ICS EXCHANGE 2025

INCLUSION, COMMUNICATION AND SOCIAL ENGAGEMENT

Atti di convegno - Book of abstract

A cura di Giusi Antonia Toto • Pierpaolo Limone • Martina Rossi

Il Capoverso
EDIZIONI UNIVERSITARIE

Università di Foggia

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INDICE

The Utilization of Augmented Reality in the Curriculum Development for Students with Dyscalculia ad Dyslexia in Applied Science Education

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1. Introduction

This study investigates the integration of augmented reality (AR) technology into curriculum development for students with learning disabilities within the faculty of applied science in a South African higher education institution. The prevalence of learning disabilities such as dyscalculia and dyslexia among tertiary students in South Africa underscores the need for innovative pedagogical approaches that cater to diverse learning needs. Augmented reality, with its interactive and immersive features, enhances the accessibility and efficacy of educational content for students with learning disabilities.

2. Research Methodology

This research employs a mixed-methods approach, combining qualitative interviews with stakeholders, such as educators and students, with quantitative assessments of AR-based curriculum interventions. By examining the perceptions, experiences, and learning outcomes of both students and educators, this study aims to identify the benefits, challenges, and best practices associated with utilizing AR technology in curriculum development for students with dyscalculia and dyslexia. Additionally, the study explores the contextual factors unique to applied science education in a South African higher education institution that influence the implementation and effectiveness of AR-based interventions.

3. Conclusion

Findings from this research contribute to the growing body of knowledge on inclusive education practices and provide practical insights for educators, curriculum developers, and policymakers seeking to leverage technology to support diverse learners in higher education.

Keywords: augmented reality, students with learning disabilities, curriculum development for students, south african, higher education institution, african higher education, applied science education, inclusive education

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The impact of educator perceptions and academic advisor role in the achievement of learning outcomes for students of determination in higher education – a case study

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Abstract: This case study explores the impact of educator perception about students of determination (SoD) and the student academic advisor role to support the achievement of learning outcomes for SoD during summative assessments in undergraduate courses at higher education institutions (HEI) in UAE. Structured and semi-structured interviews and data associated with students' two-semester assessments are used. Qualitative inductive analysis was used for data analysis. In UAE HEIs, the SoDs are supported by adjustments/accommodations recommended based on their medical reports. The enlarged font size of an assessment task, the extra time, and the different examination place are some of the adjustments/accommodations recommended for the SoD student in the case study based on his medical diagnosis and parents' request. The study results show that in semester 2, with minimum adjustments/accommodations in assessments and limited educators' awareness about SoD and their needs, the student achievement was lower than in semester 1, with provisions of all adjustments in assessments and higher education institution (HEI) faculty members' awareness of SoD needs. The study suggests an active role of the academic advisor and faculty training on awareness of SoD needs. These findings can be applied in the future research and teaching practices.

Keywords: Faculty Perception; assessment; student of determination; higher education; adjustments; Academic Advisor

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Enhancing Teaching Practices: Integrating Serious Games and ChatGPT in Teacher Training

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Abstract: This study investigates the perceptions of secondary school teachers enrolled in the Tirocinio Formativo Attivo (TFA) specialization program at the University of Foggia regarding the integration of Serious Games (SGs) and ChatGPT in instructional design. Grounded in the AD-DIE instructional model, the research examines the impact of these tools on usability, pedagogical effectiveness, engagement, skill development, and future adoption.

A total of 139 participants engaged in a two-phase process: in the first phase, SGs were incorporated into lesson planning, while in the second phase, ChatGPT was introduced as an AI-driven instructional support tool. Findings indicate that SGs foster experiential learning by enhancing student engagement and content retention (Boyle et al., 2016). More than 60% of participants found SGs effective in developing practical teaching competencies, while over 70% recognized their role in reinforcing problem-solving procedures and reducing stress in simulated environments (Wouters et al., 2013). Usability was rated posi-

tively, with over 70% of teachers considering SG interfaces intuitive and well-structured for learning.

Regarding ChatGPT, results suggest that AI-supported instructional design facilitates cognitive scaffolding and lesson structuring. Approximately 65% of participants reported improved efficiency in lesson planning due to ChatGPT's ability to generate ideas and refine instructional materials (Dell'Acqua et al., 2023). Furthermore, 53% of teachers exhibited moderate to high familiarity with AI tools (Holmes, 2019), and around 75% expressed a willingness to integrate ChatGPT into future teaching practices (Zawacki-Richter et al., 2019).

Despite sample-specific limitations, this study highlights the potential of combining SGs and AI to enhance both experiential and cognitive dimensions of teacher training. Further research is recommended to explore AI-driven pedagogical models that optimize instructional design and promote inclusive education.

Keywords: Serious Games (SGs); ChatGPT; Teacher Training; Instructional Design; AI in Education; Experiential Learning.

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Architectural Barriers and Accessibility: A systematic review

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Abstract: Architectural barriers continue to hinder accessibility and inclusion for individuals with physical disabilities. Despite regulatory advancements, significant challenges remain, necessitating an in-depth review of recent scientific literature (Marin-Nicolas & Saez-Perez, 2022; Van Engelen et al., 2021). This systematic review examines studies published between 2017 and 2025 to identify major architectural barriers and proposed solutions. The research hypothesis is that, despite legal progress, structural and social obstacles persist, limiting access to public and private spaces.

This study follows the PRISMA protocol for systematic reviews (Page et al., 2021) and is based on a search conducted in three major databases (Scopus, Web of Science, EBSCO) using the query: ("barrier*") AND ("physical disabilit*") AND ("access*" OR "physical access*" OR "accessibility" OR "accessible"). Inclusion criteria require articles in English focusing on barriers, physical disabilities, and accessibility. The initial search yielded 610 articles; after removing duplicates (263), 409 articles remained for screening.

Preliminary findings highlight a growing emphasis on universal design and innovative technological solutions. The final discussion will help identify best practices for eliminating architectural barriers and highlight areas requiring further research and intervention. The study's conclusions will provide valuable insights for policymakers and professionals, promoting more accessible environments.

Keywords: Accessibility, Architectural Barriers, Universal Design.

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The Role of AI-Driven Digital Communication in Enhancing Social Engagement in Education

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Abstract: The integration of Artificial Intelligence (AI) into educational contexts has profoundly transformed traditional learning environments, thereby creating new opportunities for student engagement and interaction. This study investigates the impact of AI-driven platforms on social engagement within educational settings, with a focus on how these technologies enhance communication, collaboration, and participation among students. To facilitate this inquiry, a structured questionnaire was administered to a diverse cohort of students across various educational backgrounds and age groups. The research aims to explore their experiences, perceptions, and challenges associated with the use of AI tools for learning and social interaction. Analyzing the data collected will allow for an assessment of the usability of these platforms, the extent of student interactions facilitated by AI, and the overall influence of such technologies on educational experiences. The findings from this study are anticipated to yield significant insights into the effectiveness of AI platforms in cultivating a more engaging and inclusive educational environment. The research will identify best practices for educators and institutions to maximize the benefits of AI technologies. It will also highlight potential areas for improvement that could hinder effective social engagement. By contributing to the ongoing discussion about the role of AI in education, this study aims to enhance understanding and inform future strategies.

Keywords: AI in education, digital communication, social engagement

Decoding Digital Ecology through Social Media Initiatives: A Study of Nayana Premnath's Instagram

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Abstract: Media Ecology is often defined as the study of media as environment and environment-like situations or contexts as media. As Neil Postman postulates, we live in a 'technopoly' society where culture seeks its authorization in technology and finds its satisfaction in technology; media and its constituents in television, internet, social media affect human lives in more complex ways than we realize. The mechanism of media affects the nature of thought, prompting us to think in myriad ways and reevaluate our existing ways of being. Nicholas Carr in his famous article "Is Google Making Us Stupid" also highlights how access to read, write, and publish vast amounts of information in the internet age is giving shape to a new kind of self. While various scholars have commented on how this emerging digital self will be constructive/destructive for humankind, I would like to argue that this self is under construction and needs to be shaped in sync with the changing times. Internet opens a democratic platform to its users, and it depends on them whether they wish to use it for creating a healthy environment or for writing their downfall. Using example of Nayana Premnath's Instagram profile, I would like to present how conscious self-perception can be used to redefine subjectivity positively and can lead to creation of a media-infused community that is more aware, conscious, and united in its aims for sustainability and betterment. Nayana Premnath is an Indian-origin architect who is driven to sustainability goals

and uses her Instagram profile to promote Zero Waste Living. Her innovative posts and well-written captions not only introduce her followers to her unique lifestyle but also encourage them to introduce a sustainable lifestyle in their own lives.

As per Emersonian notion of self, the essence of being lies in the cohesion that ties different facts and experiences together. If it is cohesion of experiences that collates self, then social media provides an adequate medium to create and redefine these experiences for creation of a sustainable environment. The digital inflexed environment that is based on a redefined interaction between living species, natural surroundings and technology must find a balance between the three to survive and grow. Using ideas from Media Theorists like Nicholas Carr, Walter Benjamin, Adam Hammond and Ecology scholars like Vandana Shiva, Jeanette Winterson and Ali Smith, I will chart a way to understand the developing new subjectivity in digital world and present case study examples (from Premnath's profile) to highlight how the construction of self can benefit from taking a sustainable approach in leading life. Using close reading techniques and qualitative research methods, an attempt will be made to offer a hands-on study of production, distribution and consumption of sustainable subjectivity in the twenty-first century. The Indian origin and experiences of Premnath will be given extra attention to present cultural dynamics and ways of sustainable environment construction in a third-world country like India.

