makes it possible to individualise and personalise the teaching–learning process based on student performance, interests, search history, and so forth. In this way, the quality of teaching improves and better results are obtained [13].

Technologies offer a wide range of possibilities that are advancing rapidly, and augmented reality is even being introduced into educational contexts [14]. While these steps forward may represent an educational quality differential, they are, in reality, generally implemented by teachers in the classroom in a simple fashion; their full potential remains unexploited, to the concern of certain researchers [15].

Kopcha [16] acknowledges that a significant gap exists between the amount of technology available to teachers and the educational use made of ICT during teaching–learning processes. Gray, Thomas, and Lewis [17] show that only half the number of teachers use new technologies in their profession, and they do so primarily for administrative tasks. In addition, when ICT is used in education, it is not adequately implemented, and therefore, the technology does not improve the teaching–learning quality [18]. Technology is seen as a transformative educational resource [19] with the ability to change the educational landscape, yet this shift has still not become a reality [20].

The use of DERs in schools is rare, especially at the Early Childhood Education stage [21]. In the early ages, DERs are used little, and when they are used, it is to communicate with families, design the curriculum [22,23], or develop technological skills, while overlooking the potential application of DERs for teaching curricular contents [24]. They are more widespread, however, at the Primary Education stage, though DERs are then only used to present the contents [25], without any awareness of their value for teachers’ professional development [26]. DERs facilitate the achievement of objectives and improve the adaptation of contents, processes, and quality of teaching [27], and they support learning [28].

Area-Moreira, Hernández-Rivero, and Sosa-Alonso [29] distinguish two types of technology integration models for educational purposes: teachers with professional experience, who are regular users and adequately trained, on the one hand, and teachers who use traditional resources and introduce technologies sporadically. That is why the educational potential of new technologies has not yet bloomed in educational practice [2]. Teachers still combine them with traditional resources [30], fail to make use of them [26], and are reluctant to integrate ICT and DERs into educational practice [31,32].

Teachers play an essential role in integrating digital teaching resources since they are the ones who take implementation decisions in the classroom [33]. When working with digital resources, teachers are resource designers, they choose to create their own materials and adapt them to their students’ characteristics [11]. An educator’s role is thus undergoing a shift; rather than representing a knowledge repository that transmits knowledge, an educator must act as a guide and designer of situations and contexts that are conducive to learning [34].

### *Technological Pedagogical Content Knowledge*

Beliefs can be defined as psychological understandings and ideas that are considered true [35,36]. They are related to personal experiences, emotions, and intrinsic appraisals [37], thus becoming determinants and indicators of human behaviour, decisions, and actions (i.e., attitudes) [37–39]. Investigating teachers’ beliefs or thoughts implies knowing the actions they conduct in their educational practice [40] and, especially, their direct impact on teaching and learning.

This relationship between beliefs, attitudes, and behaviours is more clearly illustrated in the Acceptance of Computer Technology, proposed by Davis, Bagozzi and Warshaw [41]. In this model, the authors advance that teachers’ perceptions of the usefulness of technolo-

gies and their ease of use leads to certain attitudes that eventually turn into behaviours. The model is supported by an extensive amount of research and studies indicating that teachers' beliefs are a key factor in the incorporation of new technologies and consequently, that of DER into classrooms (e.g., [36,42,43]).

Mishra and Koehler [44] presented the Technological Pedagogical Content Knowledge (TPACK) model, in which they establish that teachers need to master three types of knowledge in order to introduce new technologies into the classroom effectively. First, they must be sufficiently knowledgeable about the subject in question (Knowledge of Content); they must also master the processes and teaching–learning practices or methods (Pedagogical Knowledge); finally, they must know how technology can be used (Technological Knowledge). By thus integrating these three types of knowledge, satisfactory results can be achieved by using technologies [45]. Teachers with high TPACK competencies have been shown to be those most in favour of integrating new technologies into the classroom, establishing in this way a correlative relationship between TPACK and the Technology Adoption Model (TAM), and allowing professionals to overcome intrinsic barriers [46].

Blackwell et al. [20] advance how important it is to understand the educational usages given to new technologies to improve teachers' visions and encourage technological integration. Tezci [47] expressed the need to understand, through a qualitative study, the perceptual differences between teachers of different genders and levels of experience. Perception is a personal construction that changes and evolves over time, so it is important to identify its current state. Teachers' beliefs about ICT and DERs play a key role in their adoption and integration into the classroom.

