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Community Notebook

People, Education, and Welfare in society 5.0

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ACTIVE CITIZENSHIP FOR THE DIGITAL SOCIETY.
EXPERTISE, BEST PRACTICES AND TEACHING
IN THE DIGITAL ERA

edited by
Stefania Capogna, Manuela Minozzi, and Danila Scarozza

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3. SOCIAL INNOVATION AS A PLATFORM FOR HYBRIDIZING EDUCATION SYSTEMS[1]

di Dario Carrera[*], Melih Boyaci[**], and Domenico Maria Caprioli[***]

Abstract: *The connection between social innovation and education crosses the domain of technology in a wide and composite field. The development of new digital tools for content creation - including the no-code authoring tools - and the capability to create low-cost and highly replicable learning environments has been generating the birth of social and innovative enterprises, providing non-formal education, complementary to the public education system.*

Key Words: social innovation, education, technology enhanced learning, problem-based learning.

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L'INNOVAZIONE SOCIALE COME PIATTAFORMA PER IBRIDARE I SISTEMI EDUCATIVI

Abstract: *Il legame fra innovazione sociale ed educazione attraversa il dominio della tecnologia in un campo ampio e composito. Lo sviluppo di nuovi strumenti digitali per la creazione di contenuti – compresi gli strumenti di no-code authoring – e la capacità di creare ambienti di apprendimento a basso costo e altamente replicabili ha generato la nascita di modelli di impresa sociale e innovativa, che forniscono un'educazione non formale, complementare al sistema di istruzione pubblico.*

Parole chiave: innovazione sociale, educazione, apprendimento potenziato dalla tecnologia, apprendimento basato sulle sfide sociali

1. Educating social innovation

Most literature on social innovation takes its origins from works focusing on the non-profit sector and social entrepreneurship and looks at it such as a (no more) recent evolution of a part of informal organizations run by civil society, addressing social aims via managerial and business models. One of the very first authors who succeeded in spreading all over the world a new understanding of limits and perspectives for *social businesses* was Mohammed Yunus with his book "Creating a World Without Poverty" (published in 2008). In responding to the limits and failures from public policies and Corporate Social Responsibility initiatives, Yunus identifies the only decisive path into 'social business', defining it as a part, a subset of social entrepreneurship. In social business ventures, donors and investors, shareholders and employees, profit and not for profit organizations can cohabit in the same arena guaranteeing

sustainability and development.[2] Even nowadays, Yunus' perspective remains fascinating and spawned by empirical evidence. However, it still appears in its early stage and not entirely recognized and appreciated. Most of the media gave Grameen Bank much attention, but they always presented the microcredit experience just relegated to Bangladesh or other deprived regions in the world.

Over the past 40 years a "third way" was led by non-profit and public benefit initiatives, movements of citizens, then by social entrepreneurs and, finally (during the last fifteen years), we are discovering social innovators or – according to Yunus' wording – "social businesses" run by "innovative" entrepreneurs changing the paradigm, also at institutional level.

European Commission tried to define the boundaries of this phenomenon, supporting, and defining 'Social Economy' and 'Social Enterprise'.

Box 1- Defining Social Economy

Social Economy [...] includes cooperatives, mutual societies, non-profit associations, foundations, and social enterprises. They operate a very broad number of commercial activities, provide a wide range of products and services across the European single market, and generate millions of jobs. Social enterprises are also the engine for social innovation.
A 'social enterprise' is an operator in the social economy whose main

[2] The author stresses the multidimensionality of people, and in this element states that a unique way of enterprising is not coherent with the nature of women and men which might be devoted to mixed models where different actors could co-operate via a diversity of tools and models, according to synergic strategies. This approach could generate for the public sector a major understanding of the influence of social enterprises into the policies, a growth of competences for non-profit managers whose skills could be enriched by relationships and sharing with for profit businesses that, on the other hand, could intensify their investments and joint ventures with social entrepreneurs.

objective is to have a social impact rather than make a profit for their owners or shareholders. It operates by providing goods and services for the market in an entrepreneurial and innovative fashion and uses its profits primarily to achieve social objectives. It is managed in an open and responsible manner and involves employees, consumers and stakeholders affected by its commercial activities. The Commission uses the term 'social enterprise' to cover the following types of business:

- *Those for who the social or societal objective of the common good is the reason for the commercial activity, often in the form of a high level of social innovation;*
- *Those whose profits are mainly reinvested to achieve this social objective;*
- *Those where the method of organisation or the ownership system reflects the enterprise's mission, using democratic or participatory principles or focusing on social justice.*

(European Commission, Internal Market, Industry, Entrepreneurship and SMEs)[3]

The social economy has traditionally been associated with the non-profit sector. However, we are now witnessing the rise of hybrid institutional models that combine profit-seeking with social or environmental goals. Institutional and informal changes have had an impact on inter-organizational relations, on the legal structures governing organizations and their business or operations models. More and more organizations are practicing what can be called social entrepreneurship (Nichols, 2007), driven by what Geoff Mulgan (2007) defined as 'social innovation'. The most innovative social entrepreneurs are opening entirely new fields of economic activity – such as fair trade, information technology for social change, responsible tourism, sustainable

[3] Source: https://ec.europa.eu/growth/sectors/social-economy_en (last consultation 6-1-2023).

design, faire fashion etc. – alongside innovative organizational models (Mulgan, 2007). These activities neither fit nicely into current institutional and legal frameworks; this represents the most critical breaking point with all the theories and legal acts trying to frame the social economy.

If the hybridization of public, for profit and third sector archetypes aims to align closely operating systems (public policies, business models, knowledge) under a unique and shared vision (having positive impact to society), the reality expresses a jeopardised picture demanding a transformative entrepreneurship (even in public sector) capable to play in the overlapping areas between public and private sphere and generate a positive impact to society. In this transformative process, innovation plays a key role in interpreting and re-designing tools and methodologies in favour of a wide and distributed impact.

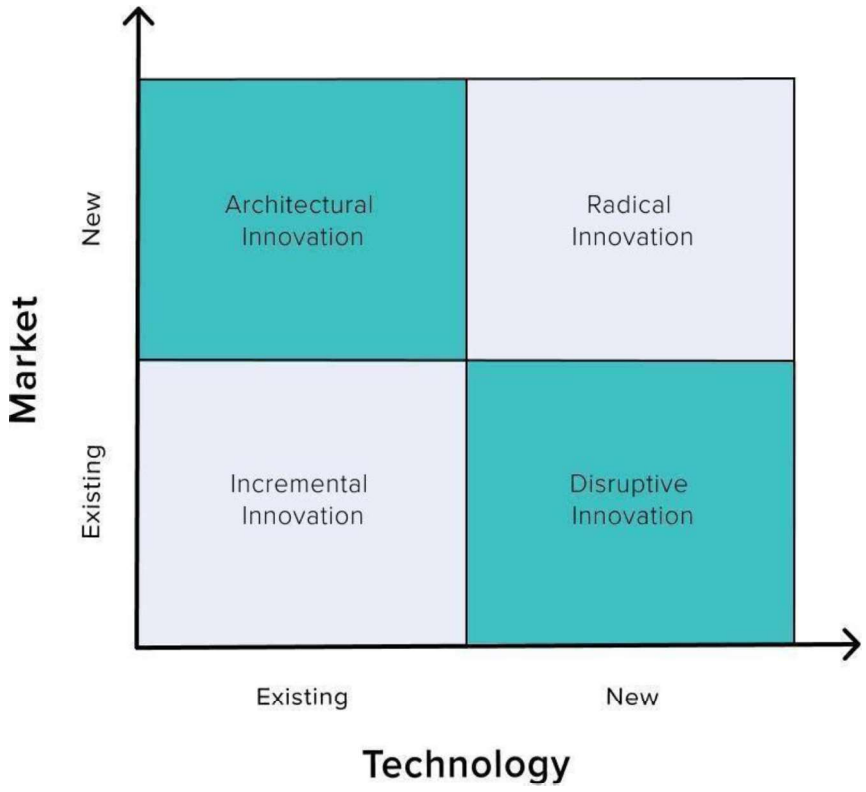
The 'Innovation Matrix' is one of the most common ways of classifying different types of innovation:

