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CHAPTER 02 THE TESTIMONIES OF CANARIAN FAMILIES ON THE USE OF DIGITAL EDUCATIONAL RESOURCES (DERS) IN THE CHILD POPULATION AGED 3-6 YEARS

Chapter 02

The testimonies of Canarian families on the use of digital educational resources (DERs) in the child population aged 3-6 years

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1. INTRODUCTION

During the last few years, the inclusion and use of digital and technological devices have increased notably in our daily routine. The COVID-19 pandemic has promoted this situation because, both in the educational context and at home, according to Manzano-Sánchez et al. (2021) and Arana et al. (2020), digitalisation was presented as a solution to the implications of compulsory confinement. In the teaching-learning process in the school system, for example, digital media were vital to avoid interrupting its development (Saldaña, 2020), as well as in other areas demanding the implementation of teleworking and in family/work conciliation (Serrano-Martínez, 2020). In addition, Information and Communication Technologies (ICT) have been incorporated noticeably into children's education when aged between 3 and 6 years old, being an age range in which their consumption and daily exposure to screens have increased (Franco, 2021;

Instituto Nacional de Estadística [INE], 2021).

Today's digital society has witnessed the benefits of ICT use, but how are DERs being used when targeting the young population between 3 and 6 years old? Although the World Health Organisation (WHO) has been recommending since 2019 that, in the 3-4 age range, exposure to screens should not exceed a maximum of one hour a day, several articles show that most people do not comply with this recommendation and in some cases, they even exceed four hours a day (Miguel-Berges et al., 2019; Oflu et al., 2021).

Regarding when and how often digital resources are used, and the preferences showed by families, Levine et al. (2019) establish the influence of purpose. When the purpose is educational, the likelihood of the activity being carried out in a group increases, but this is not the case when the purpose is entertainment, when the activity is often carried out in solitude. Furthermore, in the latter case, Levine et al. (2019) associate use with the family's level of education and the need to keep their children calm to carry out other tasks and achieve a work/family balance. Along the same lines, Chaudron et al. (2018) state that,

Nonetheless, recurrent use of digital technologies that parents see as positive across the sample is the use of mobile devices as a 'nanny' when they need to get some time for themselves or an 'SOS' when they need the child to behave calmly, especially in situations outside the house. (p. 46)

Guernsey (2017) does not find a direct relationship between the didactic use of DERs and the individual use that children make, which is directly associated with the time dedicated to these resources, but rather with the interactivity that occurs in the company of a guide around material that is correctly adapted or designed for children. The author agrees with Lerner (2017) that a certain degree of digital competence and technical knowledge is necessary to use these electronic devices and digital resources to favour the child's learning. According to Guernsey (2017), examples of positive activities would be discussions or explanations about what is being viewed, the shared use of ICTs and DERs, and the presence of someone to guide the interaction and explanation of the content accessed through these media. In this regard, Grané (2021) establishes that we should teach how to "maximise the educational and entertainment benefits of technologies with children, taking advantage of the opportunities of the medium, quality resources, and educational support systems" (p. 18).

On the other hand, Caldeiro-Pedreira et al. (2021) mention some pernicious effects of possible overuse of ICTs on an individual and unaccompanied basis. Some of the negative impacts include difficulties getting to sleep, inappropriate behaviour due to problems of self-control when trying to remove the device from the child, difficulty in maintaining adequate nutritional guidelines, viewing of content not aimed at children (even unintentionally on their part), the infringement of the right to privacy and, finally, the possibility of harassment to which children are exposed.

Madigan et al. (2019) also link these inappropriate habits of ICT and network use with addictive behaviour due to a great reward system in this type of material that stimulates and generates a cognitive behavioural effect that is not very significant for learning. For example, Potes and Filet-Larrea (2018) explain that "if a subject spends long hours in

front of a screen, the brain's reward system becomes hyperactive and addictive behaviour is triggered [...] and can - in extreme cases - generate psychological and physiological dependence" (p. 302). Regarding these effects, Alonso-Sainz (2022) states that it does not seem to attract attention that a child can remain in front of the screen for long periods but shows difficulties concentrating when carrying out manual activities with traditional material without the mediation of technology.

