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Research article

The didactic laboratory of the pedagogical museum of Castelló. Development of a proposal for action through PAR processes

El laboratorio didáctico del Museo Pedagógico de Castelló. Desarrollo de una propuesta de acción mediante procesos de IAP

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Abstract

Introduction: The Pedagogical Museum of Castelló, located at Jaume I University, is dedicated to preserving the educational heritage of the region by restoring and exhibiting objects linked to the history of education. It also serves as a center for training, research, and pedagogical innovation. In this context, this study proposes the creation of a didactic laboratory that will give a second life to the materials housed in the museum. **Methodology:** Participatory Action Research methodology was used, allowing for the collection of knowledge from various stakeholders to design an action plan based on their experiences and needs. Eleven people participated, including active and retired teachers, students of Early Childhood Education and

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the Master's program in Psychopedagogy, as well as university administrative and service staff. **Results:** The findings reflect a shared vision of the laboratory as a space for exploration and active research, transcending mere exhibition to become a living tool for knowledge construction. **Discussion:** Michel Foucault's concept of "archive" served as a theoretical basis for understanding how educational heritage can generate new forms of knowledge. **Conclusions:** The project promotes a reinterpretation of the museum's historical materials, proposing a laboratory where educational memory is transformed into pedagogical innovation.

Keywords: Pedagogical Museum; didactic laboratory; teacher training; participatory research.

Resumen

Introducción: El Museo Pedagógico de Castelló, ubicado en la Universidad Jaume I, se dedica a preservar la memoria educativa del territorio, restaurando y exhibiendo objetos vinculados a la historia de la educación. Al mismo tiempo, actúa como un centro de formación, investigación e innovación pedagógica. En este contexto, el presente estudio propone la creación de un laboratorio didáctico que otorgue una segunda vida a los materiales conservados en el museo. Metodología: Se utilizó la metodología de Investigación-Acción Participativa, lo que permitió recoger el conocimiento de diversos actores implicados para diseñar una propuesta de acción fundamentada en sus experiencias y necesidades. Participaron 11 personas, entre ellas docentes en activo y jubilados, estudiantes de los grados de Educación Infantil y del máster en Psicopedagogía, así como personal de administración y servicios de la universidad. Resultados: Los hallazgos reflejan una visión compartida del laboratorio como un espacio de exploración e investigación activa, que trasciende lo expositivo para convertirse en una herramienta viva de construcción de conocimiento. Discusión: El concepto de "archivo" de Michel Foucault sirvió como base teórica para entender cómo el patrimonio educativo puede generar nuevas formas de saber. Conclusiones: El proyecto impulsa una resignificación de los materiales históricos del museo, proponiendo un laboratorio donde la memoria educativa se transforma en innovación pedagógica.

Palabras clave: Museo Pedagógico; laboratorio didáctico; formación docente; investigación participativa.

1. Introduction

This work addresses the proposal for the creation of a didactic laboratory that provides a suitable place and tools to give a second life to the material collection of the Pedagogical Museum of Castelló (MPdC).

The MPdC has a historical collection of school and didactic materials that has been acquired and stored by different people from the XX century until today. Although some pieces have been lost or plundered over these years, the museum tries to preserve, safeguard, and restore all the collection, which allows to follow the educational history of the Province of Castelló. A history with contrasts, as the morphology of its territory, which is reflected in the number of pieces that rest on its shelves.

But the MPdC does not define itself as a school museum aimed at the preservation and exhibition of the educational patrimony it safeguards, but it intends, following the ideas of Bartolomé Cossío when he created the National Pedagogical Museum (MPN), to be a space for educational innovation and teacher training.



For this reason, it proposes opening a didactic laboratory where it is also possible give a second life to the material collection, based on Michel Foucault's concept of Archive (Jové et al., 2022).

1.1. Initial Teacher Training in Castelló

The MPdC is currently located at the Faculty of Human and Social Sciences (FHSS) of the University Jaume I (UJI). It is a young University, heir to the Teacher Training Studies that from the end of the XIX century, and thanks to the opening in 1898 of the Normal School, had their roots in the city of Castelló. Even earlier, in 1841, there was already a Normal School for Boys, located at the convent of the Poor Clare nuns. This school remained open only during five years (Salvador, 2001), since the Provincial Council decided to invest the money allocated to its operation in offering the 4th year of High School (Beltrán, 2001).

Although it was a short period of time, the seed of the Teacher Training Studies had already been planted in Castelló. It was at the beginning of the XX Century when, by Decree, an Elementary Normal School was created, located in the same convent where these studies had been taught half a century before (Salvador, 2001). From then on, the growth of this Teachers' School was constant, "in the year 1913, it obtained the status of Higher Education Institution, [...] in 1916 it moved to the building of the Ribalta High School,[...] and from 1922, some students started to appear in the qualification records, in a very small number" (Salvador, 2001, p. 23), until 1932, when we can find the first boys list. Later, it became a mixed gender Normal School.

The political events of the Second Republic involved many advances in Education, and in the hopes placed in the Professional Plan of 1931, which, due to the subsequent Civil War and the new Government, entered a significant decline. The thought of that age can be observed in the fact that, in the Normal School, students were again separated by sex, even in the fact that the school was moved to the new building located at Herrero street, where there were differentiated and symmetric spaces for both the Normal School for Girls and the Normal School for Boys (Salvador, 2001).

As this author states, with the new General Education Act of Villar Palasí (1970), both schools merged into a single University School of Primary Education Teachers, which was part of the University of Valencia. During these years, we can again observe changes that reflect some progress in Education. And once in Democracy, in 1991, the Normal School stopped being a separate centre and became part of the new University Jaume I.

