Máster Universitario en Psicopedagogía

Impact Assessment of an Awareness Program Using ICT

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Abstract

In the current educational landscape, innovation stands as a primary goal to prepare students for a constantly changing and technologically advanced world. However, some educational institutions continue to use traditional methods, limiting learning opportunities and stopping progress toward a more inclusive education. This action research study addresses this issue by implementing an awareness program in a State School for Preschool and Primary Education where resistance to methodological changes persists.

The study focuses on CEIP P.G.B., an educational institution located in Vila-real, Castellón, characterized by significant cultural and socioeconomic diversity among its students. Through a participatory approach, the project involves teaching faculty in a collaborative process of reflection and action, promoting the adoption of innovative pedagogical practices, specifically in the use of technology.

The central hypothesis posits that CEIP P.G.B. exhibits weaknesses in the effective use of information and communication technologies (ICT) in the educational process. The research is structured around the development and implementation of innovative strategies that harness the potential of ICT to enhance the quality of the teaching-learning process. Using the Design Thinking approach, the goal is to design and evaluate a program that raises awareness and trains teachers in active and technological methodologies.

The findings from this study offer actionable insights that can benefit not only the specific educational institution under investigation but also provide practical guidance for other institutions encountering comparable challenges. The successful incorporation of ICT has demonstrated a significant enhancement in faculty utilization of technology, as evidenced by the notable increase in post-test data.

This project underscores the importance of complying with legal regulations and responding to the demands of contemporary society by promoting inclusive and equitable education through the use of advanced technologies in the classroom.

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1. Introduction

In the current educational landscape, innovation has become the primary objective to prepare students for the technological and ever-changing world around us. However, despite the growing evidence supporting the effectiveness of innovative pedagogical approaches (Cabero, 2015) some educational institutions persist in using traditional methods. This resistance to change not only limits students' learning opportunities but also blocks progress toward an education more focused on the individual characteristics of each student under the umbrella of Universal Design for Learning (CAST, 2018).

This action research aims to directly address this issue, focusing on the implementation of an awareness program in a Public Primary and Preschool Education Centre where resistance to changing its methodology persists. This research not only seeks to understand the reasons behind this resistance, but also to develop and implement effective strategies to encourage the use of technology.

In this context, the hypothesis arises that CEIP P.G.B. presents weaknesses in the effective use of technology in the educational process. This assumption underpins the need to carry out an intervention focused on implementing innovative strategies that make the most of the potential of ICT to improve the quality of teaching and learning at the school.

Through a participatory approach, this project looks to engage the teaching staff in a collaborative process of reflection and action, promoting the adoption of pedagogical practices that stimulate critical thinking, creativity, and active student participation: Design Thinking Approach (Brown, 2008).

This study will not only contribute to the specific educational centre in question but also provide a practical guide for those institutions facing similar situations and seeking to overcome barriers to implementing more modern and effective educational methodologies. As we progress in this action research, we hope to not only understand the impact of educational innovation but also to analyze the evidence that can be collected after the awareness program's implementation.

Therefore, the TFM will be divided into two distinct parts: the first part consists of analyzing the school context which creates a DAFO analysis (Strengths, Weaknesses, Opportunities, and Threats) specifying the problem detected and concreting objectives; the second part will involve the implementation of the awareness program in the educational centre and subsequent analysis of results; and finally, conclusions, results and possible improvement proposals for future implementation will be suggested adding the final conclusions.

2. Theoretical Framework

Educational innovation stands as an essential element in the ongoing enhancement of teaching and learning processes. By incorporating new strategies, methods, and practices, innovative approaches enrich pedagogical practices and foster comprehensive student development in Primary and Preschool education stages (Cabero, 2015). Educational innovation is defined as "processes of change and improvement in educational models, strategies, methods, and practices, aimed at optimizing learning and teaching, as well as adapting to the needs and demands of current society" (Álvarez & Del Río, 2002).

Furthermore, this innovation involves a gradual process requiring implementation time, as it entails more than isolated changes in the educational system; it necessitates thorough study and sustained effort (Cabero, 2015). Its primary goal is to enhance education and consequently elevate student performance and teaching efficacy. Thus, successful implementation demands concerted effort and intervention from all members of the educational community, ensuring a coordinated, well-planned, and effective approach (Marqués, 2018).

The adoption of contemporary methodologies in our classrooms not only signifies a shift in teaching and learning methods but also yields a profound impact on students' educational experiences. The term "impact" denotes "the direct or indirect effect that an action, process, or phenomenon has on a system, individual, or group" (Cabero, 2006). In the educational context, innovation's impact is evident in improved access to information, heightened student engagement and motivation, enhanced digital skills development, and increased active participation in learning (Alonso, 2017;

Cabero, 2016). This transformative impact underscores the significance of educational innovation, as it fosters positive changes in traditional educational practices, aiming for continuous improvement and adaptation to contemporary societal demands. Consequently, understanding and evaluating innovation's impact in classrooms is crucial as it serves as a key indicator of success and its contribution to comprehensive student development.

Turning to the legal framework, the Organic Law of Education (LOMLOE) emphasizes the development of eight key competencies throughout students' educational journeys: linguistic competence, STEM competence, digital competence, cultural awareness and expression competence, plurilingual competence, entrepreneurship competence, citizenship competence, and personal, social, and learning-to-learn competence. These competencies are defined as "essential performances enabling students to progress with guaranteed success in their educational paths, and to tackle major global and local challenges" (Ley Orgánica 3/2020, 2020). These competencies are closely linked to the use of innovative teaching and learning techniques, which offer dynamic and engaging methods tailored to diverse learning styles and needs. Educational innovation is thus not merely advantageous but imperative for effectively fostering the acquisition and development of these competencies. By integrating creative and adaptive educational strategies, students can enhance critical thinking, problem-solving abilities, and adaptability, ensuring their preparedness for future challenges (Gimeno, 2008).

Moreover, the European Commission has delineated specific competencies for educators focused on digital competence through the European Framework for Digital Competence for Educators (DigCompEdu). These competencies encompass proficiency in utilizing digital tools and integrating technology in planning and executing learning activities (Viñoles-Cosentino, Sánchez-Caballé & Esteve-Mon, 2022). As educators, it is incumbent upon us to acquire and cultivate these competencies to deliver quality education in today's digital landscape.

Finally, we cannot overlook the current paradigm in education, which is the Universal Design for Learning (UDL). UDL provides an effective means to promote educational inclusion, ensuring that all students have the opportunity to actively participate in the learning process by following its principles: engagement, representation, and action & expression (CAST, 2018). To promote innovation and new strategies through UDL, it is essential to implement multilevel activities that enable all students to access and participate according to their level of competence and specific needs. This paradigm fosters an inclusive and equitable environment in the classroom, as illustrated by the UDL wheel (Márquez, 2022). In order to accomplish these principles through UDL, teachers need to implement methodologies that promote relationships between individuals and social interactions, fostering the theory of multiple intelligences (Gardner, 2019) and promoting interpersonal intelligence.

To conclude, as professionals in the educational field, it must be recognized the importance of complying with legal regulations and responding to the demands of today's society. The educational innovation in our classroom planning represents an opportunity to enrich the educational experience of our students and prepare them for the 21st Century challenges. The effective integration of techniques as the use of ICT allows us to enhance motivation, participation, and meaningful learning for our students, thereby contributing to their holistic development and academic success.

3. Context

3.1 The school: CEIP P.G.B.

- The City and Surroundings

The focal institution is a state school located in *Vila-real* (*Castellón*), situated within the Valencian Community. *Vila-real*, with a population of approximately 50,000 residents, is in close proximity to other urban centres, collectively providing essential amenities such as educational institutions, shopping centres, educational academies, and sports facilities.

The citizens of *Vila-real* reflect a multicultural demographic, with individuals originating from various Spanish regions, including *Andaluca*, as well as from international locations such as North African countries and Romania. The economic landscape of the city primarily revolves around the ceramic industry, small businesses, and citrus cultivation, resulting in a predominantly average income level among its citizens. (*Ayuntamiento de Vila-rea*l, 2014).

To enhance the cultural and recreational aspects of the community, the city offers many amenities. The presence of theatres, libraries, music schools, dance groups, artistic performances, cultural centres, sports events, sports complexes, museums, green spaces, and academic institutions like the Official Language School (*EOI*) contributes significantly to the overall development of our community, providing accessible resources for cultural and educational enrichment.

- The School

This is a single-line school, covering students from 3 years old to 6th grade in Kindergarden and Primary Education. The student body is diverse, with varying backgrounds and learning paces. It embraces the total of 205 students, in Kindergarden there are few students per class, about 15-18 students, and in Primary education there are about 20 to 25 students.

The schedule of the school is from 9.00 am to 14.00 pm. The school has two buildings: a kindergarten building, the canteen, a gym and an elementary building. The school has 9 classrooms, a library, a music classroom, and a multipurpose room.

This educational institution operates in accordance with the guidelines outlined in its Institutional Planning Documents. A key document is the School Educational Project (*PEC*), which delineates the centre's objectives, standards, identity, and organizational structure. The *PEC* is defined in Article 121 of the *LOMLOE,* and it is conformed by a huge number of documents and plans that regulate the state school, here are described the most relevant ones.
Subsequently, the school formulates the Action Plan for Improvement (*PAM*), outlining projects aimed at enhancing the community environment. This plan is assessed and reviewed every year to observe the degree of project accomplishment.

