The Living Lab to promote educating community development in an inclusive perspective, between innovation and participation

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Abstract

In recent decades, changes in productive and social dynamics have profoundly influenced socioeconomic environments, which are now characterized by phenomena such as globalization, the omnipresence of technology, and the loosening of social networks. These changes have led to a growing alienation of the individual from the public sphere. In this context, education must focus on fostering a sense of responsibility and belonging in both students and the community, which are essential elements for active participation in political life and building inclusive communities. In light of these premises, the paper illustrates the first steps of research aimed at the design and implementation of an innovative system for the training of education professionals through a Living Lab, intended as an action-research approach operating between community and innovation, intending to develop a digital platform that fosters the sharing of inclusive practices, integrating evidence-based research, professional experience and perspectives of people with disabilities, to create more inclusive and sustainable communities. The preliminary phase of the research, the results of which will be illustrated, was conducted through four focus groups involving a total of 57 volunteer teachers, who represent a sample of convenience chosen according to the motivation criterion for participation. The row data, collected through audio recordings and researchers' fieldnotes transcripts, were analyzed by Qualitative Content Analysis. The results show potential fruitful guidelines for the start-up of the Living Lab.

1 Introduction and background

The process of sustainable human development, understood as a path towards the maximum expression of one's potential as a person, citizen, and worker, can only take place within a democratic context capable of enhancing its community and participatory nature in which the
school plays a median and irreplaceable role (Baldacci, 2014). This perspective, on the one hand, firmly links the theme of education and training to that of democracy and inclusion, on the other hand, highlights the need for a reflection on the profile of the school as an educational agency called to weave dynamic interweaving of actions, agents, and systems that interact within the contexts in which communities move, and people develop (Ferrara & Moscato, 2022).

The present study is framed within a transformative and systemic perspective that moves the paradigm of inclusive education (Florian & Beaton, 2018; UNESCO, 2017, 2020) from the level of assimilation to a level of active participation aimed at enabling dynamic environments to promote human prosperity and development (Nussbaum, 2011). In the school context, this requires disciplinary, didactic, methodological, organizational, social, and relational skills to implement differentiated teaching methodologies that allow everyone to reach their maximum potential, welcoming all differences as a resource rather than an obstacle. In this scenario, the inclusive professional development of teachers is the key to remedi ing the phenomena of exclusion or labeling and ensuring equal opportunities for all (Forlin, 2012; Panti & Florian, 2015; Pedone, 2021).

In this context, the research aims at the study, design, and prototyping of an innovative system for teacher training through a Living Lab (LL), which is an open environment of innovation in real-life contexts where user-driven innovation is fully integrated within co-creation (Di Pace, 2016; Westerlund et al., 2018) aimed to connect educational research, practitioners' professional experience and the experiential input of students and families to develop a digital platform focused on teacher training and to create a repository of inclusive good practices. To implement a LL that meets the needs of the user community, the design was preceded by four exploratory focus groups specifically targeted to understand the perceptions, opinions, and needs of a group of teachers on teachers' professional development, teaching skills, and instructional actions to promote effective inclusive education. A total of 57 teachers from the four Italian school levels have been involved. The research is in line with the documents of the Twenty-Thirty Agenda, the Twenty-One/Twenty-Seven PNR, and the REACT EU documents, guiding the promotion of educational and didactic research aimed at proposing new architectures of education and training systems, placing inclusion and equity as a cornerstone.

1.1 School, family, territory: A vital ecosystem for the development of inclusive communities

The concept of community is extremely flexible and controversial. In general, the use of the term refers to two distinct meanings: on one hand, the German romantic tradition sees community as a supra-individual entity, the custodian of a common good that defines social relationships between individuals and enables them to overcome their limits and achieve their goals; on the other hand, the Anglo-Saxon tradition associates it with the sharing of a local territorial space, which clearly defines who is inside it and marks a clear boundary with those who are not part of it (Tramma, 2010; Zamengo & Valenzano, 2018). Both perspectives lie at the extremes of a continuum that delineates an entity characterized by the sharing of a common feeling, a common way of living the common good entrusted to all members, as well as the separation from an external, other-than-me; what animates the community is precisely the relational dynamic between these two movements, a propulsive force fueled not by a surplus but by a lack. This reciprocal limit becomes a burden (Esposito, 2006) because what keeps the community members together is sharing a task, which is a duty. Far from being based on an already given element, the
community seems to be constituted by recognizing a path to be undertaken towards a common goal.

