# MENTORING AND STRATEGIC VISION FOR INNER AREAS: EXPERIENTIAL BACKGROUND FOR CASCADE TEACHER TRAINING

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**ABSTRACT**

This research investigates the educational processes aimed at enhancing remote areas and the professional synergies grounded in affective-identity bonds, technology, and mentoring practices. Using a sequential explanatory mixed-methods approach (CAWI protocol, 1–10 Likert scale), the study involved a stratified sample of N=114 teachers. Quantitative data, analyzed through non-parametric tests and moderation models and integrated with textual analysis, reveal that the Tech-Readiness Index predicts local co-design capacity (β= 0.42; p=.008), with a strong moderating effect of seniority, peaking at the early-career stage (ρ= .708) and in expert and senior cohorts (ρ> .520). A U-shaped convergence emerges regarding the utility of Augmented Reality as an identity catalyst ($\chi2(3)=11.13$; p=.011). The analysis suggests that isolated technical development may not automatically generate educational value; in the observed contexts, establishing a meaningful connection with the territory appears to require the integration of mentoring practices.

**KEYWORDS**

Remote areas; artificial intelligence; mentoring.

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## 1. Instructional design and enhancing the affective-identity bond

The contemporary debate on the urgent needs of marginalized territories, with specific reference to Remote Areas (Bartolini et al., 2022; Cannella et al., 2020; Garzia et al., 2021; Peconio, 2025), directly calls educational institutions into question. Faced with the risk of educational action becoming detached from the social, cultural, and historical-geographical fabric, the need to interpret social demands and provide targeted interventions requires a rethinking of design and instructional practices. Within this framework, the territorial concept is defined according to the formal classification of the National Strategic Plan for Remote Areas (Piano Strategico Nazionale per le Aree Interne - PSNAI, 2025), which maps the different areas (totaling 128 project areas, 3.834 municipalities, and 13.432.861 inhabitants) based on physical distance and travel times required to access essential citizenship services, such as education, health, and mobility. Schools located in these contexts face complex challenges (Bartolini et al., 2022; Peconio, 2025), mainly attributable to geographical isolation, demographic decline, and educational poverty. This latter condition tends to manifest through sporadic relational opportunities and a contraction of available cultural stimuli.

It is clear, therefore, that in schools within Remote Areas - characterized by a limited number of students often concentrated in multigrade classrooms (De Santis & Mangione, 2025) - instructional design cannot neglect the necessary enhancement of the affective-identity bond connecting students to their territory. At the same time, in line with the Manifesto of Small Schools (Manifesto delle Piccole Scuole) promoted by INDIRE (National Institute for Documentation, Innovation and Educational Research, 2020), Remote Areas guarantee a quality of life and environmental well-being far higher than those of large metropolises. These are authentic communities of memory, custodians

of a unique heritage of deep history, traditions, and cultures. Studies by Bartolini et al. (2022), while highlighting the complexity of these situations and reiterating the difficulty of adapting standardized proposals to the actual needs of specific contexts, leverage the activation of vertical continuity processes, strong inclusion, and the piloting of innovative learning environments. According to INDIRE (2020), these factors are difficult to replicate in overcrowded urban contexts. Furthermore, the difficulty of capturing the practical impact of activities and their marketability in terms of growth and development opportunities could undermine students' sense of belonging and active citizenship, leading to a resigned attitude (Eurydice, 2012, 2017). According to the Strategic Plan for Remote Areas (PSNAI, 2025), the result is an increase in school dropout rates and difficulty in retaining younger generations, thereby undermining the development prospects of Remote Areas.

To prevent this risk, it is essential to channel the meaning of learning toward the enhancement of the affective-identity bond and the care of places and the community (Mortari, 2021). Activating such a process directly challenges the teacher, whose strategic centrality lies in the role of mediator (Damiano, 2013; Flavian, 2019), capable of aligning instructional design with both tangible and intangible cultural heritage. The effectiveness and sustainability of these interventions depend, therefore, on teachers' methodological posture and their ability to contextualize educational practices. Moreover, literature recognizes the importance of activating professional and multidisciplinary synergies to manage the fragmentation of digital content, converting it into an opportunity for co-design. From this perspective, the deconstruction of traditional formats fuels the design of multimodal and widespread learning environments capable of radically innovating teaching processes (Limone, 2012).