Following the establishment of these plans, the day-to-day operations of the centre are established by the Norms of Organization and Functioning (*NOF*) according to the Resolution 27th of June (*DOGV*, 2023) and also through the Coexistence Plan. The Tutoring Action Plan (*PAT*) is another school plan which is established according to Decree 72/2021 (*DOGV*, 2021). The last plan highlight in here is the Plurilingual and Intercultural Plan (*PEPLI)*, which establishes the percentage of areas that have to be done through Valencian, Spanish and English according to Decree 4/2018 13th of March (*BOE*, 2018); This plan helps to foster relationships between families and teachers. The remaining plans that constitute the *PEC* are integral to the concretization of the students' curriculum, the acquisition of the key competencies and the cross-curricular elements of the curriculum established on the *LOMLOE*.

- The students

In this school there are different nationalities, reflecting the social context of the city. The scholars are from Romania, South America, Morocco and Syria. Regardless of their nationality the main language spoken in the class is Valencian and Spanish. As it was quoted before, the economic level of these families is average wage, with some families getting help from the school district with a canteen voucher but also a voucher for scholar materials.

Due to diverse backgrounds, there is a high percentage of students in the process of acquiring the language. Hence, the school actively participates in a volunteer program facilitated by an association in *Vila-real* called *Socarrats*. This association intervenes by conducting reinforcement activities to support language learning for a group of students lacking communicative competence (Hymes, 1972) in both Valencian and Spanish. In response to the high percentage of foreign students, the school follows welcoming procedures according to Resolution 5th of June (DOGV, 2018).

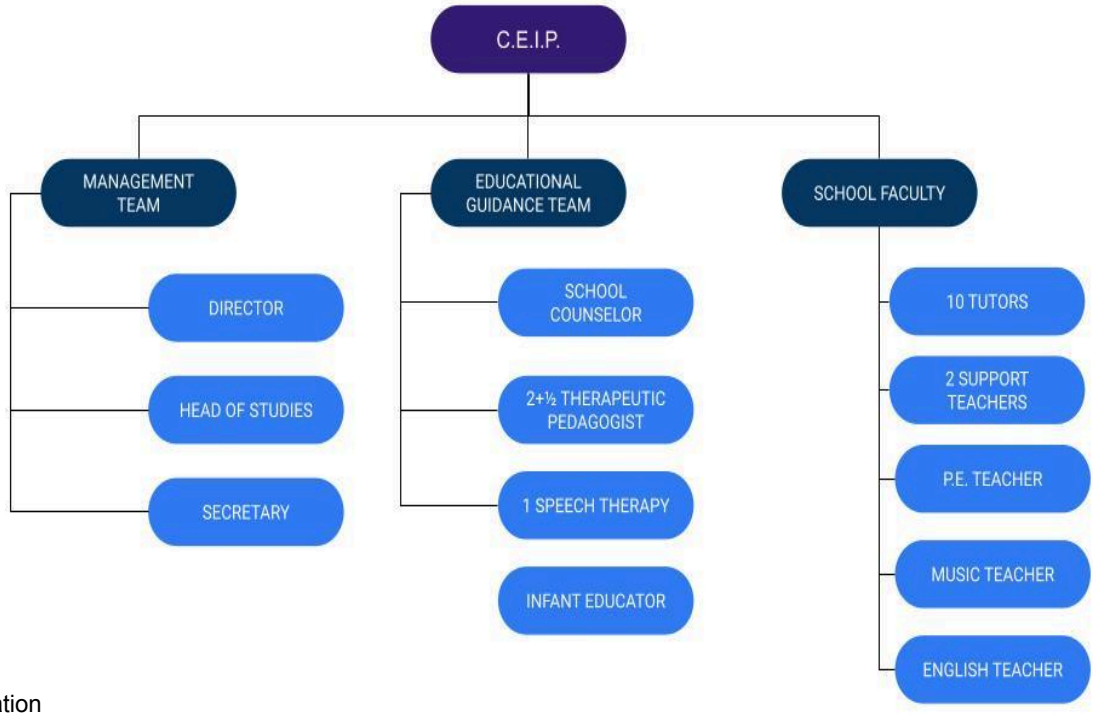
The percentage of students with specific educational support needs (*NEAE*) according to Decree 106/22 on educational inclusion (*DOGV*, 2022) is moderate, primarily due to their integration into the educational system without prior knowledge

of the language, as mentioned earlier. Diversity in the classroom is a prevalent aspect in this educational institution.

3.2 Profile of the Educational Faculty

It must be mentioned that this school is conformed by 21 professionals: ten tutor teachers, in addition to two support teachers, a music teacher, an English teacher, a physical education teacher, a school counselor, two and a half therapeutic pedagogists, a speech therapist, and an infant educator for a Kindergarten student with motoric needs. This information is shown on Figure 1.

Figure 1
School Organization Chart



Own Creation

The profile of these 21 professionals is: 85.7% female and 14.3% male. Regarding job stability, 61.9% of the teaching staff consists of permanent faculty, totaling 13 teachers, with the remaining 38.1% composed of non-permanent teachers, totaling 8 individuals. This combination provides a blend of established experience and new perspectives within the educational team.

In terms of age, there is a wide range spanning from 30 to 63 years old. Among permanent staff, ages range from 42 to 63 years, indicating a solid professional trajectory and accumulated experience. When considering both permanent and non-permanent staff, the minimum age is 30 years old. The average age of permanent staff at the school is therefore 52 years, with a standard deviation of 8,44 (Table 1); while the current average age of the entire faculty is approximately 48 years, with a standard deviation 11,42 (Table 2).

Table 1

Permanent Faculty's Average Age

	PERMANENT
	40
	50
	61
	59
	57
	46
	43
	42
	46
	61
	61
	48
	63
Average	52,07692308
Standard Deviation	8,440591789

Own Creation

Table 2

Faculty's Average Age

	TOTAL FACULTY AGES	
	40	48
	50	63
	61	59
	59	22
	57	39
	46	48
	43	55
	42	37
	46	35
	61	30
	61	
TOTAL Average	47,71428571	
Standard Deviation	11,42428491	

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4. Problem Statement

4.1 Tools for Detection and Data Collection

- Questionnaire *QUACINE*

To know the situation of the centre, the following instruments and techniques have been used in the data collection for this study:

The survey as a needs assessment tool is conducted through the questionnaire called *QUACINE* (*Cuestionario de Actitudes frente a la Innovación Educativa*) (Traver-Martí, & Ferrández-Berrueco, 2016). It was initially designed to evaluate the attitudes of both students and university faculty towards educational innovation. This questionnaire was adapted and applied in a Primary and Preschool education context (*CEIP*). This questionnaire is shown on Appendix I.

The *QUACINE* was employed as a pre-test to assess the attitudes of the teaching staff of the educational centre in question regarding educational innovation in early childhood and primary education stages; but also as a post-test in order to get results after the implementation of the awareness program. In its design and development, the "Theory of Reasoned Action" proposed by Fishbein and Ajzen was used as the theoretical basis, which provides a solid framework for analyzing attitudes. Additionally, the summative scales (Likert) approach was utilized as a measurement instrument.

This questionnaire seeks to identify teachers' perceptions, beliefs, and predispositions towards the introduction of innovations in the educational field. Through carefully selected questions, the *QUACINE* provides relevant information about the faculty's disposition towards new pedagogical practices, emerging educational technologies, alternative teaching methods, and other aspects related to innovation in the school context.

The adaptation of *QUACINE* to the context of the *CEIP P.G.B.* provides a valuable tool for understanding the specific needs and challenges faced by teaching staff in Primary and Preschool Education. The results of this questionnaire will serve as a

starting point for designing training strategies and professional development that promote a culture of innovation and continuous improvement in the educational centre.

- Interview

Once the pre-test was conducted, the research continued using the structured and open interview as an essential instrument for investigation and data collection, both with individuals or groups. Interviews allow for a deeper exploration of participants' perceptions, experiences, and opinions, especially in this case, regarding the use of ICT in the classroom. Through interviews, aspects not detected by other methods can be identified, as well as perceived barriers and suggestions for improving implementation. This provides a more comprehensive and rich understanding of the studied phenomenon, which is crucial for designing effective interventions tailored to the specific needs of the educational context. (Rodríguez, 2010).

The structured and open interview was created through a carefully designed script, and specific aspects were addressed. This script consists of three distinct sections: Daily Life, ICT in Education, and Resources and Teaching Training. These three sections are divided into 3, 6, and 5 questions respectively. This combination of questions allows for a detailed and contextualized exploration of the participants' experiences, enriching the understanding of the relationship between people and technology in everyday life. The interview was conducted with 2 of the teachers from the school. This interview script is located in Appendix II.

- Field Diary

In addition to the pre-test and the interview, the field diary is used as a third instrument to complement the Triangulation Technique. Triangulation is employed to enhance the validity and reliability of the research findings by combining multiple data sources, methods, and perspectives (Denzin, 2006). This approach allows for a more comprehensive and nuanced understanding of the use of ICT in the classroom, as it helps to corroborate findings across different instruments and reveal any inconsistencies or gaps in the data. By integrating the pre-test, interview, and field

diary, the research can achieve a more holistic and robust diagnosis of the current state and challenges of ICT integration in the educational setting.

