

- System Change Case Studies **Italy**

Education innovation at system level in Italy

*Avanguardie Educative and
Piccole Scuole initiatives*

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Publisher: European Schoolnet (EUN Partnership AIBSL)
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Design: Katherine Liloia

Please cite this publication as:

European Schoolnet (January 2026). Education innovation at system level in Italy, Brussels, Belgium.

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Executive summary

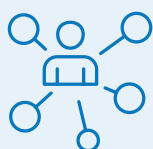
This publication is the second in a series of country case studies on system change in education, examining how education systems support innovation at scale, through different mechanisms, such as large-scale and comprehensive initiatives, intermediary institutions, networks, and system-level stewardship. Following the first case study on [Portugal's Digital Transition Action Plan for education](#), this report focuses on Italy, with particular attention to two long-standing national initiatives coordinated by [INDIRE](#) (the Italian National Institute for Documentation, Innovation and Educational Research): Avanguardie Educative and Piccole Scuole.

Together, these two initiatives offer a distinctive lens on **system-level innovation driven through horizontal collaboration among schools**, rather than primarily through top-down reform instruments. Over more than a decade, Avanguardie Educative and Piccole Scuole have supported schools in experimenting with, formalising, and sharing innovative organisational and pedagogical practices, aiming at embedding these practices sustainably within the Italian education system in the long run.

The case study is based on desk research and a series of study visits to schools that have played a central role in the development of these initiatives. It analyses how innovation has been generated, supported, and consolidated over time, and identifies both **enablers and bottlenecks** for sustained change. Rather than assessing impact in a summative way, the report aims to support **policy learning** by highlighting mechanisms, conditions, and governance choices that may be relevant for other systems facing similar challenges.

Three overarching findings emerge:

Keyfindings



Networks can act as powerful infrastructures for professional learning and innovation when they are grounded in trust, shared purpose, and opportunities for sustained collaboration. In the Italian case, strong bonding relationships within schools and bridging relationships across schools have enabled teachers and school leaders to experiment with new pedagogical models, rethink the organisation of time and space, and strengthen student-centred approaches to learning. INDIRE's role as a steward and broker has been critical in legitimising experimentation, connecting schools to research evidence, and reducing perceived risks.



Embedding **innovation** beyond individual schools remains challenging in a system characterised by strong central regulation, limited school-level control over staffing and resources, and frequent leadership turnover. While many founding schools have achieved significant whole-school transformation, the diffusion and consolidation of innovation across the wider system is uneven. This highlights the limits of relying on voluntary engagement and individual leadership commitment, and points to the need for stronger relational and learning infrastructures that can sustain change over time.



System **stewardship** matters. The Italian case illustrates the importance of actors such as INDIRE, the national research and innovation agency for education of the Italian Ministry of Education, who combines technical expertise, relational credibility, and a long-term commitment to learning. However, it also raises questions about how such a stewardship role should evolve, as initiatives mature; how responsibilities for innovation, scaling, evaluation, and network governance are distributed; how schools' voices are represented; and how learning at network level feeds into policy development and system change.

The report concludes by outlining **options for future development**, with a particular focus on strengthening horizontal relationships within and across schools, clarifying network aims and governance, building leadership capacity for stewardship, and improving mechanisms for collective learning and adaptation. While firmly rooted in the Italian context, these reflections are intended to contribute to broader European discussions on how education systems can support **sustainable, equitable, and context-sensitive innovation at scale**.

1. Introduction

This report is the second in a series of case studies produced by European Schoolnet to support **policy learning on education system change**. **Building on the first case study, which examined [Portugal's Digital Transition Action Plan for education](#)**, the series explores how different countries represented within European Schoolnet are addressing shared challenges related to innovation, equity, capacity building, and system sustainability.

The policy learning approach adopted in this series deliberately moves beyond notions of “policy transfer” or “policy borrowing”. Education reforms are deeply shaped by national histories, institutional arrangements, and professional cultures, and cannot be replicated across contexts. At the same time, **carefully documented experiences can support reflection, anticipation, and informed decision-making** within and across systems confronting similar pressures. These pressures include accelerating digital transformation, changing learner needs, concerns about student and teacher wellbeing, demographic and territorial inequalities, and increasing expectations for schools to innovate while maintaining coherence and equity.

Whereas the Portugal case study focused on a **national, time-bound reform strategy led by central authorities**, this report turns to **Italy**, where system-level innovation has been pursued through a different pathway. Rather than a single overarching reform programme, the Italian case study centres on two interrelated initiatives—Avanguardie Educative and Piccole Scuole—that have evolved over more than a decade through **school-led experimentation, supported by a national research and innovation agency (INDIRE)**.

Avanguardie Educative was launched in 2014 to bring together schools experimenting with innovative organisational and pedagogical practices, with the ambition of transforming traditional models of teaching, learning, time and space. Piccole Scuole emerged in parallel to address the specific challenges and opportunities of small, often geographically isolated schools, highlighting their potential as sites of innovation rather than marginal exceptions. Together, these initiatives offer insight into how **horizontal networks of schools**, supported by research, professional learning, and relational governance, can contribute to change at scale.

The analytical framework for this case study draws on three complementary perspectives: **social capital theory, social network theory**, and **human Learning Systems**. Combined, these perspectives help to illuminate how trust-based relationships are built within and across schools, how knowledge and practices circulate through networks, and how stewardship, reflexivity, and adaptation support sustained learning in complex systems. The framework is not applied as a rigid model, but as a set of lenses to support the interpretation of empirical observations and to surface questions relevant for policy and practice.

Methodologically, the case study is based on desk research of policy documents, research literature, and project documentation, complemented by study visits to a small number of schools that have played a central role in the development of Avanguardie Educative and Piccole Scuole. Interviews and focus groups with school leaders, teachers, students and other stakeholders provided qualitative insights into how innovation is experienced, supported and constrained at school and network levels. As such, the findings are illustrative rather than representative and are intended to inform reflection rather than provide definitive evaluations of impact.

This report is structured as follows. After presenting the Italian education system context and the origins of Avanguardie Educative and Piccole Scuole, it analyses the design principles, governance arrangements and evolution of the initiatives. It then examines findings from school visits, focusing on enablers and bottlenecks related to trust, leadership, collaboration, communication and student agency. The final section discusses future directions and proposes options to strengthen system-level learning and sustainability.

By placing the Italian experience alongside the earlier case study on system change in Portugal, this report contributes to a **cumulative narrative** on how different systems mobilise networks, intermediary actors and learning infrastructures to support innovation. Its added value lies in highlighting an alternative pathway to system change—one rooted in **long-term networked learning and stewardship**—and in identifying lessons that may resonate well beyond the Italian context.

2. *Avanguardie Educative* and *Piccole Scuole* initiatives

This section introduces the two interrelated initiatives, *Avanguardie Educative* and *Piccole Scuole*, which evolved over the course of more than a decade through school-led experimentation supported by INDIRE, the national agency for education research and innovation. It details their specific features, foundational approach and innovation strategy, as well as their development over time in an evolving context.

2.1 The development of *Avanguardie Educative*

The *Avanguardie Educative* movement, launched in 2014 by INDIRE and a network of pioneering schools, promotes systemic innovation in education by rethinking teaching, learning spaces, and school organisation. Centred around seven key “horizons,” it encourages bottom-up change and collaboration among schools through its Gallery of Innovative Ideas, research projects, and coaching models. Over time, this movement has evolved into a large, dynamic network with regional hubs, supporting knowledge exchange and professional growth, particularly during the COVID-19 pandemic. Its initiatives, including the so-called Reflex self-assessment tool, aim to embed lasting innovation in everyday school practice, grounding experimentation in educational research and community impact.

2.1.1 *The approach behind Avanguardie Educative*

The *Avanguardie Educative* movement was created in 2014 to support system-wide innovation at a systemic level by bringing together the most significant real-world experiences of transforming the organisational and teaching models of schools. These innovations are mostly promoted through a gallery of innovative ideas, training initiatives and dissemination to support methodological reflection on the school education system, as a whole.