- ➔ architectural innovation consists in applying existing practices, technology, know-how within a different market;
- ➔ radical innovation allows new industries creation via the application of 'revolutionary' technologies able to change society;
- ➔ incremental innovation can be codified as a series of small and continuous improvements that, in a systematic way, impact large-scale organisational change;
- ➔ disruptive innovation changes markets and their value network.

Combining the use of technology and markets implementation, as diverse authors point out, "innovations will obviously differ in the scope and scale of their impact - architectural innovations are likely to have a higher impact than regular innovations. In principle, however, it should not be

neglected that more 'incremental innovations', if aggregated, can have a higher impact than more revolutionary and thus visible 'disruptive innovations' (Anheier *et al.*, 2019; Christensen, 2000).

Figure 1: The Innovation Matrix



Source: ideadrop.co

As is evident, 'regular' innovation is technology-driven with its metrics and business models, on the other side social innovation is a process, a mindset, a code for defining this changing scenario. It embraces new ideas or solution proposals to the needs of humans which have not been fulfilled, to increase their life standards and welfare, and whose benefits, outcomes and positive impacts are spread, measurable and replicable.

Policy makers, academia and even big corporations are more and more attracted by this new phenomenon, able to hybridize the diverse sectors (public, for-profit e and non-profit) and legitimize the "impact" of their actions. The box below aims to collect some social innovation definitions.

Box. 2 - Defining Social Innovation

[…] a novel combination of ideas and distinct forms of collaboration that transcend established institutional contexts with the effect of empowering and (re-)engaging vulnerable groups either in the process of social innovation or as a result of it.
(Rehfeld et al., 2015)

Three key approaches to social innovation:

1. *Social demand innovations which respond to social demands that are traditionally not addressed by the market or existing institutions and are directed towards vulnerable groups in society. They have developed new approaches to tackling problems affecting youth, migrants, the elderly, socially excluded etc.*
2. *The societal challenge perspective focuses on innovations for society through the integration of the social, the economic and the environmental.*
3. *The systemic change focus, the most ambitious of the three and to an extent encompassing the other two, is achieved through a process of organisational development and changes in relations between institutions and stakeholders.*

(BEPA-Bureau of European Policy Advisors, 2014)

Social innovations are new ideas that meet social needs, create social relationships, and form new collaborations. These innovations can be products, services or models addressing unmet needs more effectively. The European Commission's objective is to encourage market uptake of

innovative solutions and stimulate employment.
(European Commission, Internal Market, Industry, Entrepreneurship and SMEs: Innovation Union initiative, 2010; Social Investment Package, 2013)

Social innovation is about new ideas that work to address pressing unmet needs. We simply describe it as innovations that are both social in their ends and in their means.
Social innovations are new ideas (products, services, and models) that simultaneously meet social needs (more effectively than alternatives) and create new social relationships or collaborations.
(Open Book of Social Innovation, Murray, et al., 2010)

[...]social businesses run by innovative entrepreneurs.
(Yunus, Creating a World Without Poverty, 2008)

[...] we redefine social innovation to mean: a novel solution to a social problem that is more effective, efficient, sustainable, or just than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals.
[...] an innovation is truly social only if the balance is tilted toward social value—benefits to the public or to society as a whole—rather than private value—gains for entrepreneurs, investors, and ordinary (not disadvantaged) consumers. We want to differentiate social innovations from ordinary innovations because the world is already amply equipped to produce and disseminate ordinary innovations. [...] At the end, a social innovation can be a product, production process, or technology (much like innovation in general), but it can also be a principle, an idea, a piece of legislation, a social movement, an intervention, or some combination of them."
(Phills et al., 2008)

"Social innovation refers to new ideas that work in meeting social goals". This means "'innovative activities and services that are motivated by the goal of meeting a social need and that are predominantly developed and diffused through organizations whose primary purposes are social.
(Mulgan, The Process of Social Innovation, 2006)

Following an interesting definition scheme, we can identify three main approaches to social innovation (European Commission, 2011; Bonifacio, 2014):

- the social demand approach (the 'ghetto' view), responding to social problems related to vulnerable groups that are traditionally not addressed by the market or the state;
- the societal challenge approach (the 'reformist' view), integrating the social, the economic and the environmental issues via hybrid models in terms of partnerships, new governance structures and business models;
- the systemic change approach (the 'empowering' view), consisting in a process of organizational development and changes in relations between institutions and stakeholders. The process of reforming society in the direction of a more participative arena where empowerment and learning are sources and outcomes of well-being (European Commission, 2011: 36-38; Bonifacio, 2014:153-154).

Some researchers (Spila *et al.*, 2016) state that despite strong demand from policy-making institutions, the development of proper indicators for measuring social innovation "is still a pending task". Probably this is due to a still "no wide consensus on its definition, its determining factors, the most appropriate methodologies and the metrics required for this purpose". Focusing on the institutional context, the authors propose an intriguing assumption about social innovation as a process for solving 'anomalies'. An anomaly (the point A in the fig.2.4) "expresses a kind of social problem that cannot be solved with the resources and knowledge available in the mainstream." It is the origin of a process with specific barriers (B) and drivers (D), generating diverse impacts in function of the quality and scale of solutions adopted. Public policies or, as named by the authors, the