However, whereas an uncritical technological optimism views digital skills - as outlined by European frameworks and UNESCO (2024a) - as a possible solution to geographical barriers from a global perspective, educational reflection calls for a deeper examination. While the pervasiveness of intelligent systems and digital skills undoubtedly represents an opportunity for development for every citizen, it is equally recognized that these skills must be oriented toward design anchored to the territory and its potential (Castro et al., 2025), hybridizing them to be transformed into opportunities for resilience (Gristy et al., 2020; Mangione, 2024; Hales et al., 2025). This reflection presupposes a reconfiguration of the term local, which should not be considered an isolated space, but rather a key dimension in constant dialogue with increasingly complex global forms of spatiality (Lussault, 2019).

Moving from this scenario, the research develops along a dual track. On one hand, it intends to explore whether the interaction between emerging technological skills and pedagogical experience can translate into design oriented toward local development. On the other hand, more specifically, the study aims to investigate the professional, design, and networking conditions that allow the school to configure itself as a strategic node of development, capable of activating co-design and territorial enhancement processes through the conscious use of digital technology to boost the heritage and resources of the area. Based on these premises, the research aims to answer the following research questions:

RQ1: Which teachers design more for the territory, involving local actors to a greater extent?

RQ2: Which technological tools are considered devices for cultural and identity mediation for the territory?

RQ3: What is the relationship between Artificial Intelligence Literacy (AI Literacy) and teachers' intentionality in design oriented toward the enhancement of local heritage?

## 2. Remote Areas: cultural heritage as a strategic resource for development

While from a practical standpoint, the enhancement of Remote Areas requires interventions designed on the basis of the actual specificities of each context, from a theoretical and regulatory perspective, the need emerges to anchor these actions to reference frameworks capable of considering local tangible and intangible heritage as a strategic resource for development. An ecosystemic perspective makes it possible to overcome the fragmentation of individual initiatives through a network of co-responsibility, transforming the local community from a simple custodian of its own cultural heritage into an active subject in its interpretation and enhancement. In line with this perspective, cultural heritage mapping and surveying practices serve as central pedagogical devices that find a solid epistemological anchoring in the Faro Convention (Council of Europe, 2005). As an instrument through which the Council of Europe helps its member states address societal challenges, the treaty highlights the close interconnection among cultural heritage, democracy, and human rights, promoting a profound vision of cultural assets in combination with society and communities. The Convention moves beyond the idea that the relevance of heritage inherently resides within objects or places themselves, establishing that their importance derives from the meanings, functions, and value systems that people attribute to them. Consistently with this approach, as enshrined in Article 8, the parties to the Convention should aim to strengthen people's sense of belonging by promoting shared responsibility. Through a recommendation-based approach, it outlines

general objectives, thematic nodes, and potential areas of intervention, while leaving the choice of the most appropriate implementation methods to each member state. From this starting point, the research delves into the theme of active citizenship and the co-construction of social bonds, grounded in experiential mediation and the teacher's design competence to generate real development opportunities. In line with this Framework, educational action assumes a strategic linking role between the tangible and intangible resources of the local community and the training needs of new generations; simultaneously, it allows instructional design to be tailored to the demands for enhancement and regeneration expressed by the territory.

Within the more strictly pedagogical dimension, the TPACK Model (Technological Pedagogical Content Knowledge) (Mishra & Koehler, 2006) clarifies the methods of effective action for educational institutions, based on the conscious integration of technology, pedagogy, and disciplinary content. Developed as an extension of the work of educational psychologist Lee Shulman (1987), the Model highlights the importance of the dynamic relationship existing among these three dimensions, which supports the teacher in disciplinary mediation (Niess, 2005). In order to apply this synergy within citizenship practices and territorial co-design, reference to the European DigComp 2.2 and 3.0 framework (Cosgrove & Cachia, 2025; UNESCO, 2024b) is considered indispensable. The transversality of Artificial Intelligence (AI) is articulated across an explicit dimension - linked to technical mastery and the conscious use of devices for the co-construction of shared content - and an implicit dimension, connected to reflective, ethical, and meta-cognitive postures useful for evaluating information reliability and the impact of technologies. The ubiquitous nature of algorithmic and generative systems necessitates critical knowledge and conscious use. AI Literacy serves as a

competence that transversally intersects all areas of the DigComp framework. For this reason, a critical understanding of AI logic also becomes a fundamental factor in mapping, interpreting, and narrating local heritage in a digital key. Moreover, teachers and students engaged in the enhancement of Remote Areas require conceptual tools to transform territorial data into a strategic resource for development and to avoid new forms of fragmentation or isolation.