The *Avanguardie Educative* movement was born from a joint initiative between INDIRE and an initial group of 22 founding schools that had experimented with innovative practices, under the banner of an *Avanguardie Educative* Manifesto. These practices were to be supported and spread by the movement according to the following seven ‘horizons’:

1. Transforming the school's transmission model;
2. Exploiting the opportunities offered by ICT and digital languages to support new ways of teaching, learning and assessing;
3. Creating new spaces for learning;
4. Reorganising the time spent in school;
5. Reconnecting school knowledge and knowledge society;
6. Investing in human capital, rethinking relationships;
7. Promoting innovation that is sustainable and transferable.

The movement aimed to use the opportunities offered by ICT and digital languages to transform learning environments, by offering and nurturing a “gallery of ideas” that were based on the experiences of schools; each innovative practice represents a piece of a mosaic that aims to change the way teaching, time and space are organised in schools. Once ideas for change have been selected according to a set of criteria to ensure that the practice is in line with the Avanguardia Educative principles, is innovative and transferable, they are proposed for adoption by all interested schools. The table below lists ideas that have been proposed since the beginning of the movement and remain active.

The 'Ideas' proposed for adoption by Avanguardia Educative		
inside/outside the school – service learning	flipped classroom	making thinking and learning visible
beyond the disciplines	integration of CDD/textbooks	heuristic dialogue
differentiated learning	spaced learning	outdoor education
self-directed/independent learning and tutoring	active learning technologies	knowledge laboratories
debate - argue and discuss	subject-specific laboratory classrooms	professional loan
scenario-based teaching	flexible use of time	

Table 1: The 'Ideas' proposed for adoption by Avanguardia Educative

The movement captures innovative school practices and, under the leadership of INDIRE, formalises and systematises these experiments, grounding them in educational research evidence. This approach represents a shift from a traditional top-down approach to a more contextualised, bottom-up approach, based on the analysis of innovative school experiences. This supports a participatory and collaborative approach, in which everyone has a role to play in driving change and innovation by activating networks of schools, the mechanism through which innovative practices are expected to spread throughout the education system.

2.1.2 The Avanguardia Educative definition of innovation

Avanguardia Educative has adopted a specific and ambitious definition of innovation, one referring primarily to a generative process of change and improvement, permeating the entire education system, according to the seven horizons of the movement listed above.

Unlike small groups of people involved in fragmented innovative practices that are rarely transformed into usable artefacts, in Avanguardia Educative, an innovation process exists and produces effects for the community of reference when it generates a benefit perceived by the community and significant changes are observed through the combination of technological, social, political and cultural elements.

In line with the aforementioned approach, the main objective is to promote knowledge and shared experiences among schools that adhere to the movement, achieving this through a three-level

system: micro (professional practice of the individual), meso (class councils and/or departments) and macro (entire school and all its subdivisions, in relation to the local area and stakeholders). Avanguardie Educative's foundational hypothesis is that the traditional school model (essentially based on transmission) will be changed by initiating processes promoted and recognised by this movement that alter teaching routines, establish a culture of innovation, and reconfigure socio-educational links, thereby overturning the current paradigm of the educational community.

2.1.3 The main phases and components of Avanguardie Educative

The movement's early years can be divided into five distinct phases:



1. Building the gallery of Innovative Ideas. Guidelines for the implementation of ideas. Assistance-coaching models between schools (2014-2016).

During the start-up phase of the Avanguardie Educative network (from November 2014 to the end of 2015), the actions undertaken to immediately provide concrete tools and operational measures mainly included three components: the creation of a “gallery of Ideas”, “guidelines for their implementation”, and “assistance-coaching” for the testing of ideas in the classroom.

- Building the gallery of Innovative Ideas - The movement deliberately chooses the term “innovative ideas” because it believes that the innovation process at the school level should follow a flexible and autonomous path, non-prescriptive, and contextualised. The methodologies associated with innovative ideas are not binding, but rather the foundations of a path the school will need to forge on its own by shifting, adapting and generating new ways of realising the original idea. These ideas are therefore intended as levers available to schools which recombine them like pieces of a puzzle according to their own vision, interestingly generating “variants” of the implementation of the original ideas. The gallery of ideas is intended to initiate change in professional routines, not as a definitive solution in itself, as innovation is rather achieved by combining multiple ideas.
- Bottom-up innovation: the “propose an innovation experience” process - Bottom-up innovation practices are identified through the ‘Propose an innovation experience’ initiative on the project website, where schools can use an online form to describe the innovation experiences they have implemented or are implementing on a systematic and ongoing basis. The experiences are analysed by an internal editorial team made up of INDIRE researchers and representatives of the founding schools of the Educational Avant-Garde Movement to assess their consistency with the principles of Avanguardie Educative and the possibility of transforming the experience into an “Idea”. Such ‘ideas’ are usually underpinned by the general principle of ‘student-focused’ pedagogies, supporting the development of competences (knowledge, skills and attitudes). This requires a fundamental shift in approach, moving from the transmission of knowledge to a learner-centred, competence-based model.

- Drafting of guidelines for implementing innovative ideas - The guidelines are operational documents in which a presentation of the theoretical framework of reference is followed by the identification of the elements enabling innovation, according to the three dimensions of innovation: space, time and teaching -- providing school administrators and teachers with technical and practical guidance for implementing these ideas in their own contexts, describing in the form of case studies (school stories) the actions taken by schools that have already begun to apply them. They are accompanied by a bibliography and links to online resources, including documentation on the idea in action.
- The assistance-coaching model between schools - The assistance-coaching model was jointly designed by INDIRE and advanced schools to ensure that adopters (schools that adopt the ideas proposed in the gallery) co-construct meaning within a community of practice, while receiving support during the piloting of innovative practices. The model was designed to support the creation of connections, relationships and networks between schools within the movement, reflecting a dynamic innovation process. INDIRE researchers and schoolteachers worked with a dual logic of theory and practice, implementing a mixed coaching process incorporating experience, reflective observation, theory, and experimentation. The assistance-coaching model was inspired by the Deming Cycle (Deming, 1986) and comprises the PLAN-DO-CHECK-ACT phases.

2. Top-down experiments (2017-2019).

The second phase of the project saw the launch of the 'Making Learning and Thinking Visible' (MLTV) research project, which involved a pilot programme in a few schools selected from within the movement. This collaborative research project aimed to adapt and localise the Making Learning Visible (MLV) and Visible Thinking (VT) frameworks for use in Italian secondary schools, with the intention of sharing them with other schools across the country.

In 2019, the project moved from the experimental pilot phase (prototypes with small numbers) to a confirmation process (sustaining phase) involving large numbers and multiple contexts (schools throughout the country belonging to different geographical and socio-economic regions). During this consolidation phase, the tools for transferring the idea, which had already been developed with the few pilot schools, were tested. These schools acted as coaches, guiding the other schools in learning about and using the protocols and routines introduced by MLTV and discussing designs and implementations with teachers in each assisted school. Avanguardie Educative's scaling-up strategy for most activities, including MLTV, has essentially been based on two methodologies: dissemination and affiliation.

A similar approach was taken with the 'Heuristic Dialogue' project (one of the innovative ideas presented in the Avanguardie Educative gallery of ideas), which examined the conditions and teaching practices that facilitate pupils' ability to 'make discoveries'. A particular risk of this idea, especially when scaling up, is the transition to the second cycle of education, where the disciplinary fragmentation typical of upper secondary school timetables often hinders interdisciplinary teamwork.

3. New Governance of the movement (2019-2020).

The growing number of schools adopting the Avanguardie Educative approach and the ongoing demand for information and training sessions on the proposed ideas highlighted the need for a new organisational structure within the movement. Alongside INDIRE's scientific coordination, 27 regional hub schools and 35 lead schools specialising in specific 'ideas' have been established as 'nodes', operating according to a constantly renegotiated network model.

The movement has adopted a fluid network dimension expected to enable cooperative relationships between the various network actors, facilitate the resolution of common problems and the spread of a co-constructed culture of innovation, and ensure greater flexibility and dynamism. This model has also been adopted due to the variety and complementarity represented within the network, including schools of all levels, sizes, geographical locations, and specialisations.