Therefore, as highlighted by Broccoli (2019), the community, particularly the educating community, should be interpreted not as the final and unchanging outcome of a concluded historical process but as a starting point for new possible configurations of humans. At this point, the circular relationship between the social function of education and the educational function of social organization, the main axis of Deweyan reflection on the formation of man and citizen, becomes pressing in a perspective that can only be democratic as democracy is something more than a form of government. It is, first and foremost, a type of associated life, a continually communicated experience (Dewey, 1916). Therefore, if it is true that the school can be considered the ideal stage where the values cherished by a social group and the purposes it wishes to achieve are distributed and made familiar to the thoughts, observations, judgments, and choices of individuals (Dewey, 1938), it is equally true that it is necessary to push our gaze towards the dynamic interplay between the plurality of actions, agents, and systems that interact within the contexts in which communities move and individuals develop.

According to Bronfenbrenner's ecological perspective (1981), the school is a microsystem, made up of relationships, shared activities, roles, and rules, which in turn is part of a macrosystem that includes all the institutions present in the territory and the beliefs, behaviors, and values that characterize the social system as a whole. This means that the inclusion processes carried out at school also involve the other systems to which the school is closely connected, and therefore, also the community and the territory (Striano et al., 2017). This ecological model emphasizes the personal and eco-social factors at play in the relationship between the individual and the environment, their dynamics, and mutual influence: on the one hand, the context "contaminates" the person, leaving its mark on their development; on the other hand, through their actions, the individual actively restructures the context itself. It is not surprising; therefore, the crucial role assumed, within the framework of strategies aimed at promoting the sustainable development of the planet, by an inclusive education that actively works to eliminate discrimination and ensure equitable educational systems, valuing diversity, and promoting active participation; an education that, yes, targets all the actors operating within education institutions, but that, extending beyond the walls of the institutes, necessarily involves families, students, administrators, and the fabric of the local community from the design phase onwards, to give life to new inclusive cultures, policies, and practices on which to build a renewed, genuinely democratic humanity.

The school, therefore, assumes in this perspective a mediating position in the dialogue, support, and collaboration among all the actors involved, holding the threads of an educational discourse intended both as the purpose and the means of existence of the community itself (Booth & Ainscow, 2011). The school is at the center of a network of relationships and interactions among families, associations, the community, and other educational agencies. A fully inclusive school works to reduce any processes of marginalization, to compensate fairly for differences that could result in a substantial deficit of equality and equal opportunities, and to promote the maximum potential in learning and social belonging. Scientific literature has extensively demonstrated that creating partnerships between education stakeholders significantly impacts overall personal growth (Epstein, 2018). Cappuccio and Pedone (2018) define partnership as a respectful alliance between educators that values the construction of relationships, dialogue, and shared power as part of a socially just and democratic school that is, an inclusive school, intercepting the key elements of a successful partnership in recognizing both the active role of students within school,
family, and community contexts and the shared educational responsibility of these same contexts towards the students, with the student/child/community member being at the heart of their development process.

An inclusive school must necessarily take on the identity of a learning community, an open educational system capable of meeting the universal need for belonging and community. It must be a learning community whose members are all in a state of reciprocal interdependence and ready and predisposed to learn in a process of continuous growth and reflection; it must transform into a space in which the actors involved feel mutually engaged in sharing and experiencing a learning process, made possible by the original contributions of individuals that enrich the entire learning community, as knowledge is considered the result of a social process (Pedone, 2021). Following Dovigo and Pedone (2019), an inclusive educating community must be based on some fundamental principles, such as the acceptance of diversity, self-respect, and respect for others; fair valorization of all students; increasing student participation; recognition of the right to be educated in one's community; the important role of the school in building communities and promoting values; the reform of cultures, policies, and practices to respond to the specific diversity of all students. In this sense, the issue of the professional quality of teachers once again proves to be a discriminating element, and the quality of initial and continuous teacher training must be considered a strategic lever for every improvement goal, whether it be didactic, pedagogical, or social (OECD, 2019).