The field diary is a fundamental instrument in qualitative research that allows the researcher to record data in real-time, reflect on their own investigative practice, and capture relevant aspects of the study's context. In this case, the field diary was used to record observations made during the study of technology use at the school (Goetz & LeCompte, 1988).

The field diary extensively describes the study area, the teachers from the CEIP P.G.B. using ICT in class or not. This field diary highlights the available technological infrastructure, which includes projectors in classrooms, interactive whiteboards in the multipurpose room, a cart with tablets, and a computer laboratory. Additionally, if these technological tools are being used, the methodology implemented is explained, which includes observing pedagogical practices in classrooms to identify the use of technology during classes. Through various observations recorded in the field diary, a detailed insight is provided into how technology is integrated into the daily teaching and learning activities.

In summary, the pre-test, the interview, the field diary and the post-test, are the instruments that make the data collection on this investigation, providing a detailed and contextualized perspective on the use of technology in the educational environment of the CEIP P.G.B. The results and data collected are explained on point 8. Evaluation, Evidence, and Results.

Thanks to the data collection, as well as the explanation of the social and school context in the previous points, a SWOT analysis of the school (strengths, weaknesses, opportunities, threats) is presented for a better understanding of the starting point in the research project. This SWOT is divided into three blocks in each dimension: Pedagogical aspects, Organization and Management and Relations with the Educational Community. The SWOT analysis is presented on the following Table 3.

Table 3
SWOT

STRENGTHS	WEAKNESSES
Pedagogical aspects - Good working environment. - Teaching staff with a predisposition to work. - Increase in the socio-cultural level of families since 2017-18 (approval of continuous schedule). Organization and Management - Good management by the management team. - Willingness of the teaching staff to undergo training. - Majority of PEC Plans and Projects already developed and reviewed. - Technological tools such as a computer lab, tablets, laptops, interactive whiteboards (IWBs), and projectors in the classrooms. Relations with the Educational Community - Good atmosphere with the family sector of the School Council and with families in general. - Very collaborative and effective direction of the AMPA. - Participation in Municipal Projects and with other entities such as the National and Municipal Police.	Pedagogical aspects - Lack of innovative methodologies. - Limited use of ICT in class. - Teachers insecurity using technology. - Rigid work routines. - General cultural level of families is medium-low (with some exceptions). - Lack of use of Valencian language by students in higher grades. Organization and Management - Lack of time for the management team and teachers to meet. - Need for good meeting planning to optimize time. - Interesting activities are carried out but not formally included in Plans or Projects. Relations with the Educational Community - Delays and failures by the city council in fulfilling commitments with the school.
OPPORTUNITIES	**THREATS**
Pedagogical aspects - Stable teaching staff with the majority having permanent positions. - 25% turnover of the teaching staff due to retirements. - Attractive school for teachers who want to transfer. - Continuous schedule. - Generally good academic results of the students at the secondary school after finishing Primary Education. Organization and Management - Good financial situation. - Small and close-knit school where all students know each other. - Stable and efficient canteen service. - Modern building with construction completed in 2008. Relations with the Educational Community - Good coexistence within the educational community.	Pedagogical aspects - Very diverse levels in the classrooms. - Frequent arrival of students who do not know the language after the course has started. - Changes in legislation. Organization and Management - Excessive bureaucratic tasks and little time. - A lot of regulations and an excess of projects and plans that sometimes overlap. - Small playground with limited possibilities. Relations with the Educational Community - Little involvement from some families in their children's education.

Own Creation

4.2 Findings

- Questionnaire *QUACINE* findings

The results of the *QUACINE* as a pre-test, administered to a population of 21 professionals from the CEIP P.G.B., reveal an overall positive assessment towards the implementation of educational innovation. These data are reflected on APPENDIX III with an average score of 4.4 out of 5, with a standard deviation of 0.3. However, significant variations are observed in the different dimensions evaluated.

Firstly, Dimension 5, related to students' perception towards compulsory education as a promoter of critical thinking and personal autonomy, obtained the lowest score with 3.7 out of 5 with a standard deviation of 0.9. This suggests a possible discrepancy between the perception of the teaching staff and the assessment that students make of these fundamental aspects of education.

On the other hand, Dimension 7 stood out as the highest rated, with a score of 4.7 out of 5 with a standard deviation of 0.5. This result highlights the importance that the faculty places on active involvement of teachers in the educational process, as well as the need for solid pedagogical skills to effectively carry out their teaching duties.

When examining the items individually, a marked reluctance towards the use of new technologies in the classroom is observed, as reflected in item 17, which obtained a score of 3.9 out of 5 with a standard deviation of 0.9. This indicates possible resistance or lack of confidence on the part of the teaching staff towards the integration of ICT and audiovisual languages in their teaching practice.

Conversely, item 7 received the highest score, with 4.9 out of 5 with a standard deviation of 0, which aligns with the highest rated dimension. This result underscores the widespread perception that active involvement and quality in teaching are fundamental aspects for professional success in the educational field.

In summary, the results of the *QUACINE* pre-test indicate a favorable disposition of the teaching staff towards educational innovation in general terms, although certain reservations regarding the use of new technologies in the classroom are highlighted.

- Interview results

Continuing with the data obtained from the questionnaire, the research focused on the lowest score: item 7, which is centered on the use of ICT in the classroom. Therefore, the interview script focuses on this aspect to investigate.

The results from the interview shown that both teachers interviewed use technology in their daily lives, mainly through mobile phones for communication and accessing information. They recognize the benefits of technology but express concerns about dependence and its negative effects.

Both have experience using technology in the classroom, primarily through the projection of digitized textbooks. However, technical issues have been encountered when using technology and those experiences have hit them under reticencies. They see the potential of technology to make lessons more engaging and facilitate access to educational resources. However, they are concerned about its impact on students' social and cognitive development and the issue of equity in access to technology.

We conclude emphasizing the general sensation of the need for more training and support in effectively integrating technology into teaching practices. They also stress the importance of the teacher's role in this process and the need to be open to new technologies and teaching methods.

On the other hand, the conducted interview provided an enriching insight into the perceptions and experiences of teaching staff regarding the use of technology in the educational setting. Through the provided responses, several key aspects have been identified that shed light on the integration of technology in teaching and learning.

Firstly, the widespread use of technology in daily life was highlighted, especially the mobile phone, for communication and accessing information. However, concerns

were raised about a potential overreliance on technology, reflecting an awareness of the importance of balancing its use with other offline activities.

In the educational context, the potential of technologies to enhance student motivation and engagement was acknowledged, as well as to facilitate access to a variety of educational resources. However, concerns were also expressed about the excessive use of technology and its impact on students' social and cognitive development.

Previous experiences with technology in the classroom varied, with some teachers effectively utilizing digital resources to enrich lessons, while others faced technical obstacles and concerns about the reliability of technology. The importance of training and ongoing support for teachers in technology use was emphasized, as well as the need for reliable and accessible technological resources in the classroom.

- Field Diary

Finally, the third instrument for data collection, the field diary used during the study, provided a detailed perspective on the use of technology at CEIP P.G.B. Through the recorded observations, it was possible to identify how technology is integrated into daily teaching and learning activities in the classrooms.

The observations recorded were carried out on three different days: March 7, March 15, and March 22. Two of the observations were conducted with the sixth-grade group, and the third with the second-grade group. During these days, observations were made in various classrooms to evaluate the use of ICT by teachers in the classroom.

In all three observed instances, ICT was being used. However, in two of these cases, the technology was not being utilized by the main teacher but by the ICT specialist teacher. In the third observation, where the technology was used by the main teacher, its use was limited solely to projecting the textbook onto the screen.

Of the three recorded observations, only in one did the students actively interact with the technology. This instance took place in the computer lab under the direction of

the ICT specialist teacher. During this session, the students actively participated in activities using the computers. In the other two instances, the students played a passive role in using the technology, merely watching videos projected from YouTube or viewing the textbook on the large screen.

These results highlight a limitation in the effective use of ICT by the main teachers in the classroom, indicating a significant dependence on the ICT specialist teacher for interactive technology activities and few varieties of technologies, using just the projector in class.

The findings from this study, derived from the *QUACINE* questionnaire, interview, and a field diary, provide a comprehensive understanding of the current state of ICT usage at CEIP P.G.B. using the triangulation technique (Denzin, 2006) to ensure a robust analysis of the data. The data obtained were used to establish the objectives of this research and to plan the awareness program for teachers on the use of ICT in the classroom, which is described in the following sections.

5. Objectives

5.1 General Objective

To improve attitudes of preschool and Primary Education teachers towards the use of ICT in the classroom.

5.2 Specific Objectives

1. To identify existing digital competencies among the teaching staff.
2. To engage the teaching staff in the implementation and creation of digital activities.

6. Research Methodology

6.1 Design Thinking Approach

Design Thinking is characterized by being a user-centered approach that seeks to deeply understand the needs and perspectives of the people involved. Through an iterative process, it promotes the generation of innovative ideas and the creation of effective solutions.