Keywords: media ecology, social media, zero-waste living, digital self, awareness

Generative AI as a Cognitive Extension for Journalists: Navigating Innovation, Integrity, and News Literacies

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Abstract: Generative Artificial Intelligence (GenAI) is transforming journalism, gradually integrating into workflows and automating activities such as transcription, headline writing, summarization, and content personalization for different audiences (Diakopoulos, 2019). Internationally, the debate on AI adoption in newsrooms is intense (Newman & Cherubini, 2025), focusing on increasing productivity and efficiency, while emphasizing the growing need for AI literacy to enhance journalists' skills (Motta & Palomino-Flores, 2024). In this context, Italy represents a unique and enigmatic case. Apart from the experiment by the opinion newspaper Il Foglio – which, for one month, published four pages entirely generated by GenAI under newsroom supervision – journalistic organizations remain silent (Ordine dei Giornalisti, 2025). They refrain from integrating generative AI into editorial processes to avoid conflicts with trade unions concerned about potential job losses. Meanwhile, individual journalists tend to use these tools informally and independently, often without any structured AI literacy training.

However, generative AI should not be seen merely as a tool for efficiency and acceleration (Sonni et al., 2024), but also as an instrument for fostering learning and creativity. In the postmedia era (Eugeni, 2022), drawing on McLuhan's (1964) theory, this study argues that AI acts as a new medium structured around a dual framework: institutional editorial

guidelines combined with journalist-driven personalization. This hybrid approach can enhance cognitive capacities and knowledge creation. By leveraging GenAI as a personal assistant through continuous interaction, journalists can reduce cognitive overload (Hutchins, 1995) while producing more original, in-depth, and high-quality content.

Through a literature review (Trejos-Gil & Gómez-Monsalve, 2024) and qualitative analysis of 15 semi-structured interviews with journalists who have used GenAI for over a year – supplemented by an extensive analysis of global journalistic communities within JournalismAI, a project by Polis at the London School of Economics – this study provides evidence that GenAI, when guided by ethical and editorial frameworks, maintains a balance between innovation and professional integrity.

Journalists, by nature of their profession, are already trained in verification, accuracy, and responsibility – values that reinforce ethical alignment with AI tools. Additionally, a national survey is proposed to assess the formal and informal use of GenAI in Italian newsrooms and to evaluate journalists' perceptions.

Specifically, the study investigates whether targeted AI literacy training and model optimization can improve journalistic quality by empowering learning and expanding the cognitive dimension of journalistic work, while maintaining editorial standards. A practical framework for sustainable GenAI adoption is proposed, grounded in four core dimensions: (a) understanding data and algorithms; (b) developing algorithmic awareness; (c) exploring the epistemology of GenAI; (d) acquiring technical skills for prebunking (van der Linden, 2023) and fact-checking (Quattrococchi & Vicini, 2020).

Finally, the study calls for reinforced ethical reflection (Shi & Sun, 2024) and professional responsibility to uphold accuracy, transparency, and impartiality in news production.

Keywords: press cambridge ma, journalism and media, ai literacy training, artificial intelligence

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Digital Inclusion in Education: Bridging Gaps for Equitable Learning

Redouane El Yousfi

Abstract: The integration of digital technologies into education has redefined pedagogical practices, offering new avenues for accessibility and engagement. However, disparities in digital access, technological literacy, and socioeconomic conditions continue to impede equitable participation in learning environments. Digital communication serves as a crucial tool in fostering inclusive education, yet its effectiveness depends on the extent to which barriers to access and engagement are addressed. Bridging the digital divide requires the implementation of best practices, the adoption of emerging technologies, and the development of strategies that enhance accessibility for diverse student populations, including individuals with disabilities and marginalized communities. In addition to technological considerations, psychological and social dimensions play a fundamental role in shaping student engagement, motivation, and emotional well-being in online learning contexts. A critical examination of these factors is necessary to develop comprehensive strategies that ensure digital inclusion, ultimately fostering more equitable and effective learning environments.

Keywords: Digital technologies, Inclusive education, Digital communication, Digital divide, Accessibility, Student engagement.

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Game-Based Strategies for Special Pedagogy in Primary School: A Systematic Review

Marco di Furia, Martina Rossi, Anna Teresa Musicco, Giusi Antonia Toto

Abstract: Innovative teaching strategies have been widely tested in the field of special education. The amount of data produced provides the scientific community with a broad overview of the use of innovative teaching methods across different educational levels, from primary school to higher education (Jadán-Guerrero et al., 2023; Lynch, Singal & Francis, 2018; McNicholl et al., 2021). In particular, over the past two decades, video games have been at the center of discussions regarding their potential applications in the educational sector (Gee, 2003), with opportunities for implementation in inclusive instructional design (Peconio et al., 2022), provided that accessible gaming tools are used and that they represent disabled identities (Nardone et al., 2022). Our systematic review aims to investigate the most recent scientific literature on the applications of gamification and game-based learning in special education within primary schools, focusing on an educational level where the use of technology has been acknowledged by teachers as highly valuable (Domingo & Garganté, 2016), showing positive effects on the development of soft skills (Serin, Serin & Saygılı, 2009). The article selection process focused on an international and multidisciplinary body of literature published between 2008 and 2024. Two independent researchers selected relevant studies following a two-phase screening process based on predefined selection criteria. The examined variables were derived from the selected studies and primarily concerned the type of study, the type of teaching strategy or tool used, and the collected

evidence. The review results provide an overview of the use of game-based methods to innovate teaching and support students with Special Educational Needs (SENs).

Keywords: Game-based learning, Serious Games, Gamification, Special Educational Needs, Primary School.

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Teaching literature in the digital age: the role of BookTok and emotions in increasing reading

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Abstract: In the current media landscape, in which multimedia is a major educational challenge that should not be trivialised (Attinà, 2012), social platforms can constitute our horizon of social meaning (Boccia Artieri et al., 2017), exerting a growing influence on cultural practices, including reading and the enjoyment of literature, particularly among the younger generations (D'Antuono, 2023). The present intervention aims to investigate the role of the BookTok phenomenon and the importance of emotional dynamics in increasing interest and engagement towards reading among young people. On a theoretical level, the intervention contributes to the understanding of the new forms of youth cultural participation and the role of emotions in the construction of the relationship with literary texts, offering insights into rethinking the aesthetic experience and the formation of the reader in the digital era (D'Antuono, 2023). The methodology adopted for this intervention is the scoping review aimed at mapping the existing evidence regarding the role of BookTok and emotions in young people's engagement with reading, identifying the main themes, key concepts and research gaps. The scoping activity includes content analysis of the sources provided, focusing on descriptions of the BookTok phenomenon, the role of emotions in sharing online reading experiences, and pedagogical reflections on the use of such dynamics in education. The main outcomes highlighted by the sources suggest that BookTok emerges as a powerful

tool to influence young people's reading habits, due to its authenticity, the centrality of shared emotions and the ability to make literary content go viral. The phenomenon has led to a rediscovery of classics and increased sales of specific titles. A potential limitation lies in the possible superficiality with which some content is enjoyed, privileging aesthetics over in-depth analysis. In conclusion, the paper highlights how the emotional dynamics and social sharing promoted by platforms such as BookTok represent an opportunity to renew the approach to the teaching of literature, suggesting the need to integrate these new forms of engagement in the promotion of reading and to enhance students' personal interest and emotions in order to foster a more authentic and lasting relationship with books.

Keywords: Reading, Emotions, BookTok.

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A bibliometric review of the literature on political communication in Indonesia

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Abstract: The dynamics of interaction among actors in political communication in Indonesia have become increasingly intricate since Joko Widodo's leadership. There are numerous signs of a decline in democracy, particularly regarding the reduction of press and internet freedom in the country. This situation represents a significant concern in the context of current issues facing Indonesia. This study aims to conduct a bibliometric analysis of literature on political communication in Indonesia. This study is the first study to provide bibliometric insights on the topic, aiming to understand the pattern and direction of research in a broad sense. This study collects a total of 252 articles related taken from the Scopus database during the period 1980-2025 using VOSviewer, OpenRefine software and Microsoft Excel. Most influential researchers on this topic were from Indonesia and Australia. As a result, this study identifies 2 (two) research themes of Indonesian political communication literature, namely (1) There is a decrease in democratic practices, which is linked to a reduction in press freedom; (2) Transformations in the landscape of mass media in Indonesia.

