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Evaluating DigiCraft for the development of digital competence: A qualitative Approach

Marcos Cabezas-González[1], Sonia Casillas-Martín[2] & Ana García-Valcárcel Muñoz-Repiso[3]

Abstract

Digital competence, the ability to use and understand technology effectively, is fundamental in today's society. For this reason, several programs have been launched in recent years to develop and improve it. DigiCraft, an educational program of the Vodafone-Spain Foundation that aims to give Spanish children access to quality training in digital literacy, is one of the most important initiatives to develop this skill among students aged 6-12 in Spain. In addition to developing digital competence, it contributes to meeting the challenges of educational sustainability, which is particularly in line with Goal 4 of the Sustainable Development Goals (SDGs): "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". The purpose of this study is to explore and understand the results of the DigiCraft educational program, taking into account the perspective of the different agents who participated in it, after three years of development. In this research, a qualitative methodology was chosen, using a semi-structured interview with open-ended questions as a tool to collect the evaluation of students and teachers involved in the program. Sixteen centres from different contexts and Autonomous Communities were selected. The results obtained show the success of this program in developing digital competence in children aged 6-12.

Keywords: *DigiCraft, digital competence, educational program, program evaluation. qualitative methodology*

Introduction

One of the main characteristics of the 21st century is the development of the knowledge society through the use of information and communication technologies (ICTs) (Basantes-Andrade et al., 2022; López-Gil & Sevillano-García, 2020). Connectivity, immediacy, speed, asynchrony, synchrony, cooperation, collaboration, dynamism, and interconnectedness are characteristics of today's society (Cabero-Almenara & Ruiz-Palmero, 2018) that lead to a continuous transformation of educational, cultural, economic and social structures (Sánchez-Caballé et al., 2020) and change the way people communicate, work, study and do business (Gabarda-Méndez et al., 2023). This requires citizens to constantly change to adapt to new circumstances (Bastarrachea-Rodríguez et

[1] *Prof., University of Salamanca, Spain, mcabezasgo@usal.es*
[2] *Prof., University of Salamanca, Spain, scasillasma@usal.es*
[3] *Prof., University of Salamanca, Spain, anagv@usal.es*

al. 2023; Cabezas-González et al., 2020). Education systems in today's societies should be able to prepare citizens and professionals for the new demands of a labour market in which digital competence, among others, has become a basic skill (Gutiérrez-Castillo et al., 2017; Leal-Sosa, 2023; López-Belmolte et al., 2020).

The development of the digital skills of students is one of the goals of the 21st century (Martínez-Méndez & Martínez-Méndez, 2023; Serafín et al., 2019). Digital competence refers to the set of knowledge, skills and attitudes that enable students to use ICT to work, solve problems and participate individually and collaboratively with others in creative, critical, and responsible ways (Hatlevik et al., 2015).

The assessment of students' digital competence is a relevant topic in the field of educational research. Numerous studies have focused on investigating this subject in different contexts. Quantitative studies stand out, particularly in the context of formal education, especially in higher education (Hidayat-Ur-Rehman, 2024; Llopis-Nebot, et al., 2021; Salguero-Alcala et al., 2024; Tomczyk et al., 2023) and compulsory education (Baeza-González, 2022; Bocconi et al., 2020; Cabezas-González et al., 2023; Martínez-Piñeiro et al., 2019). However, there is a lack of relevant research aimed at qualitatively assessing the impact of an educational program on the development of digital competence in children aged 9-12, which is the focus of the work presented in this article.

Among the educational programs carried out in Spain for the development of digital competence in childhood, it is important to mention DigiCraft, by the Vodafone Spain Foundation (Vodafone Spain Foundation, n.d.). Mention must also be made of the Digital Competences for Childhood program (CODI, by its acronym in Spanish), a joint initiative of the High Commissioner against Child Poverty and the Ministry of Social Rights and Agenda 2030 (Spain Digital 2026, n.d.). Its objective is to ensure digital inclusion from childhood through the development of methodologies, content, and didactic materials to provide children at risk of digital exclusion with basic digital skills. Similarly, the Digitalization and Digital Competences Plan for the Education System (Plan #DigEdu), by the Spanish government, focuses on enhancing educational digitalization, expanding access to technology in the educational community, and improving its integration into teaching and learning processes. Its goal is to reduce the digital divide before 2026 (Government of Spain, n.d.).