On the other hand, specific positive effects are observed using ICTs according to time, context, and appropriate guidance. For instance, the attraction and motivation they produce in children (Carrillo-Ojeda et al., 2020; Siraj and Romero, 2017) and the adaptation that DERs allow for addressing diversity in the family and educational context -especially in the case of Special Educational Needs or SEN (López-Marí et al., 2021)-. Finally, ICTs also facilitate family-school communication through videoconferencing (Fusté-Forne, 2021) since, according to Alonso-Sainz (2022), "thanks to these platforms, an interactive space is generated where teachers, students and parents communicate and share material virtually and instantaneously" (p. 247).

Despite all the inherent benefits of DERs in the second cycle of Early Childhood Education, these tools should be used as a complement and not as the primary vehicle for learning. Experimentation, discovery, manipulation, motor development, sensory stimulation, the promotion of autonomy and physical activity are essential for the integral development of the infant (Moreno-Lucas, 2015; Nielsen et al., 2020) and should occupy as much time as possible in their daily lives. In this sense, the author argues that pupils should be presented with different materials that they can use and contribute to development in various areas, such as materials that favour the development of communication and language, materials that promote sensory education, and objects that allow pupils direct contact with nature and exploration of the surrounding environment, etc. (p. 21).

In short, it concludes that over-promoting the use of DERs could take away the child's opportunity to be surprised by the little things that enrich their reality and make up their environment. The fact is that "when we are small children, we do not need fairy tales: we just need stories. Mere life is interesting enough" (Chesterton, 1967, quoted in Alonso-Sainz, 2022, p. 39).

As a result of the above, this study aims to describe the use that families of children aged 3 to 6 years old make of DERs in the home and their perception of its use in school.

1. COLLECTION AND ANALYSIS PROCEDURE

This research responds to qualitative content analysis to investigate the symbolic meanings of messages, formulating reproducible and valid inferences applicable in their context, starting from specific data and knowing that it is not necessary for there to be coincidence about the meanings (Krippendorff, 2004).

The qualitative analysis of three discussion groups aimed at collecting data on the use and evaluation of the DERs by Canarian families with children in the second cycle of Infant Education is the procedure used to describe the category of use of the DERs. The

indicators or codes have been extracted inductively from the following descriptors: Role of families, Difficulty of follow-up, Non-school DERs and Communication with DERs.

The focus groups involved parents whose children attend centres of different ownership and different integration levels of digital devices and materials. These discussion groups were held via videoconference during May 2021, with the participation of between 4 and 8 members per group.

Once the audiovisual data had been transcribed, the [ATLAS.ti](#) software was used. Before describing the categories and after the inductive extraction of the indicators, an inter-judge analysis was carried out using Krippendorff's alpha to minimise the degree of subjectivity of the observers. The degree of agreement according to the alpha is moderate (0.61). The procedure starts with an initial, individual analysis based on four dimensions, thus generating the indicators. From there, and with the help of three other researchers, content analysis is carried out using 31 indicators from an exported database, and the resulting files from each researcher are merged to obtain the degree of agreement between the four researchers. Subsequently, we proceeded to the descriptive analysis of the following categories.