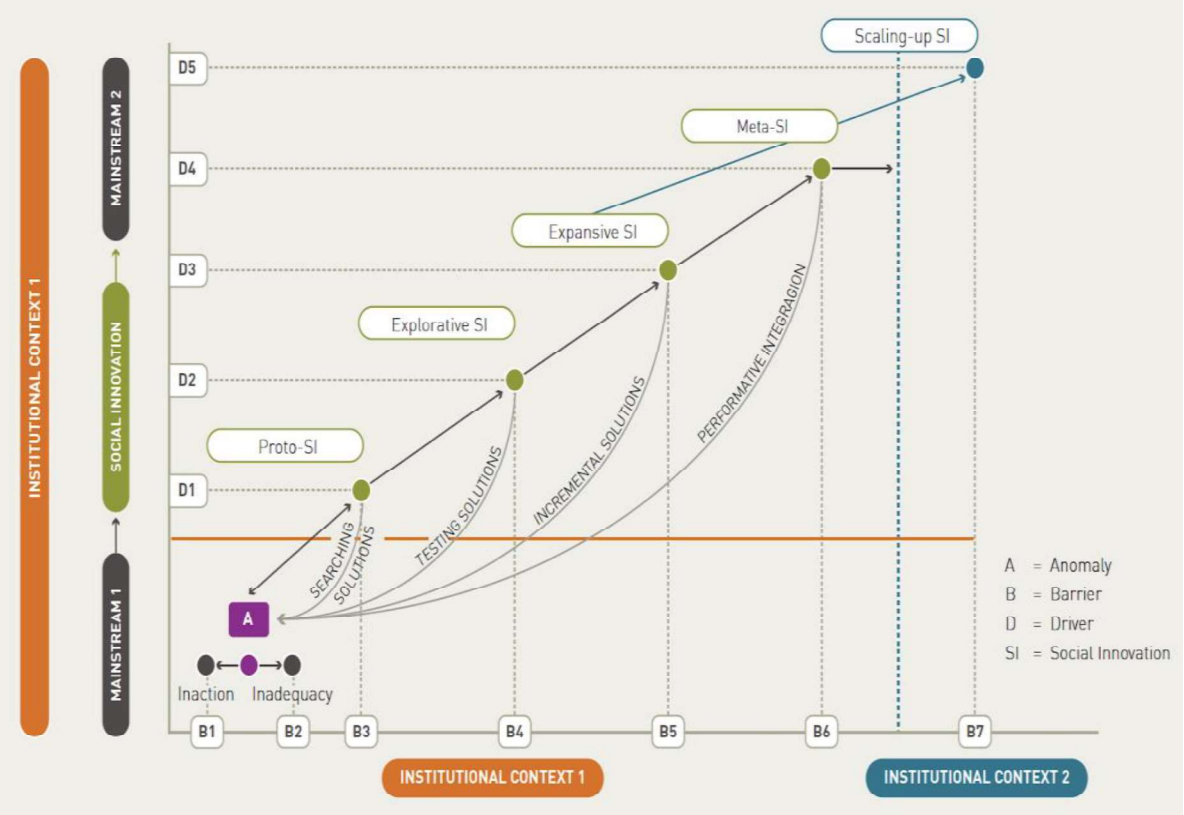
responses of the institutional context (into mainstream 1) could be identified as follow:

"(a) the non-response. This means: the institutional context does not answer to the vulnerability problems created by the anomaly and lets the problem persist (this option is related to the costs of inaction);

(b) the inadequate response. This means: the institutional context gives a response to the anomaly with inadequate resources and solution criteria for the social problem and therefore the problem persists although some of its impacts may be reduced (this option is related to knowledge asymmetries and the costs of action);

(c) the innovative response. The institutional context provides a new response to the anomaly. Thus, social innovation can reduce the impact of the problem and resolve the conditions linked to the production of the anomaly and mitigate its consequences. However, innovative responses may fail due to the context's resistance (social, institutional, economic, cultural resistance, etc.) in any of the phases of a social innovation. This way, three kinds of failures in the response (resolution) to an anomaly can be identified" (Spila *et al.*, 2016).

Figure 2: Lifecycle of Social Innovation



Source: Spila et al, 2016

This process should enable several levels and typologies of social innovation - Proto, Explorative, Expansive, Meta and Scaling-up, until the 'Mainstream 2', where the phenomenon is completely integrated in the society, into the legislation and business mindset with a 'performative integration' that "changes the direction of the mainstream network of policies and epistemic communities linked to an anomaly". The figure 3 is related to the possible and diverse combinations of barriers, drivers, and stage of social innovation.

Figure 3: Development stage of Social Innovation

DEVELOPMENT STAGE	DRIVERS/BARRIERS
Failue by interaction	» **B1:** Failure of the state or the market
Failure by inadequancy	» **B2:** Failure of the state or the market
Social proto-innovation (searching innovative solutions)	» **B3/D1:** Express the relationship between drivers and barriers that facilitate/ hinder modelling innovative ideas
Explorative social innovation (testing innovative solutions)	» **B4/D2:** Express the relationship between drivers and barriers that facilitate/ hinder modelling innovative ideas (formalise the experiences in a SI pattern)
Expansive social innovation (incremental innovative solutions)	» **B5/D3:** Express the relationship between drivers and barriers that facilitate/ hinder incorporating incremental improvements (expand) in a modelled social innovation (scaling-deep).
Meta social innovation (transformative integration)	» **B6/D4:** Express the relationship between drivers and barriers that facilitate/ hinder modelling the incorporation of social innovation into the mainstream (and transforming it into a paradigm).
Transfer social innovation (scaling-up)	» **B7/D5:** Express the relationship between drivers and barriers that facilitate/ hinder the transfer of modelled social innovation towards other social contexts.

Source: Spila et al., 2016

Taking inspiration by this model, future works should be undertaken in testing the state of the art of social innovation in specific contests and fields of everyday life: education is, surely, one of these and a unique platform to embrace methodologies and contents from different fields and perspectives for fostering future social innovators for a better society. The theoretical framework of this work can be identified in the following research question: the role of social innovation organizations in influencing educational systems through evidence-based practices, hence how formal and institutional learning environments can be open to unexpected and innovative tools and methodologies. The case studies selected and quoted, are the starting points for further development of the topic, embracing research proposals and specific areas of investigation which could be addressed with specific analysis on public policies, entrepreneurship, and civil society organizations. This work aims to promote an initial debate to test a valuable first setting for future elaborations in a common and generative knowledge platform.