1.2. The National Pedagogical Museum

In the second half of the XIX Century, and after the universal exhibition held in London in 1851, a movement to create pedagogical museums arose in Europe (Martí, 2022). Although the characteristics of these new spaces dedicated to education differed, all of them never ceased to be "spaces for the dissemination of education research and innovation, supplying the training that other institutions do not offer" (Álvarez, 2010, p. 144-146). And this is what Bartolomé Cossío tried to achieve after knowing about the European Education Museums created in the middle of the XIX century. They were framed within the international education trend on "positive" education, where the goal was the exhibition of school material (Álvarez, 2010).



It being understood that following this movement the new National Pedagogical Museum was not expected to be far-reaching, the body created in 1882 by the Free Teaching Institution, and which he himself started to chair, was presented as a place for educational innovation and teachers' training, given the major shortcomings of the schooling process in Spain (Otero, 1990).

What Cossío proposed was to change the concept of museum from being a "static exhibition of teaching materials" to a "live process which needs to be observed in activity" (Otero, 1994, p. 249). Cossío's paradox is that, in his view, museums are interested in the artist's work, whereas in a pedagogical museum the most important thing is the activity conducted to get the product, not the product itself, which at the end would be the student. In a pedagogical museum, the activity is what really interests, thus, the essence of a pedagogical museum is found in "the live school" (Otero, 1994, p. 251).

Driven by the same ideals, different Provincial Pedagogical Museums started to emerge throughout Spain, such as the ones in Cordoba, Palma, or Santander. And with these examples, in the Province of Castelló, many voices were raised asking for the mobilization of prominent individuals in the education sector who got involved in this movement to accelerate the creation of the Pedagogical Museum (Martí, 2022). But it would not be until 1926 when the agreement on the Creation of the Provincial Pedagogical Museum of Castelló was signed (Terol, 2022).

1.3. The Pedagogical Museum of Castelló

Despite the promises and agreements reached, a decade later, the teacher José Sánchiz Asensi expressed, in the Education Gazette (Martí, 2022), his huge disappointment for still not having the Provincial Pedagogical Museum in Castelló. However, the spark that had ignited the creation of different provincial pedagogical museums, and the claims for creating one in Castelló would not get extinguished. The people linked to the Teacher Training Studies in Castelló understood the importance of the creation of the provincial museum, and still hoped that it became a reality. For this reason, they preserved different pedagogical materials while the Teacher Training Studies were moved to another place.

The material collection that could be safeguarded throughout the XX century suffered a severe plundering when moving to the campus Borriol I, as well as during its following relocation in the FHSS of the UJI (Terol, 2022). From then on, the teachers of the former Department of Education, with the support of the Dean's Office of the FHSS, worked to define a stable historical and ethnological collection, seeking to preserve, restore and disseminate the collection of the former Teachers' Training School of Castelló.

Thanks to the celebration of the centenary of the opening of the first Normal School for Girls in Castelló, in 2001, it became evident the need for creating a space that could safeguard all the educational material and immaterial collection of the province of Castelló. This space should be the Pedagogical Museum of Castelló (MPdC), project that continued to be inherited by teachers, although it could not be implemented. At that moment, some negotiations were undertaken to achieve it, but it was not until 2014 when, officially the museum as such opened, coinciding with the changes in the team of the Dean's Office of the FHSS (MPdC, s/f; Safont, 2021; Terol, 2022).

With these facts as the starting point, the MPdC takes up this initiative, supported by the ideas of Bartolomé Cossío, with the firm intention of moving towards a project that is regarded as a driver of innovation and pedagogical questioning in its territory.



Nowadays, the museum is integrated in the cultural model UJI-encultura programme, being part of the Sociocultural Activities Service of the UJI (MPdC, 2023; Terol, 2022).

The MPdC's philosophy is based on the idea of network and aims at connecting different nodes in a horizontal and inclusive way, establishing relationships of cooperation among them (Jové et al., 2022). It also seeks to contribute to structure the territory of the Province of Castelló, making visible the wide range of existing educational projects, by relating them. To make their pedagogical mission a reality, their actions involve mounting of exhibitions; tasks and research projects; cataloguing and restoring the materials of the former Teachers' Training School; finding, recovering, and restoring different materials; and recovering and disseminating the knowledge about the educational history of the villages of Castelló (MPdC, 2023; Terol, 2023).

The MPdC has a very heterogeneous collection, which includes from school materials from the last century to relatively recent technological objects, which have become obsolete. And at this point is when the idea of giving a second life to all this patrimonial and educational collection arises. The museum does not conceive the idea that the pieces remain forever on the shelves of the storage room. In addition, the exhibition of the pieces to the public in a conventional way falls short if, as Sergi Selma, professor of Didactics of Social Sciences and promoter of the Didactic Laboratory, sates, what they want is that the pieces move around, and it is the student who gives them use (Terol, 2022), to create a space for reflection and knowledge thanks to the work carried out with the pieces of the museum.

In order that the pedagogical museum carries out the training task, as Cossío defended, the collection of the MPdC is presented as a unique opportunity of incalculable value. This collection has now incorporated more contemporary materials from the field of Didactics of Mathematics. For this reason, in the MPdC are firmly committed to give a second life to this material, following Michel Foucault's concept of Archive (Jové et al., 2022; MPdC, 2023).

1.4. The didactic Laboratory in the MPdC

In accordance with the definition of the concept of laboratory as a space endowed to conduct research or scientific work (AVL, s/f), the idea of didactic laboratory is understood as a space created to conduct research within the pedagogical field.