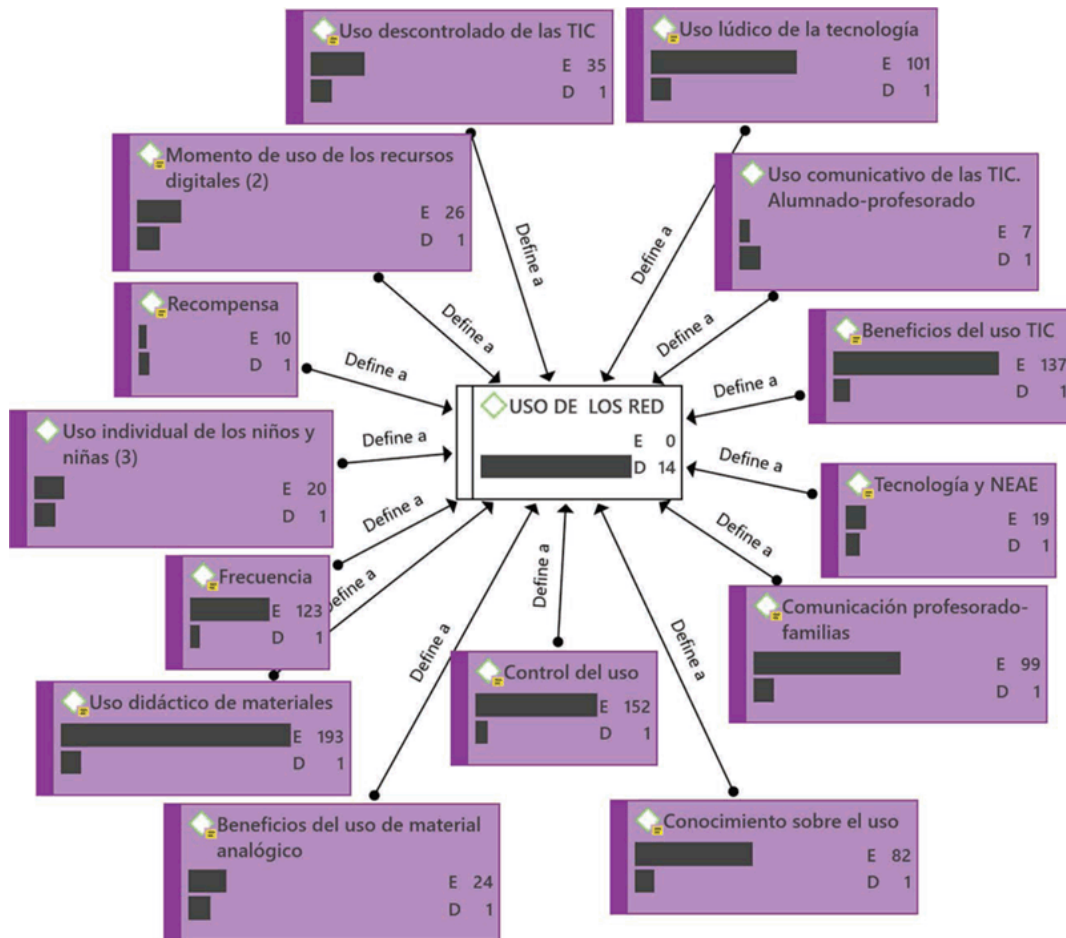
I. RESEARCH FINDINGS

We begin this section with a description of the 14 indicators obtained, which serve to define the category of DERs use (USO DE LOS RED) and the meanings of the informants. Below we present the frequency with which the indicators appear in the documents analysed, and describe the perception of the use of DERs at home and the families' perception of DERs at school.

- Beneficios del uso de material analógico (Benefits of using analogue materials). Traditional or analogue materials have certain benefits compared to other digital materials, both from an educational and recreational point of view. This indicator values the use of traditional materials.
- Beneficios del uso TIC (Benefits of ICT use). Putting the use of technology for leisure, communication or didactic purposes above other communication, play or learning systems. This indicator places value on the use of technology above other resources.
- Comunicación profesorado-familias (Teacher-family communication). This encompasses all the means or strategies applied by the school and the families to maintain contact and active communication. In addition, they can establish synchronous or asynchronous communication and static or dynamic mechanisms.
- Conocimiento sobre el uso (Knowledge of use). This is the level of knowledge of using the device or application, and the fluency and independence children show when using some digital material. This skill is linked to their autonomy in using the resources in certain activities.
- Control del uso (Control of use). Children's use of devices and applications requires control by families due to the dependence on adults to establish the time, content, and type of appropriate use.