The objective of this qualitative study was to identify the importance that participating teachers of Early Childhood and Primary Education attach to digital resources, both in their perceptions and in their practice. Specifically, the following research questions were posed:

1. How do teachers perceive digital resources in classrooms?
2. What impact on student learning do teachers identify regarding the use of digital resources?
3. What usefulness and role do teachers assign to DERs in the educational process?
4. What are teachers' main satisfactions and difficulties regarding the integration of digital resources in their educational practice?

## 2. Materials and Methods

### 2.1. Methodology

The present study is based on the analysis of participants' narratives [48]. Narrative research [49,50] was thus used to establish causal relationships and understand social phenomena [51]. This methodology allows for the analysis of teachers' reflections and the capturing of details to understand the DER phenomenon under study.

### 2.2. Participants and Context

The participants were a total of 31 teachers (23% men and 77% women) in an Early Childhood and Primary School. The type of sampling used was intentional and for non-probabilistic convenience, in line with the considered inclusion criterion, which only restricted sampling to active Early Childhood or Primary Education teachers. The average age of the interviewees was 46 years (SD = 10.99), the youngest being 28 years of age, while the most senior participant was aged 65 years. Regarding the length of their teaching experience, the minimum was 5 years, the maximum was 39, and the average number of years of experience was 21 years.

This state school has around 500 pupils from working families of an average socio-economic level. The school is located in a town in southern Spain and is governed by Spanish educational legislation (Organic Law for the Improvement of Education, approved in 2013). The teachers included 7 Early Childhood Education professionals, 20 Primary Education teachers, and 11 specialist teachers (Physical Education, Artistic Education, Music Education, and Foreign Languages). The school has 6 Early Childhood Education classrooms

and 12 Primary Education classrooms. The number of students per classroom ranges between 25 and 30. This school was selected because a member of the research team had previously visited it as a participating observer to assess the degree of integration of digital technologies in the classrooms. In this sense, it was found that the school complied with the recommendations established by educational legislation with regard to educational policies for the integration of digital resources. The school's classrooms thus had interactive whiteboards (IWB) as well as classroom computers for students and teachers. In the case of the Early Childhood classrooms, the classroom computer was a touch device to facilitate its use by pupils. The school also supplied 25 tablets that could be used by the pupils and a computer classroom equipped with more than 24 computers and a projector. The ICT used included whiteboards (49.20%), computers (38.10%), tablets (11.11%), and Smart TVs (1.59%). With regard to the frequency of use of DERs (computer applications and video viewing recommended by publishers), 52.63% of participants indicated that they made use of these resources on a daily basis, 31.58% made use of them during computer sessions, and 15.79% occasionally.

### 2.3. Instruments

The data was collected through interviews that were designed and validated by the research team based on data triangulation (three qualitative research experts together with the valuation of two schoolteachers, one male and one female). The interview was composed of two parts: the first centred on the collection of sociodemographic data (age, gender, academic training, experience, educational stage being taught, and teaching function), while the second consisted of 4 open-answer interview questions directly related to the research questions raised. The interview was guided by the following questions:

1. Do you believe that digital resources should be used in Early Childhood and Primary Education classrooms? Why? To what extent do you consider that they should be integrated into education?
2. Based on your own experience, what effects do you believe the use of digital resources has on students' educational processes? Is this use positive or negative? Why?
3. As a teacher, could you describe how you approach the use of digital resources in the classroom? Which ones do you use? How and when do you use them and what for?
4. In relation to the use of digital resources in the classroom, what satisfactions and difficulties have you experienced? What do you associate these satisfactions or difficulties with?

### 2.4. Procedure

The data collection was carried out in person. The research team contacted the school's management to request the authorisation to conduct the study. They visited the school between January and February 2020 to interview the teaching staff. Teachers voluntarily accessed and participated in this study. Audio recordings of the interviews were made after having requested the participants' prior permission, guaranteeing their anonymity, and in accordance with the ethical standards of the Helsinki Declaration.

These audio recordings were then transcribed into narratives for subsequent processing. To analyse the information obtained, a mixed (inductive–deductive) process was conducted and the research team drew up a draft of the code map based on the reading of the narratives, research issues, and the conceptual framework. This configuration subsequently underwent a minor modification based on the adjustments proposed by experts in qualitative education and research. The Analysis Qualitative Data (AQUAD) programme was used to analyse the results, allowing the classification of the identified units of meaning, the assigning of the emerging codes, and the grouping into four themes. This programme facilitates the result analysis process thanks to the possible combination of the interpretation and codification processes of the participants' narratives.