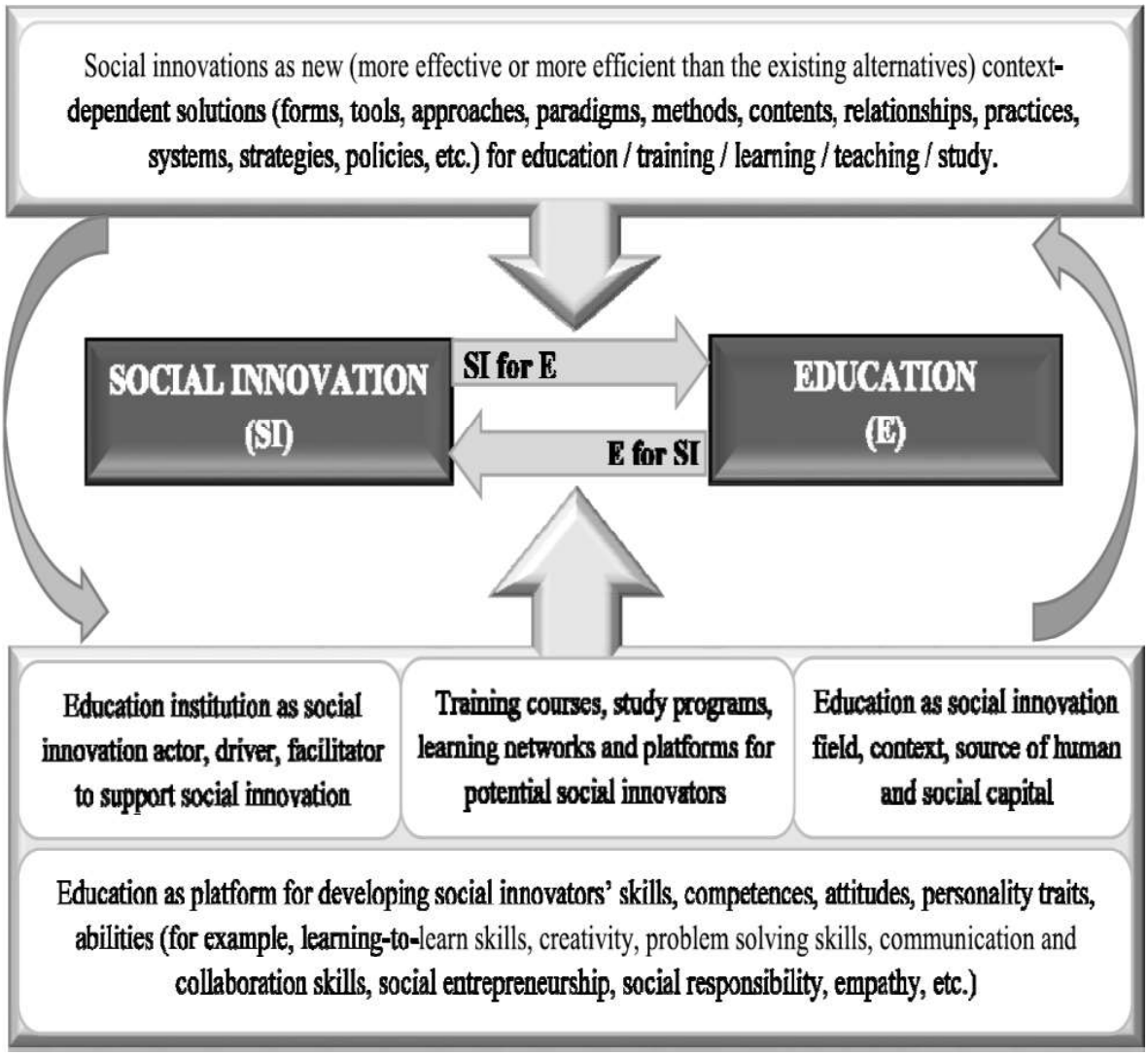
2. *Social Innovation as a Platform for Education in Governing Uncertainty*

The interpretation of social innovation as a platform, as pointed out by some authors (Snissar Lobo *et al.*, 2022), "[...]a platform is a holistic model that creates impact by facilitating exchanges of value between two or more interdependent groups". This must be considered "not as a service provider but rather a "connector" of actors of society, "[...]create shared value, and address the problem contextually. They enhance their capabilities with relevant tools and resources (data, knowledge, connections, etc.) to innovate and by engaging new and different stakeholders to

contribute to the solution. The ability to explore, analyse, predict, and act on data and insights helps to identify future needs and problems and seeds new solutions" (Snissar Lobo *et al.*, 2022). The bi-directional interaction between education and social innovation can be seen in Figure 4, where the authors Surikova S.*et al.* (2015), starting from the OECD publication "Innovating to learn, learning to innovate" (2008), states that:

- social innovation for education (SI for E) "concerns new solutions (forms, tools, approaches, paradigms, methods, contents, relationships, practices, systems, strategies, policies) for supporting, improving quality and transforming of education / training / learning / teaching / study (Pol and Ville, 2009; OECD, 2008, 2013; European Commission, 2011; Bulut *et al.*, 2013; Krlev *et al.*, 2013; Ümarik *et al.*, 2014);
- education for social innovation (E for SI) "relates to the development of the set of skills, competences, attitudes, personality traits and abilities needed for making social innovations come true. [...]Education is determined to be one of social innovation fields (Bund *et al.*, 2013) with powerful source of human and social capital which create an appropriate context for developing social innovation ecosystem (EC, 2011; Mancabelli, 2012; Nichols *et al.*, 2013; Bhatt and Altinay, 2013)".

Figure 4. A conceptual model of interaction between social innovation and education



Source: Surikova S. et al. (2015)

Education plays a significant role in creating the right "pre-conditions" in generating job opportunities for youth, "reducing societal disparities, ensuring better inclusion of vulnerable and marginalized groups, and creating impactful research that generates sustainable socio-economic returns [...]; addressing the deficits, constraints and limitations of an educational system. [...] Given the

complexity of social problems, the overall process of social innovation requires a multidimensional approach to developing effective solutions (Paunescu *et al.*, 2022:19-20). This process has been developed by Loogma *et al.* (2013), conceptualizing a model for facilitating educational change in different steps:

- identification of the problem or need;
- designing and planning the logic framework;
- responsibilising social agents in the specific contexts (social mechanisms) for achieving basis of legitimacy;
- measuring social outcomes.

The complex characteristics of the contemporary societal challenges require a multi-layered, multi-stakeholder and multi-dimensional approach (Ağırdır, 2022), in order to understand the different perspectives, solutions and possible scenarios: i) multi-layered refers to the ability to understand root problems that are underlying a phenomenon; ii) multi-stakeholder refers to the ability to empathize with different stakeholders in order to understand their views, and iii) multi-dimensional refers to the ability to analytically view such problems in order to understand different components and their relation to each other. Developing multi-layered, multi-stakeholder and multi-dimensional approaches to problems require a shift from perfecting existing solutions to developing skills and capacities to adapt to the changing circumstances (Careau *et al.*, 2014). These capacities include, but are not limited to empathy, creativity, communication skills, self-management, conflict management, critical and structured thinking, and cultural awareness (Schulz, 2008). To develop these capacities, current learning methodologies – designed for the industrial era – need to change (Reigeluth and Garfinkle, 1994): education is not only aimed at developing knowledge, but also skills that determine individuals' success in a group and in differentiating contexts.

Complex problems require skills that not only enable us to create solutions for isolated problems on our own, but also help us to create collective and systemic responses. Existing learning methods involve linear 'learn-test-pass' cycles, in which course material is first taught to students, for which they are tested through different formats (essays, multiple choice tests, group works, etc.). At the end of the course, learners pass or fail these tests and complete the course or move on to the next courses.

Firstly, such a linear approach is focused on problems with a degree of certainty. As mentioned above, contemporary problems involve a very high degree of uncertainty, and as a result, learners who are used to being presented with isolated problems are deprived of the skills that can help them navigate in the face of such variability brought by changes (An and Mindrila, 2020)

Secondly, earlier we have put forward that social innovation is a process for solving 'anomalies' that cannot be solved with the resources and knowledge available in the mainstream. Since existing learning methods depend heavily on fixed curricula determined by the teacher, they involve the application of the taught knowledge to set problems generated according to the course material. However, since social problems are highly contextual depending on the geography, culture and historical background, a more generative approach is needed: learners should not be passive, but able to participate in the content based on the problems they are trying to solve (Jamornmarn *et al.*, 2013; Ewell, 1997). This renders the role of the teacher from a conveyor of information to a 'facilitator', who guides the students in their learning processes (Major and Palmer, 2001; Abrandt *et al.*, 1998). Therefore, learners are guided in the process of exploration, research, solution generation and application.