The procedure followed to implement the educational innovation proposal was structured based on this methodology. According to Design Thinking España, it is a tool that combines creative thinking with analytical thinking to address the problems or challenges that arise. Similarly, when this methodology is applied to the field of education, it equips teachers with innovative capabilities and the ability to adapt to the circumstances of each moment. Below, it is described the phases that make up this methodology.

Empathize**:** This phase focuses on thoroughly understanding the users, in this case, the teachers and students. Techniques such as interviews, observations, and questionnaires are used to gather information about their needs, desires, and challenges. The goal is to gain a clear and empathetic understanding of the users' realities and contexts.

Define: In this stage, the information gathered during the Empathize phase is synthesized to identify the key problems that need to be addressed. A clear and precise problem statement is created, serving as a guide for the subsequent phases of the process.

Ideate**:** Here, the focus is on generating creative ideas to solve the defined problem. Techniques such as brainstorming, mind mapping, and other creativity dynamics are used. The goal is to explore a wide range of possible solutions without limiting imagination.

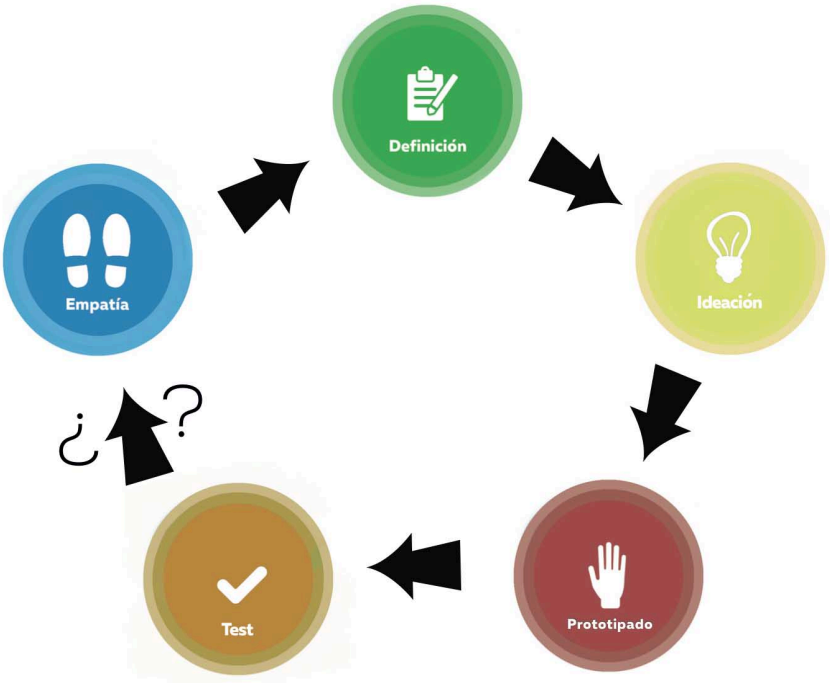
Prototype**:** In this phase, simplified and tangible versions of the most promising ideas are developed. Prototypes allow for experimentation and visualization of how the

solutions might work in practice. Models, diagrams, simulations, or any other form that allows testing the ideas can be created.

Testing: Finally, prototypes are tested with real users to gather feedback. The effectiveness and feasibility of the proposed solutions are evaluated, and areas for improvement are identified. This phase is crucial for refining and optimizing the solutions before their final implementation.

The Design Thinking process is iterative and flexible, which means that the phases can be repeated several times as needed to improve the solutions. By applying this methodology in the educational context, the aim is not only to solve specific problems but also to foster a culture of innovation and continuous adaptation among teachers and students.

Figure 2
Design Thinking stages



Original source: Design Thinking *España*

6.2 Temporal Distribution

Table 4
Calendar

STAGE	ACTIONS	TIMING
Pre-test data collection	*QUACINE* (1)	January
Data analysis	Pre-test Interview Field Diary SWOT	February March
Program design	Ideate	April
Awareness program	Implantation	30th of April
Post-test data collection	*QUACINE* (2)	May
Final draft	Redaction	June

Own Creation

7. Implementation of an Awareness Program for Active Methodologies in Preschool and Primary Education

7.1 Program Objectives

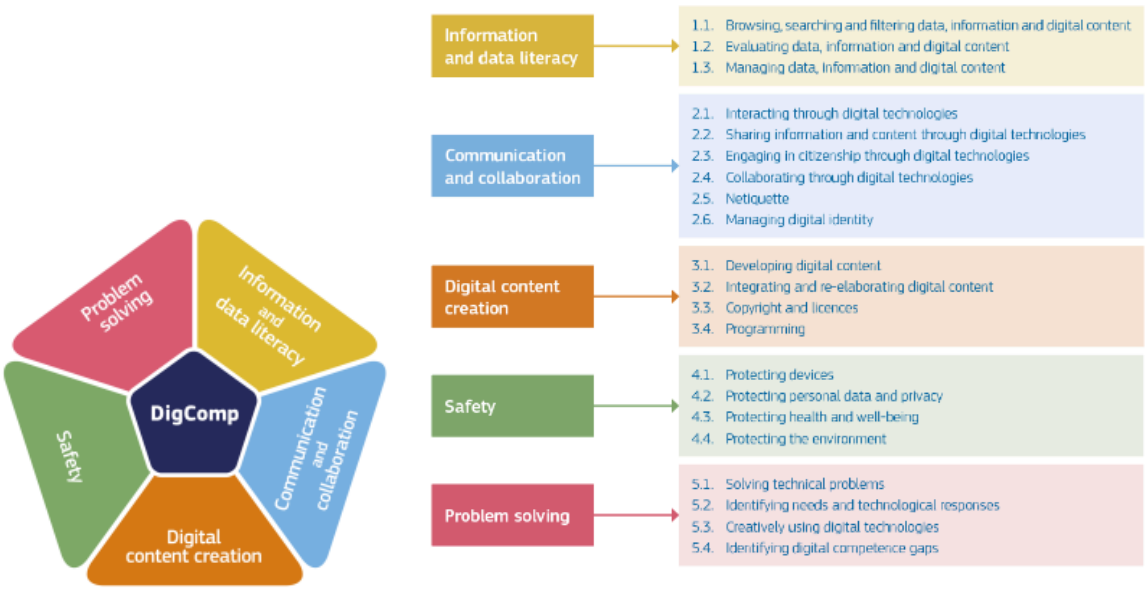
To evaluate the effectiveness of the training regarding the attitudes and digital competencies of the teaching staff.

7.2 Competences

The program aligns with the Common Framework of Digital Competence for Educators (DigCompEdu) established by the European Commission, as developed by Francesc (Viñoles-Cosentino, Sánchez-Caballé & Esteve-Mon, 2022).

These competencies are basically grouped into 5 dimensions: Information and data literacy, Communication and collaboration, Digital content creation, Safety, and Problem Solving. Within these 5 dimensions, a total of 21 teacher competencies in the use of ICT are further detailed. These dimensions and their respective competencies are represented in Figure 3.

Figure 3
DigCompEdu Dimensions



Original source: European Commission (2022). DigComp Framework.

In the Implementation of an Awareness Program for Active Methodologies, the dimensions of Digital Content Creation and Communication and Collaboration are addressed, specifically focusing on Digital Competence and Pedagogical Competence.

Developing Digital Content Competence: This competence focuses on the ability to create and develop digital content effectively, using a variety of digital tools and

media. It primarily belongs to the "Digital Content Creation" dimension in the DigCompEdu framework.

Collaborating through digital technologies Competence: This competence focuses on the ability to collaborate and work as a team using digital tools and platforms. It is directly related to the "Communication and collaboration" dimension in the DigCompEdu framework.

To understand the starting point of our project, it is crucial to assess the initial digital competence of the teaching faculty. Therefore, data collection was conducted on the digital competence level of each member of the faculty, according to Resolution 7th of November de 2023 (DOGV, 2023). This level of digital competence is based on each individual's training in ICT.

Nowadays, four levels are defined: in progress, A1, A2, or B1; but it is planned to increase those levels until B2, C1, and C2 in the future. With the data obtained, the average was calculated, resulting in a representative level of A1 for the faculty.

Table 5
Initial digital competence of the teaching faculty. A1.

Levels	**A1**	**A2**	**B1**
Color	**Interpretation**		
	Level accomplished		
	Level in progress (Lack of hours and/or areas)		
	Level not accomplished (Without any hour done)		

Original source: *OVIDOC, Oficina Virtual del Docent. Generalitat Valenciana.*

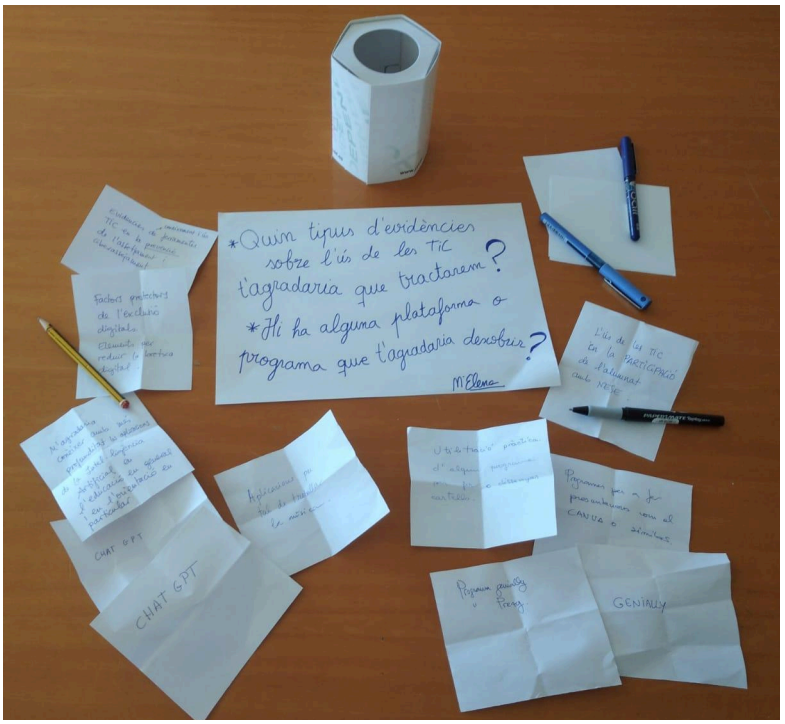
According to the Resolution 4th of May (BOE, 2023), level A1 is understood as "general knowledge of the most used communication technologies in educational contexts and understanding of their purpose," and certification will be achieved when the 3 achievement indicators established in said law are accomplished.