DigiCraft, an educational program of the Vodafone Spain Foundation designed to provide Spanish children with access to quality training in digital competence that contributes to e-inclusion in the

information and knowledge society (Casillas-Martín et al., 2020), is one of the most important programs for developing the digital competence of students aged 6-12 in Spain. In addition to developing digital competence, it contributes to meeting the challenges of educational sustainability, which is particularly in line with Goal 4 of the Sustainable Development Goals (SDGs): "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". In designing and implementing this program, knowledge, skills, and values from the professional fields of technology and pedagogy have been integrated, based on the belief that interdisciplinary teamwork contributes to solving complex problems since diverse, critical and creative thinking promotes innovation and advances in research.

The purpose of this manuscript is to highlight the positive impact of the DigiCraft educational program in promoting digital education, which innovatively integrates modern technology and digital tools to enhance teaching and learning activities (Casillas-Martín et al., 2020). For this purpose, a qualitative experimental study was carried out to try to answer the research questions: 'What is the impact of the DigiCraft program on students, teachers, and the school?' and 'How do students and teachers perceive the program?'.

This report is structured in four sections: the first section contextualizes the DigiCraft educational program; the second section describes the methodological framework used to carry out the research; the third section presents some of the findings that confirm the success of DigiCraft; and the fourth section presents the main conclusions.

DigiCraft Education Program

DigiCraft is an educational program of the Vodafone Foundation Spain, with the collaboration of the Research Group on Innovation and Digital Education (EduDIG) of the University of Salamanca in its design, development, and guidance. It aims to "train children between the ages of 6 and 12 in the digital skills that will allow them to develop their full potential" (Vodafone Foundation Spain, n.d.). The program has three modalities: 'DigiCraft Presencial' (on-site), developed in schools in different Spanish Autonomous Communities; 'DigiCraft Infancia Vulnerable' (for vulnerable children), developed in support classrooms of Spanish Voluntary Sector organizations; and 'DigiCraft en Cualquier Lugar' (anywhere), a proposal that includes free on-line activities aimed at children, educators and families.

The didactic design of DigiCraft has followed the European Framework of Digital Competences for Citizens (DigComp 2.1.). (Carretero et al., 2017). This framework divides digital competence

into five domains (information and information literacy; communication and collaboration; digital content creation; security; problem-solving), four levels with two sub-levels each (basic, intermediate, advanced, highly specialized) and three domains (knowledge, skills, attitudes). With this framework in mind, the objectives identified for each age group (6-8 years and 9-12 years) were proposed.

The educational program has a solid base: the DigiCraft methodology, which makes it possible to teach digital skills innovatively, through playful educational activities that do not necessarily require the use of digital devices, thus combining digital and analogue activities. The uniqueness of this methodology is that it is accessible to everyone, as it adopts a learning model based on design thinking (Lee, 2018), experimentation (Becker et al., 2019) and play, using tools such as board games, group dynamics, low-cost experiments with recycled materials, printable materials, and crafts.

DigiCraft is built upon four key pedagogical principles: employing play as a motivating factor, encouraging experimentation for discovery through creation, integrating both physical and virtual realms, and tailoring digital competency to suit various age groups. The objective is to ignite curiosity, foster creativity, and promote positive emotional development, all while facilitating the acquisition of digital skills playfully through the incorporation of diverse emerging technologies such as virtual reality, educational robotics, artificial intelligence, video games, and more. The program is structured into distinct training paths that advocate for environmental respect, recycling practices, and responsible technology use. These paths involve activities that seamlessly blend the use of electronic devices with the enhancement of motor and cognitive skills, logical reasoning, and collaborative efforts within a playful setting.

This educational program for the development of digital competence began to be implemented in the 2020-2021 academic year. During these years, various assessments have been carried out to check its results. An assessment of the DigiCraft centres that have completed the three years of the program is currently underway.