Through the combination of these four theoretical-practical references, the characteristics of Remote Areas are redesigned into laboratory contexts of cultural and educational innovation, in which the school offers a privileged space for sharing among students, teachers, families, local authorities, and the community. Furthermore, heritage can become an opportunity for learning and participation, while digital technology can support practices of documentation, storytelling, co-design, and reflection. This horizon is reflected in the recent systemic measures of the Ministry of Education and Merit (Ministero dell'Istruzione e del Merito – MIM, 2023) within the Piano Agenda Sud (Southern Agenda Plan). Indeed, current educational policies dedicate specific attention to 245 schools located in vulnerable contexts and within these same remote areas, identified directly by Invalsi on the basis of national assessments. Extraordinary and systemic measures are provided for these institutions. The action plan explicitly focuses on targeted training for the teaching staff, the active involvement of families, and the adoption of innovative, laboratory-based teaching methods. The broader framework of the National Strategy for Remote Areas (Strategia Nazionale per le Aree Interne – SNAI, 2014), established within the National Reform Programme (PNR) of 2014 and confirmed in the 2021–2027 cycle, aims to counter demographic decline and ensure fundamental citizenship rights (education, health, and mobility) in

marginalized territories. SNAI (2014) considers the school as a true social and economic infrastructure capable of triggering local development. In this perspective, the educational institution represents a civic center capable of intercepting and interpreting the economic and productive needs of the territory. Through open and flexible management, the school enhances the human and spatial resources present both inside and outside its walls, translating them into situated pedagogical designs that generate real growth opportunities for the entire community (PSNAI, 2025). Therefore, the need emerges to qualify the professional, design, and networking conditions that allow the school to configure itself as a strategic node, capable of translating territorial resources into processes of co-design and territorial enhancement through the conscious use of technologies.

The reference framework for schools in Remote Areas finds a connection in the three key points promoted by the Manifesto of Small Schools (*Manifesto delle Piccole Scuole*; INDIRE, 2020), which enhance their status from places of marginality to laboratories of innovation. Small schools act as communities of memory and allow for the contextualization of learning. The bond with the natural and social environment-placed at the center of this research - translates into an innovative instructional resource anchored to reality. The multigrade classroom represents an open and transversal educational environment founded on the unity of knowledge, collaboration, and respect for individual paces, offering models that are replicable even in broader school contexts. The integration of appropriate technological solutions becomes a fundamental tool to expand the boundaries of the school, ensure social inclusion, and enhance the learning environment, thereby overcoming the contraction of cultural stimuli resulting from geographical isolation (INDIRE, 2020).

## 3. Research hypotheses

The research proceeds from the hypothesis that teachers' professional, design, and relational conditions significantly impact a school's capacity to activate territorial co-design processes in Remote Areas. Specifically, it is hypothesized that the propensity to involve local actors in instructional design and to recognize technological instruments as valuable tools for cultural and identity mediation is not uniformly distributed among teachers, but is instead influenced by professional experience, the school's openness to the context, and the quality of relations with the territorial network. It is assumed that greater familiarity with the territory, developed through continuity of service and knowledge of local dynamics, can foster a more intense integration among instructional design, cultural heritage, and community resources. In this perspective, professional experience is considered not merely as a demographic or seniority datum, but as a contextual resource capable of guiding instructional choices toward forms of design that are more deeply rooted in the territory and more oriented toward the participation of external actors. Regarding technologies and their integration into the educational system, it is hypothesized that conscious use is associated not only with acquired technical skills (AI Literacy) but also with the ability to direct these tools toward specific, contextualized educational purposes. In the specific case of this research, technologies make it possible to document, narrate, connect, and enhance local resources. The study assumes that the relationship between digital competence and territorial intentionality in design is mediated by the teacher's educational role and their willingness to read the territory as an educational resource. The research aims to verify whether and to what extent

teachers' professional characteristics, along with the density of relations with the local community, contribute to differentiating territorial design practices and the use of technologies for identity-building purposes.

## 4. Methodology

The present exploratory study is situated within the epistemological framework of the Mixed-Methods paradigm (Creswell, 1999) using a sequential explanatory design, a quantitative and qualitative approach aimed at investigating the hybridization of emerging technological devices and the design intentionality of the teaching staff as a strategic lever to counter educational poverty in Remote Areas. The collection of empirical data was structured and executed through a standardized CAWI (Computer-Assisted Web Interviewing) protocol, administered to a convenience sample consisting of N = 114 teachers serving at educational institutions located in territories characterized by geographical fragility, infrastructural isolation, and risk of demographic decline. I The survey covered various comprehensive schools located in diverse territorial contexts, predominantly comprising municipalities belonging to “Remote Areas”. In order to capture the trajectories and variances determined by the generational factor and professional experience, the sample underwent systematic stratification based on years of service, configuring four macro-areas of segmentation. The analytical breakdown of the demographic, professional, and contextual characteristics of the sample is summarized in Table 1.