7.3 Basic Knowledge

The selection of the content to be addressed in the training session, was choiced according to the empathize phase from the Design Thinking, making all the participants implicated. A consultation was carried out with the entire teaching staff, aiming to gather all their proposals on which aspects related to the use of ICT in the classroom they would like to address. These responses were grouped into four thematic blocks: actions for the prevention of cyberbullying, artificial intelligence, exploration of interactive presentation platforms, and applications for the classroom that promote inclusive learning. The compilation of ideas aligns with phase 3 of Design Thinking (ideate), where the generation of creative ideas and the exploration of possible solutions to address the identified challenges are encouraged.

Figure 4

Collection of proposed content topics from the faculty



Own Creation

From these four blocks that have shown interest, *applications for the classroom that promote learning with educational inclusion* is selected as the main content. However, the other three blocks will also be addressed in a cross-curricular manner. With these proposals, the following basic knowledge are selected:

- Identification and validation of concerns and perceptions about the use of ICT in the classroom.
- Evidence-based information and legislative and theoretical justification regarding the impact of ICT use on students' cognitive and social development.
- Experimentation with ICT strategies and resources to promote their use in the classroom.

7.4 Training Session

The training session presented below was designed to address the observed needs identified after the initial phases of needs assessment, which revealed a lack of ICT use in the CEIP P.G.B. Additionally, the session was fully designed according to the Design Thinking methodology: phase 2 ideate, the selection of contents described before on 7.3 Basic Knowledge; phase 3 prototype, the design of the session; and phase 4 test, carrying the training session out.

This phase 3 prototype was designed based on the model proposed by Harmer (2015), which emphasizes the importance of structuring learning activities into three distinct phases: presentation, practice, and production (P-P-P). This approach provides an effective framework for facilitating meaningful learning and practical application of acquired knowledge. Additionally, this training session also adopts a challenge-based learning approach, which promotes problem-solving and critical thinking. Now it is described at each stage of the session training.

Figure 5
Training session photo 1

Own Creation

Figure 6
Training session photo 2

Own Creation

Warm Up

The session begins with the Canva presentation of Appendix V. To kick off with a brainstorming session, the participatory tool Mentimeter is used, accessed by participants using their mobile devices to scan a QR code to access the questionnaire. The results are located in section 7.5 Session Training Assessment.

Presentation

Continuing with the Canva presentation, the theoretical part of why to use ICT in the classroom is addressed. Four main reasons are discussed: legislative reasons, motivational factors, enhancement of intrapersonal intelligence, and attention to diversity. These reasons have been elaborated on in section 2. Theoretical Framework.

Practice

During the practice session, a series of activities are initiated in which participants will use digital applications to overcome their fear of using them. The digital platforms selected for the practice stage were: Quizizz, Google Lens, and Quiver. To carry out this phase, the action is contextualized under the narrative of an Escape Room called *La Clau Tecnològica.* In order to escape, participants must complete the challenges (divided into two groups) to obtain the secret code and unlock the chest containing the key to exit.

Production

As a final activity, we move on to the production stage where the focus is on overcoming insecurities to create resources by the participants. To do this, participants will use laptops from the laptop cart in pairs, and they will be tasked with creating a digital activity using the Wordwall platform. Once the activity is created, it will be posted on a digital wall using the Padlet platform. At the end, participants conclude the session with a resource bank created by themselves (Appendix VI).

Assessment

Finally, to promote participatory evaluation and self-assessment of the session, we use the Socratic Wheel technique (Sanmartí, 2020) through the Genially digital platform. The results of this evaluation are shown in Figure 9.

A description of the session procedure is structured in Table 6.

Table 6
Session structure

	ACTIVITY	RESOURCES	INTERACTION	TIME
WARM UP	Teachers share their concerns and perceptions about the use of ICT in the classroom, as well as their previous experiences with technological failures. The goal is to identify and validate the group's concerns and perceptions, creating an open dialogue and mutual support space. This is facilitated through the platform Mentimeter.	PC Projector Mentimeter Mobile Phones	Digital sharing: Individual Oral sharing: Big grup	10 min
PRESENTATION	Evidence-based information is provided on the impact of screen use on students' cognitive and social development. This presentation aims to debunk the belief that ICT use leads to addiction and provide teachers with tools to address this issue in the classroom. Legislative reasons, motivational factors, enhancement of intrapersonal intelligence, and attention to diversity reasons were presented.	PC Projector Canva	Big grup	20 min
PRACTICE	Teachers participate in a practical workshop (Digital Escape Room) where they experiment with strategies to reduce screen time and promote balanced use of technology in the classroom. Escape Room resources	Tablets Chest with lockers QR codes Quiver Quizizz GoogleLens	Grup (4-5) people	20 min
PRODUCTION	Teachers develop a bank resource about the Olympics using Wordwall platform to make digital activities and posting them on Padlet platform. Aiming to address fear of technological failure in the classroom by identifying potential obstacles and strategies to overcome them.	Laptops Wordwall Padlet	Grup (4-5) people	20 min
ASSESS	Participatory evaluation by workshop attendees through a digitized adaptation of the Socratic Wheel technique. Appendix VII - Socrative Wheel.	Genially	Individual self-assessment	10 min

Own Creation

7.5 Training Session Assessment

To assess the effectiveness of the implemented intervention, various strategies were used to collect qualitative and quantitative evidence on the impact of the training on the use of ICT in the classroom. Below are the results obtained:

- Pre-training Knowledge and Initial Expectations Assessment

At the beginning of the training training session (Warm-up stage), a participatory activity was conducted using the Mentimeter platform to assess participants' prior knowledge and initial expectations. Two key questions were formulated:

"What is the main issue you encounter when using ICT in the classroom?"

The results showed that the most perceived difficulties were: The amount of time students spend with screens outside of school and Logistical problems when using technology (both with 7 points). To a lesser extent: Insecurity in the use of ICT and Being alone in the classroom without reinforcement, (3 points each). Results are shown on Figure 7.

Figure 7
"What is the main problem that you find when using ICT in teaching?" - Results.

Original source: Mentimeter

The second question of the Warm Up stage was:

"Describe in one word ICT in the classroom."

The responses were collected in a word cloud (Figure 8), where the most repeated words appeared in a larger size. The highlighted words included "innovation," "resource," "motivation," and "technology," among others. This reflects a variety of perceptions, both positive and challenging, regarding the use of ICT in education.

Figure 8
"Describe in one word ICT in teaching" - Word cloud.

Original source: Mentimeter

These data reflect the main concerns and barriers that teachers face when integrating ICT into their educational practice before starting the testing phase, where negative feelings can be seen such as “perillós” and “comoditat”.

- Participatory Evaluation through the Socratic Wheel

A participatory evaluation was conducted at the end of the workshop using the Socratic Wheel technique (Sanmartí, 2020). This Socratic Wheel was presented digitally through the Genially platform where everyone can participate quickly and anonymously (Appendix VII). It is worth mentioning that this technique was adapted for dynamic implementation, where each participant had to lean towards a factor and place themselves in its gradation (1-10), instead of complementing each factor.

Participants voted individually and anonymously on various factors related to the training received. The results show a high rating in the Motivation factor, followed by Inclusion. They also ranked in Creativity and Innovation, and lastly in Utility and Efficiency. These results suggest a positive perception of the impact of the training on different relevant aspects for teaching practice and are reflected in the following image and the results on Table 7.

Figure 9

Teacher's self-assessment

Own Crean

Table 7

Results from the teacher's self-assessment

	Innovation	Motivation	Inclusion	Creativity	Efficiency	Utility	Unsecurity	Impact
1								
2								
3								
4								
5		1						
6	1							
7			2		1			
8								
9			1	1				
10	1	3		1		1		

Own Creation

8. Evaluation, Evidence, and Results

The purpose of evaluation is to determine the extent to which the quality goals set in the standards associated with the expected learning outcomes are being met after implementing an action. Therefore, evaluation is an improvement tool that facilitates obtaining valid and reliable information about the consequences of specific actions in order to optimize efforts. The results derived from evaluation are fundamental inputs for decision-making, assigning responsibilities, setting goals, defining criteria, determining actions to ensure progress in a coherent, relevant, and sustainable improvement process (Sanmartí, 2020). Evaluation not only leads to practical results but also triggers processes of reflection, criticism, and analysis essential for ensuring the quality and sustainability of educational action, thus contributing to a culture of improvement through the appropriate use of results.