The use of the didactic laboratory goes beyond a didactic strategy. This space opens a field of research for the students, moving from the philosophy of practical teaching based on theory to a new model of didactic intervention at the university. According to Gavaldà and Santisteban (2002), this research model facilitates a more autonomous learning, through practical activities and debates.

The aim is to stop understanding it as an academic space where laboratory exercises are used as teaching tools to show the knowledge acquired in the teaching-learning process (Traba, 2009), moving towards an idea closer to the one understood by Barolli, Laburú and Guridi (2010) where "the didactic laboratory is understood as a research process in analogy to knowledge production".

Thus, as stated by Grijalba and Orozco (2022), with Freire's postulates of critical pedagogy, the didactic laboratory becomes a space for knowledge problematization, breaking away from the traditional forms and established structures. From these approaches, students must build their own knowledge thanks to their research conducted with the pieces of the MPdC and the knowledge built by the teachers who used them.



Barolli *et al* (2010) also identify, as objectives assigned to the laboratory, the development of scientific attitudes and a scientific research spirit. And València-Medina and Orantes (2021) recognize it as a space where it is possible to emphasize future teachers' self-knowledge in as much as it is considered "a continuous and dynamic process that, by means of effort, reflection and self-awareness, allows the individual to have a perception of him/herself, [...] from which being able to define his/her professional identity and develop his/her personality" (Boixadós, *et al*, 2017).

In addition, it lies behind the idea of integral educational project of Rentería-Jiménez and Calle (2021), according to which the educational act must be in line with the philosophy of giving identity to the territory where the school is located. In this sense, the opportunity of working with the materials of the MPdC becomes unique and exceptional when linking teachers' training with the history of the Teacher Training Studies in the Province of Castelló.

1.5. Foucault's archive and the MPdC's living memory

The great changes undergone by Spain and the Province of Castelló, in its political and social context throughout the XX century, have also been inevitably reflected in Education. One of the first changes is shown by the passion for school material at the beginning of the last century, which interrupted the educational and school scene (Jové *et al.*, 2022).

One might conclude that those pieces that have overcome the passage of time and constitute the material collection of the MPdC have been well protected behind the glass; that these are pieces with only one last function left to cover which is to be exhibited, to be seen as a memory and legacy of the educational past of the territory, since the technological evolution has made them become obsolete if we refer to the use for which they were created.

However, as stated by Jové *et al.* (2022), "as any element of our general historical heritage, the educational one must be recovered, interpreted, located in its context, valued, preserved and disseminated to be known by teachers and students" (p. 232).

For this reason, the MPdC's intention is to give a second life to the material collection with Foucault's idea of archive, which provides the opportunity to defend against the anachronism that threatens these pieces. It is possible thanks to the way in which it widens and redefines the way of examining some objects, which are carriers of unique histories (Olarte, 2012). Foucault, with his idea of Archive, does not refer to the collection of documents neither to the data record nor the institution.

His idea of archive considers all these physical objects and events occurred as active agents that constitute a contemporary cultural and social memory, a general system of the formation and transformation of statements. Statements that are understood as the concepts that govern the discursive order, with some conditions and domain of appearance (Guash, 2022; Pereira, 2019).

When Foucault referred to the archive of a culture, he did not talk about those works or moments that today we consider remarkable. In his view, the most distinctive works only reflect the discourse expressed by the authoritarian institutions and elites. Thus, the archive is used as a power and control tool, establishing hierarchies and dominant discourses (Tello, 2016). His radical innovation in working with primary sources made that philosophers and historians accused him of relying on works which were considered mediocre, as if, for that reason, they were less historical or influential.



According to the French philosopher, what represented a society the most was the customary readings and dominant views (Olarte, 2012). That is, the most common in the present day is what better defines a community in the future.

In addition, Foucault suggests understanding the history by removing the closed time units. In his view, the archive located in the present never ceases to interpret the reality and is constantly defining the past (Estrada, 2014). He considers the archive as a place to store information, not in a neutral and mechanical way, but as a source of knowledge and power essential for a community. The work conducted on the archive "is a way of penetrating the past, the collective and individual memory, and the characteristics of the place and public domain" (Guash, 2022, p. 385).

And to make this possible, it is necessary to reflect on the archive, which considers more than one reality, none of them counterfeit, and needs new approaches to make them rise. In the archive, unstable and uncertain, there are many answers to questions that have not been asked yet (García, 2015). To become what it has not yet become, it needs from the emergence of new readings on the events that happened in former times and being in continuous movement and reinterpretation.

Thus, instead of referring to the archive of the MPdC as static and passive physical objects of the educational activity of Castelló, and to the museum as the custodian of the heritage, with the concept of archive, they are considered active agents that can provide feedback on current pedagogical knowledge. Given that, as stated by García (2015), the activity performed today on the archive's implicit memory will help to reach a higher understanding of the present day and will suggest new readings that will intervene in the future.

2. Metodología

The MPdC is characterized by being a space where hierarchies evaporate, and where each voice is listened to in the same way, meeting everyone's personal and professional characteristics. Thus, the elaboration of a proposal for the creation of its Didactic Laboratory (DL) could not be conducted from another perspective different to the collaboration of the agents involved in this project. For this reason, it was decided to use Participatory Action Research (PAR), a qualitative methodology with which it was intended to gather information to make decisions that transform and improve the reality studied (Serrano, 1994).

2.1. Qualitative model

In education research, qualitative models allow to delve into the lives of the teachers, students, and the educational community in general. These models allow to listen to their histories, understand their challenges and discover how these people are linked to their environment (Rojas, 2019). These models are used in the educational field due to the willingness to understand and deepen people's beliefs, ideas, and motivations (Guerrero, 2016), by means of talks, observations and analysis of texts and documents, to be able to create a complete and detailed portrait of the context.