4. The pandemic phase (2020-2022).

During the COVID-19 pandemic and the associated nationwide lockdowns, Avanguardie Educative played an active and supportive role in helping the Italian educational community adapt to the sudden shift toward remote teaching and learning. The movement, coordinated by INDIRE and involving a large network of schools, implemented several initiatives that helped promote innovation and professional development in crisis conditions, such as:

- **La Scuola per la Scuola” solidarity initiative** - Shortly after schools closed in March 2020, Avanguardie Educative launched La Scuola per la Scuola (“School for School”), in collaboration with the Italian Ministry of Education. This initiative aimed to support all Italian schools in transitioning to distance learning. It involved the delivery of over 200 freely accessible webinars led by Avanguardie Educative school leaders and stakeholders, focusing on innovative methodologies and solutions for remote teaching. These sessions attracted over 20,000 teachers and served as a platform for sharing practices and building collective capacity in digital and pedagogical skills during the lockdown.
- **Professional development through webinars** - In addition to the initial solidarity effort, between September 2020 and March 2022, Avanguardie Educative coordinated an extended series of 41 webinars addressing core themes in educational innovation, mentoring, and reflective practice to support teaching in hybrid and remote settings. The webinars were designed to foster professional growth, coaching, and collaborative problem-solving among educators across the network, which by then included nearly 1,600 member schools. Surveys conducted with participants reported high satisfaction and highlighted the effectiveness of such online professional learning communities in sustaining innovation during the crisis.
- **Building community and collaborative practices** - Beyond formal webinars, the movement helped preserve and build educational communities during lockdown through practices rooted in service learning, peer tutoring, and community engagement, adapted for online environments. These activities supported relationships among students, teachers, and families even in the context of remote teaching, reinforcing the role of schools as relational and socio-cultural hubs despite physical distancing.

Overall, Avanguardie Educative contributed to the Italian pandemic response by facilitating rapid exchange and scaling of innovative practices for distance learning; supporting teacher professional development in digital pedagogy; fostering stronger educational communities despite isolation; and enhancing the networking and mutual support capacity among schools throughout Italy during and after the lockdown period.

5. The Reflex development and test phase

Developed by INDIRE, Reflex is a digital self-reflection tool designed to support schools in monitoring the consolidation of educational innovation over time. The tool was initially conceived within the context of the Avanguardie Educative movement, responding to the need to understand whether innovative practices promoted by the network were becoming

embedded in everyday teaching and organisational routines. Reflex is based on the distinction between two complementary dimensions of innovation—systematisation and rooting—and collects data through separate questionnaires addressed to school leadership and teachers, generating visual reports that support reflective dialogue and strategic planning.

Avanguardie Educative schools played a key role in shaping the conceptual framework of the tool, providing the empirical context in which different trajectories of innovation consolidation were observed and informing the design of indicators used to capture school-level change. While subsequently adapted for broader use across the Italian school system, Reflex remains closely connected to the Avanguardie Educative experience, both as its original testing ground and as a reference community for validating its analytical and formative potential.

During its more than ten years of existence, Avanguardie Educative has evolved, and its membership has grown. It has supported schools in effectively formalising and grounding innovative practices in research evidence, innovations which would otherwise have remained less sustainable and more fragmented. The capabilities of individual teachers and schools have been strengthened through the collective search for solutions, creating educational environments that support meaningful and persistent learning.

This report is not the place to detail the substantial and invaluable support that the movement has provided to schools throughout the pandemic. However, it is worth mentioning, as it has likely influenced the way it has developed since then, in terms of both assets and challenges.

However, not all institutions in the current Avanguardie Educative network are equally proactive and autonomous. While many innovative practices are related to transforming education at a macro/system level, the network still needs to adjust its organisational model and further develop the self-evaluation of its approach. This will enable it to understand more precisely the variables that facilitate the establishment and systematisation of innovation, including in its operating context, which has changed since 2014.

2.2 The development of *Piccole Scuole*

While Avanguardie Educative targets all Italian schools regardless of size or location, *Piccole Scuole* focuses on geographically isolated schools (mountain villages, small islands) with few students, aiming at ensuring equal educational opportunities in remote areas and combat depopulation by preserving local schools. *Piccole Scuole* also addresses the challenge of managing multi-age classrooms (pluriclassi) and linking remote classes via video link.

2.2.1 The approach behind *Piccole Scuole*

Small schools are not only defined by low student numbers but also by their geographical isolation, limited access to services, and location in depopulated areas, such as mountains and small islands, which represent an important part of Italy's territory. Despite their specific conditions, these schools often follow the same educational models as urban schools, highlighting the need for a different paradigm that supports inclusive and context-sensitive learning environments.

Closing schools in isolated areas accelerates territorial decline, forcing families to leave and undermining local development, even though these areas often offer a high quality of life and

rich cultural and environmental heritage. Small schools should therefore be supported by targeted policies that recognise their strategic value and allow flexibility to ensure educational quality. When adequately supported, they can strengthen educational alliances between schools and their territories.

Thanks to their size and close relationships with families and local institutions, small schools can foster innovative, inclusive, and cross-disciplinary learning, promote active citizenship, and serve as socio-cultural hubs for their communities. While isolation remains a challenge, technology and national networks of small schools can reduce this limitation, enabling collaboration among teachers and enhancing educational quality, in line with the principles of the Small Schools and Avanguardie Educative initiatives.

2.2.2 The three key points of *Piccole Scuole*

As a result of the above, the *Piccole Scuole* manifesto highlights the following three key points of the initiative:

1. **Communities of memory and the quality of learning** - The distinctive features of small schools offer particularly favourable conditions for accelerating innovation processes already underway within the Avanguardie Educative network. Historically, small schools have preserved and reinforced their cultural and historical specificities, evolving into authentic communities of memory (shared history in close-knit, small communities). Their close relationship with the natural, social, and cultural environment represents a resource with strong innovative potential, as it anchors learning to meaningful local contexts and territorial vocations. Moreover, the limited number of students constitutes a clear advantage for experimenting with curricular innovation, enabling more flexible organisational models and teaching approaches that are difficult to implement in larger school settings.
2. **The multi-age classroom experience** - Valuing diversity, respecting individual learning rhythms and characteristics, and promoting flexible organisational arrangements through shared learning practices that foster collaboration and inclusion make the multi-age classroom a particularly rich educational setting. Although often considered a marginal or exceptional condition, multi-age classrooms are widespread in outlying areas and can give rise to innovative curricular configurations that support open learning environments. These environments are enriched through strong links with the territory and further enhanced by learning experiences supported by virtual networks. Multi-age classrooms provide a space in which to develop learning pathways grounded in the unity and cross-disciplinary nature of knowledge and should therefore be recognised as valuable contexts that generate pedagogical and organisational approaches applicable well beyond small-school settings.
3. **Technologies and social inclusion** - The adoption of appropriate technological solutions tailored to diverse local conditions can help counteract the limitations of socially restricted environments, where opportunities for interaction, exchange of perspectives, and stimulation are often scarce. Initiatives that involve the joint implementation of educational activities with schools located in other territories can offer concrete opportunities to mitigate the effects of geographical isolation. Through such collaborations, technologies can expand students' social and cultural horizons, overcoming the constraints imposed by limited territorial size and narrow social environments, and fostering more inclusive and connected educational experiences.

3. Structure and governance of the Italian education system

The formal K-12 education system in Italy offers a **pre-primary phase** (Scuola dell'infanzia for children aged 3 to 6) that, while not compulsory, is widely attended.

The **first compulsory cycle** covers primary education (Scuola primaria, lasting five years, for six- to eleven-year-olds) and lower secondary education (Scuola secondaria di I grado, lasting 3 years, for eleven to fourteen year olds).

The **second cycle** covers upper secondary education, which usually lasts five years for students aged 14–19. This cycle offers three different paths, i.e. a general path (licei), a technical path (istituti tecnici), and a vocational path (istituti professionali) school (state responsibility).

An alternative pathway for vocational and technical education is provided at a regional level (Istruzione e formazione professionale – IeFP) and can cover the final two years of compulsory education (up to 16).