Keyword: bibliometrics, political communication, Indonesia

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School Dropout and INVALSI results: a mapping of the Inner Areas of Apulia

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Abstract. The Inner Areas represent a critical and challenging context for the Italian educational system. They are characterized by geographical isolation, inadequate infrastructure, and depopulation, but are also rich in potential, such as a strong sense of social cohesion and significant cultural heritage. This study aims to analyze the quality of teaching in schools located in the Inner Areas of Apulia, with particular attention to the Monti Dauni as a pilot area, subsequently extending the analysis to other internal areas of the region (Alta Murgia, Gargano, Sud Salento, Alto Salento). The main objectives include: (1) examining the characteristics of school dropout, both implicit and explicit, and levels of learning; (2) identifying specific criticalities and strengths for each school district; (3) formulating intervention proposals and educational policies aimed at improving teaching quality and reducing educational inequalities. The methodology adopted is quantitative and involves the analysis of open data related to school dropout and the results of INVALSI tests for the school years 2023/2024, 2022/2023, and 2021/2022. The data, organized at the school district level, will be analyzed using descriptive and comparative statistical techniques to identify significant trends and territorial differences. The pilot analysis of the Monti Dauni will allow for testing the research model and providing a replicable comparison for other internal areas of Apulia. The expected results include a preliminary mapping of teaching quality in the Monti Dauni, with the identification of schools with significant criticalities and

trends in school dropout levels and learning outcomes. It is hypothesized that education in the Internal Areas of Apulia is influenced by systemic factors, such as logistical difficulties and lack of resources, but that there are also opportunities for development through targeted interventions. This study aims to provide an empirical basis for the development of educational policies designed to reduce territorial inequalities, strengthening the role of schools as drivers of development and social cohesion in peripheral contexts.

Keywords: inner areas**;** school dropout; quality of teaching.

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Shaping inclusive education through Virtual Reality: opportunities and challenges

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1. Introduction

The integration of digital technologies into educational settings is profoundly transforming teaching methodologies, opening up new opportunities for teaching and learning. Virtual Reality (VR), in particular, stands out for its ability to create immersive environments that foster interaction, personalization of educational pathways and accessibility (Young et al., 2020), with a significant impact on students with Special Educational Needs (SEN) (Creed et al., 2024). However, the effectiveness of the use of VR in inclusive education depends on the perception and preparedness of teachers in knowing how to integrate this technology in a conscious and purposeful way (Lampropoulos et al., 2022).

2. The exploratory study

This study, based on a quali-quantitative approach, aims to analyze trainee teachers' opinions on the use of VR to promote school inclusion. The survey was conducted among a sample of 689 trainees in the specialization course on support for pupils with disabilities, who were given a structured questionnaire designed to detect attitudes, expectations and critical issues related to the adoption of this technology. The data collected showed a general enthusiasm for the potential of VR in improving engagement and

educational accessibility. However, some concerns emerged, particularly related to the lack of specific training and infrastructural limitations, which are significant obstacles to large-scale implementation of this technology. This research is part of the digital transformations promoted by the "School 4.0 Plan" adopted in the Italian context by Minister of Education Decree No. 161 of June 14, 2022. The Plan is envisaged by the National Recovery and Resilience Plan (PNRR) as a tool to synthesize and accompany the implementation of the relevant investment lines and is intended to provide support for the actions that will be carried out by educational institutions in compliance with their educational, managerial and organizational autonomy. It is divided into four sections and aims to encourage the adoption of immersive and interactive environments for innovative and inclusive teaching.

3. Conclusion

The results of the study highlight, on the one hand, the strong potential of VR in supporting the learning of all students, particularly those with disabilities, due to its ability to improve engagement and provide personalized educational experiences. On the other hand, some critical issues emerge that require immediate attention, including the need for targeted training for teachers and overcoming technological and infrastructural barriers. To make VR a truly effective tool in the school setting, it is essential to invest in structured training paths that not only provide technical skills but also help teachers design inclusive educational experiences by making the most of the potential of this technology. In addition, it is critical that educational institutions are equipped with the necessary infrastructure to enable regular and appropriate-scale use of VR, reducing the technology gap between schools. VR is, therefore, a promising resource for building inclusive and innovative learning environments. However, its effectiveness will depend on the ability to integrate this technology into an edu-

cational system that promotes equality of learning opportunities for all students (Antón-Sancho et al., 2024). Only through a coordinated strategy that combines investment, training and research will it be possible to exploit the full potential of Virtual Reality, helping to realize the principles of inclusive education and meet the challenges of the school of the future.

Keywords: virtual reality, sciences institute university of foggia, learning sciences institute university, inclusive education

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Overlapping hybrid approaches in collaborative workplaces

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1. Abstract

1.1 *Introduction*

This insight is a restricted excerpt of a meta review mapping a doctoral research context. The primary focus of the thorough analysis pertains to the nexus between emergent collaborative workspaces and both analog and digital new literacies. The phenomenon of coworking has witnessed a marked escalation even after the pandemic. This trend exerts influence on logistical choices, new city spaces and the necessary infrastructure required by digital nomads. It also necessitates the introduction of new organizational benefits for coopetition.

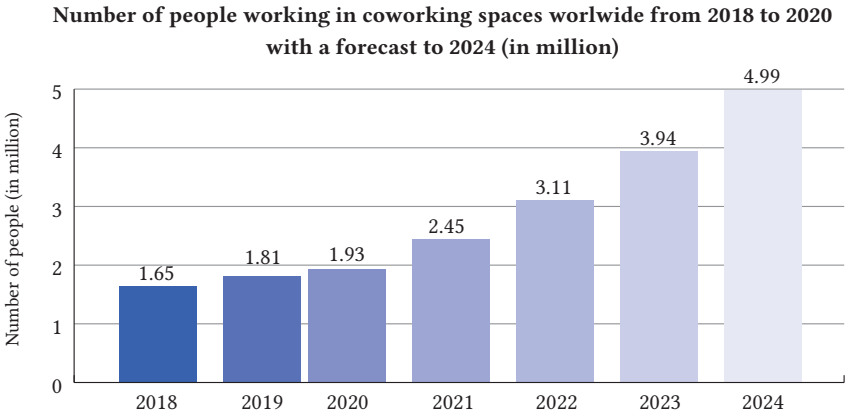

Fig. 1. Source: Coworker & Coworking Resources (July 23, 2020)

2 . Hybrid coworking approaches

A survey of the relevant literature indicates that there has been a shift in working patterns. The physical space is subject to greater demands, especially in terms of hybridisation: apart from the physical presence in the office, virtual environments for connection and collaboration must be taken into account. This shift has given rise to forms of 'camaraderie' (Belk, 2018; Lundgren et al., 2022) not comparable to anonymous carsharing services or vacation home sharing. The value of new collaborative workspaces lies in their provision of basic infrastructure (Internet access and additional services), personal assets (mailboxes, messenger boxes) and collective assets such as lounge areas and telephone booths (Kopplin, Gantert & Maier, 2021).

Hybridisation also includes multi-functionality and flexibility in the post-work context. So, coworking expands its definition to encompass both physical and digital activities within a designated physical space, thereby generating the need to replicate these novel communities in virtual environments (Sinitsyna et al.,2022). The future is moving towards a broader form of hybridisation that combines remote working, virtual collaborative spaces and coworking spaces in presence, all complementary to each other, including the dimension of socialization (Di Marino et al., 2022). In such environments, together with the potential of innovation and competition, a third element may be amplified: the dynamics of coopetition (Bouncken et al., 2018; Orel & Mayerhoffer, 2021), thanks to the dissemination of information, resources and business opportunities. They boost competitiveness through the ability to find new solutions for customers, also using various tools. One such example is matchmaking, which involves the utilisation of 'matchmaking' tools. Within the context of coworking processes, matchmaking is recognised as a means of fostering contacts between potential partners. Collaboration can be triggered through a smartphone application based on user-generated profiles, that allows employees to create tags according to business interests, find opportunities for cooperation and con-

nect via instant messaging or voice chat in the coworking network. The benefits are utilitarian, but the tools can create a sense of closeness and thus foster community and friendship (Garrett et al. 2017), interaction and collaboration between partners (Kopplin & Gantert & Maier, 2021). The provision of digital tools to create new relationships between the parties could become an effective proposal for new synergies. In a hypothetical classification of coworkers between mere users, socializers and learners, the proposals for new literacy and digital benefits are diverse and should be tailored by facilitators, tutors or managers. The extension of virtual leadership models is a plausible course of action being based on the specificity of the coworking environment (Avolio et al., 2000; Dell'Aversana & Miglioretti, 2024). Smart technologies can offer different solutions for monitoring and protecting shared spaces. Attention to possible forms of discrimination, prevention and empowerment towards sustainable behaviour could take advantage from gamification, mobile applications, sensors and communication displays. The utilisation of virtual 'matchmaking' social media applications and push notifications could favor matches especially for newcomers. Conversational AI could act as an agent of social interaction, such as facilitating reservations, scheduling activities and maintenance, and managing information on multi-purpose spaces and activities. The integration of a technological tutor would increase the exchange of know-how: it could take the form of a social robot or a chatbot capable of generating instructions on specific activities to be shared in common spaces (Makkonen et al., 2023). These aspects are strategic because there is a tendency to emulate the successful practices of other coworking spaces, resulting in mimetic isomorphism (Bouncken et al., 2020). Effective design can also fosters inclusivity, particularly in the context of rural regions and in providing prospects for NEETs (Redmond & McFadden, 2023). Last but not least, to be effective, hybridization necessitates a meticulous experience design approach.

3. Conclusion

The new economy needs logistical support and proposals to encourage co-opetition, that is a symbiotic environment characterized by collaboration and competition. While networking may not always result in immediate profitable returns, other perks, such as digital applications for matchmaking, addressing new literacies, and fostering connections, may hold relevance in the new coworking ecosystem. Therefore, further reflection is required on the experience design of spaces and digital benefits, as well as the presence of professionals with new skills to foster ubiquitous hybrid environments.

Keywords: Coopetition, Coworking, Hybridization, Matchmaking, New literacy

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What should be a website for psychological and pedagogical support for parents and children?