The four research questions were at the core of the narrative analyses and various themes were established relating to them. In this way, the first and second research

questions were linked to Topic 1, referring to the teacher's perception of the importance of DERs, their integration in the classroom, and the impact of digital resources on learning processes. The third research question included the codes referring to the purpose of use (Topic 2). Finally, the fourth research question addressed two last topics (3 and 4) that grouped the codes on use satisfaction and dissatisfaction.

### 3. Results

The analysis and presentation of the results were organised according to the different themes that emerged. The presentation of the results is based on the percentage of Absolute Frequency (%AF). In addition, for a more in-depth analysis of the results, the tables present data referring to the Mean (M) and the Standard Deviation (SD).

#### 3.1. Topic 1: Teachers' Perceptions of the Importance of DERs

##### 3.1.1. Importance of DERs in the classroom

The first topic identifies the reasons that lead teachers to consider digital resources in educational practice as relevant. The results are shown in Table 1.

**Table 1.** The importance of DERs in the classroom.

Code	AF (%)	M	SD
1.1 Technological society	39.13%	0.58	0.56
1.2 Capture pupils' interest	28.26%	0.42	0.56
1.3 Favour the teaching–learning process	23.92%	0.35	0.55
1.4 Variety	8.70%	0.13	0.34

The most prevalent code (1.1.—Technology society) refers to the significance of introducing DERs and ICT into the classroom because they are currently widespread in many fields of everyday life and have a prominent role in society today. It is thus important that schools keep up and prepare pupils for their future inclusion in society. Example of this code are the following:

*We live in a highly computerised society.*

(Participant 4)

*The world is full of technology, it is going very fast, there are many developments, so you have to work on it at school not to fall behind.*

(Participant 11)

Code 1.2 gathers the segments of text reflecting teachers' beliefs that the use of digital resources in the classroom is important due to their power to motivate and capture the students' interest:

*Yes, I believe digital resources play an essential role because they motivate students a lot and they are more interested.*

(Participant 5)

*Of course, because children are very attracted to the resource, they pay more attention, and you can work better with them.*

(Participant 31)

Code 1.3. (Favour the teaching–learning process) collects narratives in which participants state that electronic resources facilitate student learning. The following is evidence of this code:

*In addition to motivating them, they learn better.*

(Participant 6)

*They expand the pupils' mindsets beyond the pencil, rubber, and notebook.*

(Participant 7)

Other narratives illustrated how the educational process is enriched by the contents worked on, as there is greater variety and pupils develop their capacities more significantly (Code 1.4):

*We have a huge choice of resources that we don't usually have in the classroom. There are videos, songs, there are countless things you can do.*

(Participant 3)

*There are many possibilities.*

(Participant 23)

### 3.1.2. Integrating DERs in the Classroom

Narratives describing the integration of DER in the classroom were also identified. The codes that emerged are detailed in Table 2.

**Table 2.** Integration of DERs in the classroom.

Code	AF (%)	M	SD
2.1. Full integration	17.86%	0.16	0.37
2.2. Mixed integration	35.71%	0.32	0.65
2.3. Complementary integration	28.57%	0.26	0.51
2.4. Integration by group	17.86%	0.16	0.45

Mixed integration (Code 2.2.) refers to the realisation of a part of daily activities using DERs and ICT, as described in this narrative:

*I think they should be combined. Both textbook and digital formats.*

(Participant 4)

*I think that you can alternate. For example, in one exercise we can use the IWB, and students participate interactively, and then we can do the same exercise or a similar one in the book.*

(Participant 16)

It is also worth noting the presence of Code 2.4., in which the narratives show that the level of integration depends on the age and number of pupils in the group:

*It also depends on your group: whether there are many pupils, whether they are aged 2, 3, 4, or 5 years old.*

(Participant 23)

*I wouldn't use DER too much to start with in Early Childhood, even if they play an important role, because children need exploration, manipulation, attention games . . . I think it is more important in Primary school.*

(Participant 24)

Complementary integration (Code 2.3.) is defined as the use of these resources as complementary elements with the objective of reinforcing the contents studied rather than fulfilling the objectives of the curriculum. This is well-expressed in the following:

*That it be a complement to the teacher's work.*

(Participant 14)

*Not for everything, but to look for information, to watch documentaries, even to teach, sometimes they learn that way . . .*

(Participant 21)

Some textual segments refer to the teachers' view that full integration is adequate (Code 2.1):

*All resources or devices, such as computers, digital whiteboards, digital monitors, tablets must be fully integrated whenever possible.*

(Participant 2)

*To what extent? All the time, as much as possible.*

(Participant 3)

### 3.1.3. Influence of DERs on the Learning Process

The impact of DER integration was also considered to be highly significant for student learning. Table 3 illustrates the codes under which the corresponding described findings were grouped.