Compulsory education lasts 10 years for students aged 6 to 16; an additional “right-duty” to education and training extends to the age of 18.

3.1 Governance

The **Ministry of Education and Merit (Ministero dell'Istruzione e del Merito – MIM)** is the main authority responsible for school education. The ministry defines the National Guidelines, which serve as a national framework within which schools develop their curricula. It also defines general regulations, staffing rules, pay scales, qualification standards and the system's overall evaluation. The Ministry operates through territorial offices (**Offici Scolastici Regionali/USR**), deconcentrated regional offices which allocate human and financial resources to schools, supervise the implementation of national policies, and oversee inspections. While research on the governance of education in Italy has focused primarily on school autonomy over the last two decades, previous studies of the educational governance structure (Bifulco, 2008) have indicated that, in practice, the ministry continues to exercise significant control over funding, staffing and evaluation, despite certain responsibilities having formally been transferred to lower levels.

Consequently, the USR acts primarily as an administrative arm rather than a fully empowered meso-level governance entity. Despite originating from the 2010s, this evidence remains relevant due to the long-term effects of path dependency in education (Busemeyer, 2015; Cerna, 2013; Feeney, 2014). Education policies are deeply rooted in enduring institutions such as curriculum systems, teacher labour markets and credential rules, as well as broad coalitions, which makes any reversal costly and slow. This analysis also applies to Italy (Bozzano et al., 2024; Grimaldi & Serpieri, 2012).

Two national agencies play an important role in the system. One is **INVALSI**, the National Institute for the Evaluation of the Education and Training System, which designs and administers national standardised tests (prove INVALSI), provides system-level evaluation data, and supports the external evaluation of schools. INVALSI data are heavily used for monitoring school performance and territorial disparities, supporting data-driven accountability. The other national agency is **INDIRE**, the National Institute for Documentation, Innovation and Educational Research, which is the national reference body for educational research, innovation projects

and teacher professional development; this includes educational and digital innovation, as well as EU-funded initiatives.

Regions share legislative power on education with the State and are exclusively responsible for vocational education and training (VET), including programming, managing and delivering regional VET (IeFP) pathways, as well as defining regional plans for the school network and right-to-study measures (e.g. scholarships and transport support).

Provinces are responsible for planning the upper-secondary school network, and for owning, building and maintaining upper-secondary school buildings and related services.

Municipalities are responsible for school buildings and facilities for preschool, primary and lower secondary schools. They also provide essential services such as school transport, canteens and support for inclusion.

Financially, the state covers the vast majority of current expenditure (mainly salaries), while municipalities, provinces and regions co-fund buildings and support services. However, local authorities' capacity to invest varies sharply, which contributes to **territorial inequality** in **infrastructure**, **support services** and **inclusive education** (e.g. specialist staff and transport in rural areas).

School autonomy has been introduced by law since 2001. As single legal entities, schools (often comprising multiple campuses) enjoy the following types of autonomy: **didactic autonomy** (organising curricula within national guidelines, flexible scheduling, grouping of students, and additional educational offerings); **organisational autonomy** (internal structures, timetables, partnerships); **research, experimentation** and **development autonomy**; and **limited financial autonomy**, mainly over the use of small discretionary funds and project-based resources.

Each school develops a multi-year **PTOF** (Piano triennale dell'offerta formativa) setting out its educational plan in line with national objectives. However, research evidence describes school autonomy as “functional autonomy” (Del Sorbo, 2023; Poggi, 2022), whereby schools can organise teaching and certain activities, yet lack strategic control over key factors such as staff numbers, salary levels and core funding. Empirical research also highlights a school autonomy that is institutionally coupled with strong accountability through INVALSI and self-evaluation (Mentini, 2024; Mentini & Levatino, 2023). In practice, the system remains highly centralised regarding staffing, pay, curriculum frameworks and evaluation, while being decentralised with regard to building maintenance, some support services and local programming.

3.2 Teacher training

Initial teacher education (ITE) for **pre-primary and primary education** consists of a compulsory single cycle of a five-year university degree in Scienze della formazione primaria, which qualifies teachers and awards them a professional title. At **lower and upper secondary education**, teachers must hold a subject-specific second-cycle degree, as well as complete a 60-ECTS pedagogical-didactic qualifying programme. Recruitment is organised through competitive national or regional examinations, followed by an induction year in schools.

ITE is formally **governed at a national level**, with the MIM and the Ministry of University and Research defining frameworks, and universities designing and delivering programmes within these national rules.

Research evidence (Malandrino, 2025; Savelli, 2017) highlights the fact that repeated reforms have created a complex and often unstable entry route, with frequently changing rules for secondary teacher qualifications and transition measures, which produces uncertainty and long periods of precarity for aspiring teachers. A report by the University of Bergamo to the European Commission (2025) also suggests that gaps exist between

the design and implementation of reforms, with universities and schools adapting due to resource constraints and uneven regional capacities.

Continuing professional development (CPD / in-service training) has been made **continuous and compulsory** by the “Buona Scuola” reform (Law 107/2015), which recognised in-service training as a core teacher responsibility, and linked training priorities to national policy priorities and school PTOF planning. In this context, the Ministry sets national priorities and funds national plans, while INDIRE and other accredited providers (including universities) develop programmes; and schools then decide on their own CPD plans within their PTOF, and school leaders coordinate participation.

An impetus has also been given to teacher training by investments aimed at developing digital skills in schools and innovative learning environments, from the National Digital School Plan (PNSD) and Scuola Futura to the School Plan 4.0 (NRRP, Next Generation Classrooms, Next Generation Labs).

Empirical research highlights high levels of participation in CPD driven by compliance with the new reforms, rather than by long-term professional learning strategies (Foschi, 2021; TALIS, 2018). The research also suggests that the quality and continuity of CPD vary across regions and school types, with smaller and more disadvantaged schools reporting fewer opportunities and less strategic use of training. As a result of such challenges, schools struggle to convert national priorities into coherent local learning pathways (De Santis & Bianchi, 2013).

4. The analytical framework of the study

This paper draws on three complementary perspectives to analyse how horizontal networks support learning and innovation in education systems: social capital theory (emphasising bonding and bridging ties within and across schools), social network theory (examining how relationships, agency, and meaning-making shape the flow of knowledge and practice), and Human Learning Systems (prioritising stewardship, distributed leadership, relational trust, continuous adaptation, and shared values). Together, these perspectives help us understand not only who is connected and how information and opportunities for learning flow through networks, but also actors' motivations to engage, how they interpret and adapt innovations, and what conditions enable networks to drive sustained change.

While each research tradition has strengths and limitations, which we briefly discuss, our focus is on their practical integration. How can networks be designed, nurtured, and adapted to foster collective learning, innovation, and equity in real-world educational contexts? An annotated bibliography (in Annexe) outlines main areas of inquiry for readers seeking deeper engagement with the underlying theories and evidence.

Horizontal networks in education aim to support learning and innovation both within and among schools through meaningful, trust-based interactions with colleagues about teaching, learning and assessment (Bellibaş, Çelik, & Polatcan). By bringing together social capital theory, social network theory, and human learning systems as explanatory frameworks, we aim to better understand how relationships in teacher professional learning networks are structured, how trust and agency shape engagement, and what stewardship and adaptive practices enable networks to drive equitable, sustained change.

From these frameworks, we draw on specific concepts that illuminate the conditions under which networks support learning and innovation.