Method

Research Design

A qualitative experimental methodology was used, which allowed for an exploratory examination of the impact of the program from the participants' perspective in a descriptive and detailed way. This was achieved by collecting information through interviews (Merriam & Tisdell, 2016).

The purpose of the research process carried out was to explore and understand the results of the DigiCraft educational program, taking into account the perspective of the different agents who participated in it: coordinators and management team, teachers and students.

The following variables were studied: impact of the program on the knowledge and skills of teachers and students, effect of the program on the motivation and attitudes of teachers and students, effect of the program on students' interest in their school life and transfer outside the educational centre, transfer of the program to the life of the educational centre, assessment of the DigiDraft methodology by teachers and students.

Two research questions were posed: (a) What is the impact of the DigiCraft program on students, teachers, and the school? and (b) How do students and teachers perceive the program?

Population and Sample/ Study Group/Participants

The educational centres under study are those that have completed the entire implementation cycle of the DigiCraft program. A total of 16 cases belonging to the autonomous communities of Galicia (6 centres), Andalusia (6 centres), and Madrid (4 centres) were examined. The centres were selected using non-probabilistic purposive sampling (Creswell & Creswell, 2017), taking into account several specific criteria to take into account the diversity of the population to be studied. This selection was made from the total number of schools that met the general criteria of commitment and full participation during the three years of the DigiCraft program (Table 1).

Table 1

Educational centres participating

AA.CC	Ownership		Medium		Size			Complexity		ICT Level Integration		
	Public	Concerted	Rural	Urban	Sm	Med	Lar	V	NV	Bas	Inter	Advan
Galicia	5	1	2	4	2	3	1	-	-	2	-	4
Andalusia	5	1	1	5	4	2	-	4	2	1	2	3
Madrid	4	-	1	3	1	3	-	2	2	1	2	1

Note: AA.CC. Autonomous Communities. Sm: Small (one group of students), Med.: Medium (2-3 groups of students), Lar: Large (four or more groups of students). V: Vulnerable (the centres have students in vulnerable situations), NV: No vulnerable (the centres have no students in vulnerable situations). Bas: Basic, Inter: Intermediate, Advan: Advanced.

The total number of participants in the study was 40 teachers and 68 students (Table 2).

Table 2

Sample of interviewed teachers and students

Autonomous Communities	Educational centres	Teachers	Students
Galicia	6	14	31
Andalusia	6	16	21
Madrid	4	10	16
Total	16	40	68

Data Collection Tools

Data were collected using a semi-structured interview, which is an appropriate instrument for obtaining detailed information about personal experiences, as it allows participants to express themselves freely while following a predefined script of questions (Adeoye-Olatunde & Olenik, 2021). This type of instrument is a valuable tool in qualitative research due to its flexibility, as it enables the exploration of emerging themes (Marshall & Rossman, 2016), and its depth, as it enables more detailed and rich information gathering than structured interviews (Patton, 2015). Moreover, it also fosters interaction between the interviewer and the interviewee, leading to a deeper understanding of the study topic (Glaser & Strauss, 2017).

Two semi-structured interviews were prepared to answer the research questions. One of the interviews was addressed to the management team, DigiCraft coordinators and teachers, and was organized into 24 questions; the other was addressed to students aged 9-12, and was organized into 17. The student interview features fewer questions because the impact variable of the program on the educational centre was not addressed in it; this topic was considered more appropriate for study with teachers and coordinators. Both instruments were designed with four dimensions in mind: the impact of the program on students, the impact of the program on teachers, the impact of the program on the school, and the evaluation of the program by students and teachers.

The interview questions were validated using the expert review method (Patton, 2015). A total of 8 professionals in the field of educational technology, who were familiar with and understood the purpose and context of the evaluation, reviewed the two designed instruments. Interviews were adjusted according to these expert assessments.

Two protocols were also developed to guide the fieldwork in the schools to ensure that all researchers followed the same guidelines when collecting information.