***Table 1**: Description of the demographic and professional characteristics of the research sample (N = 114)*

| **Variable** | **Sub-category** | **Frequency (n)** | **Percentage (%)** |
|---|---|---|---|
| Years of service | Early career (up to 5 years) | 18 | 15.79 |
| | Mid-career (6-15 years) | 46 | 40.35 |
| | Expert teachers (16-25 years) | 23 | 20.18 |
| | Senior teachers (>25 years) | 27 | 23.68 |
| School level | Primary School | 79 | 69.30 |
| | Lower Secondary School | 35 | 30.70 |

The architecture of the questionnaire consists of 21 quantitative items anchored to 10-point Likert scales (semantic anchors: 1=Insufficient/Not at all; 10=Excellent/Extremely), aimed at mapping the latent constructs of self-perceived digital readiness, ethical-pedagogical posture, and situated design agency. The selection of quantitative and qualitative items subjected to subsequent statistical modeling and text mining procedures is analytically reported in Table 2.

***Table 2**: Connection between investigation macro-dimensions, questionnaire items, and relative measurement metrics*

| **Macro-Dimension** | **Item** | **Survey Items and Analyzed Variables** | **Scale / Metric** |
|---|---|---|---|
| Tech-Readiness Index | How do you rate your current theoretical and practical knowledge regarding:<br>(1) Virtual reality; (2) Augmented reality; | Self-assessment of theoretical-practical readiness on: Virtual Reality, Augmented Reality, Avatars in education, AI Literacy, | 1-10 Likert Scale (Aggregate score calculated via row mean; $\alpha = .986$) |

| | | | |
|---|---|---|---|
| | (3) Avatars in education;<br>(4) AI literacy;<br>(5) Prompt engineering;<br>(6) Digital storytelling;<br>(7) Gamification; (8) Hypertext;<br>(9) AI-supported design? | Prompt Engineering, Digital Storytelling | |
| Territorial Design | How confident do you feel using AI in instructional design?;<br>To what extent are you able, in your teaching practice, to integrate subject-matter content with the local area's historical and/or cultural resources?; How capable do you feel of designing a technology-enhanced learning activity that highlights local resources?;<br>In your opinion, which AI function is most important for connecting teaching with the local area and fostering meaningful ties between students and the community? (maximum 2 options);<br>How useful do you consider AI to be for showcasing local resources?;<br>To what extent do you believe that AI-based instructional design offers students concrete opportunities to raise | Capacita_Tech_Territorio: Ability to design an educational activity using technology to enhance territorial resources.<br>Connessione_Didattica_Territorio: Ability to establish a dialogue between disciplinary content and historical and/or cultural resources | 1-10 Likert Scale (Single items and criterion constructs) |

| | | | |
|---|---|---|---|
| | awareness of and highlight local environmental and productive resources?; «How often do you involve external stakeholders (local experts, associations, village elders) in your teaching activities?;<br><br>In your lessons, are students asked to actively map cultural heritage (memories, traditions, local resources)? | | |
| Identity Mediation | To what extent do you believe the following tools can strengthen students' sense of identity regarding their local area:<br><br>(1) Virtual Reality;<br><br>(2) Augmented Reality;<br><br>(3) Personalized avatars;<br><br>(4) Digital Storytelling?; How confident do you feel using digital storytelling to have students tell stories about local heritage?; How important do you consider the integration of AI in addressing the social and relational needs of students in 'Remote Areas'? | Assessment of the usefulness of digital tools for strengthening students' identity connection with their territory: [Augmented Reality] | 1-10 Likert Scale (Dependent variable for KW analysis) |

| | | | |
|---|---|---|---|
| Textual Analysis (NLP) | In your opinion, what are the most significant challenges and opportunities arising from the use of technologies (Digital Storytelling/AR/VR/Avatars) to promote digital citizenship skills and resilience?;<br><br>Imagine being able to use AI to discover your city's resources and narrate them through avatars or virtual reality: how would you integrate these technologies into your instructional design?;<br><br>Can you describe a project idea in which you created a meaningful relationship between students and the local territory, enhancing local heritage (tangible or intangible)? | Sfide_Opportunita_Testo: Challenges and opportunities of DS/AR/VR/Avatar for citizenship and resilience<br><br>Immagina_IA_Testo: Integration of avatars/VR in instructional design<br><br>Idea_Progettuale_Testo: Narrative of a project idea focused on local heritage. | Open-ended text responses (Lemmatized and cleaned corpus processed via tidytext) |