- Frecuencia (Frequency). This refers to the time of use of electronic devices and can be defined in an indeterminate way (frequently, occasionally, sporadically...) or others that refer to specific times (twice a week, once a day, only at weekends...).
- Momento de uso de los recursos digitales (Time of use of digital resources). Indicates the time when children usually use the devices, e.g. when homework is done or when family caregivers are at work.
- Recompensa (Reward). Use of devices as a tool for regulating behaviour.
- Tecnología y NEAE (Technology and SEN). When REDs are used with children with SEN to favour their learning, mainly in the school environment and at home.
- Uso comunicativo de las TIC (Communicative use of ICT). Pupil-teacher.
- Uso descontrolado de las TIC (Uncontrolled use of ICT). This refers to the lack of control over time or content when children use electronic resources or devices.
- Uso didáctico de materiales (Didactic use of materials). Assessment of the families' perception of the educational use of ICT in schools (suitability, application of materials at school, etc.).
- Uso individual de los niños y niñas (Children's individual use). Situations in which children use technological resources without being accompanied by adults.
- Uso lúdico de la tecnología (Playful use of technology). When applications, devices and resources are used for play, whether games or other applications.

Figure 1. *Frequency of occurrence of codes and relation to category*



In terms of the descriptive results obtained, the vast majority of participants mentioned a variety of technological devices in the home (television, Tablet, specifically digital educational resources from toy shops, mobile phones and computers). In the few cases in which children aged 3 to 6 years old have their own devices, these have been inherited and adapted to suit their ages by setting limits and restrictions. Families also mention that some of the digital devices they use are shared, a widespread issue when several siblings live together in the same family.

On the other hand, the digital devices available at school are digital whiteboards or projectors. In some cases, it was mentioned that there are also iPads for the children to use besides digital whiteboards. Among the different digital didactic resources used at school, the families comment above all on using videos with educational content and different interactive activities that the digital whiteboard allows. According to their families, these activities are desirable and motivating for the children.

“At school, when I ask him about something, let’s say that he is more enthusiastic and likes what he does on the digital whiteboard, and the other things he tells me about as if they were work. In other words, the traditional activities are work. The other stuff is more of a game, and it becomes work when he has to paint, cut, etc.” (GD2)

The general opinion of families is that technological devices in the classroom are appropriate for their children. They generally consider that technological devices should not be the centre of attention, nor should they be the primary resources for pupils of

these ages. On the contrary, they believe that, in the pre-primary age group, attention should be paid to the main manipulative and social issues that encourage collaborative learning, experimenting with different elements and learning the fundamental issues for their comprehensive development at this stage. Precisely for this reason, the uses they make of technology on the digital whiteboard and other resources at specific moments are valued very positively, bearing in mind that tangible and analogue resources take on greater importance.

“I think they are complementary, but it is true that, in the first stage, in infants, I prefer more manipulative work because children need to work on their fine motor skills, to work with plasticine. You can indeed do digital puzzles, but you can also do puzzles in cardboard, in wood”. (GD3)

However, although they believe that the use of technology at this age should not be the main focus, they do agree that they should have a virtual learning environment that allows them to follow what their children are working on in class, with resources and materials that may be relevant for the continuation of their studies at home. In this sense, two families indicated a virtual environment such as Google Classroom or a teacher’s blog where they upload this type of resources and information, which they consider helpful and favour the connection between family and school.

“What we use the most is a blog of their teacher, in which she uploads the activities they do every day at school, photos of the children, etc. She also uploads stories told by her, with questions for the children, for reflection, meditation, etc. She also uploads stories told by her, with questions for the children to reflect on, meditate on, etc. She uploads some activity to do with them, but if we use it, it is usually something uploaded on the teacher’s blog”. (GD2)

Concerning the function knowledge, the families indicate that their children cannot notice the digital resource’s function, but they know how to carry out fundamental interactions with the digital device such as the Tablet or mobile phones. Moreover, according to the families, the level of use of digital devices depends on the level of language acquisition (and therefore, their level of use is limited); nevertheless, they also indicate that their kids know how to search and find what they want or what they would like to see.