Data Collection

The fieldwork took place in April-May 2023. In each school, a group interview was conducted with the head teacher or a member of the management team designated by the school, the DigiCraft coordinator, and the teachers involved in the program. Group interviews were also conducted with the students aged 9-12 (3-5 girls/boys selected by the school). According to the established protocols, the interviews started with the introduction of the researchers and the research objectives, followed by the beginning of the research questions. Each interview lasted 45-60 minutes.

With the purpose of increasing the validity and reliability of the obtained results, the triangulation of sources method was employed, based on interviewing participants using different perspectives. This method can enhance the credibility of the results by providing a more comprehensive and profound understanding of the studied phenomenon (Morse, 2015). Information collection was obtained from different informants: DigiCraft coordinators, DigiCraft teachers, and students participating in the program, to address the research questions.

To ensure the ethical aspect of the research, informed consent was obtained from all participants (in the case of students, the consent of their families was mandatory).

Data Analysis

A content analysis was conducted, which is a qualitative data analysis approach that follows a systematic and objective process to describe and quantify observable manifestations of the studied phenomena (Elo & Kyngäs, 2008). It involves the identification of units of analysis, their categorization, and the interpretation of results to extract meanings (Bardin, 2013).

The interviews were recorded, and the information collected in the interviews was transcribed and coded for analysis using NVivo 14 software, according to a coding system created for the categorization of information. Once the coding process was complete, the proposed categories were refined and adjusted by merging some that were similar and splitting those that were broader into more specific ones. For each category identified, the most relevant findings were identified and supported by specific quotes and examples. Finally, graphs were created based on the frequency of citations for each category.

Concerning the research questions posed, the themes obtained in the content analysis using NVivo reflect the impact of the program on students, including effects such as fostering autonomy,

confidence, and responsibility, stimulating creativity and digital skills, as well as improving motivation and learning through fun and games. Additionally, benefits were observed in students' interest in school life, family involvement, and reduced absenteeism. Regarding teachers, changes were identified in knowledge, attitudes, and motivation, as well as in the implementation of innovative methodologies. Challenges were also proposed for the improvement of the program.

Findings

The results are presented in four sections, according to the two research questions posed and to the four dimensions in which interviews are structured, as indicated in the subsection on instruments in the method section. Firstly, reference is made to the impact of the program on students, integrating and contrasting the perspectives of both teachers and the students themselves. Secondly, the effects on the teaching staff are analyzed, considering the experiences lived by those responsible for the program's development. The third section investigates the program's impact on the life of the school, including the centre's digitalization strategies and plans. These three sections present the results of the first research question. In the fourth section, a deeper examination is conducted on the assessment of the DigiCraft program by both students and teachers. The results of the second research question are presented in this section.

Impact of the DigiCraft program on students

Regarding the impact of the program on students' knowledge and skills, DigiCraft has enabled the development of significant competences for academic life and personal growth. This includes a focus on digital competence related to creating digital content and the ability to collaborate effectively. The program has also shown its influence on competences related to digital security, as well as the development of autonomy, confidence, responsibility, assertiveness, reflective and investigative skills, and emotional well-being. Finally, the program has also contributed to the achievement of competences in the linguistic and mathematical domains (Figure 1).