Thirdly, current learning methods measure individual knowledge almost exclusively. Even though teamwork already exists

in current learning formats, they very rarely involve components that are addressed towards 'the enjoyment of sharing tasks' (Alves *et al.*, 2012). Lack of effective teamwork hinders the development of soft skills such as empathetic listening, analytical thinking, leadership, and creative problem solving. The engagement of the learners with the content, the teacher, and with other learners decreases, partly because of the dependence on individual knowledge, and partly due to not being able to put the learning content into context (Johnny, 2008). This leads to the underutilization of resources, where the overload of information through online and offline courses, reading materials, videos, podcasts, etc. does not turn into meaningful and applicable learning.

Fourthly, in current methods, students are introduced with a fixed problem. In the real world or in professional settings, these foreseeable problems rarely occur. The comfort provided by teachers in the form of predictable problems hinders the development of capacities such as proactivity, taking more risk and spotting points of improvement.

Finally, current formats do not give enough space for like-minded learners to interact, learn from each other's (i.e., they do not give enough room for interaction)[4].

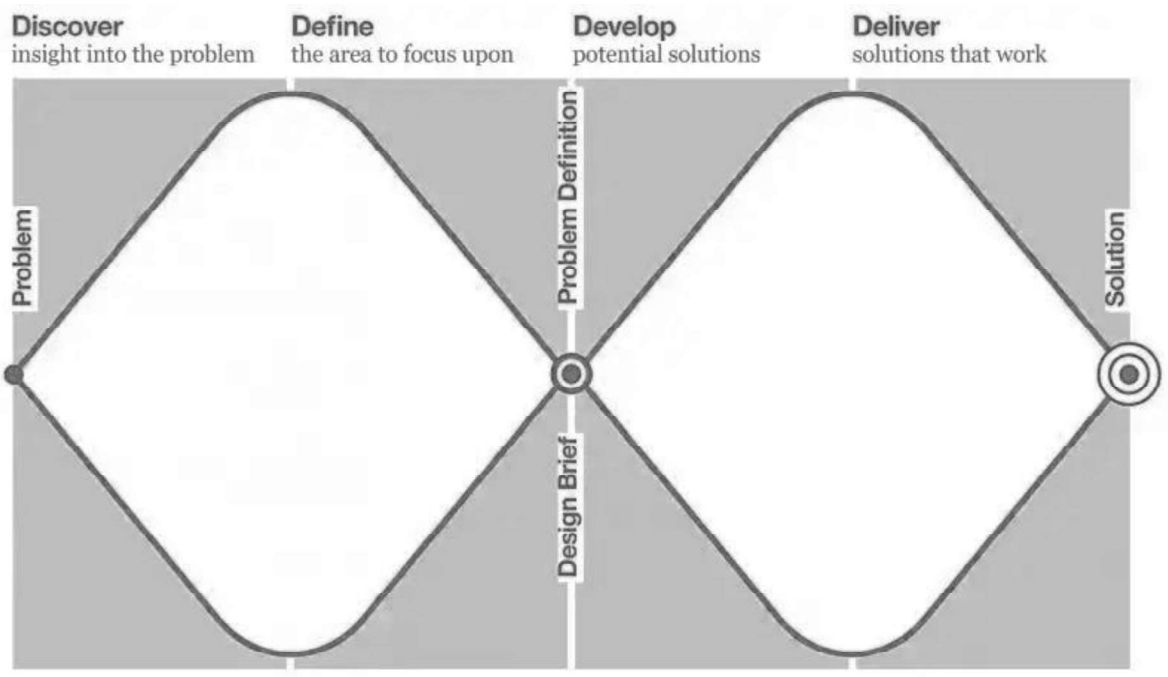
A possible solution could be identified into problem-based learning (PBL): an approach 'in which students learn about a subject by working in groups to solve an open-ended problem. This problem is what drives the motivation and the learning'[5]. Linked to this, design thinking's process structure could build an alternative

[4] This is partly because learning contents are standardized and give little to no room for the learner to establish personal connection to the content. This, in return, further lowers the engagement of the learners and detaches them from the learning process (Hurst, B. *et al.*, 2013).

[5] Source: https://teaching.cornell.edu/teaching-resources/engaging-students/problem-based-learning (last consultation 6-1-2023).

path. “Design thinking is generally defined as an analytic and creative process that engages a person in opportunities to experiment, create and prototype models, gather feedback, and redesign” (Razzouk and Shute, 2012). To propose a structure on how problem-based learning can work in cycles, we draw upon the five-stage structure of design-thinking methodology. These stages include empathize, define, ideate, prototype, and test. At this point, it is also important to highlight that the recommendations described below are not about what should be taught in learning processes, but more about how the content should be delivered. The “double diamond model” (Fig.5) shows the problem definition and solution development phases. First, the initial generic problem is explored. Arter the research, teams define their specific problems. Then, each team works to ideate on possible solutions. Finally, teams narrow their ideas to a solution to be prototyped and tested.

Figure 5: The double diamond model



Source: Lipiec, 2019

The process starts with the introduction of a fuzzy generic problem. This generic problem is more like a theme than a well-defined problem. At this point, learners are expected to start exploring the problem by doing primary and secondary research. The research techniques include participant observation, stakeholder interviews, expert interviews, desk research, etc. This way, learners can understand deeper the initial problem and develop empathy with the stakeholders, and how they view the problem. This helps learners to understand the problem with its different dimensions. After developing an understanding of the problem, learners share and discuss their learnings from their research, and define a point of intervention: a narrowed-down form of the initial problem, which includes this time a target stakeholder. By using their knowledge and skills, learners try to identify the best fit between what they can achieve, and what will be the most effective way of creating positive impact. This narrowed-down question is called a challenge question. Once the challenge question is formulated, learners engage in collective ideation processes, where they utilize their existing knowledge, insights from their research, and creative skills to bring together many possible solutions. At this point, lifting barriers against creative confidence and letting the learners develop their solutions without hesitation is of utmost importance. Teachers are responsible for introducing such ideation techniques, and guiding learners through the facilitation during the creative sessions.[6] Learners should be engaged in game-like activities to free

[6] Ideation techniques include the worst possible idea, where learners try to find the worst solution to a problem and then reverse the thought process in order to come up with good ideas; forced analogies, where learners use features of an irrelevant concept in order to bring 'forced' solutions to problems; brain dumping, where learners write their ideas randomly without filtering, and then build affinity maps based on the patterns of their ideas; and brainwriting, where learners write their ideas and pass it on to other group members in order to make constructive feedback.

themselves from the social anxieties and build creative confidence. After teams generate enough ideas, they narrow down to a single solution based on the criteria they determine with their teacher. This process is very important in developing skills such as setting criteria based on context, facilitating discussions and leading participatory decision-making processes. Teams move on with their solution to prototyping. During prototyping, each team builds an early prototype of their solution in the form of a storyboard, sketches, formulations, mock-ups, or any other technique that gives a visualized and understandable explanation of how the solution works, what it solves and what the design's components are.