To overcome the limitations of statistical fragmentation inherent to single ordinal variables, the metrics regarding front-line technologies - specifically Virtual Reality, Augmented Reality, Avatars in teaching practices, AI Literacy, Prompt Engineering, and Digital Storytelling - were mathematically aggregated by calculating the row arithmetic mean. The internal consistency and robustness of the resulting macro-construct, formalized as the Tech-Readiness Index, were tested and validated using Cronbach's alpha index, which yielded a coefficient of $\alpha = .986$; high internal consistency.

Due to the ordinal nature of the Likert scales and the asymmetry in the distribution of responses, confirmed by the application of the Shapiro-Wilk normality test, the statistical-inferential strategy rejected parametric models in favor of robust non-parametric estimators. In the first instance, an analysis of variance by ranks was conducted using the Kruskal-Wallis Test to verify the significance of perceptual differences regarding the effectiveness of media devices (specifically, Augmented Reality understood as an identity catalyst) across different cohorts of professional seniority. In the second instance, to examine the hypothesis that the impact of the Tech-Readiness Index (independent variable X) on the capacity for instructional enhancement of local heritage (dependent variable Y) was conditioned and reshaped by field experience (moderating variable W), a stratified analytical design was chosen. Therefore, a cross-group calculation of Spearman's rank Correlation coefficients (ρ) was performed, isolating the non-linear effect of the experiential background of each cohort. Finally, the precise intersections between algorithmic literacy and the propensity for intergenerational and historical-cultural dialogue were assessed by calculating Spearman's coefficient ρ across the entire global sample.

To complement and mutually support the quantitative framework, the qualitative component of the research focused on the textual analysis of the open-ended responses provided by the teachers, which centered on the challenges of digital citizenship, application imaginaries of AI, and place-based narrative practices. The textual corpus was processed in the R software environment using Natural Language Processing (NLP) routines following a text mining pipeline. After tokenization and lemmatization, the texts were cleaned using custom stop-word dictionaries to eliminate the semantic noise generated by grammatical elements and redundant structural lemmas (e.g., activity, use).

Finally, morphological consolidation and standardization of inflectional variants belonging to the same conceptual core were carried out (merging the lemmas digital, digitale, and digitali into a single lexical hub named Digital). The extraction of absolute frequencies (n) allowed for the mapping of dominant semantic attractors, ensuring the necessary analytical triangulation and providing the qualitative, interpretative key to the evidence emerged from the statistical moderation models.

## 5. Relational density, mentor posture and affective anchoring

To answer the first research question (RQ1), aimed at identifying which profiles of teachers display a greater propensity for territorial design and the involvement of local actors, the study integrated regression models and stratified non-parametric analyses. The global multiple linear regression model initially confirmed the general predictive impact exerted by the Tech-Readiness Index on the self-perceived capacity to structure educational pathways anchored to the geographic context ($\beta = 0.42$; $t = 2.70$; $p = .008$). However, the analytical examination of the Spearman coefficients disaggregated by subgroups reveals the action of a powerful moderation effect exerted by years of service, validating the hypothesis of a non-homogeneous distribution of design agency.

The impact of overall digital skills on the drive toward co-design is not linear, but is conditioned and reshaped by the teacher's experiential background, as illustrated by the slopes in Figure 1.