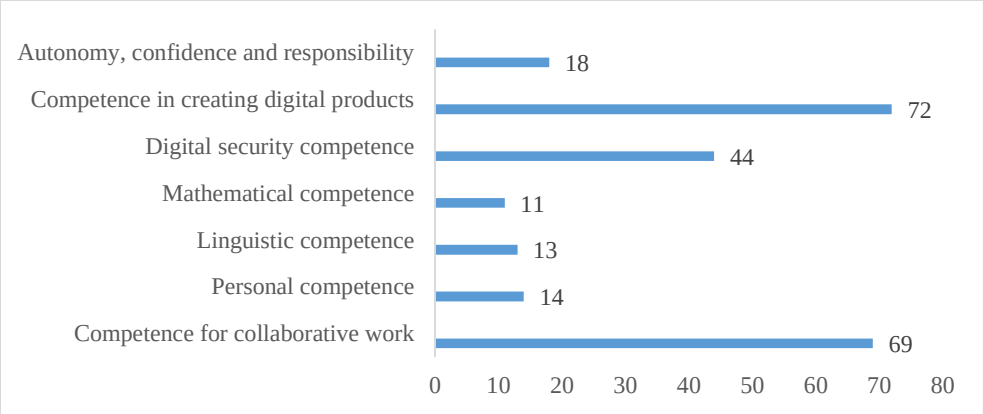

Figure 1. Impact of the program on students' knowledge and skills

For students, learning with the DigiCraft program is an unquestionably positive and highly beneficial experience, as expressed in some of their comments:

> "When I started using DigiCraft, I had many technological devices at home that I didn't know how to use. However, over time, I have learned things about the Internet, technology, and have become better at using them" (student 1, educational centre A-BI).
> "I learn a lot because in the games, not only on the tablet but also with the materials you have, it makes you learn a lot" (student 5, educational centre G-BC).

If we consider the motivational component of the program, teachers express their ability to motivate students, and students, in turn, affirm that they really like DigiCraft and find it a source of enjoyment and encouragement when going to school.

> "It's a way of working that they enjoy and that motivates them" (teacher 2, educational centre M-JRG).
> "I am livelier and more awake to wake up my entire family so as not to arrive late" (student 5, educational centre M-CB).

Finally, both students and their teachers highlight a process of transfer to the former's family environment, meaning that they involve their families in the development of activities. On the other hand, it is recognized that the motivation generated by the program in boys and girls contributes to the reduction of school absenteeism (Figure 2).

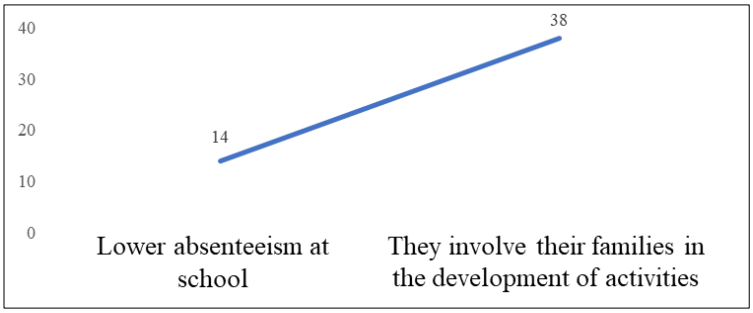

Figure 2. Effect of the program on students' interest in their school life and transfer outside the educational centre

Impact of the DigiCraft program on teachers

Teachers, mostly, claim to have enhanced their knowledge and skills, not only as regards technological aspects but also in terms of abilities related to taking the initiative, increasing curiosity and imagination, and interpersonal communication with their colleagues. Some also point out that the program has taught them to be more critical about the use of technology (Figure 3).

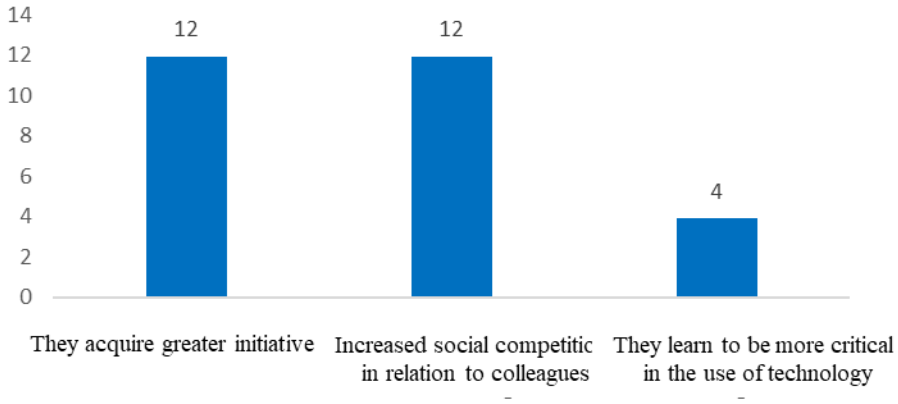

Figure 3. Impact of the program on teachers' knowledge and competences

It is interesting to note how the digital competence of older teachers has been successfully improved, despite possible initial reluctance. It has also had a positive impact on the attitudes and motivation of the teaching staff, with an increase in interest in technologies and greater confidence in their educational use. Additionally, there is a recognition of a closer relationship with students, resulting in shared learning (learning from and with students). This has led to increased satisfaction with teaching and a more relaxed teaching experience (Figure 4).