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Abstract: There are different approaches in the process of organizing assistance to parents and children in solving urgent problems in their interaction. There is a transition to new forms of organization of psychological and pedagogical assistance in the "here and now" format, the most in demand at the moment are specialized websites and applications for psychological and pedagogical assistance. This article describes common problems in the interaction of parents and children, as well as provides an approximate content and the necessary plan for the implementation of the project to create a website with the possibility of online consultations.

Keywords: psychological and pedagogical support of the family, problems of interaction between parents and children, parent and child, relationship system.

Similar Sites

An analysis of five popular websites "Sunny Children's Portal", "Honest Journal for Parents", the newspaper "Good Road of Childhood", "I am a parent", "Child-psy" showed that consultations with specialists are possible only on one site. We believe that the online form of consultation is in demand and effective.

Project Description

We are currently developing a website where online consultations will be conducted. Methodological material is also being selected to improve the interaction between parents and children. The paper presents an action plan for the implementation of the project: identification of the target audience and its needs; development of a website concept; selection and analysis of material according to the topic of the website; organization of online consultations; creation of an online portal; testing and optimization of the website; launch and promotion of the website; website support and updating; evaluation of effectiveness and regular monitoring.

Literature analysis

Analyzing the scientific literature and from personal observations, the following common problems can be identified: violation of personal boundaries (Singer, 2022); lack of joint activities (Kireeva, 2019); differences in age, experience, life position, views, values (Makhneva, 2023) and so on. The reasons for the problems are also presented: lack of understanding and communication, different values and ideals (Pyatkov, 2024). Problems and causes are interconnected, so it is impossible to solve only one of the problems or causes without paying attention to the others.

Conclusions

An analysis of the above sites has shown that there can be a lot of specialized material, but there is no most important thing – online consultations, which is not effective in solving problems. An analysis of the scientific literature has shown that there are problems in the relationship between parents and children, they are diverse, related to the causes and they need to be solved in a complex. Currently, the authors are working on a project to create a website for pedagogical and psychological support and support of child-parent relations, which provides online consultations. The paper presents a project implementation plan. In the future, the project involves

the creation of an electronic personal diary on the website to visualize the problem-solving process, as well as the option of recording webinars and podcasts in various areas with the possibility of discussing the presented material.

Disclosure of Interests

The authors have no competing interests to declare that are relevant to the content of this article.

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Relationship between IQ and Emotion Recognition Ability: A Correlational Investigation

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Introduction: Scientific literature suggests an absence of a significant correlation between Intelligence Quotient (IQ) and Emotional Intelligence (EI). However, some studies hypothesize that specific aspects of EI, such as the ability to recognize emotions (Emotion Recognition Ability, ERA), may show a partial association with IQ.

Objective

The aim of this study is to empirically verify this hypothesis, already proposed in the literature, through a correlational analysis between IQ and ERA.

Method: The study was conducted through a cross-sectional survey on a nonrandomized sample of children attending elementary schools (N = 81). Participants completed the Raven Progressive Matrices (measure of IQ) and the DANVA-2 (assessment of ERA).

Results: The analyses highlighted positive but weak correlations between the scores of the two tests (e.g. r = .167 between total scores), not sufficient to be statistically significant. A paired-sample t-test was also conducted and the results indicated statistically significant differences between the means of the administered tests ($p < .001$).

Conclusion: The results do not significantly confirm the hypothesis of a relationship between IQ and ERA, suggesting that the two dimensions remain substantially independent.

Keywords: QI, ERA, Emotional Intelligence

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Graph by graph, bird by bird: Gamified literary data visualizations for Digital Humanities pedagogy

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1. Introduction and background

In recent years, Digital Humanities (DH) have expanded beyond basic data digitization into dynamic computational inquiries that enrich literary and historical scholarship. Researchers now integrate text mining, data visualization, and distant reading techniques to unearth previously overlooked patterns in large corpora (Armand & Henriot, 2023; Siemens & Schreibman, 2013; Mulligan, 2021). However, many results are still presented as static charts or textual summaries, limiting opportunities for deeper engagement. A growing body of scholarship calls for more interactive, user-centered frameworks that combine rigorous analysis with immersive modes of exploration (Bludau et al., 2020). This paper proposes an approach to interactive data visualization – augmented by gamified design principles – spotlighting the works of Haruki Murakami, chosen for their distinctive thematic symbolism, complex narrative structures, and recurring motifs (Seats, 2009). Such features lend themselves to distant reading and graph visualizations, where patterns in language usage, character interactions, and symbolic themes can be dynamically mapped and explored (Moretti, 2013). Drawing upon existing DH methods, we show how this model can be generalized to other topics beyond contemporary literature, offering a creative framework that instructors, students, or researchers can adapt with minimal overhead.

2. Methodology and output

We begin by outlining the conceptual background of interactive literary visualization, emphasizing the potential of data-rich representations to transform the reading experience from passive consumption into participatory discovery. Here, we contextualize how Murakami's works – replete with surreal imagery, layered parallel worlds, and recurring motifs such as wells, cats, and mysterious women – prove uniquely suited to computational analyses. Building upon existing scholarship on computational narratology, we highlight how distant reading strategies enable researchers to detect overall narrative arcs and compare them (Mani, 2022; Gius & Vauth, 2022). This macro-level perspective can illuminate recurring tropes like loss, memory, and the boundary between fantasy and reality. By facilitating a more immediate engagement with these patterns, interactive visualizations challenge the "flatness" of typical literary data presentations. Next, we present a methodological framework that demonstrates how data mining and visualization tools can uncover thematic and linguistic signals in literary corpora. First, we compile primary texts; then, by capturing metadata on characters, settings, and key concepts, we create a structured text repository suitable for computational parsing. Then, a customized natural language processing (NLP) pipeline identifies recurring phrases, symbolic objects, and sentiment shifts, noting how a motif (e.g., dreams, crows, hidden gateways) oscillates in frequency and context across various novels (Seipel, 2013). These extracted features are transformed into weighted graph representations, wherein nodes correspond to thematic clusters or character references, and edges define relationships or co-occurrence patterns. A dynamic zoom-in/zoom-out perspective further embeds close reading passages directly into the visualization, enabling a seamless transition between macro-level networks and micro-level textual analysis. In parallel, a gamified design framework encourages learners and enthusiasts to "solve" interpretative mysteries in the data. Rather than passively observing networks, users engage interactively with graph elements and derive new hypotheses about the interplay

of recurring settings or symbols. Critically, this approach aims to foster pedagogical engagement. Instructors can guide students through a gamified data exploration process: formulating queries, uncovering hidden motifs, and reevaluating initial assumptions. By panning across the visualization space, learners gain a tactile sense of how different themes interconnect, spurring them to hypothesize about narrative strategies and compare findings across multiple works. This process encourages critical thinking by prompting students to test textual evidence and refine interpretations in real time – a vital aspect of experiential learning (Kolb, 2014). Additionally, the possible "challenges" embedded in the platform – such as tracing symbolic motifs through unexpected plot intersections – turn literary analysis into a collaborative, puzzle-like endeavor. Such an adaptable methodology can be replicated beyond literary scholarship. Historical texts or sociological data, for instance, may be structured similarly, using the same NLP pipeline and graph-based representation to foster gamified discovery. The underlying architecture allows researchers and educators to "plug in" custom corpora – whether Renaissance plays, modern news archives, or personal diaries – thus broadening the scope of DH pedagogy. By foregrounding interactive data visualization and game-based design elements, this study responds to calls for bridging scholarly rigor with dynamic engagement (Armand & Henriot, 2023; Mulligan, 2021). Visual interfaces that highlight co-occurrence networks and sentiment trajectories encourage both novice and expert audiences to "play through" analytic insights. When readers can literally uncover the threads of a motif or theme by navigating branching storylines, they develop an embodied form of interpretation that enriches comprehension and fosters empathy (Bludau et al., 2020).

3. Conclusions

The design and implementation of an interactive, gamified visualization pipeline for Murakami's corpus illustrate how Digital Humanities techniques can invigorate literary education by showcasing data-rich

narratives in a visually compelling, puzzle-driven format. This approach amplifies the analytic potential of distant reading, unveiling how recurring patterns and motifs form subtle intertextual webs. More importantly, it offers educators and researchers a reusable blueprint that can illuminate new vistas of literary analysis across broader domains. As participants navigate a fusion of linguistic data, cultural references, and thematic symbolism, they become active co-creators of interpretive knowledge, bridging the gap between computational analytics, game-inspired engagement, and the lived experience of reading. Such a synergy opens the door to an expansive future wherein humanities scholarship – supported by interactive, game-oriented structures – champions deeper inquiry, reflective dialogue, and creative experimentation.

Keywords: Digital Humanities, Gamification, Computational literary studies, Visualization, Distant reading, Network analysis, Murakami

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Serious Games, COTS Games, and Gamification: Transforming Learning Through Play

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Abstract: The awareness related to videogames and their use has seen a significant growth since the first decade of 2000, passing from a sectorial entertainment, enjoyed by a small amount of people to a worldwide phenomenon with a multi-billionaire dollar industry and an established gaming culture, now part of the pop-culture of the last decades. This happened due to the fact that videogames can activate a motivational lever able to create engagement into players, fuelling a circle based on intrinsic motivation. Those happenings have been evaluated by the research that, since the first decade of 2000, studied how to channel the engagement created through videogames to support students in learning processes, exploring innovative methodologies, like gamification and serious games, but also discovering the potential of the lately defined COTS games. The term gamification indicates the use of game elements (badges, leaderboards, level, points) in non-game contexts in order to increase motivation and engagement, serious game instead is the use of videogames specifically designed with educational purpose, COTS games (commercial off-the shelf games) are videogames that were designed for entertainment, but later recognized for their educational value. The following research article will analyse the impact of the use

of gamified tools and video-games (serious-games and COTS games) employed as game-based learning tool to support learning processes in formal and informal educational contexts.