1.2 Living Lab in the school context

To ensure that schools, local communities, and all other social actors collaborate and participate for the common good, there is a need to identify a suitable perspective for this purpose. In the last twenty years, scientific attention has been dedicated to LLs, conceived as an open ecosystem of research and innovation involving user communities, solution developers, research laboratories, local authorities, and national policies. By opening up to multiple multicultural and multidisciplinary aspects, they can transmit the necessary level of diversity and allow the emergence of revolutionary ideas, concepts, and scenarios that lead to innovative, adoptable solutions (Pallot et al., 2010).

There is no commonly accepted definition of LL, but based on studies and analyses conducted, it is possible to identify its key components (ICT and infrastructure; management; partners and users; research; approach) and fundamental principles (openness; influence; realism; value; sustainability), identifying them both as a place of creativity where collaboration between diverse people takes place and as an organization, an innovation environment, a research methodology, an approach for user involvement, an experimentation platform, and a user-centered approach (Pierson et al., 2005; Ståhlbröst & Holst, 2017; Westerlund et al., 2018).

Despite the differences in focus, perspectives, and definitions, some common points underlying its interdisciplinary nature contribute to understanding the concept of LL (Bergvall-Kärereborn et al., 2009), making it particularly effective and functional for co-participation in the construction of the common good in school contexts:

**Openness.** In LLs, all actors in a context (in the case of schools, students, families, administrative staff, teachers, reference communities, and stakeholders) are called to confront issues related to the introduction of innovation in the context itself and, consequently, the promotion of the common good. The action generated by the actors themselves allows for the awareness of
individuals and the community and, through collaboration, promotes common growth and social inclusion (Niitamo et al., 2006).

**Sustainable innovation.** LLs embrace a systemic approach that, in addition to considering individual problems and sectors, takes a broader view to solve complex issues of the school institution and the extended community, facilitating the identification of connections and feedback between the various components. In this sense, by shifting the emphasis to the active role of participants as co-innovators, LLs are configured as innovation platforms that can be guided by teachers and, in this case, can meet the training needs of teachers and educators as developers of the common good.

**Co-creation.** A paradigm generally associated with innovation, in the context of LLs, refers to the involvement of users in the development process itself and in all stages of developing new solutions to the challenges that arise. Combining innovation and the co-creation paradigm increases the possibility of new solutions to address emerging social, economic, and environmental challenges successfully. To achieve this goal, schools can rely on LLs as adaptive learning systems based on innovation and active participation, aimed at providing tools suitable for different cultural levels concerning the skills of the protagonists and the objective to be achieved (Dutilleul et al., 2010).

**Connection with real life.** The LL is an experiential environment in which participants immerse themselves in a creative social space focused on social innovations and sustainable solutions, taking into account specific local contexts, values, and economies to develop products or services more suitable for social and cultural environments of reference. In the school context, the LL is configured as a laboratory environment, that is, a device for global innovation where organizational value (new models of school spaces), pedagogical value (new dynamics of socialization), and didactic value (new teaching methods based on research) (Baldacci, 2004), represents a new way of envisioning and giving shared meaning to reality.

Through the LL, schools can adopt an advanced methodology for promoting innovation, placing end users at the center, and promoting constant collaboration among all actors as active protagonists of their education in an open and inclusive dimension. Thus, the training, designed and implemented considering all possible sources of innovation through the sharing of ideas and collaboration, manages to understand real needs considering the territory of belonging, with short, medium, and long-term impacts.