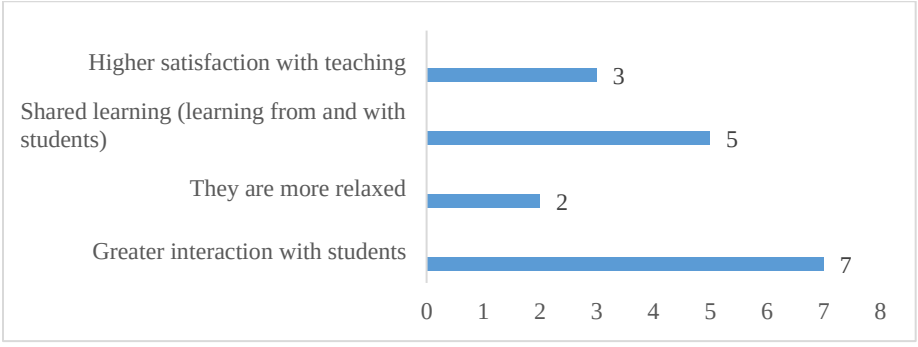

Figure 4. Impact of the program on teachers' attitudes and motivations

In this regard, some statements made by the teachers are as follows:

> "All the older teachers have embraced digitalization, and a curiosity to acquire new tools and resources, which they are already using, has awakened in them" (teacher 2, educational centre A-NN).
> "Not only are students more motivated by these types of activities, but teachers are also more motivated when they prepare them" (teacher 1, educational centre G-VR).

> "In my case, I even learn from them; the feedback between us is rewarding" (teacher 2, educational centre M-CC).

Impact of the DigiCraft program on the school

For teachers, the development of DigiCraft has had a significant impact on the school itself, primarily due to the availability of program resources and the experimentation with a new teaching and learning methodology that can be applied to other activities and subjects taught at the school. The empowerment of some teachers is linked to greater autonomy in leading other projects, allowing the knowledge gained to continue beyond the planned time for the development of the DigiCraft program. The participation and motivation of families in such training proposals are also highlighted, as well as the positive change in the school's atmosphere.

This impact is expressed in statements such as:

> "In all subjects, we are also incorporating some modules in which we can use this set of tools provided by DigiCraft" (teacher 1, educational centre G-LP).
> "Our promotion goes a step beyond what DigiCraft proposes, meaning it is a part of the subject, which is being implemented. Apart from these types of experiences, they have been used in teaching practice, in demonstrations to parents, and during specific thematic weeks" (teacher 1, educational centre M-C).
> "I think it encouraged us to undertake more projects" (teacher 2, educational centre A-SJC).
> "In the interview, the students have said that they take it home, that they explain to their family what they are working on" (teacher 1, educational centre A-FBC).

Evaluation of the DigiCraft program by students and teachers

Teachers and students highly appreciate the DigiCraft methodology because it enhances collaborative learning, fostering a methodological shift in teaching that promotes active learning, class group cohesion, and the inclusion of all students. The classrooms encourage the participation of every student, including those facing greater challenges (Figure 5).