- Questionnaire *QUACINE*

The *QUACINE* questionnaire was used at the beginning of the diagnostic evaluation of this investigation as a pre-test (Traver-Martí, J. A. & Ferrández-Berrueco, R., 2016). At this point and after the awareness program was conducted, it was used again as a post-test to measure the impact it had on improving the attitudes of the educational faculty at CEIP P.G.B. towards the use of ICT.

Of the 21 respondents initially in the pre-test, the number of respondents decreased to 12 in the post-test. This reduction was due to various reasons, including absences and staff changes from the start of the school year until the completion of the program in May. Additionally, some participants were unable to attend the training session, resulting in their exclusion from the subsequent measurement.

The overall result of the pre-test, explained in section 4.2 Findings, showed an average of 4.4 with a standard deviation of 0.3; while in the post-test, there is a generalized improvement with an average of 4.7 and a standard deviation of 0.4.

This research is particularly focused on item 17 of the *QUACINE* questionnaire, as it had the lowest score in the pre-test, centering on the use of ICT in the classroom. In the pre-test, an average of 3.9 with a standard deviation of 0.9 was obtained, while

after the program was carried out, a significant improvement was achieved, with an average of 4.6 out of 5 and a standard deviation of 0.5.

These results demonstrate a notable improvement in the perception and use of ICT in the classroom following the implementation of the training program. The overall average increased significantly, suggesting that teachers have more effectively adopted technologies in their pedagogical practices. The specific improvement in item 17 highlights a positive change in the most critical area initially identified, showing that the intervention successfully addressed one of the main areas of need. These data are reflected on APPENDIX IV.

- Field Diary

Direct observation of the use of ICT in the classroom was carried out using a field diary (Goetz & LeCompte, 1988). This data collection instrument was previously used for the diagnostic evaluation and Triangulation Technique (Denzin, 2006) at the beginning of this research. Now, it is used again as a qualitative data collection instrument for the evaluation of the awareness program. The results were as follows:

Two tutors were observed while using the tablet cart and the laptop cart during their tutoring sessions. Additionally, the use of a tablet as an alternative and augmentative communication tool was initiated for a student with Autism Spectrum Disorder (ASD) at preschool. These observations provided concrete evidence of the use of ICT following the training session.

In conclusion, the combination of post-test results and field diary observations highlights the significant positive impact of the training program on the use of ICT at CEIP P.G.B. The data collected from both instruments corroborate the improvement in teacher attitudes and the increased integration of technology in the classroom.

9. Innovative Action Proposal for Improvement

After the development of the awareness plan and the analysis of the results obtained, the need arises to consider improvement aspects for future implementation of the program. In this regard, the proposal for innovative action for future research on the use of Information and Communication Technologies (ICT) at CEIP P.G.B. aims to expand and deepen the findings obtained in this initial study. Below, several key areas and specific recommendations are presented to guide future research and improvement actions in the educational field:

Expanding the number of training sessions would be crucial to provide teachers with a continuous space for learning and development in the use of ICT in the classroom. By offering more sessions, opportunities would be provided to delve into specific topics, explore new tools and strategies, and address any needs and concerns that may arise during the implementation of digital technologies in the educational process. It can be planned for the *PAF (Projecte de Formació en Centres)* for the following school year.

On the other hand, conducting a Longitudinal Evaluation of the Impact of ICT on Academic Performance would be highly relevant to better understand how the prolonged use of these technologies affects students' academic progress over time. This evaluation would allow for closely monitoring students' development, identifying potential changes in their performance, and analyzing how the continued use of ICT contributes to their long-term learning.

Furthermore, Expanding the Case Study to Other Educational Centres would offer a broader and more diverse perspective on the impact of ICT in education. By conducting similar studies in different school contexts, common patterns and specific differences in the use and effects of ICT on student learning could be identified. This would provide a solid foundation for better understanding effective practices and potential areas for improvement in the integration of ICT into teaching and learning.

10. Conclusions

The conclusions of this research summarizes the objectives and key findings of the research, linking these results with the initial objectives and placing them within the broader context of the field of study. The main aim of the research was “to improve attitudes of preschool and Primary Education teachers towards the use of ICT in the classroom”, identifying existing digital competencies and promoting the implementation of digital activities.

The results indicate a favorable disposition among teaching faculty towards educational innovation, although certain reservations persist regarding the use of new technologies in the classroom. Through the *QUACINE* pre-test, interviews, and field diaries, it was observed that teachers recognize the benefits of technology in making lessons more engaging and facilitating access to educational resources. However, they also express concerns about technological dependency and its impact on students' social and cognitive development, as well as equity in access to technology.

The practical implications of these results suggest that to achieve effective integration of technologies in education, it is crucial to provide teachers not only with technological tools but also with the knowledge and confidence to use them. This could have a significant impact on improving educational quality and preparing students for an increasingly digital world.

Finally, the research recognizes some limitations, such as expanding the number of training sessions and longitudinally evaluating the impact of ICT on academic performance. Additionally, conducting similar studies in other educational contexts would provide a broader and more diverse perspective.

In summary, this research confirms the importance of continuous training and support in the use of ICT in education, highlighting the need for a balanced approach that maximizes the benefits and minimizes the challenges associated with technological integration in classrooms.

11. Bibliographical References

Aguirre, A., Benet, A., Moliner, O., Sales, A., Sanahuja, A. & Traver-Martí, J. (2018). *Técnicas para la participación democrática. La formación para la convivencia democrática en los procesos de mejora*. Castelló de la Plana: Publicacions de la Universitat Jaume I, (132). http://dx.doi.org/10.6035/Sapientia132

Alonso, C. M., & Blázquez, F. (2017). La integración de las TIC en la educación: Retos y posibilidades. *Revista de Educación a Distancia*, 54, 1-23.

Álvarez, P. & Del Río, M. (2002). Innovación educativa: Principios y estrategias. En *Revista de Educación a Distancia*, 12(3), 45-58.

Ayuntamiento de Vila-real. (2014). Datos demográficos. Rtrieved from https://www.vila-real.es/portal/p_20_contenedor1.jsp?seccion=s_fdes_d4_v2.jsp&codbusqueda=659&codResi=1&codMenuPN=596&codMenu=681&layout=p_20_contenedor1.jsp&language=es

Brown, T. (2009). *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*. HarperBusiness.

Boletín Oficial del Estado (BOE). (2022). Resolución de 4 de mayo de 2022, de la Dirección General de Evaluación y Cooperación Territorial, por la que se publica el Acuerdo de la Conferencia Sectorial de Educación, sobre la actualización del marco de referencia de la competencia digital docente. Recuperado de https://www.boe.es/boe/dias/2022/05/16/pdfs/BOE-A-2022-8042.pdf

Impacto de las TIC en el ámbito educativo: ¿Realidades o promesas? En *Revista Latinoamericana de Tecnología Educativa*, 5(1), 7-16.

Cabero Almenara, J. (2015). Tendencias para el aprendizaje digital: de los contenidos cerrados al diseño de materiales centrado en las actividades. El Proyecto Dipro 2.0. *Revista de Educación a Distancia (RED)*, (32). Recuperado de https://revistas.um.es/red/article/view/233041

Cabero Almenara, J. (2016). Impacto de las TIC en el ámbito educativo: Realidades y promesas. *Revista Iberoamericana de Educación a Distancia*, 19(1), 85-104.

Center for Applied Special Technology (CAST). (2018). Universal Design for Learning Guidelines version 2.2. Retrieved from https://www.cast.org

Denzin, N. K. (2006). *Sociological Methods: A Sourcebook*. New York: Aldine Transaction. ISBN 978-13-1512-994-5

Diari Oficial de la Generalitat Valenciana (DOGV). (2018). Resolución de 5 de junio de 2018, de la Conselleria de Educación, Investigación, Cultura y Deporte, por la que se dictan instrucciones y orientaciones para actuar en la acogida de alumnado recién llegado, especialmente el desplazado, en los centros educativos de la Comunitat Valenciana. [2018/5664]

Diari Oficial de la Generalitat Valenciana (DOGV). (2021). DECRETO 72/2021, de 21 de mayo, del Consell, de organización de la orientación educativa y profesional en el sistema educativo valenciano (p. 25506). [2021/6157]

Diari Oficial de la Generalitat Valenciana (DOGV). (2022). DECRETO 106/2022, de 5 de agosto, del Consell, de ordenación y currículo de la etapa de Educación Primaria. [2022/7572].

Diari Oficial de la Generalitat Velenciana (DOGV). (2023). Resolución de 27 de junio de 2023, del secretario autonómico de Educación y Formación Profesional, por la que se aprueban las instrucciones para la organización y el funcionamiento de los centros que imparten Educación Infantil de segundo ciclo y Educación Primaria durante el curso 2023-2024.

Diari Oficial de la Generalitat Valenciana (DOGV). (2023). Resolución de 7 de noviembre de 2023, de la Dirección general de personal docente, de la Conselleria de Educación, Universidades y Empleo, por la que se regula el procedimiento para la acreditación de la competencia digital docente. [2023/11339].