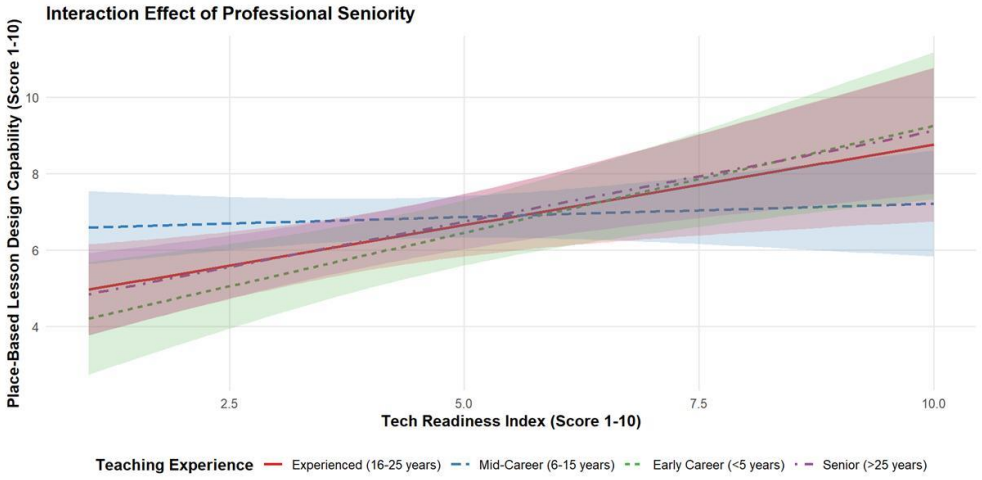



***Figure 1****: Interaction effect of teaching experience on the relation between Tech-Readiness and Place-Based lesson design capability.*

In early-career teachers (<5 years of service), the correlation between technical skills and situated drive is highest and highly significant (ρ = .708; p = .001), demonstrating an immediate translation of skills into workshop-style applications in the field, supported by native technological familiarity. However, this link disappears completely in the intermediate mid-career cohort (6-15 years; ρ = -.036; p = .814), highlighting a partial stagnation in which mere instrumental mastery risks stiffening into a sterile technicality if it is not supported by stable networks of territorial co-responsibility. Within the cohorts of expert teachers (16-25 years; ρ = .566; p = .004) and senior teachers (>25 years; ρ = .520; p = .005), the correlation undergoes a vigorous reactivation. Within the analyzed sample, senior teachers exhibit a notable relational density, mentor posture, and affective anchoring. These traits constitute facilitating factors for converting algorithmic tools into potential instruments for resilience and citizenship within the investigated Remote Area communities.

## 6. Immersive devices and digital narratives as identity mediators (RQ2)

The second research question (RQ2) aimed to trace which emerging technological tools are configured by the teaching staff as effective devices for cultural and identity mediation for the territory. The quantitative extraction of lexical frequencies conducted on the corpus of open-ended responses provides initial qualitative of this anchoring. Net of stop-words, the absolute semantic attractor of the project imaginary is represented by the lemma “Territory” (f=54). Density analysis (Figure 2) highlights how transition devices are not perceived in an alienating key, but rather as relational bridges: the lemmas “Avatar” (f=37) and “Storytelling” (f=37) are closely interconnected to cores linked to the physical and biographical space of internal communities, such as “City/Town” (f=27), “Local” (f=18) and “History” (f=19).

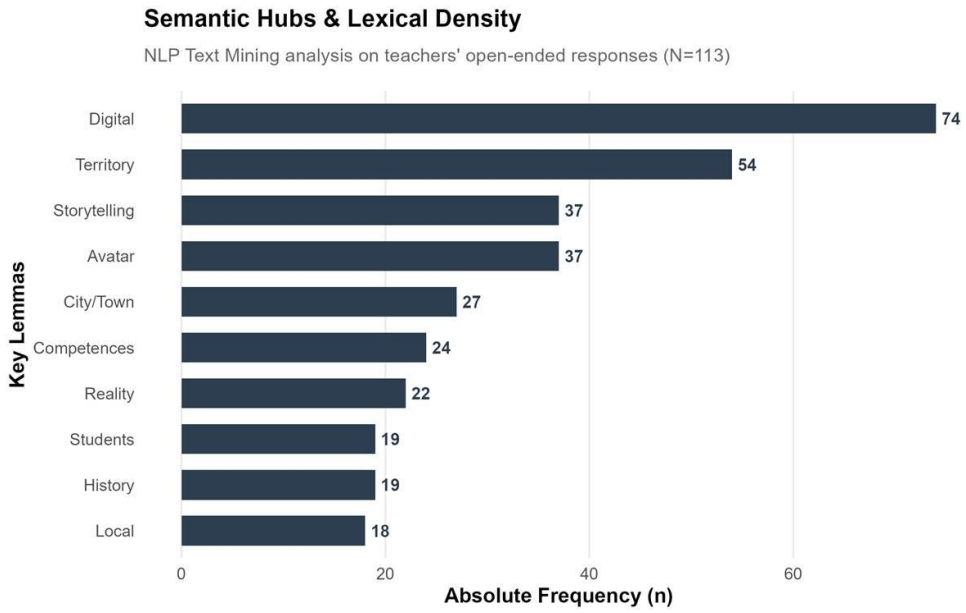



***Figure 2**: Semantic Hubs and Lexical Density in Teachers' Open-Ended Responses.*

The consolidation of inflectional variants under the macro-hub “Digital” (f=74) empirically demonstrates that teachers embrace technology as an invisible channel of mediation aimed at bringing to light and documenting tangible and intangible heritage.