In general, the results show that children know how to search for videos on platforms such as YouTube, Netflix or Disney+, including using Smart TV or accessing photos and videos from the device galleries. Some families comment that they help them learn to use the devices with a clear playful or educational intention, but others point out that, whether or not this intention exists, since they see their parents perform these types of actions, they tend to repeat them and learn thanks to following the same actions independently.

“The photos and all that with the mobile phone, she already controls it, she knows how to click on the video, enlarge it, go from one side to the other. But of course, I think that the moment you show something, she picks it up quickly”. (GD1)

The results obtained also demonstrate the ease with which children use digital resources, which is why some participants refer to it as “unconscious innocence”. There are specific actions carried out by their sons and daughters that surprise the families, as they do not know where they have learnt it.

“She is a digital native, she knows how to take selfies, she takes them herself, with poses that I don’t know where she got them from, and she’s only five years old..., she uses YouTube”. (GD1)

In this sense, the impact of the content that minors view and are exposed to, such as advertising, extended viral content or overexposure on the Internet, is expressed by families with critical concern. According to the families, this is a matter of concern for the content itself and the ideas that can be extracted from this exposure to the content. Misinterpretations and misconceptions of minors due to advertisements or content on YouTube platforms themselves are an issue of concern for families. For example, one mother expresses this concern when her daughter calls it “cool” for girls to have all the toys given to them by companies because of their status as YouTubers.

“I am often more concerned about the conclusions my daughter might draw from what she sees, rather than what she sees.” (GD1)

Autonomy in the use of devices is an issue that depends on the child’s specific age and the limitations configured in the application. Thus, some families say that they never let their children use technology independently, and others say that, having carried out parental controls on the content and timetable, they leave them some freedom to access whatever the children might be interested in. This strategy makes it easier for some families to take advantage of the moments when technology is used independently as a playful resource to accompany and enrich the situation by asking questions and encouraging dialogue. It is noteworthy that, in all cases in which it is indicated that the use is educational, families emphasise the importance of a guiding figure during this time, asking questions, helping them understand the activity and generating reflections on the content itself. However, differences in the gender of this guiding figure are observed.

Families who say that they do not use parental control applications indicate that this is due to the young age of their children and the lack of autonomy they have, for the moment, with resources. Although they have not done so, they do not rule out taking this action after a couple of years because of the problems they encounter and can avoid.

“I will have future problems because Google Home didn’t understand him recently, and a week ago, he learned to turn up the lights and put whatever he wants on the TV. So we already had the problem that he bought a Netflix series with the remote the other day. It was unintentionally, he wanted to put his movie on, and he got the wrong button. So I put parental controls on everything. But, in the end, it’s nothing for him, but little by little I’m setting rules because little by little he’s getting to know the tools and discovering the possibilities they give you”. (GD3)

The downloading of mobile applications is carried out by families and prevents their sons and daughters from performing these functions; however, families highlight the importance of education in controlling technological devices. Values and understanding of the use of resources must be accompanied by rules and the correct use of devices, even though they point out that this is a complex issue.

“It is necessary to tutor this adoption, activate the parental control on a device, and explain it to them because they may not know it. There are resources for tutoring without having to limit. I think it goes that way, teaching and explaining. But, it’s complicated to carry it out”. (GD3)

Families set timetables to avoid prolonged use of digital devices by their children, depending on their age. Regarding specific times, some families indicate that they use it in the afternoon, and other families indicate that they use it at times that suit them to prevent the children from falling asleep or keep them concentrated and calm during specific periods. The use of technology as a distraction also favours, according to the opinion of the families, their ability to carry out the activities they need to do on a daily basis when they cannot attend to them. Likewise, some mothers express that they use technology as a resource to reinforce behaviour, such as a reward when homework is finished or when they have behaved well.

Some families consider that, if it were up to their children, they would spend quite a lot of time being addicted to digital platforms, games or videos. In other cases, some participants share that in the case of their children, they leave their devices because they are tired or want to interact with other types of resources such as physical toys, puzzles or even physical children's books.