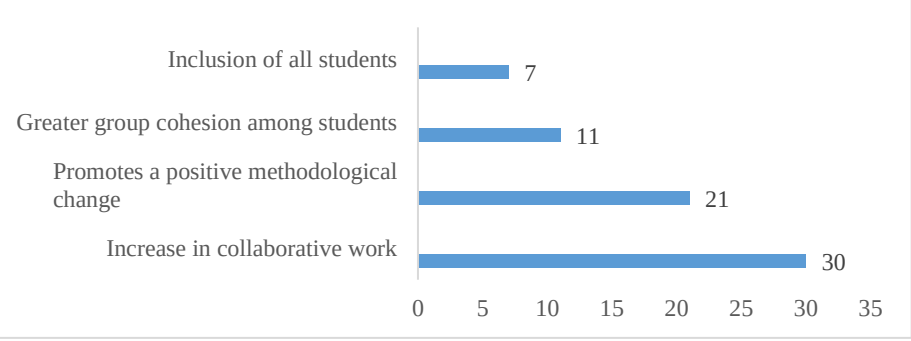

Figure 5. Assessment of the DigiCraft methodology

The DigiCraft program is characterized by teachers as a comprehensive and cross-cutting program that includes structured planning of guided activities tailored to the students' ages, the necessary resources and materials to carry out the proposed activities, and teacher training to implement the

program. Teachers highly appreciate the well-structured nature of the program and the ease with which activities can be developed thanks to detailed guidance and the provided materials. They highly value the training provided by DigiCraft instructors, praising their high level of expertise and expressing gratitude for their flexibility and availability to assist them when needed. They also highlight the level of competence achieved, which has provided them with more confidence when using digital technologies.

Some statements expressing this are:

> "That everything comes prepared in a kit and it tells you 'this is what you're going to have to use.' To me, it seemed like one of the best things" (teacher 2, educational centre A-BI).
> "For teachers, it's intuitive because all the steps to be carried out are provided in detail, and I think it's easy" (teacher 2, educational centre M-MC).
> "The training is fantastic. It gives us confidence" (teacher 1, educational centre A-NN).
> "Strengths: training, warmth, and quality of the instructors" (teacher 2, educational centre G-BCS).
> "Remote counselling is agile" (teacher 1, educational centre M-CB).

The main challenges identified in the development of DigiCraft, as pointed out by the teachers, include the time required to prepare all the proposed activities in each itinerary and to implement them in the classroom. Some mention that there are too many activities, some of which are too lengthy to fit within the allotted time for their completion. They also highlight technological and organizational difficulties of a structural nature, such as technical problems with the available devices, lack of recognition for the involved teaching staff, or a need for the participation of more teachers in each school.

Some statements that express this are:

> "The itineraries are very well thought out. Perhaps I see it a bit, from my point of view, excessive in terms of activities" (teacher 2, educational centre G-LP).
> "We have to put in many more hours in preparing things; a lot of prior preparation was needed before using all the material. Devote more hours outside our regular schedule to try to solve those problems so that the next day, well, what has failed does not fail again" (teacher 2, educational centre A-BP).
> "We don't have set hours. This is voluntary" (teacher 1, educational centre M-MC).
> "Our major problem is the technical aspect of devices. The technology failures at the centre are horrendous, and as a result, I've been left wanting to be able to do everything I was supposed to do" (teacher 2, educational centre G-OC).

Finally, students highlight the program for its technological, playful, practical, and enjoyable nature (Figure 6).

Figure 6. Word cloud from student evaluations

Note: The size of each word corresponds to its frequency of repetition.

Discussion, Conclusion and Implications

Concerning the impact of the program on students, it is important to highlight that teachers believe that there has been an increase in their students' curiosity, interest, and creativity. They also note that technology promotes students' autonomy, responsibility, digital, mathematical, linguistic, and social skills, and the ability to learn how to learn. This is also evident in other research studies (García-Valcárcel Muñoz-Repiso et al., 2022) and it shows how DigiCraft contributes to digital transformation by promoting substantial changes in traditional modes and forms of teaching and learning (Area et al., 2022). As for students, they find the DigiCraft methodology very attractive and exciting because they "play, have fun, and learn," expressing a desire for similar approaches such as this to be implemented in more subjects. As has also been demonstrated in other studies playful learning is a fundamental pedagogical pillar in the teaching and learning process (Carrillo-Ojeda et al., 2020; Gil-Quintana & Prieto-Jurado, 2020; Hong et al., 2024; Ma et al., 2023).