The research herein, focused on a specific case, is conducted without the objective of generalizing the solution to this problem to other fields or contexts (Bonilla and Rodríguez, in Guerrero, 2016). When addressing this research, we tried to understand the "why" and the "how" of the creation of the Didactic Laboratory (DL). To achieve it, we considered both the needs and possibilities offered by the MPdC, as well as the fields involved, and the people who are part, on a global scale, of the Teacher Training Studies at the UJI.



As Rojas rightly says (2019), to engage participants not only in the research process to create the Didactic Laboratory, but also to involve them in the corresponding solution, it is necessary to conduct Participatory Action-Research (PAR).

2.2. Participatory Action-Rasearch

The people and groups who participate in the MPdC, and who will also be part of the Didactic Laboratory, are very different. For this reason, in this research, we have tried to include different perspectives to create the proposal for the Didactic Laboratory. Thus, the PAR was an ideal model to face this challenge. This idea coincides with the one shared by Serrano (1994) and Sales et *al.* (2019) that the PAR process emerges from a collective motivation and actively involves everybody in decision-making and during some stages of the research process.

Research linked to action aims not only at describing the problems, but also at generating, together with the community, the knowledge necessary to define the proper actions to solve them. Thus, the researcher is forced to live closer to the problems that concern the community (Lara and Ballesteros, 2001). In this research, this fact is implicit in its development, when combining the research work with the one performed as a trainee in the MPdC. This facilitates "the primacy of immediate subjective experience as a basis for knowledge" (Serrano, 1994, p. 20), favouring a better understanding of the reasons and beliefs that lie behind the actions that have led the MPdC to work to create the Didactic Laboratory.

Being part of the MPdC also helps to answer the questions posed by Hernández (2010) on for whom it is a problem, and why we must be the ones who solve it. The MPdC addresses this research looking for the answers to these questions (Alatorre, 2014). The goal shared by all its members is their commitment to educational improvement, research, and recovery of the educational memory of the Province of Castelló, as well as the promotion of the heritage education.

Thus, the MPdC feels morally responsible for raising and discussing the problem of the creation of the Didactic Laboratory that helps to improve the educational action, especially, in the Teacher Training Studies at the UJI. In addition, the MPdC is in charge of safeguarding and preserving the pieces of the collection of the Former Teachers' Training School of Castelló. Thus, the museum becomes an ideal place for pedagogical renewal, teaching innovation and citizen interpellation, which makes it the perfect driver of this research (MPdC, 2023; MPdC, s/f; Jové *et al.*, 2022; Terol, 2022).

With PAR, context analysis is not conducted from outside with the information gathered. It is the community of the MPdC and the one of the Teacher Training Studies at the UJI who discovers, analyses, questions, debates, and reaches agreements on the problems addressed and, who finds possible solutions (Sales et *al.*, 2019).

2.3. Stages

Following the proposal of Sales et al. (2019), this project is implemented in six stages, from which, in this research, we present the results of the first three. The stages conducted in this work are:

- A. Wording of the problem- demand for collaboration. First contact and shared negotiation of the demand;
- B. Detection of Needs: Diagnosis and shared analysis;



- C. Proposal and action planning;
- D. Implementation and follow-up;
- E. Evaluation of the PAR process, and
- *F. Dissemination of the process.*

According to Suárez and Gómez (1999), the first stage consists of an exploratory analysis in which we identify the characteristic features of the community or organization object of study and negotiate the demand. In our case, we made the first contacts with the socio-professional context of the MPdC and created a first outline of the project, which was later presented to and agreed upon by the participants.

In the second stage, as stated by Ander Egg (2003, p. 10), we must study the problems: "Delimit the situation-problem on which we will work later. Study the problems, needs and interests lived and felt by the people involved in the program, project, activity, or service that we want to conduct". Basic information that we have obtained by using different techniques as field notes, documentary analysis or interviews, with the aim to identify the needs and agree the problems to be addressed.

The third stage has a planning nature. According to Suárez and Gómez (1999), we, together with the participants of the study, design the action plan, set the goals to achieve, the possible activities to be implemented, the participants, the necessary resources, etc.

The work herein presented ends in this stage, with the characterization and presentation of the proposal for action to the educational community of the MPdC, due to the lack of the necessary resources to implement it. To implement this proposal, it must also be negotiated with the corresponding responsible bodies of the UJI.

2.4. Participants

The research and intervention conducted following the PAR methodology is very distant from the traditional one. In this methodology, the person who plays the role of expert is not responsible for the analysis and design of the proposal, but it is the community who becomes a living and active agent in the research (Navarrete, 2014).

Simultaneously, the commitment to critical education that is at the heart of the MPdC inherently moves to this project. For this reason, we adopt a democratic view of knowledge and the processes involved in its creation, both the researcher and the participants share responsibilities in decision-making (Serrano, 1994). The idea of the Didactic Laboratory came from a collective motivation; thus, all together must look for the appropriate means to make it a reality.

Drawing from the insight of Navarrete (2014) and Serrano (1994), we contacted different profiles from within and outside the University to participate in the research. Specifically, there were a total of 11 participants (P), of which some were University teachers (UT), retired teachers (RT), laboratory technicians (LT), members of the Vice-Dean of infrastructures of the FHSS of the UJI (VD), and students of the Degree in Primary Education Teacher and the master's degree in Educational Psychology (E). With this diversity of voices, we have tried to design the proposal of the Didactic Laboratory, considering the perspectives of all its future participants.



Table 1.