Confirming the theoretical anchoring to the principles of the Faro Convention regarding the social value of heritage, the inter-group inferential analysis tested how the value assigned to these tools varies across professional cohorts. The non-parametric Kruskal-Wallis test revealed the presence of statistically significant differences in the evaluation levels expressed by teachers regarding the specific usefulness of Augmented Reality understood as an identity catalyst ($\chi 2(3) = 11.13$; $p = .011$). As mapped in the boxplot in Figure 3, trust in AR as an accelerator of local affective bonds experiences a convergent "U-shaped" trend: it stands at high levels among newly recruited teachers and rises symmetrically among expert and senior teachers, who glimpse in the immersive medium a tool of choice for enabling students (“Students”, f=19) to critically rediscover and attribute new meanings to the historical roots of their village.

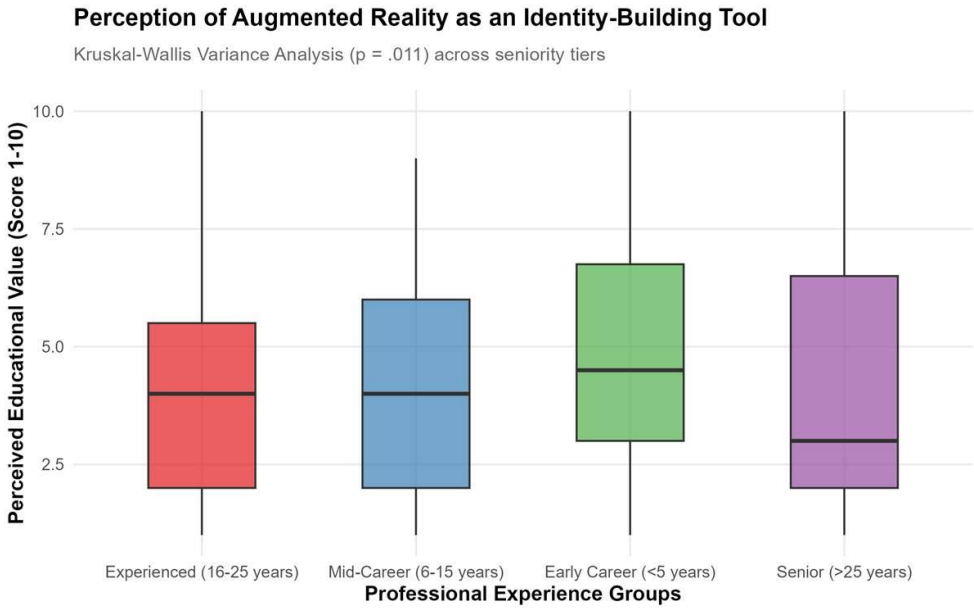



***Figure 3:*** *Perceived Value of Augmented Reality as an Identity-Building Tool by Professional Seniority Groups.*

## 7. De-technicalization of AI Literacy and contextual ethics (Focus RQ3)

The third research question (RQ3) allowed for the examination of the profound nature of the relationship between the teacher's pure technological mastery (AI Literacy) and the pedagogical intentionality oriented toward creating a dialogue between disciplinary content and the historical, geographical, and cultural resources of Remote Areas. Closely confirming the hypothesis regarding the role of technology as a means and never as an end in itself, the global correlation analysis conducted on the entire sample revealed a total absence of a linear link between the two dimensions, yielding a virtually zero and non-significant Spearman coefficient ($\rho = -0.006$; $p=.949$).

This quantitative result provides useful insights for the scientific debate on the TPACK model and the extensions of DigComp 3.0, suggesting that, in the observed contexts, the relationship between digital literacy, educational

innovation, and contextual improvement may not follow a linear or technocentric trajectory. Isolated algorithmic competence (the purely technical and explicit dimension of AI) does not spontaneously generate situated value or social inclusion. The conscious integration of intelligent systems to respond to the needs of vulnerable schools, counteract depopulation, and manage the instructional complexity of multigrade classrooms requires a meta-cognitive and ethical posture - akin to the implicit and reflective dimension of literacy - that only the embodied knowledge of the territory, the teacher's affective investment, and the school's relational openness to the local community can effectively activate and sustain.