Finally, during the test phase, learners bring their prototypes to their stakeholders, receiving feedback on them to see if the solution is a good fit to their problems. In this testing process, depending on the learning goals of the course, learners can be asked to combine these learnings into a report to be shared with the teacher and other teams to make a final evaluation. With this course structure, there's reason to believe that learners can first analytically define and approach a problem, understand its components, build creative solutions as a team, build an early prototype of the solution, and share learnings with fellow learners in order to reflect on their process, and receive constructive feedback. This way, they can make sense of the content in context, and develop skills to apply their knowledge in different settings in the future. A valuable case study is the 'Social Innovation School' in Sardinia, Italy, an advanced training course, run by Rumundu association,[7] to rethink and reshape organizations in a sustainable way, and help people to be aware and responsible leaders. An unconventional course, in presence, based on the stress-testing of development models, individual and group activities, co-creation

[7] See: https://rumundu.com/en/ (last consultation 6-1-2023).

and co-design, acceleration and deceleration methodologies. After supporting thousands of young social innovators in years, one of the latest initiative, MediterranEU, aims to involve young people coming from areas in conflict (Israel-Palestine, Mali, Nigeria, Serbia-Kosovo, Azerbaijan-Armenia, Colombia, Russia-Chechnya): after living together in the international student house of the association Rondine Cittadella della Pace, and acquiring the tools and skills to prepare and implement a project with international impact, the group faces in the Rumundu Academy a path of advanced training aimed at fostering the birth of initiatives able to affect the local realities of countries in conflict, with the ambition of triggering a profound social, economic and political change in the Mediterranean. Another exemplary case study is the Embark Project from Turkey,[8] which works to build a nonformal learning environment for business leaders, refugees, and host communities. The project offers programs including reverse mentoring, where young participants give mentorship to senior managers from corporates, and student consultancy programs, where students are gathered in groups and matched with corporations to create solutions for the challenges the corporation is facing. By applying the human-centred design approach, the students get the chance to develop core capacities such as research design, empathy, communication, public speaking, analytical problem solving, and stakeholder management. The trainers are not positioned as teachers of the content, but they guide the participants throughout the process by helping them in designing research, conducting interviews, developing ideas, and building prototypes to be tested.

Social Impact Award (SIA[9]) is another practice of learning through social innovation. Conducted since 2009 and now more than 25 countries, SIA is a program that helps youth discover the

[8] See: www.embarkproject.com (last consultation 14-2-2023)
[9] See: https://socialimpactaward.net/(last consultation 14-2-2023)

field of social entrepreneurship and take their first steps as social entrepreneurs. The program consists of workshops, an incubation process, mentorship, and network support activities. Through workshops, the young prospective social entrepreneurs learn by turning their rough ideas into start-ups and develop impact and business models. Through peer-to-peer interactions, the participants learn the basic concepts regarding social entrepreneurship by actively engaging in the development process. From the applicants, selected participants move on to incubation, where they work closely with the program teams and mentors to further develop and materialize the start-up ideas. As a result, every participant learns how to develop their ideas into a social start-up by practicing it. Again, the trainers remain as guides or facilitators and do not control the content. Although SIA provides all the implementing teams with the relevant contents, each implementing partner has the autonomy to tailor these learning activities according to the local needs. Also, by working on their ideas, which they think will create a positive social impact, participants develop emotional and intellectual bonds with the learning content. Finally, through peer-to-peer learning activities, they develop a belonging to the group that they are learning with.

3. Technology Enhanced Learning for Hybridizing Education Systems

The connection between social innovation and education crosses the domain of technology - for instance - with regards to the TEL (Technology Enhanced Learning), a wide and composite field, which lies between the learning and the education areas.

Globally, the pandemic has imposed a prodigious acceleration on the theme of TELs, having led to the removal from

school of 90% of the world's school population.[10] In June 2020, the European Commission's Joint Research Centre (JRC) launched a large-scale survey – conducted in over 11 countries and also supported by organisations such as UNICEF and Save the Children – to measure the impact of the paradigm shift technology in education, verify its effects and reflect on the opportunities.[11] It has become a still open research table which, after recognizing the numerous criticalities in emergency management and immediate follow-up, has identified the extraordinary potential of TELs in guaranteeing quality education for all, overturning one of the main limits recorded in the pandemic situation (linked to inequalities). Moreover, the potential of TELs has been widely recognized for at least 30 years, when research began to investigate the impact of information technologies on the integration of children with special educational needs into curricular activities. In a fluid society like the contemporary one, digital technologies – whose main function is to govern complexity – can provide a valuable service in the management of heterogeneous territorial realities, reaching a granular, individual modelling level. TELs summarise key emerging technologies such as 5G/6G, Extended Reality (XR), Blockchain, remote sensing and Artificial Intelligence (AI), which will be considered below, but we can also summarise them by their purposes, flowing in three main riverbeds:

1. TELs for improving and enhancing the educational contents.
2. TELs for the improvement of the learning effectiveness and experience.
3. TELs for the enhancement of the access to high level education.

[10] See: https://www.unesco.org/en/covid-19/education-response (last consultation 10-2-2023).
[11] See: https://www.savethechildren.it/cosa-facciamo/pubblicazioni/i-giovani-ai-tempi-del-coronavirus (last consultation 6-1-2023).

While the link between the latter point and the social innovation is presumably perspicuous, it is also important to notice that the two previous points are going to play a crucial role into activating local resources and connections.

The development of new digital tools for the content creation – including the no-code authoring tools[12] – and the capability to create low-cost and highly replicable learning environments has been generating – especially under the Covid emergency – the birth of social and innovative enterprises, providing non-formal education, complementary to the public education system. Africa constitutes a reference point, with an impressive growth of the *edutech* sector, which stems from a well-grounded tradition of non-formal technology enhanced learning (interesting to consider that this is the same core on which the technical cooperation relies). The African case is also significant for laying bare the roots which tie informal education, social innovation, and digitalisation as a means of empowerment. The lack or the vulnerability of physical assets and infrastructure has led some of the African countries (particularly in the case of Nigeria[13]) towards the spontaneous acquisition of a digital skill set, to replace physical with digital assets. The African innovation ecosystem is now structurally planning the digital training, but in the last years it has been mainly relying onto the personal initiative, paving the way for an African digital entrepreneurship, which presents very peculiar features, according to the MIT paper

[12] No-code development platforms (NCDPs) allow programmers and non-programmers to create application software through graphical user interfaces and configuration instead of traditional computer programming (Source: Wikipedia, last consultation 6-1-2023).

[13] Cfr: https://www.premiumtimesng.com/opinion/552586-ict-as-a-colossal-symbol-of-nigerias-digital-economy-by-fom-gyem.html?tztc=1; https://guardian.ng/opinion/columnists/catalysing-a-digital-economy-in-nigeria/; https://businessday.ng/news/article/how-nigeria-can-tap-into-3tn-global-digital-economy/.