1. Bonding and bridging capital, introduced and popularised by political scientist Robert Putnam (1993, 2000), are now core concepts in **social capital theory**.
 - Bonding capital refers to strong, trust-based ties within schools and/or professional learning communities focused on collaborative inquiry and improvement. Groups develop shared norms, commitment to improvement, and collective efficacy. In the context of school relationships, strong social capital sustains motivation to take on challenges inherent in change processes.
 - Bridging capital refers to more distant ties across schools, regions or sectors. Although ties are weaker, broader network membership provides access to more new ideas, practices and resources than might be available in a single school. Under-resourced schools may also have access to expertise and support not otherwise available. Putnam's work on bridging capital builds on Granovetter's (1973) earlier conceptualisation of strong versus weak ties (1973). Granovetter argues that weak ties provide access to novel information and are especially important for innovation and generalised trust in civic communities.
2. Social network theory - Social capital theory and social network theory are related but distinct frameworks that focus on different aspects of relationships and their effects. Our analysis covers social network theory only in a superficial sense, meaning we do not provide an in-depth analysis of ties and structures in the Avanguardie Educative and Piccole Scuole networks. We do, however, consider two key concepts from the social network theory that are relevant for these initiatives: Burt's (1992) structural holes theory and the importance of "bridging ties". Burt argues that "brokers" who span gaps between disconnected clusters occupy advantageous positions: they can access diverse sources of information and exercise some control over its flow. In this sense, brokerage itself can be understood as a form of social capital. In

the education sector, individuals in professional learning networks (PLNs) may act as knowledge brokers bringing in ideas from the wider network, as well as supporting them in their own schools.

3. Our conceptual model also introduces to the analysis the emerging area of Human Learning Systems (HLS). The idea of “stewardship”, which highlights the importance of values, trusting relationships, common purposes, deep learning, learning and power dynamics in change processes, is core to HLS. In other words, stewardship should be extended to all school staff. Views that staff are primarily individualistic and self-serving should be balanced with stewardship perspectives that see staff as collectivist, pro-organisational, and trustworthy (Davis, Schoorman and Donaldson, 1997).

HLS itself is grounded in complexity theory, bridging academic analysis with the complexity of practitioners’ daily work, referring to a variety of individuals’ experiences; that “what works” in any given context may not work in other contexts or points in time. In addition, the lack of control over outcomes within a complex system highlights the need for different actors to coordinate and collaborate (Human Learning Systems, 2020).

HLS shares with social capital and social network theories an emphasis on learning. Collective, ongoing cycles of inquiry through feedback and double-loop learning (i.e., experimentation, reflection, iterative improvement and adaptation embedded in organisational routines, collective knowledge, memory and capacity) (Centre for Public Impact, n.d.). Importantly, HLS also emphasises the importance of revisiting how systems and networks are functioning and adapting when necessary.

Critiques of the three theories

Empirical research on horizontal networks in education shows mixed, context-dependent results. Research has found that simply having network connections does not guarantee learning or behaviour change. The quality of interactions, shared purpose, organisational capacity for improvement and sustained engagement contribute to innovation and enhanced student outcomes (Rincón-Gallardo & Fullan, 2016). Teachers in well-functioning networks also report greater professional learning, collective efficacy, and access to new ideas and resources (Prenger, Poortman & Handelzalts, 2018).

While social capital theory has led to a rich exploration of the nature of relationships within networks, it has been critiqued for paying too little attention to how norms and trust are constructed, contested or changed through agency or cultural shifts (Foley & Edwards, 1999). Too little attention is paid to how actors either build or resist social capital. Other critiques focus on how social capital can reinforce exclusion (Portes, 1998), can spread groupthink (Pillai et al., 2017).

A fundamental critique of social network theory is that, like social capital theory, it often under-theorises agency, culture, and meaning. While SNT tracks information flows between individuals and groups (how “structural holes are addressed”), it pays little attention to motivations to engage, the beliefs and values which shape learning. Little attention to sense-making, adaptation, and alignment of innovation with local contexts and professional identities. SNT thus risks reducing complex social processes to structural patterns. Networks may also facilitate superficial adoption of innovations with influencing deeper changes in practice (Emirbayer & Goodwin, 1994).

Critiques of Human Learning Systems centre on its lack of clarity or concrete guidance on. While policy systems increasingly emphasise the importance of balancing accountability with improvement, HLS’s downplaying of clear, measurable outcomes and concrete objectives may create tensions. HLS may be layered on top of performance management approaches, creating systemic incoherence. Other critiques centre on the time and resource-intensive nature of HLS, which demands cultural and structural changes, that stakeholders invest time in trust-building, and engage in co-production, reflection and adaptive learning.

Building trust and collaboration

Social capital theory (bonding & bridging)	Social Network Theory (structural holes)	Human Learning Systems (stewardship, complexity, reflexivity)	How they complement each other
Bonding capital creates strong, trust-based relationships within schools, enabling deep collaboration, shared norms, and collective efficacy.	Network analysis can map the density and quality of ties within schools, identifying isolated actors or weak clusters that need support.	HLS emphasises stewardship and relational infrastructure—creating conditions for trust to develop and be sustained through ongoing reflection and support.	Together: Social capital explains what is needed (trust, shared norms); network theory shows where gaps exist; HLS provides insight on how to nurture and sustain trust through stewardship and adaptive practices.

Facilitating innovation

Social capital theory (bonding & bridging)	Social Network Theory (structural holes)	Human Learning Systems (stewardship, complexity, reflexivity)	How they complement each other
Bridging capital connects schools to new ideas, practices, and resources beyond their immediate context, enabling cross-pollination and system-level learning.	Identifying and supporting brokers who span structural holes can accelerate the spread of innovations across disconnected groups.	HLS recognises that innovation is not passively transmitted—it requires active sense-making, adaptation, and alignment with local contexts and values.	Together: Bridging capital and brokerage creates the pathways for innovation; HLS ensures that innovations are interpreted, adapted, and embedded meaningfully, not just replicated.

Addressing Equity and Inclusion

Social capital theory (bonding & bridging)	Social Network Theory (structural holes)	Human Learning Systems (stewardship, complexity, reflexivity)	How they complement each other
Social capital can reproduce inequality if well-connected actors hoard resources or exclude marginalised groups.	Network analysis can reveal who is isolated, marginalised, or excluded, and where power is concentrated,	HLS prioritises equity, voice, and inclusion as core values, and embeds regular reflexivity to assess and address power imbalances and exclusion.	Social capital theory alerts us to the risk of exclusion; network analysis identifies who is marginalised and where gaps exist; HLS provides the values, stewardship, and adaptive processes to intentionally build inclusive networks, ensure diverse voices are heard, and continuously monitor and address inequalities.

Facilitating innovation			
Social capital theory (bonding & bridging)	Social Network Theory (structural holes)	Human Learning Systems (stewardship, complexity, reflexivity)	How they complement each other
Bridging capital connects schools to new ideas, practices, and resources beyond their immediate context, enabling cross-pollination and system-level learning.	Identifying and supporting brokers who span structural holes can accelerate the spread of innovations across disconnected groups.	HLS recognises that innovation is not passively transmitted; active sense-making, adaptation, and alignment with local contexts and values are required.	Bridging capital and brokerage creates the pathways for innovation; HLS ensures that innovations are interpreted, adapted, and embedded meaningfully, not just replicated.

Table 2: Three perspectives on networks and system learning: social capital theory, social network theory and human learning systems

School leadership, networks and sustainable and responsive change

In Italy, school-level change may be difficult to sustain, given that school leaders are not selected by the school council or staff based on their fit with the school mission and approach, but rather, are assigned. Under these conditions, relying on individual leaders is risky: when they move, momentum can stall or even be reversed. One way to buffer against this is to embed improvement in relational and learning infrastructures that go beyond any single person.

This means deliberately building social capital within schools (bonding ties in strong, trusting professional communities that can support sustainable change) and between schools (bridging ties that connect staff to new ideas, practices and peers), and addressing structural holes across school networks through brokering roles that link otherwise disconnected actors. Research on school to school collaboration suggests that when such networks are well governed, with a clear purpose, attention to the quality of interactions, and strategic brokering, they are more likely to remain relevant and effective and to help sustain school level change over time, even as leaders rotate (e.g. Ainscow, Muijs, & West, 2006; Burt, 2004; Chapman & Muijs, 2014; Daly, 2010).

The next section explores findings from five visits to schools that have been at the core of the Avanguardie Educative/Piccole Scuole networks since their early years. It identifies enablers of change as well as bottlenecks that may slow or prevent sustained efforts to introduce effective, student-centred practices, to support and deepen professional learning, and to encourage other schools to initiate changes within their own school contexts. This is followed by a discussion on future directions and recommendations for the Avanguardie Educative/Piccole Scuole.