Against this background, the research aims to study, design, and prototype an innovative system for teacher training through LL aimed at connecting the educational research, the professional expertise of practitioners, and the experiential input of learners and families to develop a digital platform focused on teacher training. More specifically, the goals of the LL are

1. To connect the educational research, the professional expertise of practitioners, and the experiential input of learners and families;
2. To develop a digital platform focused on teacher training; iii. To create a repository for good inclusive practices.

**2 Method**

Active engagement of professionals and researchers in dynamic and intricate settings - framed as networks within LLs - poses significant challenges. These challenges begin with the essential focus on contextual characteristics, encompassing resources, aspirations, needs, and material and
human constraints. Robust and specialized knowledge bases distinguish study activities and actions within living social or organizational contexts. As a result, interventions informed by research within these contexts require utilizing a broad range of methodologies (Følstad, 2008).

From this standpoint, the design of LLs must evolve from educational needs and the ongoing negotiation of meanings as perceived and experienced daily by the community of participants. Within this framework, the focus group emerges as a valuable method for needs analysis, crucial for co-designing research activities that adopt a user-centered perspective. This approach aligns with the generative paradigm fundamental to LLs. Essentially, group processes facilitate participants in exploring, deepening, and clarifying their opinions. This dual function allows for effective data collection while fostering the generation of novel and shared ideas, thus guiding research toward new directions (Krueger & Casey, 2014; Mortari, 2013).

Consequently, the design phase of LL protocols is preceded by the execution of four exploratory focus groups aimed at comprehending the perceptions, opinions, and needs of a group of teachers regarding teacher professional development, teaching competencies, and actions conducive to promoting effective inclusive education. Each discussion, spanning 120 minutes, was structured around four thematic areas. Participants were prompted with the following questions:

1. Do you think teacher professional training is helpful? What for?
2. In your opinion, what competencies are essential for an inclusive teacher?
3. What are the constituent elements of good inclusive practices a teacher should be trained on?
4. What kind of professional training do you need as an inclusive teacher?

2.1 Participants

The focus groups were conducted by three researchers (one moderator and two observers) and 57 volunteer teachers, selected as a convenience sample based on their motivation to participate. As depicted in Figure 1, the teachers spanned an age range from 27 to 53. Figure 2 indicates that their teaching experience varied from 1 to 15 years. Despite the sample's lack of representativeness for the population, Figure 3 demonstrates that the percentages are fairly distributed among the four school orders.

![Figure 1 Participants' average age](image1)

![Figure 2 Participants' years of teaching experience](image2)

![Figure 3 Participants' school level](image3)

To cultivate robust group dynamics and facilitate comprehensive idea expression among all participants while minimizing the potential for stifling dissenting or less assertive viewpoints (Greenbaum, 1999), the decision was made to partition the primary group into four subgroups. Each subgroup consisted of a diverse mix of educators spanning various educational levels (Figure 4). The four focus groups were populated by 14 teachers each in the case of F1, F2, and F3, and by 15 teachers in the case of F4.
2.2 Data analysis

Knowledge is considered valid when it aligns with the cognitive objectives set forth and reliable when it remains consistent unless there are changes in the relationships and dynamics of the studied phenomenon. These qualities can be achieved through forms of triangulation (Bans-Akutey & Timub, 2021). However, the challenges and inherent risks within the context of qualitative inquiries have been extensively discussed in the academic literature, foremost among them being researcher bias, wherein researchers may unconsciously seek evidence that confirms their preconceived ideas (Creswell & Miller, 2000; Patton, 2002). In this process, validity and reliability stem from intersubjective comparison, and the diligence to avoid introducing systematic distortions in data collection and interpretation is ensured through researcher triangulation (Trinchero, 2015).

To analyze raw data in our study, we employed NVivo 12 Pro software and adhered to the methodology of Qualitative Content Analysis (QCA) (Schreier, 2012). QCA is a significant research methodology aimed at analyzing qualitative data to identify and interpret implicit meanings within textual or data corpora. This involves thoroughly examining raw materials such as interviews, documents, or transcriptions to identify recurring themes, patterns, or categories. Once identified, these elements are coded and organized to construct an interpretative framework. Researchers built an interpretative framework through segmentation, coding, categorization, and thematization to facilitate a comprehensive understanding of the data.