**Table 3.** Influence of DERs on the learning process.

Code	AF (%)	M	SD
3.1. Motivates the process	58.49%	1	0.97
3.2. Improves the process	41.51%	0.71	0.78

In this way, Code 3.1. includes the units of meaning that indicate an increase in motivation, attention, and participation, among others, as shown in the following narratives:

*I've noticed that the children are more attentive, and they are excited about interacting, going up to the digital whiteboard and doing the interactive exercises, touching the whiteboard and working with it.*

(Participant 1)

*It is very motivating, it motivates them and captures their interest much more, they are in tune.*

(Participant 15)

In addition, Code 3.2. collects the narratives of the participants who described how they could access a greater variety of resources, improving the quality of the educational process.

*Puts access to knowledge at their fingertips . . . they have at their disposal elements that they do not find outside the classroom or at home. It's always very positive because it helps to develop their skills and abilities.*

(Participant 3)

*They help students to understand concepts that might not be conveyed by a book or an oral explanation.*

(Participant 19)

### 3.2. Topic 2: Purpose of Use

Table 4 presents the results regarding the purpose for which DERs and ICT are used in the educational process.

**Table 4.** Purpose of use.

Code	AF (%)	M	SD
4.1. Teaching	79.37%	1.61	1.12
4.2. Assessment	4.76%	0.10	0.40
4.3. Teaching competences	3.17%	0.06	0.42
4.4. Teacher functions	12.70%	0.26	0.51

With regard to the purpose of use, we identified that the code relating to the purpose of transmitting knowledge to students was the most frequent (4.1.—Teaching):

*I have some videos that I use to teach traffic signs when we study road safety education.*

(Participant 11)

*They had to do a written presentation of an animal. I gave them the questions and they had to search on the Internet what they ate, what they were like, how they are born.*

(Participant 14)

It is worth noting that the frequency of teacher narrative codes referring to assessment purposes was low; the following extracts portray the frequency of Code 4.2.—Assessment:

*In the music subject, I use new technologies for the learning and evaluation processes.*

(Participant 16)

*I use rhythms and audio for the assessments.*

(Participant 18)

Participants explained how they use electronic resources to develop teaching functions (Code 4.4.) such as, among others, communication, or the elaboration of resources:

*I use them to communicate with parents.*

(Participant 9)

*In my personal work, I also use the computer to draw up materials.*

(Participant 16)

Although less frequent, computer classes (Code 4.3.) were also described as one of the elements used to teach basic digital skills to students:

*One day per week we go to the computer workshops, and they interact with the computer and all that.*

(Participant 7)

*We have set up computer sessions so to teach them what the mouse is, the use of the computer.*

(Participant 22)

### 3.3. Topic 3: Usage Satisfaction

This topic refers to the satisfaction that integrating DERs into educational practice can bring to teachers. Different reasons for satisfaction arising from the use of DERs and ICT were grouped into three codes, as shown in Table 5.

**Table 5.** Usage satisfaction.

Code	AF (%)	M	SD
5.1. Student motivation	76%	0.61	0.50
5.2. Ease of work	20%	0.16	0.37
5.3. Productivity for the teaching–learning	4%	0.03	0.18

Increases in student motivation (Code 5.1.) were a major reason for teacher satisfaction regarding the integration and use of technological resources since their use enhances pupils' motivation in the educational process. It is one of the aspects that considers the following ideas:

*I'm really pleased actually. This resource has a great impact on pupils.*

(Participant 1)

*You feel satisfaction every day as you witness how children are amazed to see something or do some activities on the whiteboards.*

(Participant 3)



Code 5.2. includes the narratives in which participants describe how DERs facilitate their work in designing and developing learning activities:

*They are always within reach and that makes it much easier of course.*

(Participant 5)

*I am satisfied about what I told you, because sometimes, if the activity is well-presented, it is highly motivating for students, and they make the job of teaching much easier.*

(Participant 11)

Less frequently, teachers identified, as an aspect of DER use satisfaction, the fact that they improved or added value to the teaching–learning process. Code 5.3 is well characterized in the following extract:

*[I]t's different, innovative.*

(Participant 28)

### 3.4. Topic 4: Use Dissatisfactions

In addition, in Table 6, we codified the dissatisfactions or difficulties experienced by teachers in coordinating the DERs and ICT in their educational practice.