Keywords: Serious Games, COTS Games, Gamification

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Virtual reality and empathy: experiencing intercultural immersion

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Abstract: Immersive technologies, such as Virtual Reality (VR), offer new opportunities to foster intercultural competencies, soft skills, and to enhance emotional regulation and understanding of other cultures. This contribution aims to analyze the potential of VR in simulating intercultural experiences, allowing users to "immerse" themselves in diverse contexts. The methodology adopted includes a systematic review of existing literature, aimed at identifying relevant studies on the topic and highlighting key areas of application, benefits, risks, and challenges associated with the use of VR for promoting intercultural empathy. The primary objectives include: analyzing how VR can facilitate cognitive and emotional processes, such as perspective-taking and bias reduction; identifying best practices for immersive simulations to ensure cultural accuracy and avoid stereotypes; and evaluating gaps in the current literature to identify future research directions. Expected results suggest that VR, due to its ability to create immersive and realistic experiences, can serve as a valuable tool for improving intercultural understanding and encouraging critical reflection on existing cultural differences. Furthermore, the preliminary analysis highlights significant challenges, including the need to scientifically validate the effectiveness of simulations and ensure their accessibility in educational contexts. It is anticipated that VR, when used thoughtfully

and integrated with structured educational approaches, can contribute to shaping more empathetic and interculturally competent individuals, offering a solid foundation for future developments in educational and social domains.

Keywords: virtual reality, intercultural competencies, immersive simulations, empathy, educational contexts

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Empowering inclusion and gender equality: the role of digital technologies in comprehensive Sexuality education

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Abstract: Comprehensive Sexuality Education (CSE) represents a fundamental educational approach to promote inclusion and gender equality, addressing topics such as identity, relationships, and rights. In recent years, digital technologies have played a crucial role in supporting educational processes related to CSE, offering innovative tools to engage both students and teachers. This study explores the influence of digital technologies in promoting inclusion and gender equality through CSE, adopting a mixed-methods approach. The research includes a qualitative analysis of digital content, educational platforms, and online resources, along with a critical examination of the potential and limitations of such tools. The objective is to evaluate how digital tools, such as educational apps, interactive platforms, and social media, can facilitate the understanding of complex concepts and foster dialogue on sensitive topics, overcoming cultural and relational barriers. Preliminary results indicate that the use of digital technologies allows for personalized educational pathways, improved accessibility, and the stimulation of critical thinking, contributing to greater awareness of gender equality and inclusion. However, challenges also emerge, such as the quality of digital content, the digital divide, and the need for educator training. The study

concludes that the integration of digital technologies into CSE offers significant opportunities for promoting an inclusive and equitable culture, emphasizing the importance of targeted educational policies and collaboration among educational, technological, and social institutions.

Keywords: comprehensive Sexuality education, digital technologies, inclusion, gender equality, educational tools

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Artificial Intelligence in mathematics education to improve critical thinking and problem-solving

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Abstract: In recent decades, technological evolution has profoundly transformed education, leading to the need to rethink teaching methodologies and the skills required to face future challenges. Soft skills, such as problem solving, have become essential not only for academic success, but also for personal growth and social inclusion. The goal of modern education is to prepare students to become conscious citizens, able to face the challenges of life and work through the acquisition of transversal skills (Council of the European Union, 2018). Problem solving plays a vital role in this process, which is why artificial intelligence (AI) is entering the educational landscape, especially in mathematics teaching. AI, in fact, offers the possibility of personalizing learning, ensuring immediate feedback and answers to the individual needs of students. AI-based mentoring systems, such as those described by Van Vaerenbergh and Pérez-Suay (2021), promote autonomous and adaptive learning. In this context, ChatGPT represents a promising tool for support in solving mathematical exercises and deepening concepts. However, its effectiveness depends on how it is used. It's not just about getting answers, it's about stimulating students to think critically about each step, formulate precise questions, and question AI in a conscious way (Subroto et al., 2024; Yoon et al., 2024). The mathematics teacher, therefore, is no longer seen as a simple transmitter of knowledge, but as a facilitator

who guides students in the critical and reflective use of tools such as ChatGPT (Matteucci et al., 2024). The teacher must teach students to: formulate precise questions to obtain detailed explanations of mathematical problems; stimulate critical thinking, verifying the validity of the answers obtained; managing the interaction between human and AI, using ChatGPT as a tool to understand concepts, not just to mechanically solve problems. The use of ChatGPT to solve mathematical problems has great potential, but it also has critical issues, such as the difficulty in dealing with complex geometric problems. Therefore, it is crucial for students to critically analyze the answers and learn how to correct any mistakes. In the description of the research project, a teaching proposal will be deepened and analyzed, aimed at solving geometric problems through the use of ChatGPT. The research question on the use of artificial intelligence, and in particular the ChatGPT model, in teaching is: RQ: Can AI support students in understanding complex geometric concepts, foster their development of critical thinking and improve their problem-solving skills? The impact of this technology on the effectiveness of learning will also be assessed, examining the potentials and challenges related to the integration of advanced digital tools in the educational context. The proposed teaching activity involves students addressing a series of geometric problems, both independently and with the help of ChatGPT, interrogating it repeatedly to refine the answers and improve their understanding of mathematical concepts. Students will be divided into groups and will have to solve a series of geometric problems, following two distinct phases for each problem:

1. Step 1 (Autonomy): Each student will solve the problem independently, applying the knowledge acquired during the lessons. At this stage, students will have to rely on their analytical and problem-solving skills, trying to arrive at a solution on their own.
2. Step 2 (Interaction with ChatGPT): Next, students will interact with ChatGPT to get clarifications, confirm their solutions, and receive

more detailed answers. In this phase, students will have to formulate precise questions to ChatGPT, trying to refine the answers through several successive questions, with the aim of deepening their understanding of the problem and the mathematical concepts involved.

This methodology aims to stimulate active and collaborative learning, promoting critical reflection and the use of digital tools to develop advanced mathematical skills. The activity encourages the quality of solutions, develops the ability to formulate questions relevant to ChatGPT and allows the teacher to work in the class group on the topic of argumentation. In this way, key skills such as problem-solving, collaboration and the conscious use of digital tools are highlighted. Currently in the development and testing phase, the activity will be evaluated by comparing the results obtained by the groups that have used AI with those of another sample class that will face the same problems without technological support. This comparison will allow us to understand whether the use of artificial intelligence represents an added value in mathematics teaching and promotes students' learning. The study examines the use of AI in mathematics education, improving skills and pedagogy with the teacher in a central role.

Keywords: Mathematics education, AI, Mathematical High-School Project, ChatGpt, Technology enhanced learning

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Exploring the integration of Mathematics and Music within the STEAM Framework: Insights from the Medieval Quadrivium

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Abstract: In this article, the connection between the medieval Quadrivium and the modern STEM/STEAM approach is investigated, offering a perspective that enriches teaching. The Quadrivium, literally "crossroads of four roads", is an educational model, born in the Pythagorean school, which dealt with the knowledge of number and its applications, considered by the Pythagoreans the key to understanding the universal order, and was divided into four disciplines: arithmetic, geometry, harmony (or music) and astronomy. It put mathematics at the center of learning and conceived knowledge as an interconnected whole, principles that we find today in the STEM/STEAM model, which integrates mathematics with other disciplines and aims to go beyond compartmentalized teaching to foster critical thinking and creativity (Sternberg, 1988). STEM (Science, Technology, Engineering and Mathematics)/STEAM (with the addition of Art) is an acronym that represents a multidisciplinary educational field focused on these subjects not separately, but so that students can see how concepts intertwine with each other and how they can be applied to solve real problems. It is not only a matter of learning new things, but also of developing skills such as analytical reasoning (Bloom, 1956), divergent thinking (Guilford, 1967), experiential learning, learning by doing (Lewin, 1951), fundamental skills to face a future in which technology and science

will be protagonists. The presence of art in STEAM serves to take a step further than just technical and scientific reasoning. Art, in fact, is about the ability to think creatively (Rochon, 2024), to look at problems from different angles, making solutions more fascinating and often more efficient. Quadrivium has a more theoretical and philosophical imprint, while STEM is more applied and technology-oriented, but both promote a holistic approach to learning, in which knowledge is not fragmented but part of a unitary and interdisciplinary system. With this in mind, an educational workshop dedicated to the exploration of the isoperimetric problem is proposed, a classic theme of optimization: “among all the plane figures with a given perimeter, which one has the maximum area?”. This mathematical challenge offers the opportunity to adopt an interdisciplinary approach, fostering dialogue between the ancient knowledge of the Quadrivium and modern STEM disciplines. The goal is to link the geometric optimization of the classical isoperimetric problem to harmonic optimization in music, arithmetic principles, cosmic proportions and technological applications with the use of Geogebra and MuseScore, showing how all these fields share structures and proportions. The activity begins by introducing the problem and comparing the idea that the circle represents the maximum area contained for a given perimeter with the search for perfection in musical ratios and astronomical proportions, highlighting how all these areas try to maximize a certain characteristic (area, harmony or cosmic order). The students, after acquiring the necessary prerequisites, are the protagonists of the activity. We proceed by analyzing the harmonic relationships that define the musical intervals (e.g. 2:1 for the octave, 3:2 for the perfect fifth, 5:4 for the major third), linking them to the geometric proportions of the isoperimetric problem through the use of mathematical, technological and practical tools. Furthermore, by exploring the link between these ratios and fundamental numerical proportions in arithmetic, we analyze the way in which they emerge in the organization of planetary orbits in astronomy and their applications in modern technologies.