5. Study visit findings and analysis

In addition to desk research and discussions with INDIRE colleagues, our study included visits to a small number of founding Avanguardie Educative and Piccole Scuole schools. We should note that while this provided valuable qualitative insights into the network's design, values, and early implementation, it has important limitations. We were not able to observe how innovations have spread to more recent Avanguardie Educative and Piccole Scuole members, assess the network's impact on teaching and learning outcomes, or gather systematic evidence of the effectiveness of different innovations that have been adapted for different school contexts. The findings are therefore anecdotal and exploratory, offering illustrative examples and raising questions for further research, rather than providing definitive conclusions about the network's overall impact.

Several themes emerged across the study visits, including:

- The importance of trust and the quality of relationships within schools (bonding capital)
- School leadership models (bonding capital)
- Opportunities for mutual learning/sharing innovation among schools (bridging capital)
- Communication patterns (bonding and bridging capital)
- Student agency (bonding capital)

5.1 The importance of trust and the quality of relationships within schools

Our conceptual framework highlights "trust" within schools as a key element for effective change. Social capital theory refers to "bonding capital", social network theory refers to the importance of dense ties, and Human Learning Systems highlights the importance of honest reflections and opportunities for peer learning. Putnam defines social capital as "...connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them" (Putnam, 2000, p. 19). While social network theory doesn't refer to Putnam's "bonding/bridging" terminology, SNT's reference to cohesive, dense networks and strong ties is akin, and brokerage across structural holes in networks is closely related (Burt, 2004). In the Human Learning Systems approach as well as the broader literature on stewardship, trust among peers creates opportunities for open exchanges and reflection that are essential for learning and change and is closely related to literature on leadership as stewardship (see Annexe).

Various studies have found evidence that relational trust among teachers, school leaders, students and parents is a key driver for school improvement and higher student achievement (e.g. Bryk & Schneider, 2003; Tschannen-Moran, 2009). A recent meta-analysis found that trust among teachers has a moderate effect on student learning and that school leadership had a large effect on teacher trust. They found that teacher trust in students and parents had the largest impact on student learning compared to other dimensions of trust (Sun, Zhang and Forsyth, 2023). Studies show that when trustful networks are rooted in shared norms and values are in place, learning moves forward more easily and with less resistance (Rempo and Markland, 2018).

The study interviewees indicated significant levels of within-school trust and collaborative cultures (bonding capital) among core groups of teachers and school leadership, as well as between teachers and students and with parent representatives.

Trust may be developed through a focus on the quality of relationships. A teacher noted that *"...our school here is based primarily, first and foremost, on relationships. Not just relationships between the children, but relationships between teachers and pupils. Because we have to, I mean, if they learn through emotions, if there is emotion, ... I mean, there's everything. And when I try to bring this to other contexts, that school is born out of relationships"* (Modena teacher focus group).

Shared work is also important. In one example, a teacher noted *"...what's really different is that we as a department, the language department, the Italian department, the maths department, we all work together and plan together and share ideas and help each other, and I think that's very different from other schools"* (Modena teacher focus group).

Students participating in focus group interviews also expressed feelings of belonging and care. As one student observed, *"things I really appreciate about this school are both the relationship with the teachers and the staff. Because since I started attending the school more regularly, getting to know the headmistress and deputy headmistress, I realised that they really care about us, the school and our education"* (Lucca, student focus group).

Parent representatives interviewed indicated that while some parents have expressed doubts regarding innovations that have been introduced, their objections have diminished over time.

Enablers:

Teachers, school leaders and students interviewed described the development of trust-based relationships, based on shared norms, collaborative efforts, and opportunities for shared reflections. A teacher observed that *"We have some exceptional teachers, including those who decide to stay or who come here for the first time. ... I am thinking in particular of the teachers who work on wellbeing, ... These are teachers who are there, present, truly giving their all for the children"* (Teacher focus group, Lucca).

Efforts to support new teachers are also extremely important. *"We want everyone who arrives to immediately get into the way of working... so we run 25 compulsory courses for new teachers where we teach them the basic skills they need to deal with the way we work, both in terms of digital skills, but also and above all in terms of methodology and assessment, which is a very important aspect for us."* It is also important to note that INDIRE has played an important role as a steward for the Avanguardie Educative and Piccole Scuole networks, lowering risks associated with experimentation and innovation in schools. INDIRE plays a collaborative role with schools (rather than a compliance role) and encourages communication and learning regarding the effectiveness of different approaches.

Bottlenecks:

While the focus on relationships and attention to individual students are good examples of stewardship within schools, and strong bonding capital, high levels of staff turnover and uneven adoption of innovations have created barriers to whole-school change. Some portion of the new staff will resist student-centred pedagogies. Negative views regarding the innovative pedagogies are sometimes related to perceptions regarding the workload. Philosophical misalignment on the aims and methods of education may also play a role. *"There are also many teachers who work professionally, honestly. Yes, most of them. Others, however, who share a different teaching ethic, who see the role of the teacher as something else, perhaps more as an academic role"*

than a front-line one, let's say, decide to leave. But many others, we move forward...Our school manages to do everything it does in terms of planning, inclusion and so on, because there is a valid teaching staff, even if it is not the whole, because without teachers" (Lucca teacher focus group).

Changes in school leadership may also threaten the sustainability of changes in schools. A school leader noted that "...over the years, schools experience variability in teachers and leaders, because if a leader wants to change schools, for example, we have this internal migration" (school leader interview, Modena). School leaders interviewed noted that decisions to participate in Avanguardie Educative/Piccole Scuole were made collectively. In Modena, a new school with an unusual open architecture, a core group of teachers made the decision to join Avanguardie Educative and then set out to recruit a school leader aligned with their general vision. Collective decision-making has been important for shared ownership of changes. This is a highly unusual case, however, A new leader not aligned with the philosophy of Avanguardie Educative/Piccole Scuole may easily undo changes, given the importance of school hierarchies.

5.2 School leadership models

School leaders in Italy are appointed as *dirigenti scolastici* (school managers) under Legislative Decree No. 165/2001. Responsibilities include:

- Development of the three-year school plan, co-designed with the teachers' board and approved by the school board and aligned with national and regional priorities.
- Oversight of curriculum planning, teaching and learning environments (e.g. inclusion and digital innovation and innovation processes in teaching) and implementation of school autonomy.
- Staff development, including identification of professional development needs, and school personnel management.
- School governance, including leadership of and participation in the school council, which includes staff, parents and student representatives. The school council manages school policy, budget, extracurricular activities and welfare initiatives.
- Accountability for meeting explicit objectives agreed with the Regional School Office. Evaluation is based on the school leader's portfolio.
- Performance evaluation of the regional and ministry inspectors, with results affecting assignment renewals and performance-based pay (UNESCO, 2024).

Under Legislative Decree No. Law 107/2015, school leaders are to promote relations with local authorities and other institutional, cultural, social and economic institutions in their communities, in consultation with the school council. UNESCO, 2024 (<https://education-profiles.org/europe-and-northern-america/italy/~school-leadership>)

School leaders are appointed through competitive procedures and must participate in a two-month management training course and four-month internship (Decree No. 138 of 3 August 2018). The Ministry of Education is responsible for training and professional updating of managers, as outlined in the 2016 – 2108 National Collective Labour Agreement.

School leaders interviewed during the study visit communicated strong commitment to the vision for student-centred learning, supporting both learner wellbeing, academic achievement, and connections to their communities and the world of work. They highlight the importance of adapting education to meet the needs of the current generation of students, noting that young people face significantly different challenges than previous generations.

The impact of COVID-19 on student wellbeing (as well as on the wider socio-economic environment) and accelerated digital transformation have also created a new context for schools ten years after the founding of Avanguardie Educative.

Enablers:

Current legislation, describing roles and responsibilities of school leaders and their staff, and opportunities for regular training, highlights the importance of inclusion, collaboration and innovation. Connections with the broader community are also required. These elements are well aligned with the type of whole-school development and evidence-informed pedagogies promoted through the Avanguardie Educative and Piccole Scuole networks.