The initial review of the materials, conducted independently by each of the three researchers, facilitated the identification of text units corresponding to the subdivisions outlined in the structured protocol for conducting interviews and their subsequent coding. A comparison phase ensued, resulting in a new categorization emerging from negotiation among the researchers, who collectively reanalyzed the data while considering the existing literature. Subsequently, the third phase involved constructing "coding nodes folders" independently by exploring and interpreting meanings. This process entailed segmenting into discrete parts to identify pertinent and significant elements. This was followed by an additional phase of comparison, negotiation, and joint redefinition of the "coding nodes folders." The data, organized in this manner, underwent analysis to highlight the main emerging themes, achieved through identifying and tallying recurring words and meanings. Subsequently, a clustering operation based on similarity criteria was conducted (Zhang & Wildemuth, 2005).

3 Findings

The analysis results described above will be presented, emphasizing the categories of responses that most frequently emerged for each of the 4 questions identified for the focus group sessions.
3.1 Do you think teacher professional training is helpful? What for?

Regarding the first question, the respondents were divided into two segments. The entire group of participants agreed on the significance of professional training, and their motivations can be categorized into four main areas (Figure 5). These motivations are ranked in descending order of importance. The first category, which received the highest score (35.09%), is the desire to expand their competencies. The second category, with a significant number of responses (24.56%), is the goal of meeting the evolving needs of students. The third category, which received a substantial number of responses (21.05%), revolves around personal and professional satisfaction. Lastly, the fourth category, with a noteworthy number of responses (19.3%), pertains to gaining a competitive advantage in the labour market. These results align with other studies in the field (Avalos, 2011; Coldwell, 2017).

![Figure 5 Main answers to the first question of the focus group](image)

3.2 In your opinion, what competencies are essential for an inclusive teacher?

According to the literature (Chiappetta et al., 2013; Murdac et al., 2016; Nimante, 2018; Perrenoud, 2003; Shevlin et al., 2013), the teachers’ responses support the idea that inclusive teaching requires a wide range of competencies. The teachers emphasized relational skills' importance, accounting for 25.45% of the responses. Methodological skills were also deemed essential, making up 16.97% of the responses. Networking skills were mentioned by 14.55% of the teachers, while problem-solving and creative skills were considered important by 12.12% of the respondents. Competencies in personalization received 11.52% of the responses, followed by organization skills at 10.91%. Reflectivity was mentioned by 8.48% of the teachers (Figure 6).

![Figure 6 Main answers to the second question of the focus group](image)

3.3 What are the constituent elements of good inclusive practices a teacher should be trained on?
Teachers recognize the importance of understanding and accepting their students' unique characteristics (10.51%). This requires creating an inclusive environment where all students feel valued and included. Effective communication with colleagues is crucial to collaborate and share resources and strategies (10.08%). This shows the teachers' commitment to working together to meet the diverse needs of their students. Promoting critical thinking, creative thinking, and problem-solving skills is a top priority for teachers (10.08%); they understand these skills are essential for students' future success in an ever-changing world. Teachers also aim to instill values such as respect, personal responsibility, solidarity, and a sense of justice in their students. These values foster a positive and inclusive learning environment (8.41%). Another area where teachers feel they would benefit from training is in adapting their teaching style to accommodate different learning styles (8.41%). By acknowledging and addressing different learning styles, teachers can better meet their students' individual needs. Furthermore, teachers recognize the potential of Information and Communications Technology (ICT) in enhancing inclusive education (9.24%). They want to be equipped with the necessary skills and knowledge to effectively incorporate ICT into their teaching practices. This demonstrates their understanding of the importance of keeping up with technological advancements to meet students' diverse learning needs. In the same vein, several studies have been conducted (Hattie, 2012; Ferrara, 2021; Mitchell, 2011; Pedone, 2021) which highlight the need for teacher training focused on how to put them in a position to face potential challenges by offering them a wealth of knowledge and skills (pedagogical, methodological, organizational and relational, as well as disciplinary) capable of reading and interpreting the reality of the classroom, to respond to emerging needs.