The educational initiative presented in this document is strategically crafted as a component of the Mathematical High School Project (MHS) and is intended for implementation in 12th and 13th-grade classrooms. The MHS project involves a collaboration among 26 universities and more than 160 educational institutions across Italy. This forward-thinking educational program seeks to reintegrate the interdisciplinary essence of mathematics into the Italian school curriculum. By leveraging emerging technologies, the MHS project seeks to explore and reinterpret subjects such as history, art and economics through a mathematical perspective (Bimonte et al., 2023; Rogora & Tortoriello, 2021). Within the framework of this initiative, music serves as a significant unifying cultural force, harmonizing with mathematics to enhance cognitive development (Tortoriello & Nigrelli, 2025). The laboratory will be developed in the coming months in the classroom. The Quadrivium-STEM/STEAM combination creates an innovative learning environment that enhances both ancient knowledge and the possibilities offered by new technologies. In fact, through the combined use of software such as Geogebra and MuseScore, students can visualize how mathematical proportions underlie both geometric optimization and musical harmony, and can understand how the connection with astronomy can be found in the organization of planetary orbits and in modern navigation technologies. The study of mathematics becomes more concrete, engaging and meaningful, preparing students for modern careers that require blended skills in an increasingly dynamic world.

Keywords: Interdisciplinarity, STEAM, Geometry, Music, Technology, Mathematics education

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Embodied Education: Embodied Presence and Emotional Awareness in Teacher Training

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Introduction

In the educational context, a teacher's presence is not limited to their physical presence in the classroom but represents a complex dimension that profoundly impacts the relationship with students and the effectiveness of learning (Carlomagno, 2020). The ability to be present with the body, emotions, and communicative intention is a crucial aspect in fostering an engaging and authentic learning environment (Gallese, 2007). Jane Goodall (1999), in her work on human and interspecies connections, highlights the value of an authentic and aware presence in building relationships, emphasizing its importance in education as well. From this perspective, presence becomes a set of skills and techniques that educators can and must develop through training. This research aims to explore how body awareness and emotional regulation can enhance stage presence, which is also didactic presence (Carlomagno, 2023), thereby improving the teacher-student relationship. By integrating neuroscience (Gallese & Morelli, 2024) with pedagogy (Carlomagno, 2020) and theatrical practices (Barba & Savarese, 2011), this study seeks to identify best practices and educational strategies that help teachers enhance their communicative and relational effectiveness. The challenge is to make

teaching more empathetic and interactive, where the embodied presence of the teacher becomes an essential tool for stimulating learning and fostering active student engagement.

Research

The study employs Art-Based Research (ABR) (Leavy, 2015), applied through the CReAP+T approach (Corporeality, Creativity, Relationship, Emotion, Action, Performativity + Technology/Training) (Carlomagno, 2022, 2023). This multidisciplinary approach allows for the analysis of didactic presence not only through a theoretical lens but also via experiential and performative methodologies. The pilot study was conducted on a sample of 60 students enrolled in the third year of the Degree in Educational Sciences at Suor Orsola Benincasa University, within the laboratory "Learning Through Play: Techniques for Theatrical Animation and Communication." To analyze the impact of theatrical practice on the perception of presence, various data collection tools were employed, including structured questionnaires administered at the beginning and end of the course. These tools enabled an assessment of possible changes in students' perception of their own presence and in educational interaction dynamics (Sibilio, 2020). Additionally, individual assignments were given throughout the course to encourage reflection on the perception of presence through self-observation exercises and reflective writing. The integration of theory and practice, along with the use of artistic and corporeal methodologies, enabled an exploration of how presence can be developed and made more conscious through innovative pedagogical tools. The data analysis combined both quantitative and qualitative methods, with a particular focus on the correlation between increased body awareness and improved teaching performance. The findings suggest that theatrical practice not only enhances spatial awareness and non-verbal communication skills but also fosters greater confidence in the teacher's personal and professional expression.

Conclusions

The findings indicate that the use of theatrical and bodily practices helps enhance awareness of one's presence, fostering a greater integration of emotions, communication, and educational interaction (Damasio, 2000). Students reported an improvement in their ability to manage space, voice, and non-verbal language – fundamental elements for engaging and effective teaching. The CReAP+T approach highlighted the value of integrating theoretical and practical learning, suggesting that teacher training could benefit from methodologies that develop body awareness (Merleau-Ponty, 1945) and emotional regulation. This study represents a first step toward redefining the role of embodied presence in education, providing innovative tools to strengthen teacher-student communication. For future research, it will be beneficial to expand the sample and further investigate the role of immersive technologies and experiential training to consolidate the findings. The introduction of theatrical methodologies in teacher training could serve as a key strategy to improve not only communicative effectiveness but also the well-being of both teachers and students, enhancing their relationship within the educational context.

Keywords: Embodied Cognition, Incarnate Presence, Body Awareness, Educational Theatre, Teacher training, Theatre practices

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Artificial Intelligence in Education: exploring inclusive use with teachers and educators

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1. Fostering pedagogical use of artificial intelligence

The integration of Artificial Intelligence in Education (AIED) is leading to significant changes in teaching and learning, sparking both interest and critical reflection. While AIED can provide opportunities to innovate teaching methods, it also brings challenges in terms of reliability, ethics and pedagogical validity (Ifenthaler et al., 2024). AIED appears to support teachers in developing personalized materials tailored to the different needs of students (Jauhiainen & Guerra, 2023). However, this is still a young field with concerns about the quality and trustworthiness of AI-generated content, which may contain errors, biases or unverified information (Xie et al., 2022). To address these issues, UNESCO has proposed the AI Competency Framework for Teachers (UNESCO, 2024a). The document emphasizes the central role of teachers and encourages educators to critically reflect on the impact of AIED and promote its conscious and pedagogically sound use. The growing academic interest in AIED reflects its pedagogical potential to personalize learning, support students with diverse needs, and transform traditional educational practices by fostering

new forms of human-machine collaboration in the classroom (Wang et al., 2024). However, these innovations also raise critical questions regarding ethical use, data protection and the redefinition of professional roles in education (Robert et al., 2024). In this context, teacher training plays a crucial role in ensuring that AIED is implemented critically and responsibly with a clear pedagogical focus.

2. Exploring artificial intelligence with teachers and educators

This study was conducted within the First Level Master program Expert in Educational and Teaching Processes at School (EsPEDA) offered by the University of Turin (UniTo; 2024-2025) through the Departments of Education, Culture, Politics and Society and Psychology. The program supports the training of future teachers and educators by promoting professional skills for conscious, inclusive and collaborative practice in schools, with a focus on inter- and multi-professional collaboration. The study involved a group of EsPEDA participants in the Inclusive Teaching and Digital Learning Environments Laboratory. In two separate lab sessions, participants used AI to create instructional materials: a text simplification and a pedagogical narrative based on textbook excerpts. The sessions took a mixed-methods, hands-on approach, combining qualitative reflections and quantitative observations to explore how participants interacted with AI tools in collaborative environments. The present experiment builds on previous work conducted at UniTo within the Expert in School Inclusion Processes (EPIE) course and the Specialization Course for Support Teachers (CSS). Both programs aim to prepare teachers to promote a culture of inclusion in the school environment (Bruschi & Marchisio 2023). These experiences contributed to the development of a ten-point framework for the pedagogical use of AIED, which serves as a theoretical reference for this study (Ballestra Caffaratti & Monchietto, 2025). This study aimed to adapt and apply best practices originally developed for the training of support teachers to the preparation of future teachers and educators, with the goal

of promoting an inclusive culture beyond the boundaries of special education. Preliminary results suggest that AIED can be a valuable aid in the design of inclusive teaching materials. However, they also confirm that the quality and pedagogical effectiveness of such tools are highly dependent on the active, critical and conscious participation of the teacher.

Keywords: School Inclusion, Artificial Intelligence in Education, Teacher Training

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Empowerment, Autonomy, and Inclusion: Educational and Psychoeducational Pathways for People with Autism with Support from VVAs

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Abstract: The acquisition of work-related skills that allow for the highest possible level of independence is fundamental, as it enables individuals with autism to experience a sense of accomplishment and satisfaction in their daily activities. Consequently, psychoeducational intervention plays a central role, offering a unique opportunity to teach skills that can be extended and generalized to everyday life. These achievements not only enhance self-efficacy but also help strengthen the self-image of individuals with autism, fostering a positive view of their abilities (Cottini, 2016). People on the Autism Spectrum are often characterized by cognitive rigidity and behavioral and communicative difficulties, which create complications in daily life and make interaction – especially in work settings – more challenging. To overcome these limitations and improve their quality of life, this study utilizes a Voice Virtual Assistant (such as Alexa) to provide personalized prompts and support in carrying out work tasks, facilitating greater success in the workplace. This article presents four case studies of young individuals with ASD participating in job internships across different settings. A preliminary assessment of their skills was conducted using the TEACCH Transition Assessment Profile (T.T.A.P.), which is essential for mapping both existing and emerging abilities as well as

individual learning styles. The participants were trained to respond to instructions from the VVAs as professional support in the workplace, and the study demonstrated improved functional performance and a reduction in behavioral difficulties.