Participant list

Participant	Description	Code
P1	Head of the Department of Education and Specific Didactics. Professor in Didactics of Mathematics at the Department of Education and Specific Didactics.	EPU1
P2	Professor in Didactics of Experimental Sciences at the Department of Education and Specific Didactics.	EPU2
Р3	Laboratory Technician at the Department of Education and Specific Didactics.	ETL
P4	Secretary and Head of the University School of Primary Education Teachers. Head of the Teaching Degree Programme at the University Jaume I. Secretary and Vice-dean of the Faculty of Human and Social Sciences of the University Jaume I. Head of the Department of Education of the University Jaume I.	EPJ1
P5	Specialist teacher in Experimental Sciences, Mathematics and Valencian Language.	EPJ2
P6	Professor of Didactics of Biology.	EPJ3
P7	Primary and Special Education Teacher. Associate Professor in Theory and History of Education at the Department of Education/Pedagogy.	EPJ4
P8	Student of the bachelor's degree in Early Childhood Education.	GFa
P9	Student of the bachelor's degree in Early Childhood Education.	GFb
P10	Student of the master's degree in Educational Psychology. Primary Education Teacher.	GFc

Source: Own elaboration (2024).

2.5. Data Gathering

For the data gathering process, we used the techniques and tools characteristic of the PAR methodology, considering the research's characteristics and its participants. We also kept in mind the research questions, which aim to find out: the participants' view on what a Didactic Laboratory is; the place where it should be located at the UJI; how it would be organized, and who its public would be (De Lara and Ballesteros, 2001).

The diversity of techniques used in this research allowed to extract data from the reality studied, as well as to examine it from different prisms. Thus, it was possible to cross-verify and triangulate the data obtained to contrast and validate the information (Serrano, 1994; and De Lara and Ballesteros, 2001). In addition, the use of qualitative methods allowed to obtain a unique description of the situation, which made it possible to analyze and reflect on the educational practices that are currently being implemented in the Teacher Training Studies at the UJI (Sales et al, 2019).

The techniques used for data gathering were selected based on our knowledge of each of them, the characteristics of the situation to be researched and the possibility to implement them, considering that the participants are also involved in some of them (De Lara and Ballesteros, 2001).

The tools used for data collection were varied and, following Serrano (1994), were divided into tools of pencil and paper, and the so-called living techniques. Among the first ones, we used field notes (FN) and documentary evidence (DE). With regards to the second group, the individual interview (II) and the focus group (FG) were used.



Firstly, participant observation (PO) was used throughout the research. This kind of observation was conducted from the role of researcher, but also from the position of trainee in the MPdC. This last aspect is what facilitated social interaction among the participants in a non-intrusive and natural way, since it was not necessary a period of introduction to the group because both were part of the place where the research was conducted.

Observation was conducted both in a non-systematized way, including in field notes everything that attracted attention and could be of interest; and in a systematized one, having previously agreed the aspects to be observed and the way of recording them (De Lara and Ballesteros, 2001). Participant observation showed a remarkable capacity for flexibly, adjusting to the studied scenarios and not considering only what they say about themselves, but trying to get closer to what they really think and to the original sense of their descriptions (Encina and Montero, 2019). This kind of observation allowed to obtain perceptions of the participants and the studied situation which otherwise would have been difficult to achieve.

When gathering documentary evidence, we consulted all kinds of documents, which allowed to understand the history of the MPdC, the structure of the organization, and the previous ideas regarding the Didactic Laboratory project. Among the documents consulted, we can find books, articles, and reportages on the creation and operation of the MPdC, as well as documents, records, and manuscripts related to the Didactic Laboratory.

Furthermore, aiming at intentionally capturing the ideas of each participant, a series of qualitative interviews were conducted. The interviews started from an open scheme, where the questions were only a starting point for discussion. The aim of using this technique was provoking a conversation between the researcher and the participant regarding the Didactic Laboratory, but more than getting answers, the objective was finding questions that helped to discover new meanings that widen the understanding of the topic studied (García-Vargas and Ballesteros, 2019).

This situation led, unintentionally, to other topics different to the ones proposed at the beginning with regards to the use of the objects and pieces that were accessible at that time. As highlighted by García-Vargas and Ballesteros (2019), this free association made by the participants is a characteristic of the semi-structured interview conducted, which forced the interviewer to be continuously interested in the thread that runs through the participants' stories.

Most of these interviews were conducted in the working area of the MPdC. The interviews were conducted individually, being this the most used modality, and in groups. The group interview or focus group was conducted with the participating students, considering that, as they have the same profile, they could create new speeches that they could not create individually (García-Vargas and Ballesteros, 2019); in addition, some speeches made others emerge.

2.6. Data Analysis and Triangulation

After gathering the data provided by the participants, the transcription of the interviews was carried out, to have it also in text form. Transcriptions faithfully reproduced the conversations, with the objective of respecting the silences, hesitations, the oral structure of the utterances, the reiterations, or contradictions.



Once we had all the data in the same format, the information was categorized to group it around ideas, topics, or concepts (García-Vargas and Ballesteros, 2019). This categorization was specified following a deductive logic, with the categories planned at the beginning of the research and which were present throughout it.

These categories are called by Cisterna (2005) deductive categories, and among them we can find the concept of didactic laboratory, the spaces, and the public. In addition, following an inductive logic, we found other categories that emerged from the research, which the same author calls emerging categories, such as the materials presented by each field and the use they would do of the Didactic Laboratory with regards to the frequency of use and methodology.

This categorization was conducted through saturation and repetition of concepts (Bejarano, 2016). Following García-Vargas and Ballesteros (2019), we tried to meet the criteria of relevance, clarity and comprehensiveness when shaping the system of categories of this research.