**Table 6.** Use dissatisfactions.

Code	AF (%)	M	SD
6.1. Time	11.11%	0.19	0.60
6.2. Skills	22.22%	0.39	0.99
6.3. Infrastructure	46.30%	0.81	0.75
6.4. Learning problems	11.11%	0.35	0.55

The different reasons for dissatisfaction mainly originated in the infrastructures and connection problems of electronic devices (Code 6.3.), which largely hinder the optimal unfolding of teaching:

*Okay, there are Internet connection difficulties. I mean, sometimes the connection breaks down a lot and if you don't have internet, obviously nothing works.*

(Participant 7)

*The difficulties are that sometimes it's difficult to get started, or sometimes the contents do not load well, or the internet doesn't work for some reason.*

(Participant 15)

We also identified dissatisfaction regarding problems with pupils in the teachers' accounts (Code 6.4.), indicating disruptive behaviours or limited digital abilities:

*You have to keep a close eye on them, I mean you have to prepare the classes very well so that the resources are properly used. If they are not well prepared, the children go to web pages they shouldn't go to.*

(Participant 13)

*At first, children do not know how to use the computer, the names of the different components, what a mouse is, what a desktop is.*

(Participant 20)

Another dissatisfaction that was described in the narratives was related to the fact that the use of digital technologies requires prior use skills (Code 6.2), as the following narratives make clear:

*Indeed, one difficulty is that they do not know how to use the programmes, the applications . . . and that is frustrating.*

(Participant 20)

*Difficulties because they do not know how to use applications, programmes.*

(Participant 20)

Code 6.1. Time is also one of the major difficulties mentioned in the narratives, as they regard the time required to prepare and work on the activities that integrate digital resources as a limitation.

*It takes a long time to load digital books and all that. I spend more time preparing the online pages than giving my own explanations at the board.*

(Participant 8)

*It is very time-consuming, I spend a lot of time preparing these activities.*

(Participant 29)

#### 4. Discussion

The results obtained for the first research question show that according to the participants' narratives, DERs have a relevant role in the educational landscape. This data supports the study of Ravasco et al. [52], who found that 91% of professionals gave a positive rating. Nevertheless, teachers sometimes overlook the value of using these resources [26]. Most justifications of the relevance of DER in the classroom coincide with those presented in other studies [11], which emphasise that the technological society we live in makes it necessary to introduce these resources in the classroom, in addition to the fact that they are motivating. In the same way, they improve the teaching process by making it easier to improve the quality of the teaching and to achieve the learning objectives [27,28], and by mastering the three recognised types of knowledge in the TPACK model [44].

With regard to the perceived integration, worthy of note was the combined use of these resources with traditional resources, a common occurrence in today's educational practice [30]. Thus, teachers with high TPACK competencies are in favour of integrating electronic resources in the classroom, and it allows professionals to overcome intrinsic barriers [46]. However, it is worth highlighting that teachers' perceptions differed, and no consensus was observed regarding how to properly integrate DERs in education [32]. The function of assessment was excluded from the described purposes [25], and their integration could be regarded as depending on the age or number of students.

The second research question concerned the influence detected by teachers of DERs on the teaching process. Teachers regarded it as directly related to the importance of integrating these resources into the classroom and the generated benefits, as they highlighted the motivation factor [53] and the capacity of DERs to facilitate and improve the process [27,28]. The only negative factor identified was that the use of DERs caused some overexcitement. The latter may be due to the fact that in certain circumstances or activities, using ICT and, therefore, DERs, can be excessively motivating and overcompetitive. Behaviours, however, generally tend to improve [54].

The third research question addressed the use and prominence that teachers assign to digital resources in the teaching–learning process. The results show that teachers were content creators [11], though we perceived high levels of usage of published book materials [53], mainly by teachers of a more advanced age. Vidal et al. [53] also highlighted the use of applications, but not that of videos or audios. Furthermore, these authors indicated that the main means of accessing DERs were the IWB, computers, or tablets, thus reflecting the results of our research. Teachers stated that they mainly used ICT and DERs on a daily basis [32], primarily for teaching and specific teaching functions, overlooking almost entirely their integration in the assessment process [22–24].