Keywords: Autism; work; VVAs

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Inclusion, education and independent living: perspectives on After Us and the Convention on the rights of persons with disabilities

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Abstract: This paper examines, through a critical review of the existing literature, how scientific research has conducted in the last decade (2015-2025) different studies on the relationship between inclusion, education and independent living, with particular reference to the concept of 'Dopo di Noi' (After Us), to independent living projects and to the normative framework provided by the United Nations Convention on the Rights of Persons with Disabilities. The methodology adopted is based on a Scopus Review focused on the scientific literature related to the Italian context, supplemented by the analysis of case studies representative of national dynamics. The objective is to identify the main challenges and opportunities in the implementation of the principles of the UN Convention on the Rights of Persons with Disabilities within the educational system and disability services in Italy, with particular attention to the role of inclusive education in facilitating the transition to adulthood and independent living and the specific perspectives to support self-determined life projects. The results emerging from this analysis highlight structural criticalities deeply rooted in the Italian context. These include the fragmentation of the territorial services, which hinders the continuity and effectiveness of the interventions; a still limited co-planning between school institutions, family units and the wider community, depotentiating the creation of truly customised pathways; and the pressing need for a substantial strengthen-

ing of the training of educators, in order to equip them with the necessary skills to respond adequately to the complexity of needs. Nevertheless, the study also notes the presence of good practices that demonstrate how a systemic and integrated approach, capable of overcoming sectorial logics, can effectively promote the right to self-determination and full social inclusion.

Keywords: Inclusion, work skills development, independent living, independent life project, quality of life

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Paving the Way to Success: School Climate and Students' Aspirations

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Abstract: Socio-emotional skills (SES) and school climate are key factors in shaping students' educational and professional pathways. SES cannot be reduced to mere individual traits but must be understood as dynamic processes emerging from social interactions and structural contexts (Vygotsky, 1978). Their definition and development are influenced by cultural and social norms, which shape their transmission and learning within educational settings (Goleman, 1995). At the same time, social capital is a crucial determinant of academic success, as support networks facilitate access to educational resources and enhance future orientation (Coleman, 1988). School well-being, defined as an environment characterized by positive relationships and a sense of security, plays a fundamental role in strengthening students' motivation and self-efficacy (OECD, 2024). The ability to plan for the future intertwines with sociality, emotionality, and personal reflexivity, influencing how young people construct their aspirations (Maccarini & al, 2023). Recent studies show that a favorable school climate can reduce educational inequalities and promote academic success (Carlana et al., 2022; Knight & Duncheon, 2019; Andersen et al., 2023). This study, based on an analysis of PISA 2022 data, investigates the impact of school climate on the aspirations of Italian students, with a particular focus on the perception of security and the quality of interpersonal relationships. The findings indicate that a school environment perceived as

safe and supportive fosters higher educational expectations and greater professional ambitions. Conversely, the absence of adequate emotional support and a perception of risk significantly reduce students' propensity to pursue higher education and qualified careers. These trends align with existing literature, which highlights the importance of social support and stress reduction in shaping aspirations (La Ferrara, 2019; Brimblecombe et al., 2018). In light of this evidence, the present study suggests the implementation of targeted educational policies, including socio-emotional training for students and teachers, mentorship and tutoring programs, and effective strategies for bullying prevention. Furthermore, it emphasizes the importance of Future Literacy (Poli, 2011) – the ability to distinguish between authentic and non-authentic futures – as a tool to enhance students' resilience and promote conscious future planning. Improving the school climate not only fosters greater classroom well-being but also serves as a crucial element in reducing educational inequalities and encouraging more ambitious educational choices. An educational system that values socio-emotional skills can contribute to building a more equitable and inclusive future for new generations.

Keyword: Socio-emotional skills (SES), School climate; Educational aspirations; Future literacy; Educational inequalities

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AI tools for inclusive writing instruction: Considerations and cautions

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Abstract: Since the SRSD (Graham et al., 1992) and CSIW (Englert et al., 1988) programs for writing instruction, scientific studies on cognitive support for struggling writers have evolved little until recently; in fact, artificial intelligence (AI) now offers powerful new possibilities for supporting inclusive writing instruction for struggling writers (Evmenova et al., 2024; Bal & Ozturk, 2025; Jen & Salam, 2024). Recent research has shown that AI has the potential to provide personalised feedback, support learners' writing development, amplify the options for communication (Tan et al., 2025), and act as an idea generator (Woo et al., 2024; Duin & Pedersen, 2023). However, the integration of AI into the writing classroom requires critical consideration. Teachers often report that they do not feel adequately trained to use technology-based writing tools effectively, especially when addressing students with different linguistic abilities or special educational needs (Regan et al., 2019; Bortolotti & Bocchi, 2023). Professional development programs should therefore not only improve teachers' technical skills for teaching writing, but also aim to problematise the tool at their disposal so that it is of greatest use and interest to students. Without such informed guidance, AI tools risk replacing students' writing process, reinforcing linguistic and cultural biases, or creating dependency rather than fostering autonomous writing skills. This paper discusses both the promising aspects and limitations of AI-based writing tools for inclusion. It argues for comprehensive teacher training that enables educators to critically evaluate AI technologies and integrate them meaningfully into their teaching practice (Edward-Groves, 2011) (for example, recent research shows that the use of AI in writing can reduce students'

perceptions of self-efficacy in terms of creativity in the writing process, Habib et al., 2024). Finally, the paper argues for further research and evaluation of the impact of the use of AI tools in writing lessons from a quantitative and qualitative perspective, taking into account teacher and students' point of view in the evaluation of effectiveness (Barrett & Pack, 2024, Fleckenstein et al., 2024; Steiss et al., 2024; Stornaiuolo et al., 2023, Wang, 2024).

Keywords: Writing instruction, Inclusion, AI tools, Critical perspective

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Home Involvement in Enhancing Early Elementary Reading Skills: A Focus on Fluency, Comprehension, and Vocabulary

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Abstract: This study examined the impact of home involvement on enhancing early elementary students' reading skills, specifically fluency, comprehension, and vocabulary development. The research underscored the significance of parental engagement in children's literacy, demonstrating that active participation in home reading activities correlated with improved academic performance. A literacy-rich home environment, characterized by shared reading, storytelling, and word games, fostered a strong foundation for reading proficiency. Despite advocacy from governments and educational institutions for parental involvement in literacy initiatives, disparities persisted due to socioeconomic status, parental literacy levels, and resource availability. A mixed-methods research design was employed, integrating both quantitative and qualitative approaches. Quantitative data were collected through standardized reading assessments and surveys, while qualitative insights were obtained from semi-structured interviews with parents and educators. The study sample comprised 100 early elementary students (Grades 1 to 3) and their parents, selected through stratified random sampling to ensure diverse socioeconomic representation. Additionally, four literacy development educators provided professional perspectives on home involvement in reading proficiency. Data analysis involved statistical tools such as SPSS for descriptive and inferential statistics to establish correlations between parental involvement and students' read-

ing proficiency. Thematic analysis of qualitative data identified recurring patterns in parental engagement practices, literacy challenges, and recommendations for improvement. Ethical considerations were strictly adhered to, ensuring informed consent, confidentiality, and voluntary participation. Findings revealed a strong positive correlation between home involvement and students' reading proficiency, emphasizing the pivotal role of parental engagement in literacy development. Socioeconomic factors and parental literacy levels were identified as significant variables influencing the effectiveness of home-based reading support. The study's results provided valuable recommendations for educators and policymakers to enhance parental involvement strategies and implement targeted literacy programs aimed at fostering early reading success. Literacy development in early childhood significantly impacts future educational achievements, influencing a child's ability to comprehend, analyze, and apply knowledge effectively. Given the importance of literacy in shaping academic trajectories, it is essential to examine the role of home involvement in enhancing children's reading proficiency. Globally, literacy rates serve as key indicators of educational quality, with governments and institutions continuously striving to improve reading competencies among young learners. Research has consistently highlighted the significance of parental engagement in children's literacy development, demonstrating that children who receive active reading support from home tend to perform better academically compared to those with limited literacy exposure in their home environment. Reading is a fundamental skill that serves as the foundation for academic success and lifelong learning. In many educational frameworks, a collaborative approach among parents, teachers, and communities is emphasized to foster a literacy-rich environment. This collaboration ensures that children receive consistent literacy support across various settings, reinforcing the importance of reading as an everyday practice. The home environment plays a crucial role in shaping children's literacy skills, providing the first exposure to language, reading materials, and communication. Parents who actively