Design Thinking España. (s.f.). Recuperado de https://xn--designthinkingespaa-d4b.com/

European Commission. (2022). DigComp Framework. Recuperado de https://joint-research-centre.ec.europa.eu/digcomp/digcomp-framework_en

Ferrández, M.R. (2003) La calidad en la educación. Del concepto de calidad a la complejidad de su conceptualización en el hecho educativo *Conferencia impartida*

en las I Jornadas sobre gestión, dirección y calidad en los centros educativos Universitat Jaume I

Gardner, H. (2019). *Inteligencias múltiples: La teoría en la práctica* (Edición revisada). Paidós. ISBN 8449336252

Gimeno Sacristán, J. (2008). *Educar por competencias, ¿qué hay de nuevo?*. Morata. ISBN 8471125285

Goetz, J. P., & LeCompte, M. D. (1988). *Etnografía y diseño cualitativo en investigación educativa*. Madrid: Morata. ISBN: 978-84-7112-320-6

Harmer, J. (2015). *The Practice of English Language Teaching* (5th ed.). Pearson Education Limited. ISBN 978-1447980094

Hervás, R., Moreno, M., Nabarrete, C. & Sotos, P. (2006). *Materiales para el diseño e implementación de un sistema de gestión de calidad en centros educativos: guía de planificación estratégica*. Edit. Generalitat Valenciana. Valencia, España. ISBN: 84-7890-554-5

Hymes, D. (1972). *On Communicative Competence*. In J. Pride & J. Holmes (Eds.), Sociolinguistics (pp. 269-285). Harmondsworth: Penguin Books.

Ley 4/2018, de 21 de febrero, por la que se regula y promueve el plurilingüismo en el sistema educativo valenciano. Boletín Oficial del Estado, núm. 63, de 13 de marzo de 2018, páginas 29292 a 29308. Recuperado de https://www.boe.es/eli/es-vc/l/2018/02/21/4/dof/spa/pdf

Ley Orgánica 3/2020, de 29 de diciembre, por la que se modifica la Ley Orgánica 2/2006, de 3 de mayo, de Educación [LOMLOE]. Boletín Oficial del Estado, núm. 340, de 30 de diciembre de 2020, páginas 122868 a 122953. Recuperado de https://www.boe.es/diario_boe/txt.php?id=BOE-A-2020-17264

Marqués, P. (2018). Innovación educativa y TIC: Claves para la transformación de la enseñanza. *Revista de Innovación y Buenas Prácticas Docentes*, 5(2), 123-139.

Mootee, I. (2013). *Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School*. Ed. Wiley. ISBN 978-1-118-62012-0

Rodríguez, G. (2010). La Entrevista como Método de Investigación. *Revista Iberoamericana de Educación*, 52(1), 1-15.

Sanmartí, N. (2020). *Evaluar y aprender: un único proceso*. Barcelona: Octaedro. ISBN 9788418083587

Traver-Martí, J. A. & Ferrández-Berrueco, R. (2016). Construcción y validación de un cuestionario de actitudes hacia la innovación educativa en la universidad. *Perfiles educativos*, *38*(151), 86-103. https://doi.org/10.22201/iisue.24486167e.2016.151.54917

Viñoles-Cosentino, V., Sánchez-Caballé, A., & Esteve-Mon, F. M. (2022). Desarrollo de la Competencia Digital Docente en Contextos Universitarios. Una Revisión Sistemática. *REICE. Revista Iberoamericana Sobre Calidad, Eficacia Y Cambio En Educación, 20(2).* https://doi.org/10.15366/reice2022.20.2.001

12. Appendices

APPENDIX I - *QUACINE*

QUACINE
CUESTIONARIO DE ACTITUDES FRENTE A LA INNOVACIÓN EDUCATIVA
(Adaptación para ed. primaria e infantil)

A continuación te presentamos unas afirmaciones sobre actitudes y creencias frente a la renovación y la mejora educativas. Expresa si estás de acuerdo, en desacuerdo o indiferente frente a estas afirmaciones.

Sexo	Hombre ( ) Mujer ( )
Nombre y apellidos	
Papel	Alumno/a ( ) Profesor/a ( )
Edad	

Puntúa de 1 a 5, sabiendo que:
- El 1 significa muy en desacuerdo.
- El 2 no estás de acuerdo.
- El 3 no tienes aún una opinión definida.
- El 4 estás de acuerdo.
- El 5 estás muy de acuerdo.

Rodea con un círculo la puntuación escogida. Gracias.

PASE: ( )1º ( )2º ( )3º CÓDIGO:

N	ÍTEM	PUNTUACIÓN				
1	Estoy convencido que para llevar al aula propuestas innovadoras el profesorado tiene que estar en continuo proceso de formación y renovación.	1	2	3	4	5
2	Considero que el profesorado tiene que mediar en el aprendizaje del alumno realizando funciones de guía y orientación del mismo.	1	2	3	4	5
3	El rendimiento de los alumnos mejorará si el profesor se muestra cercano y accesible a ellos.	1	2	3	4	5
4	El profesorado debe implicarse en la tutorización del aprendizaje de los alumnos.	1	2	3	4	5
5	El alumnado valora positivamente que la educación obligatoria le capacite como persona con pensamiento crítico y autonomía personal.	1	2	3	4	5
6	Estoy convencido que cuanto más alta sea la motivación del profesorado hacia la enseñanza, mayor será la del estudiantado hacia el aprendizaje.	1	2	3	4	5
7	Considero que para ser un buen profesor o profesora se hace realmente necesario implicarse en el hecho educativo y en la enseñanza.	1	2	3	4	5
8	Creo que para dar clases en el colegio, tan importante es conocer los contenidos y la legislación vigente, como saber enseñar.	1	2	3	4	5
9	Es importante que el profesorado dedique tiempo a preparar sus clases.	1	2	3	4	5
10	Para poder realizar innovación educativa la docencia debería tener mayor reconocimiento administrativo.	1	2	3	4	5
11	Pienso que la organización de centro (equipo directivo, ciclos, coordinadores…) influye positivamente en la mejora educativa.	1	2	3	4	5
12	Estoy convencido de que si la docencia se considerara más que la investigación se favorecería la innovación docente.	1	2	3	4	5
13	El estudiantado valorará positivamente unas ratios menos elevadas en las aulas.	1	2	3	4	5
14	Pienso que en el colegio debería darse el mejor contexto para investigar sobre la innovación educativa.	1	2	3	4	5
15	Creo que para el éxito de las propuestas educativas en la enseñanza universitaria es esencial adaptar a la nueva realidad la metodología y los materiales.	1	2	3	4	5
16	Considero que para mejorar la práctica docente es necesaria la utilización de nuevos métodos de enseñanza acordes con la realidad profesional y social.	1	2	3	4	5
17	Considero importante incorporar la utilización de las TIC y de los lenguajes audiovisuales para mejorar la docencia en el aula.	1	2	3	4	5

APPENDIX II - Interview Script

INTERVIEW			
GENERAL DATA OF THE INTERVIEWED TEACHERS			
(7) N. Honrubia	woman	39 years	non-stable teacher
(11) I.M. V.	woman	59 years	stable teacher

INTERVIEW SCRIPT

DAILY LIFE

1) ¿Qué tipo de tecnologías utilizas en tu día a día fuera del ámbito educativo?
2) ¿Cómo crees que estas tecnologías facilitan tus actividades diarias?
3) ¿Has experimentado algún beneficio específico al utilizar tecnología en tu vida cotidiana?

ICT IN EDUCATION

4) Considerando los avances tecnológicos actuales, ¿crees que las tecnologías pueden ser útiles en el entorno educativo?
5) ¿Has tenido alguna experiencia previa utilizando tecnología en el aula? Si es así, ¿cómo fue?
6) ¿Qué crees que podría ser un obstáculo para implementar tecnología en tu práctica docente?
7) ¿Qué ventajas crees que podría haber al integrar tecnología en la enseñanza?
8) ¿Has observado cambios en la forma en que los estudiantes aprenden o se involucran cuando se utilizan tecnologías en el aula?
9) ¿Qué preocupaciones o reservas tienes sobre el uso de tecnología en la educación?

RESOURCES AND TEACHING TRAINING

10) ¿Has tenido alguna formación en el uso de tecnología para el aula? Si es así, ¿cómo fue tu experiencia?
11) ¿Crees que la falta de acceso a tecnología adecuada podría ser una barrera para su implementación en el aula?
12) ¿Qué crees que se podría hacer para superar las reticencias hacia el uso de tecnología en el ámbito educativo?
13) ¿Qué aspectos crees que deberían considerarse al seleccionar y utilizar tecnología en la enseñanza?
14) ¿Qué papel crees que deberían desempeñar los maestros en el proceso de integración de la tecnología en el aula?
15) ¿Cómo piensas que podrías sentirte más cómoda y segura al implementar tecnología en tu práctica docente?