As identified in the participants' narratives, given the way they use and describe the technologies, they introduce technological resources in a very superficial way, without exploiting their full potential. In other words, they make use of e-learning 1.0 and 2.0, but they do not go further and do not take advantage of these resources as methodological

transformers in order to increase educational quality, just as they fail to keep up to date with innovative technological resources [13,15].

In relation to the fourth research question, that is, the satisfactions and dissatisfactions related to the use of DERs and ICT, teachers were satisfied with the motivating factor [11]. Yet dissatisfactions mainly stood out, as teachers more frequently identified infrastructure problems [55]. Few were concerned, however, about their lack of training and skills; this is a major barrier to the integration of digital resources in the classroom since it is necessary for teachers to master the three types of knowledge proposed by the TPACK model [29,44,55].

The results show that, as mentioned by Vanderlinde, Aesaert, and van Braak [56], there may be a relationship between the school and teaching practices. Indeed, we observed a notably generalised use of the IWB, together with dissatisfaction concerning the infrastructure, while all participants viewed DERs positively. The latter has also been identified to be directly related to teachers' beliefs [41], although discrepancies do exist between teachers' perceptions, beliefs, and the activities they carry out [32]. On the one hand, they consider that the DERs are important in education, but not all teachers integrate these resources in a significant way in the teaching–learning process.

## 5. Conclusions

The results show the importance that teachers attach to DERs, both in their perceptions and in practice. Integrating these types of resources into the classroom plays a significant role, and so does the coordination and organisation of DER usage in the educational process. It is also noteworthy that teachers identified highly positive factors or effects of DER integration on learning. Indeed, their narratives revealed that DERs serve as a good motivation tool.

As for the use that teachers make of digital resources, applications or videos play a notable role. The latter are primarily accessed through the IWB or computers, mainly with the objective of transmitting knowledge. Discrepancies were found between different teachers' degrees of use of these resources.

Reasons for satisfaction include the motivating effect of DERs on educational development. However, teachers were critical and dissatisfied with respect to the existing infrastructure and resources at their disposal. They were also, in some cases, concerned with a range of learning problems engendered by digital resources, overlooking, perhaps, the fact that these problems derive from their own lack of skills or training.

The results of this study are not entirely generalisable. The teachers who participated in the study all came from the same school. Furthermore, this school is one of reference for the use of technologies in education. It would have been interesting to include professionals from different institutions in order to compare the data and cover a greater variety of participants, in addition to a bigger sample of Early Childhood Education teachers. Another limitation was the fact that the volunteers' average age was relatively high, almost half being over 51 years of age, and this leads to a generation bias. Some of the participants' dissatisfaction with the infrastructures may have influenced the study's results, as they made inefficient use of DERs in the classroom. Finally, it is worth noting that the teachers in the sample generally confused the terms "digital resources" and "new technologies".

The present study led us to detect new possible directions of research that could contribute to building knowledge within the educational sciences. First, it would be relevant to reproduce this study using a more extensive sample, that is, with teachers from different schools and presenting a greater variety of characteristics (educational stage and age). Similarly, a quantitative study would help to clarify how teachers use DERs in the classroom, verifying age or gender differences linked to their integration. It would also be interesting to study the reasons why teachers do not significantly integrate DERs into educational contexts, especially in their assessment work. A final possible new line of research would be the quest for a digital training strategy adapted to teachers with relatively low digital skills, as teachers indicated that the training provided to them was not meaningful. To summarise, the study met its objective and uncovered teachers' current

thinking regarding the use of DERs in the classroom. It also provides information on the actual use of these tools and the types of satisfaction and dissatisfaction that may affect their integration in educational contexts.

**Author Contributions:** Conceptualization, I.A.-M. and M.J.I.-M.; methodology, I.A.-M., M.J.I.-M. and I.L.-C.; software, I.A.-M.; validation, I.A.-M., M.J.I.-M. and I.L.-C.; formal analysis, I.A.-M., M.J.I.-M. and I.L.-C.; investigation, I.A.-M.; resources, I.A.-M.; data curation, I.A.-M.; writing—original draft preparation, I.A.-M., M.J.I.-M. and I.L.-C.; writing—review and editing, I.A.-M., M.J.I.-M. and I.L.-C.; visualization, I.A.-M. and M.J.I.-M.; supervision, I.A.-M., M.J.I.-M. and I.L.-C.; project administration, I.A.-M. and M.J.I.-M. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Acknowledgments:** We would like to acknowledge all the interview participants for their contribution to the study.

**Conflicts of Interest:** The authors declare no conflict of interest.

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