However, other families indicate that this maximum number of hours per day will depend on the use of these resources and the specific devices. For example, one mother commented that the technology in her home is used for different purposes and does not imply an autonomous and solitary use of digital devices. For this mother, shared use of resources that includes different family activities can be a good alternative, even if it exceeds a maximum number of hours per day. Consoles and video games prefer to be used only at specific times during the weekend.

"I use it to learn how to paint, yoga, all that kind of stuff [...]. I know I would set a time limit, but when they use it because they are learning something, I couldn't set a time limit". (GD1)

About controlling the use of technology when the purpose is educational, there are opinions in favour of controlling it also with a time limit because, in the words of some families, it could limit the effectiveness of learning.

"This is an alternative that works. But if it is constant and there is too much input, I think it blocks learning a little bit. That's why it has to be used in a controlled way." (GD2)

It should be noted that one of the participants is a mother of a child with Asperger's Syndrome. In addition to rules on time and usage, she points out that she has a space set aside as a workspace where technology can be used to promote learning and concentration. The rest of the house and the common spaces are used for more playful use of technology. Therefore, the use of technology in her child's case is essential. According to her experience, DERs favour motivation and concentration to develop his learning, which is why she tends to adapt the activities and resources sent to her son to keep him interested and intersperse the different resources to maintain the activity attractive.

"My son indeed has a particular characteristic; he has Asperger's..., so everything through devices works much better with him, obviously. That's why we use them at home. In fact, my system of working with him, the stories, we do all of that through devices, and as the colleague mentioned before, the issue of the digital whiteboard, I have bought a digital whiteboard for the house because I see that when I work with him through a device, in a more interactive way, he pays a lot of attention and he understands everything much better. So yes, in my particular case, I also use traditional materials, but I support him a lot with the digital one". (GD2)

I. DISCUSSION AND CONCLUSIONS

The study of educational technology in the early childhood stage should be of greater importance in today's society and educational research. Analysing the use of digital technology and educational resources at this stage can offer relevant information on the psychosocial development of children aged 3 to 6 and the study of learning within the school context and at home. Considering this area, this object of study investigates the type of content to which children are exposed, the time of exposure in which they are using screens or technologies on a daily or weekly basis or, on the other hand, how they use these technological resources concerning the use of analogue and traditional materials.

The relationship between technology and childhood must be analysed at an age in which the first vital impressions are being generated, such as impressions towards socialisation, experimentation, and natural and playful learning. In the study presented, it is observed that families monitor and show genuine concern about the use, time and spaces given to Digital Educational Resources. However, it is witnessed that parental control, the imposition of rules and organisation at home are relatively different among the families in the sample. Likewise, there is a slight difference with Levine et al. (2019) regarding autonomy and guidance in using the devices, whether for recreational or educational purposes. On the other hand, it is also observed that families mention the positive aspects of the use of DER, such as motivation, an aspect already mentioned by Siraj and Romero (2017). However, they also point out the importance of more traditional resources (analogue and tangible), as pointed out by Moreno-Lucas (2015), with digital resources taking second place.

Finally, the limitations of this type of study are clearly defined. In this sense, it is necessary to reflect on the bias present in qualitative research, which is evident in early childhood education and the possible sensitivity of families to share the type of education given in their homes. Knowledge of the actual use of technological devices and how they are used in research is necessary and fundamental to a reflective exercise on the type of education we are generating in a society with an extensive digital presence. Families have provided us with relevant information to encourage reflection, but we must continue to encourage research with mixed methodological characteristics that alternate the collection of information and data analysis between technology and childhood from different analysis focuses. In this sense, this research deals with families' perceptions, but clearly, no action in favour of the development of children in early childhood education should be carried out without collaboration between school and family. Coherent and appropriate use of technology in these stages requires a close relationship between school and home, reducing the barriers between socialising and educational agents, and encouraging the use of digital devices in a regulated age-appropriate, and correctly managed way in terms of the time of use, content and primary purpose, contributing to the comprehensive learning of children in their day-to-day lives.

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