**8. Greater professional experience for a form of non-formal mentoring**

The results of the study pave the way for reflection on teacher training models and educational postures destined for Remote Areas. The evidence that isolated technological competence does not produce pedagogical intentionality suggests the need to move beyond professional development programs solely oriented toward digital skills and AI Literacy. The development of a comprehensive Artificial Intelligence literacy requires a design that skillfully integrates ethics, methodological choices, and human relationships (Vinci et al., 2026). In line with the Faro Convention, teacher training is then called to reclaim a situated dimension, focused on contextual design and relational skills. In this perspective, the professional heritage of teachers with greater seniority proves to be a cornerstone for the sustainability of educational institutions in fragile territories. Teachers with more professional experience express a form of non-formal mentoring, grounded in a deep knowledge of the local fabric and the recognition of technology as a means to protect community identity. In light of this suggestion, educational institutions should structure co-design spaces

through which this contextualized experience can qualify the school's educational offering, anchoring it to the specific needs and identity of the territory, while simultaneously sharing local stories, traditions, and knowledge with younger colleagues to guide them toward a design closer to the territory. Valorizing the role of experience means recognizing that the quality of teaching and the affective anchoring of students depend on the school's capacity to act as a conscious interpreter of its reference community.

In conclusion, combating educational poverty in Remote Areas seems to pass through the consolidation of stable local alliances, finding expression in a school understood as a strategic, cultural node of the territory and a decentralized classroom (Mortari, 2020). Here, tied specifically to the transmission of a true competence of context, the construct of mentoring takes on a particularly relevant meaning as a promoter of relational dynamics (Perla et al., 2022) and historical aspects of the territory in which it operates. A second aspect concerns the interaction between digital skills and pedagogical intentionality. Although digital literacy and knowledge of artificial intelligence are now considered indispensable transversal requirements, generational familiarity with digital media does not always automatically translate into an AI-supported territorial design competence. Educational research must, therefore, question the latent risk of technical mastery bending back on itself (Vinci et al., 2026), instead of opening up to listen to the social and identity needs of the school community. On the other hand, the maximum receptivity toward Artificial Intelligence resides in the expert teacher in the consolidation phase. Their methodological and procedural skills allow them to consider AI as a scaffolding to optimize, diversify, and innovate design. If governed by the

intentionality of the expert teacher, Artificial Intelligence can transform into a flywheel for territorial enhancement. Technological innovation thus aligns with the context and supports territorial specificities.

## 9. Multidisciplinary synergies for territorial co-design in Remote Areas

This research aims to demonstrate that educational processes directed toward the enhancement of Remote Areas require a close interaction between emerging technological skills and pedagogical experience. This intersection must be grounded in professional and multidisciplinary synergies capable of governing the fragmentation of digital content and converting it into a co-design opportunity. It is deemed crucial to shift the focus to sharing practices among teachers, the role of professional experience, and mentoring practices (Agrati, 2011, 2022), adopting a critical interpretive key to redefine the professional development processes of teachers operating within the context of Remote Areas.

If isolated algorithmic competence proves insufficient to generate value for the territory, the turning point lies within implicit, relational, and historical potential. Within this construct, it becomes essential to view the teacher in their function as a conscious mentor, assuming a fundamentally strategic role (Perla et al., 2022). Mentoring should be understood as an opportunity for professional recognition (Agrati, 2022). The present study declines this opportunity as a training occasion conducive to rethinking the territory through a design lens. Expert teachers possess a profound knowledge of cultural heritage and an affective bond that are indispensable for supporting younger colleagues in anchoring technological skills within a relational and emotional framework. Through mentoring dynamics, the expert teacher's experience acts

as a scaffolding for younger teachers, allowing them to guide their native technological familiarity toward an instructional design that is genuinely sensitive to the identity, social, and cultural demands of the local community.

Quantitative data confirm the potential effectiveness of this synergy: the strong propensity for territorial design found both in early-career profiles and among the most experienced teachers finds an ideal point of convergence precisely in this intergenerational alliance, which is capable of bridging the stagnation recorded during the mid-career phase. Similarly, the value attributed to Augmented Reality (Jiang et al., 2025) facilitates integration between the reflective posture of expert and senior teachers - who glimpse in the immersive medium a useful tool for enabling students to rediscover the historical roots of their village - and younger teachers. Mentoring thus configures itself as the most natural relational device to activate an exchange of best practices and cascade training: a space where technology serves as an enabling tool to rethink design in favor of safeguarding relationships, community identity, and the affective bond with the territory.

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