Categories validation was carried out by using the techniques of persistent observation, verification by the participants, and triangulation (Rodríguez, Lorenzo, and Herrera, 2005), which, in addition, favored the relevance (saturation and assertiveness) and the belonging of the data to the categories (Cisterna, 2005).

The fact of having worked through the research with different complementary sources of information (participant observation, documentary evidence, and interviews) has allowed to perform data triangulation, combining the triangulation of methods of information production and the triangulation of sources (Lara and Ballesteros, 2001).

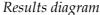
3. Results

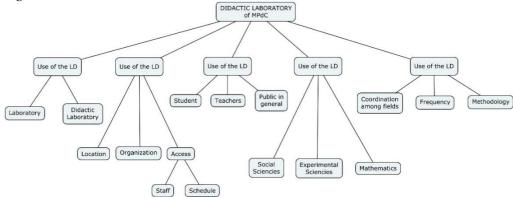
The results obtained were structured according to the main axes that articulate the action proposal for the creation of the Didactic Laboratory. In addition, each of these axes synthesizes a basic idea that emerged from the contrasted knowledge of the participants who make up the educational community of the MPdC. These results were later contrasted with the bibliography and reference works. This helps us to shape a proposal, open to public debate, which constitutes a necessary starting point for the creation of the Didactic Laboratory in the MPdC.

Each axe or category consists of different subcategories that explain and detail the results obtained in each classification, orderly. This sorting of the results was reflected in a concept map, which allowed to summarize the characteristics of the proposal for the Didactic Laboratory.



Figure 1.





Source: Own elaboration (2024).

3.1. Concept

Regarding the concept of what a laboratory is, participants were asked about what came to their mind when they heard about 'laboratory'. The participants who were closer to the project were specifically told to forget, for a moment, about the Didactic Laboratory to be able to get better a general definition of the concept in question.

From here, the answers regarding the concept of laboratory are highly focused on the idea of a space, as a place of work and research, resorting even to this word's etymology to defend this idea:

A laboratory is a space where tasks are conducted, works are carried out, as its name says. I like to stick to the issue of etymologies, where words come from, and the laboratory is a place where you work (EPJ4).

In this sense, more participants also conceive the concept of laboratory as a workplace (ETL, EPJ2, EPJ3). And, in the same vein, there are participants who, from a scientific point of view, conceive it as a place where experiments are carried out (EPJ1).

In the case of the students of the bachelor's degree in Early Childhood Education, they first refer to the concept of laboratory from the perspective of a common laboratory of Experimental Sciences, although they do not cease to highlight its function for experiencing from the practice:

I associate the laboratory more with the scientists. It is where experiments, studies, etc. are carried out. [...] It is where you can practice (GFb).

But when letting the group debate, we started to realize that this issue could be far more comprehensive, and the laboratory could not only be limited to Experimental Sciences. As a result, the conclusion was reached that it is a space or environment for studying, which provides a variety of ways to build knowledge, and where people work in a practical way (FG).



On the basis that it was a workplace, none of the participants gave an exhaustive definition of how they conceive it, since it depended a lot on what it was prepared for. A space where to reproduce the reality, to experiment and which, in this way, allows you to control the variables to be able to later generalize in real life (EPJ2).

Finally, the participants also emphasized that we must avoid that the laboratory becomes a place only used for repeating knowledge, but it must be taken as an opportunity to research on unknown things:

Today the laboratory is conceived as a space that allows to give master classes supported by models of experience [...]. I think that the laboratory-class must be a place for research (EPJ3).

"Water boils at 100 Celsius degrees, let's check it". No, well, if you tell them the result, it's not necessary to check it. It's on the contrary, we know it boils, but we don't know at what temperature, let's find it out. Then, you do the experiment and find it out (EPJ2).

Regarding the concept of didactic laboratory, they follow the same line of the concept of laboratory, but this time it is more focused on the bachelor's degree in Primary or Early Childhood Education. It is considered a place where the space allows to experiment and manipulate materials and concepts related to the teaching-learning process, with the global aim of improving Education (EPU2; EPJ4):

When there is a change in someone's thinking, a reaction, caused by an exercise, by someone's view, you have carried out an experiment (EPJ1).

The didactic laboratory has two functions. One of its functions is to understand the content that is being worked in the experiment, but also to learn to carry out experiments [...], there you learn to control the variables, to see which variables you focus on, and you also learn which tools you must use and how they can be used to achieve what you want (EPJ2).

Finally, the results also highlight, regarding the concept of laboratory and didactic laboratory, that it is a living and communication space, which facilitates to experiment different techniques and methods, together with your classmates and teachers, where teamwork prevails (FG; EPJ3).

Laboratory also means that there is more than one person working. I can't imagine a laboratory where there is only one person working (EPJ4).

3.2. Spaces

The issue of where the Didactic Laboratory must be placed has been addressed at length in the MPdC (FN). What the museum asks the FHSS for is to have a visible place, of passage, which students, especially the ones of Education, can easily find and see what is shown. With this regard, at first, the MPdC proposed the place where the reprography center was formerly located in the FHSS, which was denied; and then, one of the places of the Agora of the UJI, which was also denied.



Even so, the Vice-dean of Infrastructure of the FHSS supports this project and is willing to seek alternatives. So much so that, as a result of a session of the master's degree in Educational Psychology taught in the Hall of the FHSS, it raised the idea of locating the Didactic Laboratory in the neuralgic point of the Faculty (EVD; FN). This proposal was liked, and in addition, it also complied with the characteristics they had asked for regarding the Didactic Laboratory location and organization:

a) Visibility and immediate Access from the FHSS.