The planned national school leadership academy will help to ensure that school leaders across Italy are exposed to innovative models for school leadership, including distributed leadership (with more significant pedagogical roles shared among school department heads) and transformational leadership, which Leithwood and Jantzi (2000) describe as “... *building school vision and goals; providing intellectual stimulation; offering individualised support; symbolising professional practices and values; demonstrating high performance expectations; and developing structures to foster participation in school decisions*” (Leithwood & Jantzi, p. 5).

School leaders who wish to meet with and learn from peers around Italy and internationally have opportunities to do so (i.e. through Erasmus+ programmes, participation in training).

As noted by a school leader interviewed, “In my role, [I have had] opportunity to meet many other leaders throughout Italy who shared my sensibilities, Since I am a bit obsessed with training, as you may have heard, and since we are a national training centre for digital transition ... I had to carry out national network projects, and so it gave me the opportunity to make these contacts with managers with whom I knew I could work well, because they had the same vision of school as I did, soSo It gave me contact with colleagues with whom I could do things together” (School leader interview, Lucca).

Bottlenecks:

While we met many inspiring and committed school leaders during the school visits, potential bottlenecks for the sustainability of their change efforts and their work with Avanguardie Educative/Piccole Scuole emerged in our discussions.

A first bottleneck is that the school leader's engagement with innovative pedagogies and with the networks is purely elective. Current legislation outlining roles for school leaders emphasises administrative and managerial roles. As noted by a school leader interviewed, “*You are legally accountable at the administrative level. No one will ever ask you to be legally accountable at the pedagogical level.*” This school leader went on to say that “*...in my opinion, you are accountable at the pedagogical level in your conscience.*”

There is no guarantee that incoming school leader will align themselves with the vision of their predecessor, or actively engage with Avanguardie Educative and Piccole Scuole. While all school leaders are

required by law to support inclusion and to work with the school council and community, they may meet these requirements through teacher-centred and hierarchical school leadership approaches, as well.

A second bottleneck, closely related to the emphasis on school leaders' legal obligations over pedagogical leadership, is that accountability is related to fulfilling legal obligations. However, there is no emphasis on the school leader's stewardship role or on leading school teams in improvement efforts. Also at play may be the school leader's lack of interest in pursuing school-level innovation and/or a lack of exposure to new ideas (i.e., to the extent that innovative ideas are not included in school leader or teacher training, or not well communicated across the networks).

5.3 Opportunities for mutual learning/sharing of innovation among schools

In this section, we highlight horizontal relationships across schools as well as with the surrounding communities and universities. Putnam (2000) notes that while bonding social capital is important for reciprocity and solidarity, bridging networks. (e.g. among rather than internal to schools) are better for information diffusion. Moreover, Putnam asserts, bridging capital "can generate broader identities and reciprocity" (Putnam, p. 23). Szreter and Woolcock (2004) note that while bonding social capital is associated with trust and co-operative relationships, bridging social capital is associated with respect and mutuality. Granovetter (1973) highlights the difference between bonding and bridging capital as socially cohesive and less socially cohesive networks.

Molenaar, Slegers and Daly (2012) found that well-connected teacher networks correlated with collective teacher efficacy, and this, in turn, supported student achievement. Daly's work on social network theory in education systems highlights the importance of structured opportunities for interaction and mutual learning. In addition, having multiple pathways for interaction allows more potential network partners and more potential resources (Daly, 2010).

The SNT literature highlights the importance not only of "bridging" across organisations, but also of "linking" network members that are not directly connected to each other (referred to in SNT as "structural holes"). Burt (2004) argues that "people who stand near the holes in a social structure are at higher risk of having good ideas" (i.e., individuals who are connected across groups gain familiarity with alternative ways of thinking, and therefore have more options to explore and synthesise (pp. 349 – 350). This brokerage role can be crucial in ensuring that information is shared across networks. At the same time, there is a need to go beyond information sharing and diffusion of good practices, and to support schools and teachers to adapt evidence-informed approaches to their own school and local context, and to innovate (e.g. through professional learning networks).

Enablers:

Teachers and school leaders in our study visits highlighted the importance of learning from other schools. One teacher, for example, noted that *"...you never achieve a defined ... framework, but you are on a journey and the exchange Even if it's just online, even through personal research, but knowing that there is someone who officially deals with it and with knowledge of the facts...[I]t may be that there are indeed many directions, they can be shared and from the meeting of the directions a new one is born"* (Teacher focus group interview, Modena).

Teachers mentioned opportunities for training and exchange among the founding schools and the diffusion of information in the wider Avanguardie Educative network. They also noted that sharing ideas

is easier with other Avanguardie Educative founding schools. As one teacher noted, the 20 founding schools of Avanguardie Educative are always in communication with each other. This closer relationship allowed teachers in a subset of the founding school network to develop innovative methods to assess students during the COVID-19 closures, which they then disseminated more widely.

Bottlenecks:

While teachers mentioned the importance of searching out new ideas as well as diffusing their own work, they also noted that it can be difficult to actively collaborate with other schools. *“It’s difficult to get into this mindset, to find it... outside. The ways in which we approach each other, in which we approach the new, even in exploring other activities. It’s difficult for them to be perceived in the same way as here. Experimentation is part of our daily lives”* (Teacher focus group interview, Modena).

For the most part, INDIRE focuses on how the evidence-based research they have championed has been taken up and adapted in other school contexts. INDIRE plays an active role in matching schools and in tracking the implementation and adaptation of the evidence-informed research it has championed.

New projects and ideas tend to arise through international projects (e.g. Erasmus+ projects that bring together schools and researchers from across Europe). Based on study visit feedback, it seems that INDIRE has faced challenges in encouraging schools to develop new and innovative ideas themselves or discover new ideas or practices that may be taken up (e.g. serving as brokers across schools).

5.4 Communication patterns

Communication patterns within and among schools (including through bonding and bridging capital), with surrounding communities and with INDIRE have been highlighted to some extent in previous sections. In this section, we want to explore communication that promotes collective sensemaking, experimentation and system stewardship – which are at the heart of Human Learning Systems (HLS).

An online practical guide to HLS describes learning as a management strategy, and of course, communication is key to this. “Rather than trying to meticulously pre-plan and organise a programme of activity in someone’s life, it enables public-facing workers to learn together with the people they serve. They can learn about the unique nature of each person’s life as a complex system – the key relationships and the driving factors in their life – and how all of those things interact. And then, when they have learnt together, it enables the workers and those being served to explore and experiment together around what helps to produce better and different outcomes in people’s lives.”

HLS practical guides also emphasise the importance of collective sense-making. System stewards play an important role in helping different actors in the system to understand innovations to make sense of changes being created (Lowe & Padmanabhan, n.d, p. 39). System stewards may need to think through the communication channels necessary for different actors to make sense of new approaches.

Toby Lowe emphasises that HLS requires a shift from “delivery” to managing complexity. Communication with various actors and facilitating adaptive change requires strong communication competencies (Lowe, 2023).

Enablers:

Schools' efforts to connect with parents, students and the broader community provide some of the richest examples of reciprocal communication and mutual learning. As explained by a teacher, "We believe so strongly in innovation that it is also the reason why our school is constantly open to the local community. Innovation [is about] ... understanding and responding to the times we live in, and how we can help our children to live in the present. And that is why there is constant work on the part of everyone, almost all teachers, I must say, to be open and connected to the local area....". A teacher commented that "...we call it a 360-degree way of learning,..." (Teacher focus group interview, Lucca).

Other examples of the importance of communication centre on how the school shares ideas with parents. For example, the school may organise an event with an external expert (for example, a university professor who can talk about student assessment) that is not only for teachers, but also for parents. As a teacher noted, "...we always try to give them maximum publicity, maximum dissemination so that parents, so much so that even when choosing the times" so that parents may attend (Teacher focus group interview, Modena). Parents may also be invited to come on participate in an activity at school so they can really understand the pedagogy.

Bottlenecks:

Schools we visited have developed effective methods for communicating with different actors and stakeholders. Particularly in the case of community service and student internships, communication is focused on ensuring that what students are learning in school is relevant and up to date. However, this type of communication could be more systematised for schools in the network, and focused on mutual learning and, as emphasised by the HLS approach, in a safe space.