APPENDIX III - Pre-test Data

		Sexo	Edad	Permanent	Dimensión 1 (i14)	Dimensión 2 (i1)	(i15)	(i16)	(i17)	Dimensión 3	(i2)	(i3)	(i4)	Dimensión 4	Dimensión 5 (i5)	(i6)	(i7)	Dimensión 6	(i8)	(i9)	Dimensión 7	(i10)	(i11)	(i12)	(i13)	Dimensión 8		
1	A. Bartoll	M	59	N	5	5	4	4	3	3,666666667	4	4	4	4	3	4	5	4,5	5	4	4,5	4	4	3	3	3,5		
2	M	M	40	S	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4,5		
3	C. Martínez	M	22	N	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4,5		
4	A. Ramo	M	50	S	5	5	5	5	4	4,666666667	5	5	5	5	3	5	5	5	5	5	5	5	5	5	5	5		
5	J.R. Ortega	H	61	S	4	5	4	4	4	4	5	5	5	5	3	4	5	4,5	5	5	5	5	5	3	4	4,25		
6	N. Honrubia	M	39	N	4	4	5	4	2	3,666666667	4	5	5	4,666666667	3	5	5	5	5	5	5	4	3	3	4	3,5		
7	S. M. J.	M	59	S	3	2	5	4	4	4,333333333	4	5	5	4,666666667	4	4	5	4,5	5	4	4,5	3	4	3	5	3,75		
8	L. Chulvi	M	57	S	4	5	5	4	4	4,333333333	5	5	5	5	5	5	5	5	5	5	5	5	3	4	5	4,25		
9	L. Gómez F.	M	48	N	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
10	I. M. V.	M	46	S	5	5	4	4	3	3,666666667	4	4	4	4	4	4	4	4	5	5	5	5	5	4	5	4,75		
11	R. Fernández	H	43	S	4	4	5	4	3	4	3	5	4	4	3	5	5	5	5	5	5	4	4	4	3	3,75		
12	M.L. Palmares	M	55	N	5	4	4	4	3	3,666666667	5	3	5	4,333333333	5	4	5	4,5	5	5	5	2	4	4	5	3,75		
13	D. Roldán	H	42	S	4	5	5	5	3	4,333333333	5	5	5	5	2	5	5	5	5	5	5	4	5	5	5	4,75		
14	H. Nebot	M	37	N	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
15	A. González	M	46	S	4	5	3	4	3	3,333333333	4	5	3	4	3	5	5	5	2	5	3,5	2	5	4	5	4		
16	M.J. Gumbau	M	61	S	5	5	5	4	3	4	5	5	5	5	3	5	5	5	5	4	4,5	4	5	4	5	4,5		
17	L. Gómez P.	M	35	N	3	5	4	5	5	4,666666667	5	5	4	4,666666667	3	4	5	4,5	5	4	4,5	5	5	4	5	4,75		
18	I.L. Gozálbo	M	61	S	4	5	5	5	5	5	5	5	5	5	4	2	5	3,5	5	5	5	5	5	4	4	4,5		
19	R. Agut	M	48	S	4	5	3	4	4	3,666666667	5	5	5	5	4	5	5	5	5	4	4,5	5	5	5	5	5		
20	S. H. S.	M	30	N	5	5	5	5	4		5	5	5	5	4	5	5	5	5	4	4,5	5	5	5	4	4,75		
21	C. Navarro	M	63	S	4	5	4	5	5		5	5	5	5	3	4	5	4,5	5	5	5	4	4	3	5	4		
		M=18	47,714	S=13	4,380952381	4,714285714	4,523	4,476	3,904	4,301587302	4,66	4,80	4,7	4,73015873	3,761904762	4,52	4,95	4,738095238	4,85	4,7	4,785714286	4,333	4,571	4,047	4,523	4,369047619	TOTAL AVERAGE	4,472718254
		H=3		N=8		Standard Deviations:			0,9						0,94365046		0				0,564637345							0,347795526

APPENDIX IV - Post-test Data

		Sex	Age	Permanent	DigCompEdu	Dimension 1 (i14)	Dimension 2 (i1)	(i15)	(i16)	(i17)	Dimension 3	(i2)	(i3)	(i4)	Dimension 4	Dimension 5 (i5)	(i6)	(i7)	Dimension 6	(i8)	(i9)	Dimension 7	(i10)	(i11)	(i12)	(i13)	Dimension 8		
1	A. B.	M	59	N	1	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	3	4	4	4		
2	J.R. O.	H	61	S	1	5	5	4	4	5	4,333333333	5	4	5	4,666666667	3	4	5	4,5	5	4	4,5	4	5	4	5	4,5		
3	N. H.	M	39	N	0	4	5	5	4	4	4,333333333	5	5	5	5	3	5	5	5	5	4	4,5	5	4	5	4	4,5		
4	S. M. J.	M	59	S	1	5	5	5	4	5	4,666666667	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	4,75		
5	L. G. F.	M	48	N	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
6	I. M. V.	M	46	S	1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
7	R. F.	H	43	S	2	5	5	5	5	5	5	5	5	5	5	3	5	4	4,5	5	5	5	5	5	5	5	5		
8	A. G.	M	46	S	2	5	5	5	5	4	4,666666667	4	5	5	4,666666667	3	5	5	5	4	5	4,5	3	5	5	5	4,5		
9	M.J. G.	M	61	S	1	4	4	4	4	4	4	4	5	5	4,666666667	3	4	5	4,5	5	4	4,5	5	5	4	5	4,75		
10	L. G. P.	M	35	N	2	5	5	5	5	5	5	5	5	4	4,666666667	5	4	5	4,5	5	5	5	5	5	4	5	4,75		
11	R. A.	M	48	S	2	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	4	5	5	5	4,75		
12	S. H. S.	M	30	N	1	5	5	5	5	4	4,666666667	4	5	5	4,666666667	5	5	5	5	5	5	5	5	5	4	5	4,75		
		M=18	47,91666667	S=13	1,166666667	4,833333333	4,916666667	4,833	4,666	4,6666	4,722222222	4,75	4,91	4,9	4,861111111	4	4,75	4,9166	4,833333333	4,91	4,75	4,833333333	4,666	4,75	4,5	4,833	4,6875	TOTAL AVERAGE	4,7109375
		H=3		N=8			Standard Deviations:			0,4923					0,953462589		0				0,380693494							0,296630509

APPENDIX V - Canva presentation (Training Session)

3 PRACTICE

ESCAPE ROOM

La clau tecnològica

Esteu atrapats en l'escola i l'única manera d'eixir és demostrar el vostre domini de les TIC.

La vostra missió és completar una sèrie de desafiaments tecnològics per trobar les claus que vos permetran obrir la porta i escapar.

El rellotge està en marxa!

PASSOS *3 grups

1. Recolliu el *kit* d'escapament
2. Recopileu les xifres per descobrir el cofre
3. Compartiu amb tots/es el vostre resultat

DESAFIAMENT ACONSEGUIT

4 PRODUCTION

CREEM UN BANC DE RECURSOS

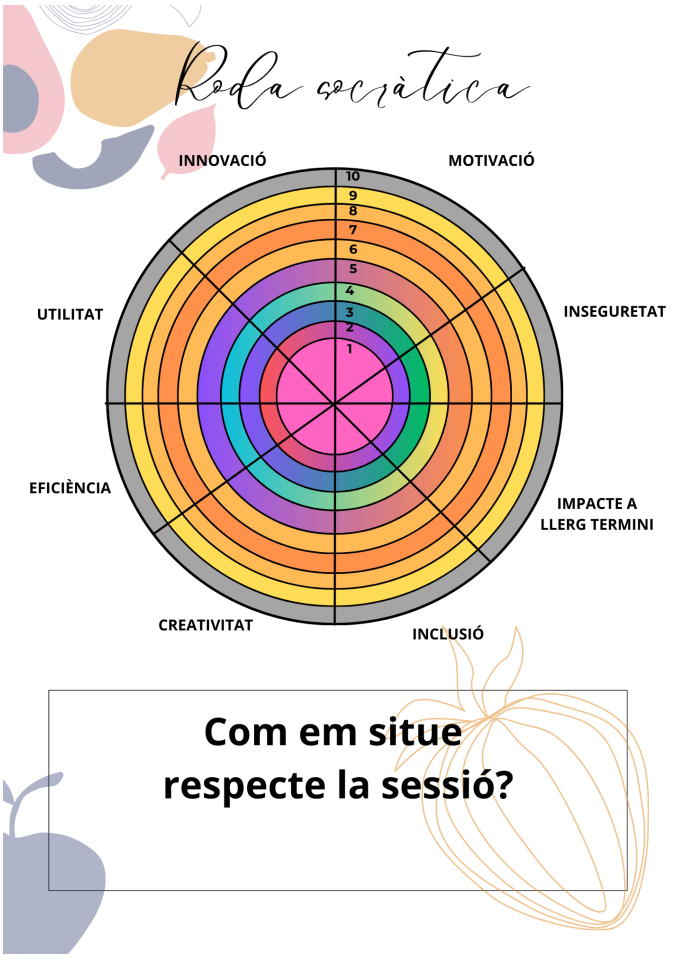
PASSOS * per parelles

1. Utilitzem els portàtils
2. Accedim a Wordwall
3. Escollim un recurs i creem l'activitat
4. Compartim en :Padlet els recursos

5 AVALUACIÓ PARTICIPATIVA

RODA SOCRÀTICA

(Aguirre et al., 2018)

APPENDIX VI - Padlet

APPENDIX VII - Socrative Wheel