If we consider the impact of the program on teachers, DigiCraft provides them with a comprehensive program ("activities, training, and resources") that is appropriately structured ("guided activities adapted to age") and develops their digital competence. This reaffirms the importance, as noted in other works, of a good pedagogical design of educational programs for the development of digital competence (Casillas-Martín et al., 2020). In addition, they are more willing to take the initiative, showing more interest and confidence in using technology, as well as feeling more satisfied with teaching. These results are in line with the findings of other studies (Gabarda-Méndez et al., 2023; Munawaroh et al., 2022).

Regarding its impact on educational centres, teachers indicate that DigiCraft has contributed to increasing their ability to lead other projects autonomously, develop additional teaching competencies, improve the overall atmosphere of the centre, work in a multidisciplinary manner,

and transfer activities, methodology, and resources from the program to the delivery of various subjects taught at the centre. As noted in other studies, learning has been successfully transferred to other life situations at the centre (Hidson, 2021).

Focusing on the assessment of the program, as in other investigations, teachers highlight the methodological shift it represents, emphasizing its promotion of collaborative work and its ability to make classes more active, participatory, inclusive, and cohesive ("group sense"). Students emphasize the experience of learning about technology in a playful, practical, and enjoyable manner. These findings are consistent with other studies such as the one conducted by Romero-García et al. (2020), which aimed to analyze whether active methodologies based on digital tools enhance the digital competence of university education students.

The purpose of this research was to explore and understand the results achieved with the DigiCraft educational program for the development of digital competence in Spanish children aged 9-12, from the perspective of the agents who participated in it. This includes their perception of the program's impact on students, teachers, and the school, as well as the evaluation provided by both students and teachers regarding DigiCraft.

Taking into account the research questions posed, it can be concluded that the DigiCraft program has had a very positive impact on students, teachers and schools, and is highly valued by both teachers and students involved in the program.

The success of DigiCraft in developing the digital competence of 9-12-year-olds has been confirmed. Its contribution to the challenges of educational sustainability, as embodied in the Sustainable Development Goals, has also been validated, as this educational program contributes to achieving educational equity and promoting learning opportunities through technology.

The main contributions of this work are two. First, the presentation of a Spanish educational program for the development of digital competence in children aged 6-12 years. This program is the result of an interdisciplinary collaboration between companies and universities, has a solid pedagogical basis and is developed through a methodology that allows for the training of digital skills in an innovative way. This program could address the issue of the urgent need for digital education (García-Aretio, 2019; Grané-I-Oró, 2021; Sosa-Díaz & Valverde-Berrocoso, 2022). Secondly, the use of a qualitative research methodology to explore and understand the results of this educational program. This methodology provides a deep, rich, and contextualized

understanding of the phenomenon under study, which contributes to the generation of knowledge that can be used to improve the educational program under evaluation (Merriam & Tisdell, 2016). The results obtained provide a solid foundation to justify the necessity, continuity, and expansion of educational programs like DigiCraft, highlighting their positive impact on the development of digital skills and the overall well-being of students and the school community. Key practical implications of this study include:

- The importance of integrating the development of digital skills into educational programs for children aged 9 to 12.
- The positive impact on student and teacher motivation suggests that this type of program can be effective in improving engagement and reducing school absenteeism.
- The transfer of learning to the family environment involves the possibility of fostering intergenerational learning and family involvement in education.
- Improving digital competences and positively influencing teachers' attitudes toward technology and their motivation to use it in education could lead to greater adoption of digital tools and innovative teaching methods in schools.
- The positive assessment of collaborative learning as a working method highlights the importance of promoting social learning and collaboration in digital education.
- Contribution of the program to the challenges of sustainable education by promoting equity and access to digital learning opportunities. This aligns with the SDGs, particularly with goal 4 "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all".

Finally, the main limitation of this research concerns the representativeness of the sample. Since it is a qualitative study based on a deep understanding of the cases examined rather than on a representative sample, the findings are not directly generalizable to a broader population or different contexts. For future studies, it may be advisable to triangulate the data obtained with other quantitative data, which could help to endorse the opinions expressed by the teachers and students who participated in this study.

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