Digital Entrepreneurship in Africa[14], whose authors conclude that entrepreneurs creatively and productively adapt digital technologies to local markets rather than dreaming of global dominance, achieving sustainable businesses by scaling based on relationships and customising digital platform business models for African infrastructure challenges. The authors examine African entrepreneurial ecosystems; show that their digital entrepreneurs have begun to form a new professional class, becoming part of a relatively exclusive cultural and economic elite; and discuss the impact of Silicon Valley's mythologies and expectations. An overview of the African educational scenario confirms that we are in front of a genuine example of a virtuous hybridation circuit of formal, non-formal and informal education, through social innovation. The presence and the commitment of the social innovation organisations, their effort to create non-formal learning environment, with the purpose to empower the local communities, as well as to train recruitable human resources in loco, have contributed to provide the local communities with both the technological device and the basic skills to facilitate the development of new ways to fill the skill mismatch, relying on the informal education. Finally, this combination has produced a smart and well-equipped cultural group, which has begun to exert pressure on the formal education system, triggering a conformational change which is now perfectly distinguishable. Breaking down the classification by purposes and looking at TELs from a technological point of view, we can identify five technological ecosystems related to TELs.

[14] Friederici *et al.*, 2020.

I. Visual and immersive technologies for learning.

All extended reality systems, web3 technologies such as the Metaverse and various visual technologies refer to this area. All the technologies and methodologies aimed at building immersive learning environments, in which to promote experiential learning, based on the implementation – in real time – of knowledge in 'real' contexts, fall within this ambit.

II. AI-based systems for modelling learning and training.

This ecosystem brings together technologies – mainly based on AI and Machine Learning (ML) – capable of building personalized learning models, through various types of monitoring and processing big data from heterogeneous sources. These models can be individual, and lead to the development of personalized learning paths, and have the advantage that they can also be conducted on a large scale. The technologies for detecting learning needs also belong to this ecosystem, which today experience a growing demand by virtue of phenomena such as globalization and migratory phenomena.

III. Technological systems and models of sustainability for access to education in remote areas.

In this case, the field of technological innovation is substantially associated with that of public policies. Access to education in remote areas, in fact, passes through the development of a digital infrastructure which – whatever the chosen paradigm – cannot disregard the involvement of policy makers at the national level, first of all, and then at the local level, although many contemporary technologies, as demonstrated on a large scale by the recent case of Starlink in Ukraine, make it possible to bring high-performance internet services to places where a physical infrastructure would be unthinkable or too expensive. Furthermore,

there are technologies which operate without a real infrastructure, such as some satellite services or MiFi technologies.

IV. Technological systems and participatory models for participation in curricular education activities.

One of the first areas in which a technological offer, also available on the market, was aggregated, was that of involving students with special educational needs (SEN) in curricular activities; a trend that fits into what is now driven, for instance, by the association Hackability,[15] which crosses all the technological domains listed here, including physical technologies and artificial intelligence systems for voice or gestural recognition.

V. Technologies for the modelling and automatic generation of training contents.

This area is - probably - the most fertile and the one subject to the greatest push from below. It includes all generative technologies, authoring tools for textual, audio, graphic and motion graphic content, as well as artificial intelligence authoring applications that have recently come to the fore, such as Open AI and Midjourney. Many of these tools are also available free of charge as functions of popular social networks, which has generated an overabundance of educational offers and, above all, the possibility of developing sophisticated content in the absence of equally sophisticated equipment. The impact of these technologies on learning methodologies has been significant and precocious. A 2014 study by the University of Copenhagen already highlighted Facebook's ability to create social learning communities, starting with the development of learning communities dedicated to learning

[15] See: http://www.hackability.it/ (last consultation 6-1-2023).

new languages[16]. The study is echoed in much other contemporary research, including Social Networks for Language Learning, by Ali Derakshan and Samareh Hasanabbasi (2015), in which different functions of social networks used by user communities to improve language learning are considered. With the segmentation of the social networks market, dedicated social networks have arrived, networks of contacts with the aim of mutually supporting each other in learning the language[17].

In this framework, the city of Naples, in Italy, is a suggestive and highly emblematic laboratory.

The city is historically characterised by a very strong associative fabric and traditionally shows a strong tendency towards spontaneous initiatives[18] and is afflicted, among other things, by high youth unemployment, combined with widespread school dropout phenomena[19], exacerbated by the pandemic[20]. School dropout in the city is a typical complex problem, in which various circumstances cooperate, causing significant difficulties of intervention at a systemic level. Since 2010, the lively fabric of social innovation in the city – traditionally very active but fragmented – has begun to aggregate around some poles, such as the municipal administration and, above all, the University of Naples "Federico II". The interaction between these institutions triggered a re-design of the projects which was then expressed in two directions: on the one hand with the bottom-up, non-formal and informal experiences of the "neighbourhood schools", on the other – a formal and non-

16 Mondahl *et al.* 2014 (pp. 339-352).
17 See, for instance: HiNative (https://hinative.com), Lingualia (www.lingualia.com), Speaky (www.speaky.com), (last consultation 6-1-2023).
18 Cattivelli, V., Rusciano, V. Social Innovation and Food Provisioning during Covid-19: The Case of Urban–Rural Initiatives in the Province of Naples. Sustainability 2020, 12, 4444. https://doi.org/10.3390/su12114444.
19 Caroleo *et al.*, 2007.
20 See: https://www.nytimes.com/2021/04/26/world/europe/italy-schools-covid-dropouts.html (last consultation 6-1-2023).

formal level and with the entry of the regional authority – with the establishment, in 2016, of a large Federico II Academy, dedicated to digital professions, sponsored by the American giant Apple and, therefore, called Apple Developer Academy or, more simply, Apple Academy. About three thousand students have passed through the Academy in 6 years, selected with open recruiting programs and often already sponsored by companies which, in Europe, employ almost two million iOS developers. The program includes a placement support service, the effectiveness of which is such as to place students often before the end of the course of study, but the main impact of the project is not limited to this: the creation of a formal but extra-university education has triggered a value generation process whose relevance is not yet easy to define, attracting students and new businesses but also young professionals, often employed as teachers or tutors in the Academy[21]. On the other hand, at another level many third sector subjects operate, trying to transfer a part of this offer of knowledge to problematic contexts, such as the districts of the centre (Sanità, Quartieri Spagnoli, Forcella) or the suburbs, especially in the East (which is the area designated for the birth of the Neapolitan digital pole). Third sector foundations or bodies such as the two Neapolitan community foundations (San Gennaro and Naples Centre), the Foqus foundation, L'Altra Napoli Onlus, Aporema, have built a material and immaterial fabric that has generated a sort of widespread learning environment, made up of physical places, such as the Casa di Vetro in Forcella (promoted by L'Altra Napoli Onlus and co-financed by the Con i Bambini Foundation), a community school with classrooms for advanced teaching (and a significant amount of TELs), gyms and recreational places, as well as of

[21] See: https://www.apple.com/cf/newsroom/2021/09/apple-expands-naples-developer-academy-creating-new-opportunities-for-european-entrepreneurs/ (last consultation 6-1-2023).