5.5 Student agency

The Avanguardie Educative/Piccole Scuole networks have a clear focus on student-centred learning. Recent legislation in Italy has emphasised the importance of student inclusion to ensure more equitable outcomes. School governance structures include student councils to ensure that students' voice is represented. These different facets support student agency and can have a positive effect on student well-being.

Klemenčič (2023) defines student agency as "...students' capabilities to navigate and influence their learning and education pathways and environments." Klemenčič notes that the theory of student agency "...shifts attention from institutional structures and processes, and student engagement with these, to students' capabilities, such as intentionality, forethought, self-regulation and reflexivity, self-awareness and self-efficacy guiding student interactions and engagements that build their experiences and result in outcomes" (p. 1).

An expanded view of student agency suggests that students be included in system learning. Students may also be considered as key actors within social networks to build cross-school weak ties.

Enablers:

Students participating in the study focus groups, as noted above, noted the quality of relationships with teachers and school leaders. When asked how their current school differed from schools they had previously attended or other schools attended by their friends, they consistently noted that "traditional", frontal methods of teaching and learning were common – and that they preferred the learner-centred

approach in their current school. They also mentioned opportunities they had had to present their school to teachers, either by visiting their school or at conferences they had attended.

Bottlenecks:

Student participation in system learning as well as part of network governance could bring a new dimension and new insights to the Avanguardie Educative and Piccole Scuole networks and ways of working. Klemenčič (2023) suggests that students may need to be supported in developing competencies for active engagement, including intentionality, self-regulation, reflexivity, self-efficacy, etc.

6. Future directions: options for development

Recommendations on vertical relationships

The following recommendations are suggested by the analysis of the case study:

↕ Recommendations on **vertical** relationships are beyond the scope of the current study, but we note national policy level changes and investments that would provide schools with greater autonomy/ support learning and innovation within schools and across networks. These might include:

- Ensuring the Avanguardie Educative and Piccole Scuole networks have sufficient financial resources and support.
- Strengthening the national digital school innovation network.
- Redefining school leadership roles to include instructional leadership, stewardship for school development and student care.
- Investing in national-level professional learning of school leaders.
- Empowering regions to engage in and support reforms/capacity building related to teaching, learning and assessment.
- Strengthening school evaluation/inspection, with a focus on development and improvement.

This may include:

- school leader appraisal, with focus on stewardship competences, capacity to engage in school-level and network-level learning.
- teacher appraisal, with focus on competences related to learner-centred teaching and assessment, collaboration and teamwork, as well as leadership roles, within and across schools, digital competences, etc.
- ITE/CPD training to support the development of competences for collaboration within schools and across networks.
- Addressing issues related to the sustainability of reforms in view of school leadership turnover every few years (e.g. by promoting a stewardship model of school leadership, requiring collaborative development of school planning (e.g. with teaching staff, parents, learners, selected community leaders).

Recommendations on horizontal relationships

Our core interrogations on directions for future development are nevertheless focused primarily on **horizontal relationships, within schools and across the Avanguardie Educative and Piccole Scuole network.**

- ↔ **Ensuring clarity and relevance of network aims and mission.** While Avanguardie Educative and Piccole Scuole have had a clear mission and have embedded innovations in founding schools over the past 10 years, it may now be timely to ask whether the current aims and shared goals remain fit for purpose (see also the discussion of network governance). How frequently should the mission and goals be revisited, and by whom, to ensure their continued relevance and effectiveness? Disruptions such as the widespread availability of AI raise questions about how school and classroom practices may need to change, and whether current assumptions about how the networks operate (network structures), and what they prioritise (e.g. stewardship, bottom-up innovation and mutual learning), remain appropriate.
- ↔ **Strengthening network governance and representation.** The future sustainability of the networks raises questions about what kinds of governance structures are most likely to sustain meaningful collaboration and impact. To what extent does the current governance model ensure strong and equitable school-level representation, clear decision-making processes, and a fair distribution of leadership roles across schools and roles? There is also a need to consider what mechanisms might best enable network leaders to systematically listen to needs and feedback from schools, and how insights on school development might be communicated more effectively to policymakers at regional and national levels. Further questions concern how often, and in what formats, meetings and other interactions should occur to keep network activities aligned with agreed goals, and how structures might be developed to connect individual schools with shared interests to support mutual learning and more targeted collaboration (brokering and bridging roles).
- ↔ **Building capacity for collaborative working within and across schools (bonding and bridging capital).** Future development of the networks invites reflection on how best to build capacity for collaborative working within and across schools, and how to balance investments in bonding and bridging social capital. Within schools, how might mentorship, peer learning and collaborative working be organised so that they both support innovation and create safe spaces for more sceptical teachers to voice concerns and experiences? What kinds of structures or routines are needed to enable staff to reflect on local development needs, their capacity to use evidence, and ways of adapting or translating lessons from other schools into their own context? Questions also arise about how peer mentoring can be designed (especially for new staff or those hesitant about change) to foster trust, shared understanding and mutual support.
- ↔ **Considering what forms of professional learning for school leaders and teachers are most conducive to building bridging capital between schools.** How might collaboration with university-based researchers and knowledge brokers be organised to support participatory research and inquiry that is both context-sensitive and practically useful? A further question concerns how network learning can move beyond the simple diffusion of “good practice” towards deeper mutual learning, with a stronger capacity to contextualise innovations and engage in school-level experimentation and improvement. This also raises practical issues about how teachers can be given sufficient time and resources for professional learning, including bespoke training that aligns with local needs. Throughout, it will be important to reflect on how the networks can continue to promote evidence-informed school improvement, while recognising the context-based and contingent nature of teaching, learning and assessment, and creating new opportunities for mutual learning within and across schools.
- ↔ **Strengthening the sustainability of school innovations by promoting a culture of stewardship and school-level learning and development.** Questions about the long-term sustainability of school innovations point

to the importance of a culture of stewardship and ongoing learning and development at the school level. What kinds of leadership training and ongoing professional development, at national, regional and network levels, are most likely to foster an understanding of leadership as stewardship of people, practices and innovations? How can school leaders (including mid-level leaders) and teachers best be supported to develop competences for continuous learning, critical reflection and school development? There is also scope to examine how existing regional school leadership programmes might be oriented more explicitly towards stewardship, learning and improvement, and how mid-level leaders might be more systematically included to strengthen distributed leadership and embed innovations more deeply in everyday practice.

- ↔ **Improving communication to address “structural holes” in social networks.** Finally, there are important questions about how communication patterns within and across schools shape who has access to information and opportunities, and how “structural holes” in social networks might be identified and addressed. What methods could be used to map current information flows, and how might the resulting insights inform network design? Who currently acts as a broker? Is this an individual or a role with access to diverse sources of information? And how might such brokerage be supported or formalised to enable cross-fertilisation of ideas across sub-groups and communities of practice? It is also important to consider how schools and actors on the periphery of the network can be given more meaningful opportunities to communicate their needs, participate in decision-making, and engage in network activities, so that innovation and learning are not concentrated within a small core of highly connected schools or staff.
- ↔ **The dual role of INDIRE** – Observations during school visits underlined the significant input of INDIRE in collecting and brokering evidence from research, guiding the adoption of innovative ideas and practices for teaching and learning in schools, and sustaining their use. Similar feedback has emerged concerning INDIRE’s engaging facilitation and leadership of the movement/network. Both aspects have played a large part in the success of Avanguardie Educative to date. If the focus on innovation at the system level is to be reinforced, what are the conditions for this dual role to remain sustainable and effective in the coming period? Would it be relevant and effective for some INDIRE researchers to develop areas of specialisation, with some focusing on the didactic and organisational aspects of innovations at the school level and others focusing on spreading change knowledge at the system level? Regardless of their area of focus, could the same researchers also be responsible for animating and stewarding the AE movement/network?

The achievements of both initiatives warrant an in-depth discussion of the above questions, with contributions from all stakeholders involved to date, as well as those who are interested but not yet part of the movement.

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8. Appendix – Annotated bibliography

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