The presence of the Didactic Laboratory of the MPdC at the epicenter of the UJI, being very close to the FHSS facilities, would facilitate the continuous dissemination of didactic and pedagogical proposals, public promotion of the UJI's heritage, an additional value to the FHSS, and social protection of the academic institution (MPdC, 2023).

b) Exhibition area

The Didactic Laboratory should be equipped with shelves where the material could be kept, and which also allowed to exhibit some pieces (EPU1). This space should not be separated from the working or dissemination space. It is necessary that there is a visibility that makes it possible to have access, at any time, to the complementary information (EPJ4).

c) Workplace

The space where the students, teachers, etc. can work in different research projects should be equipped with tables and chairs that make it possible to teach classes, seminars, or any kind of course (EPU1; EPJ3). In addition, this area must provide places for discussion, debate, round table, etc. (EPJ4).

d) Dynamization of the space

It is essential that it is a dynamic space (EPU2). It must not be structured in a specific way, that is, "the tables must be arranged in this way, with chairs to sit at the table". It is necessary that they can be rearranged depending on the needs of each situation, even to be able to work in different ways at the same time (ETL).

Furthermore, all the participants expressed doubts when asked about the access to the Didactic Laboratory area. With this regard, the participants proposed that ideally there should be, on the one hand, a fixed schedule that allowed free access to everyone and, on the other hand, staff who, in addition to being responsible for the space, could act as interlocutor with the visitors (EPU1; EPJ1; EPJ2; EPJ3). Moreover, this space should be considered a classroom, thus, to access or use it, you should follow the same procedure as in a traditional classroom, always controlling the pieces exhibited, which have a high patrimonial value.

3.3. Public

"The museum is of everyone and for everyone" (MPdC, s/f, p. 5). This is how the MPdC introduces itself and what the results show: "This material collection belongs to everybody, and must be shared with the society in general, and with the educational community" (EPU2).



The Didactic Laboratory, as a project of the museum itself, inherits this philosophy and is conceived with the hope that it can be used by any group (FN), understanding that "the more protagonists that can be there to participate and work, the more enriching it will be for everybody" (EPU2).

Specifically, the results point to some diverse groups, among which highlight those aimed at "both initial and continuous training" (EPU1). It can also be observed that "firstly, it would clearly be aimed at future teachers" (ETL). Although these studies are the main target group of this project, it must be borne in mind the benefits that the Didactic Laboratory could offer to other Education studies taught at the UJI (masters' degrees in Secondary Education and Educational Psychology). Even more, in the MPdC, they are also aware of the interest that this material collection has for other degrees or studies such as History, Humanities or Communication (FN).

But the Didactic Laboratory, as well as the MPdC, is not satisfied with addressing only the university community. On the track towards achieving the final goal of reaching the society in general, this space must be arranged in such a way that it can reach other levels of formal Education, such as schools, high schools, schools for adults, etc. (FG). Because the fact that "any student, of any school, of any high school, can go to the University and do something is always impressive" (EPJ2). And, if we gaze on these centers, we must also gaze on its teachers' continuous training. With this regard, the collaboration with the CEFIREs (Training, Innovation and Educational Resources Centers in the Valencian Community) is considered essential, since "we also need that teachers report things" (EPU1).

Finally, the results also show the willingness to open the Didactic Laboratory to the public in general, aiming at making known the patrimonial collection kept in the MPdC (ETL, GF, EPJ3).

3.4. Materials

The collection of the MPdC consists of materials mainly from the fields of Didactics of Social Sciences and Didactics of Experimental Sciences, which accumulate part of the material from the Former Teachers Training School. These two fields intend to place value on and make visible all this material collection on which they have been working during the last years. The work in the Didactic Laboratory allows to analyze the didactic materials that were used when teaching these two subjects, as well as to place yourself within their historical context and the way they have evolved.

Regarding the "very recently created concept of Didactics of the Social Sciences, it includes very diverse knowledge. In addition, at the beginning, its contents consisted only of the study of the environment where living beings live" (MPdC, p.5). This is the reason why the materials it provides are related to Geography and the study of the Earth. Regarding the Didactics of Experimental Sciences, the material provided is much richer thanks to the long history of this field within the Teacher Training Studies. Among the materials for teaching this science, we can highlight the microscopes, models of plants and a model of a clastic man (MPdC, 2023).

Recently, these fields have been joined by the one of Didactics of Mathematics, which aims to transfer the idea of the GAMAR² project (University of Girona) to the UJI. With its inclusion in the Didactic Laboratory, the field of Didactics of Mathematic seeks to raise questions from material handling (EPU1).

² <u>UdG > GAMAR > Inici</u>



Regarding its own material, it has a collection of more than 180 pieces of didactic material, more contemporary if compared to the former ones, in which prevails the work of the transitions from reality to symbolism (MPdC, 2023).

In addition to the materials provided, in one way or another, by the different fields, there is also the work carried out by the MPdC finding, recovering, and restoring patrimonial and education resources, as well as donations from schools, associations and individuals of educational materials that are considered relevant (MPdC, s/f; FN). Thus, it can be observed that the MPdC and the Didactic Laboratory have a didactic collection that is continuously growing. For this reason, all the participants coincide with the MPdC's internal proposal, considering the material collection of the MPdC as the main axe from which the Didactic Laboratory must be created (FN).

3.5. The use of the Didactic Laboratory for training

When asked about the possible coordination among the fields involved in the Didactic Laboratory project, the participants show a good predisposition to do so. It is understood that the common link is Education and, thus, joint participation more than possible, is necessary (EPU1). They even state that "it should be essential because it isn't possible to build knowledge from just one field" (EPJ2).