educational and integration paths, such as the work carried out, at Sanità, one of the historic districts of the city, by the San Gennaro Foundation and by Aporema, with an important laboratory on the cine-audiovisual languages, which trains hundreds of Neapolitan youth, introducing them to professional paths in the field of video production and motion graphics[22]. The intuition of freeing the creative energies of the territory with non-formal and informal paths oriented, however, towards contemporary demand and with the use of advanced technologies also for teaching, has generated a change of pace, helping to launch the image of an ecosystem of innovation, the Neapolitan one, lively and active. Nowadays, many start-ups are emerging, and more and more large companies are setting up a division in Naples, especially in the eastern area, attracted by the sensitivity of the institutions (municipal and regional) to the theme of innovation and by the availability of quality skills, in a context in which the cost of living is decidedly lower than in northern Italy. The case of Naples, therefore, highlights a complex and circular network of relationships linking social innovation and *edutech* sector, which we can try to untie as follows:

- social innovation and its agents – institutional and non-institutional – have recognized in training a strategic objective and a powerful lever;
- new technologies allow not only high teaching effectiveness, but also high involvement, so much so that some solve the acronym TEL in Technology for Engaged Learning[23];
- new technologies are an attractive educational object, as they provide effective skills, immediately recognized and perceived as important and qualifying;

[22] See the experience of the "Casa dello Scugnizzo Liberato", reported in Fava, 2022.

[23] See: https://www.uagc.edu/blog/using-social -media-as-a-learning-tool (last consultation 6-1-2023).

- TELs allow not only the construction of highly performing learning environments, but – by virtue of the high segmentation - they contribute to generating new innovative ecosystems.

This experience is also interesting for two aspects of governance. The first is that the trigger of this process was the University, especially Federico II, which in recent years has played an increasingly active role in city affairs and regional strategies, qualifying as a fundamental pivot of regional Smart Specialisation Strategy promoted by European Commission[24] and, indeed, generating and conducting a substantially autonomous strategy, on which, then, the municipal and regional institutions aligned themselves, extending their involvement to industrial and financial partners, conveying a territorial development model that is reversed from traditional choices. If, in general, requests for urban redevelopment drive new projects, including educational ones, in the case of Naples it was the project of an academy and, more generally, of a new pole of digital skills, that drove public finance for the redevelopment and, subsequently, private investment. Education triggered the circuit, real estate only followed[25]. Another crucial aspect concerned the role of non-profit organisations and their cooperation with universities (a part Federico II University) and with the local offices of national research centres, such as INDIRE, the National Agency for Research and Innovation on Education. Indeed, the plot twist is that the strategy of building small hubs of informal education had started precisely from those subjects of the non-profit and informal organizations active in problematic neighbourhoods,

[24] See: https://s3platform.jrc.ec.europa.eu/what-we-do (last consultation 6-1-2023).

[25] In support of this consideration, it will come as no surprise that at Federico II University, from 2020, it is possible to attend one of the first-degree courses, in Italy, in Social Innovation. (See: https://www.scienzesociali.unina.it/didattica/corsi-di-laurea/lauree-magistrali/21871738-innovation-social/ (last consultation: 6-1-2023).

with the experiences already mentioned, relating precisely to technological training, but also with famous projects such as Sanitansamble[26] which since 2008 has set up and maintains a large music school in the Sanità district and an orchestra with 80 elements. The project, recently replicated by L'Altra Napoli association in the Forcella district, demonstrated the impact that quality non-formal and informal education can have on children, adolescents, and young people and, consequently, on local communities and their territories. Therefore, after having inspired the University's choices, the non-profit bodies continued by occupying the spaces it left free, covering the missing segments of a training offer which, as mentioned, aimed to become systemic.

Conclusions

Evidently, geographical, and historical backgrounds influence how we can conceptualise and codify the effect of social innovation into the educational systems.

The basic assumption of the work is that social innovation organizations should be more 'generative' than for profits and public institutions, influencing these latter in entering, with a diverse intensity, into the 'social innovation arena'. The education systems can play a crucial rule, underlying the emergence of a transformative approach which, even if declared and needed, appears still in its adolescence in terms of practices run by the existing SIOs and their (potential) ecosystems. The ambitious challenge to combine economic, social, and environmental impacts via social innovation organizations seems depending on key factors that each ecosystem lacks:

[26] See: https://sanitansamble.it/ (last consultation 6-1-2023).

- supportive legal frameworks and dedicated public policies;
- scientific and qualitative data collecting;
- clusters and networks enabling local innovations and spread their impacts at international level.

Even with these huge barriers, any potentialities should be stressed out. Focusing on how education systems can influence the entire social innovation process:

- investing in deep research and understanding of the existing societal challenges and potential needs;
- mapping the (local) key resources – needed and available – and how these can be valorised (potentially at global level);
- prototyping solutions that can be implemented, tested and measured via a common framework of codes (wording) and metrics (impact indicators);
- sharing the knowledge tools (i.e., in terms of methods, context-based research) and spreading the lesson learnt in a common and open dataset;
- supporting the enabling players in the education field (policy makers, teachers, and researchers, even investors and citizens) to vehiculate innovation and *impact awareness* in the field.

Uncertainty brought about by drastic changes in climate and societies makes it more difficult to rely solely on existing knowledge. Constantly changing contexts increase the importance of skills and capacities to adapt knowledge to different emerging situations.

According to Nilson (2010), PBL helps improve skills such as working in teams, leadership, self-awareness, and evaluation of group processes, working independently, critical thinking and analysis, self-directed learning, applying course content to real-world examples, researching and information literacy, and problem solving across disciplines. Nilson's list of skills are strongly aligned with our claims that PBL can improve skills that are crucially

important for individuals to work self-directed in teams to solve complex problems in collaboration with internal and external stakeholders. In such a context, the role of the teacher shifts from the transmitter of knowledge to a facilitator of creation (Kolmos A. *et al.*, 2008). Rather than giving them fixed questions to answer, teachers in this context guide the learners to ask questions in a way that facilitates the generation of creative ideas. Also, teachers can instruct learners about creative ideation methods and help them facilitate discussions between team members. By utilizing PBL, students can be given more control over the learning content and the format, depending on the problem they are trying to solve. Since information is more accessible than ever and there's an overload of resources on the internet and social media, it is more important to help learners develop skills to filter and interpret these contents than to supply the content itself. Moreover, using PBL with a focus on social innovation gives the process a purpose. By dealing with the problems, they face and care for in their daily lives, learners become more engaged and gain a sense of belonging to the content, group members, and to the teacher. In this case, content becomes the means to the purpose, group members become a team, and the teacher becomes a facilitator. Combining PBL with 'user- and learner-centred design' principles, the learning process can be improved with each course cycle, and prototypes can be tested with learners. With the exploration of the learning problems each time with the inclusion of different stakeholders, learning needs can be evaluated and re-evaluated in a participatory fashion; hence, learnings from previous experiences can be better reflected in the future iterations. Additionally, TELs constitute a powerful accelerator for contamination between formal, non-formal and informal education paths. They are not only a support, a new medium, a learning environment, they are also a learning object. The appeal that they exert, for example, on adolescents, as well as

the perception that there is a strong market demand for these technological systems, guide some significant examples of social innovation that demonstrate the connection with training and, above all, in hybridising education systems for preparing the future social innovators as the future builders for a better society.

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