Figure 7 Main answers to the third question of the focus group

3.4 What kind of professional training you may need as an inclusive teacher?

The answers to this last question confirm what the teachers have stated throughout the focus group and are in continuity with the literature. The surveyed teachers expressed various training needs, but there was a consensus on several key areas. First and foremost, they emphasized the importance of specific training on inclusive educational methodologies (20.94%). This training would likely focus on understanding and implementing strategies that cater to students' diverse needs and abilities in the classroom. Moreover, the teachers also highlighted the need for training on assessment practices (9.95%). Inclusive teaching requires educators to utilize assessment methods that accurately measure students' progress while accommodating different learning styles and abilities. Another crucial training need highlighted by teachers is the development of a community of practice (9.95%). Inclusive teaching is a collaborative effort that requires teachers to engage in ongoing professional development and share best practices. Training sessions that
foster collaboration and encourage the exchange of ideas and experiences would enable educators to learn from one another and collectively enhance their inclusive teaching strategies. Furthermore, teachers expressed a desire for training on networking (9.42%). Building connections with other educators, professionals, and organizations within and outside the education sector can provide valuable resources, support, and inspiration for inclusive teaching practices. Training on networking would equip educators with the skills to establish and maintain meaningful connections that positively impact their teaching approaches. The call for training on innovative learning environments (9.42%) reflects the increasing integration of technology and digital tools in education. Teachers recognize the potential of digital platforms to enhance inclusive teaching practices. However, they require specific training on effectively integrating these tools into their lessons and leveraging their benefits to create an accessible and engaging learning environment.

![Figure 8 Main answers to the fourth question of the focus group](image)

**4 Conclusion and future directions**

Building upon the outcomes of the preliminary investigation, which acts as the project's foundational stage, there is optimism surrounding the distinct requirements and viewpoints of the participating teachers regarding the professional growth of inclusive educators. However, while the results of this preliminary study hold significant value in terms of direction, it is important to consider the limitations it encompasses. These limitations primarily stem from the qualitative nature of the inquiry, which tightly focuses on the context and participants involved and the small and non-probabilistic sample selection. Additionally, the literature has extensively discussed the challenges and opportunities associated with the focus group methodology used in this inquiry, highlighting the risk that, while on the one hand, it allows for the collection of a wide range of opinions and facilitates in-depth dialogue, not often achieved with individual interviews, on the other hand, certain socially acceptable opinions may predominate. Some participants may significantly influence the research process (Smithson, 2010). Overall, the conduct of the inquiry and the data analysis have considered these aspects and their complexities.

The findings obtained represent a fundamental contribution to the design of the LL aimed at the community of teachers involved in the research. Moving forward, the research will further delve into the emerging data through additional analysis and reflections. To enrich and expand upon the findings, a dedicated focus group will be organized to explore topics related to digital training. Subsequently, the community of teachers will be actively engaged in implementing the proposed LL. This involvement will encompass various stages, including participatory design, platform development, and iterative evaluation of the products and outcomes. Each step will contribute to developing and enhancing the LL, fostering a collaborative and adaptive approach. Finally, priority will be given to disseminating and sharing the research results and the final project product. This
phase is crucial as it allows for broader dissemination of knowledge, enabling other educators and stakeholders to benefit from the results and resources generated during the project. Through this comprehensive approach, the project aims to contribute to the ongoing professional development of inclusive teachers and create a lasting impact within the educational community.

5 Statement of Researchers

5.1 Researchers contribution rate statement

This work is the result of the combined contributions of the authors, each of whom is credited in detail for their respective parts: Gabriella Ferrara paragraphs 1, 1.2, 2.1, 3, 3.3, 3.4; Maria Moscato paragraphs 1.1, 2, 2.2, 3.1, 3; Francesca Pedone paragraph 4.

5.2 Conflict statement

The authors declare no potential conflicts of interest.

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