In general, what is conceived as the ideal way of coordination or collaboration among the fields is the possibility of creating joint projects in which no field is predominant over the rest (EPU2; ETL; EPJ2; EPJ4). Although, currently, this possibility seems difficult and they prefer to think of it as a goal for the future, focusing on the creation of the Didactic Laboratory, and gradually establishing small collaborations (EPU1; EPU2).

One of these reasons is the frequency with which they think the Didactic Laboratory will be used for the classes of the degrees of Education. The Didactic Laboratory is conceived to be used "as a workplace" (ETL), aimed at conducting practical sessions supported by what is being worked in class in each of the fields, also understanding that some of the practical sessions must continue to be conducted in the laboratories of each field (EPU1; EPU2; ETL; GF).

Thus, at first, the joint coordination and participation among the fields is more focused on continuous training. It is assumed that activities in the form of courses and/or workshops, aimed at schools, high schools, and CEFIREs, are the most suitable form for starting synergies among the fields, which can later be transfer to the Teacher Training Studies of the UJI (FN).

Starting from the intended use of the Didactic Laboratory, we adopted a methodology based on experimentation and the application of the scientific method, together with the promotion of spaces for reflection (EPU1; EPJ2; GF). The aim is to break free from the conception of museum as a place where visitors can only observe, to move closer to a model where material handling prevails (EPU2).

From the field of Theory and History of Education it is proposed to start from curiosity and benefit from a unique space where materials are exhibited and presented (EPJ4). Based on Foucault's idea of Archive, the study of the materials is understood as an opportunity, not to learn about their current didactic use, but about the didactic use they had and the context in which they were used. Thus, understanding the evolution of Education throughout these years (EPJ1; EPJ2; GF; EPJ3; EPJ4).



4. Discussion and conclusions

The results of this research show, firstly, the participants' high degree of willingness to carry forward and shape the Didactic Laboratory of the MPdC. The concept of didactic laboratory, which is not very widespread today, has been understood by the participants as a place where experiencing, reflecting, and debating about everything related to Education. In this specific case, this can be done by taking advantage of the patrimonial collection of the MPdC and the long history of over a century of the Teacher Training Studies all around the Province of Castelló, which allows the Didactic Laboratory to have a rich variety of materials, available from the moment of its creation, and a great legacy of Education on which to work and link to the territory.

Simultaneously, there is a cohesion among the answers regarding the fact that this space is considered a place of work and research that allows to build knowledge. These answers are in accordance with the ideas of authors such as Barolli *et al* (2010), Traba (2009) and Gavaldà and Santisteban (2002), according to whom this model of didactic intervention favors a more autonomous and significant learning.

That is, putting aside the activities aimed at reinforcing already acquired knowledge and starting to create new knowledge, following Foucault's idea of Archive, through the research conducted with the material collection of the MPdC. Thus, the work in the Didactic Laboratory favors the development of scientific attitudes, self-knowledge as a teacher, and the feeling of belonging to the profession as key competences when building one's professional identity. In addition, it establishes links among future teachers and their territory that they will be able to transfer to their teaching practice in the future.

Regarding the location of the Didactic Laboratory, the possibility of placing it in the Hall of the FHSS becomes a unique opportunity that provides some of the advantages requested by the people involved in its creation. The fact of placing it at the heart of the Faculty allows that it becomes an incomparable showcase to make it known and, consequently, to also disseminate the work of the MPdC among the university community. In short, as Escafet *et al.* defend (2021), it is a learning space that makes it possible to relate to people and resources, facilitating a wide variety of stimuli and thus, promoting creativity, reasoning, and logical thinking. In addition, such a wide space allows a great dynamization of the space distribution, meeting the needs of each moment.

The Didactic Laboratory shares the same philosophy as the MPdC, considering itself as a resource of everybody and for everybody; the public it attempts to address is very diverse, from the students of the degree in Education to the students of Primary and Secondary school and their teachers. Thus, this scenario opens two roads which are bound to intersect. On the one hand, it is more viable to start-up the Didactic Laboratory focusing on the students from the different fields of the Department of Education, to give it a continuous use and learn to work from the perspective of more autonomous learning and knowledge production thanks to the research processes, as Gavaldà and Santisteban (2002) and Barolli *et al.* (2010) defended. On the other hand, the opportunity of working from the perspective of lifelong learning allows to experience with collaboration projects among the different fields, as well as to apply the strengths of these experiences to initial training, resulting in an interdisciplinary work thanks to the design of the Didactic Laboratory as a common space (Escafet *et al.*, 2021).

Finally, as our results show, if we apply methodologies based on experimentation and research, the work on the material collection of the MPdC can become an inexhaustible source of knowledge creation, thanks to the application of Foucault's concept of Archive.



In this regard, the work in the Didactic Laboratory is not focused on knowledge reproduction, but it is about using the materials to create new knowledge, just as García (2015) defends that the activity performed in the archive's memory will help to better understand the present and will erase everything we thought we knew.

In a nutshell, the Didactic Laboratory is presented as an excellent opportunity to work with a unique collection of educational materials, which could hardly be in the hands of any institution, and which answers in an innovative way, as defended by Escafet *et al.* (2021), the need for reflection and reconceptualization of university learning spaces. And this is what this work does, limited by the deadline for its submission, which impeded from studying the proposal in more detail, as well as from providing more exhaustive feedback on the results with the participants. But still it has achieved to bring together an important number of different voices related to the Teacher Training Studies at the UJI, which, once ordered, classified, and analyzed have shaped a joint proposal for the design of the Didactic Laboratory of the MPdC.

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