engage in literacy activities such as shared reading, storytelling, and word games create a foundation for fluency, comprehension, and vocabulary development. These components are essential for acquiring reading skills and directly contribute to a child's ability to decode, interpret, and analyze texts effectively. At the national level, literacy initiatives encourage parental involvement in reading programs, recognizing the long-term benefits of early interventions. Governments and educational institutions advocate for literacy-friendly home environments, equipping parents with the necessary tools and strategies to support their children's reading development. Such initiatives aim to bridge the gap between formal education and home learning, ensuring that children receive comprehensive literacy support. However, despite these efforts, disparities in literacy development persist due to factors such as socioeconomic background, parental literacy levels, and access to reading resources. Understanding these challenges is essential for designing and implementing effective home-based literacy programs that cater to diverse learner needs. Fluency, comprehension, and vocabulary acquisition are core elements of reading proficiency, and their development is influenced by multiple factors, including home involvement. The early elementary years are a critical period for reading skill development, as this stage lays the foundation for future academic success. Studies have shown that children who engage in consistent reading activities with their parents exhibit stronger reading abilities, improved academic performance, and enhanced cognitive development. Parental involvement in literacy activities can take various forms, including reading aloud, discussing stories, and encouraging independent reading, all of which contribute to a child's overall literacy success. Fluency is a vital component of reading, enabling children to read texts accurately, quickly, and with proper expression. Fluent readers can process written information efficiently, allowing them to focus on comprehension rather than word recognition. When children struggle with fluency, their ability to understand texts is often hindered, leading to difficulties in academic performance. Parents can support fluency development by

modeling expressive reading, encouraging repeated readings of familiar texts, and providing a supportive environment for reading practice. These interactions help children develop confidence in their reading abilities, establish natural reading rhythms, and enhance overall comprehension. Reading comprehension is another critical aspect of literacy that determines a child's ability to understand, interpret, and analyze texts effectively. Strong comprehension skills are developed through active engagement with reading materials, critical thinking exercises, and discussions that encourage deeper understanding. Parents play a key role in enhancing comprehension by asking thought-provoking questions, guiding children to make connections between texts and real-life experiences, and encouraging storytelling practices that strengthen analytical skills. By fostering a habit of critical reading and discussion, parents help children develop the ability to extract meaning from texts and apply their knowledge in different contexts. Vocabulary acquisition is essential for effective communication and reading proficiency, as a robust vocabulary enables children to decode words efficiently, understand context, and express their thoughts clearly. Children with a strong vocabulary are better equipped to comprehend texts, engage in meaningful discussions, and improve their overall literacy skills. Parents can promote vocabulary growth through exposure to diverse reading materials, interactive word games, and daily conversations that introduce new words in meaningful contexts. By integrating new vocabulary into everyday interactions, parents can enhance children's linguistic abilities and prepare them for more advanced reading and writing tasks. It is widely accepted that parents have a significant role in their children's education and influence their learning and development (Froiland & Davison, 2014; Pinquart, 2015). Many studies have shown that parental involvement is related to children's academic success (McNeal, 2015; Wang & Sheikh-Khalil, 2014), their attitudes and motivation towards school or lessons (Frenzel et al., 2010; Lipnevich et al., 2016; Simpkins et al., 2015; Spera, 2006), and desire for education (Jung & Zhang, 2016; Leung et al., 2010).

Considering that reading comprehension skills acquired in primary school years affect all learning experiences of individuals throughout their lives (Bradley, 2016), it can be argued that family involvement plays an important role in the development of primary school students' reading comprehension skills (Villiger et al., 2012). This highlights a research gap in the area of parental involvement and its effects on reading comprehension. Research further indicates that early reading at home is fundamental for children's language development, fostering skills such as vocabulary, reading comprehension, and oral expression (Toledo Purguaya, Alania-Vasquez, & Ayala Tandazo, 2024). Activities such as reading aloud and discussing books not only enhance learning but also strengthen bonding between parents and children. Additionally, an appropriate family environment, with access to diverse reading materials, encourages positive reading habits from an early age. Collaboration between family and school amplifies these benefits through effective communication and joint activities, such as workshops and reading clubs. However, challenges remain regarding lack of access to resources and low parental participation. Educational technologies can complement these practices but require proper supervision to be effective. Equity in resource access is essential to ensure all children develop their linguistic and personal potential.

Keywords: Enhancing Early Elementary Reading Skills, Vocabulary, Fluency in reading

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Predictive Models and Learning Assessment in School Contexts: An Experimental Approach to Linguistic Competencies in Primary School

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Abstract: This study explores the integration of predictive models into school assessment processes, analyzing their pedagogical implications through a longitudinal experimental design focused on the development of linguistic competencies in primary education. The research contributes to the epistemological debate on transitioning from static evaluation paradigms to dynamic models oriented toward instructional proactivity, with particular attention to the interaction between quantitative evidence and pedagogically grounded decision-making processes. The methodological framework combines principles of *assessment for learning* (Black & Wiliam, 2009) with predictive methodologies, investigating their potential for designing adaptive learning environments. The theoretical approach integrates classical evaluation models (Bloom, 1976) with innovative frameworks, critically analyzed through a pedagogical-experimental lens to assess compatibility with cognitive scaffolding processes, support for differentiated teaching practices, and impact on students' metacognitive regulation. The experimentation operationalized linguistic competencies into four psychoeducational dimensions – text comprehension, written production, lexical competence, and metalinguistic awareness – selected based on their predictive validity for alphabetic development (Stanovich, 2000). The data collec-

tion protocol combined standardized tools (PROLEC-R; Cuetos et al., 2007) with systematic contextual observations, applying an explanatory sequential mixedmethods design to balance metric rigor and interpretative depth. The implemented predictive model was conceptualized as an *educational mediation tool*, aimed at early identification of misalignments between developmental potential and observed performance, optimizing educational resource allocation (Darling-Hammond et al., 2020), and generating interpretive hypotheses for instructional action. Analysis of variable interactions revealed a circular relationship between decoding process automatization and autonomous reading practices, confirming psycho-pedagogical hypotheses on the role of motivational factors (Immordino-Yang et al., 2019). This result underscores the need for multidimensional predictive models integrating cognitive and non-cognitive indicators, transcending purely technical approaches. The proposed operational framework was validated through iterative *action-research* cycles in a co-design process. This approach mapped teachers' training needs in data analysis, tested adaptive feedback protocols, and evaluated impacts on instructional regulation practices. Findings highlight that predictive approaches, when embedded in an ecological assessment system (Pellegrino & Hilton, 2012), can enhance the timeliness of corrective interventions, personalization of learning pathways, and teacher professional reflexivity. The study concludes by proposing a hybrid model of *augmented assessment*, where predictive analytics serves as a support device for teachers' hermeneutic practices rather than replacing them. Future directions emphasize the need to develop ethical frameworks for pedagogical data use, design training environments, and maintain a focus on the relational and contextual nature of learning processes.

Keywords: Predictive models; learning assessment; linguistic competencies; longitudinal study; competency-based evaluation

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Outdoor Education in Inner Areas: an action-research project for teaching innovation

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Abstract. Outdoor Education (OE) is increasingly recognized as an innovative pedagogical approach that combines active learning in outdoor environments with the integration of local cultural and natural resources. This approach holds particular relevance in rural and inner areas, where it can address educational challenges while fostering well-being, motivation, and a stronger sense of belonging among educators and students. In alignment with Italy's National Strategy for Inner Areas (SNAI), our ongoing research investigates the potential of OE to contribute to educational innovation and territorial development in these contexts. The project focuses on examining the psychological well-being, professional selfefficacy, and motivation of teachers and educators during the implementation of innovative teaching methodologies. Specifically, it explores the satisfaction and frustration of basic psychological needs (autonomy, competence, and relatedness), the perceived self-efficacy of teachers in adopting innovative methods, and their intrinsic and extrinsic motivation toward teaching. Additionally, it investigates their attitudes toward Outdoor Education and other innovative pedagogical practices. This longitudinal study adopts an Action Research approach, involving 32 participants, including teachers

and educators from primary schools located in inner areas of Southern Italy. Data collection began with a pretest phase, during which validated psychometric scales were used, including the Basic Psychological Needs Scale (Deci & Ryan, 2000), the Teacher Self-Efficacy Scale (Tschannen-Moran & Hoy), and the Motivation at Work Scale (Gagné et al., 2010). Furthermore, a tailored instrument was developed to assess attitudes toward OE. The pretest results serve as a baseline for subsequent comparisons following the structured intervention phase, which includes theoretical seminars, practical OE training, and collaborative project design. Preliminary findings from the pretest phase indicate moderate levels of self-efficacy, intrinsic motivation, and satisfaction of psychological needs among participants. Relatedness emerged as the most satisfied need, while competence was identified as an area with potential for growth. Participants expressed openness toward innovative teaching methodologies but demonstrated varying levels of familiarity with OE as a pedagogical approach. These initial insights underscore the importance of targeted training to enhance educators' self-efficacy and competence in applying innovative methodologies. The findings also suggest that OE has significant potential to act as a catalyst for professional development and psychological well-being, particularly in geographically and socially isolated inner areas. While the intervention's full impact remains to be assessed, the pretest data highlight the areas where the training program might have the greatest effect. Future phases of the project will evaluate the outcomes of the intervention, providing a more comprehensive understanding of OE's role in promoting sustainable educational innovation and addressing disparities in educational opportunities between rural and urban areas.

Keywords: outdoor education**;** teacher training; innovative teaching methodologies.

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Empowering Educational Leadership: School Principals' Engagement in the 'Classi in Rete' Project

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The *Classi in Rete* model, developed through a long-standing collaboration between INDIRE and the Québec Ministry of Education, draws inspiration from the Canadian initiative École éloignée en Réseau (ÉÉR). It aims to counteract the educational isolation of small and remote schools by fostering high-quality, networked teaching practices. In the 2023/2024 school year, the model was piloted in the Liguria region, involving 22 schools and focusing on methodological innovation, professional development, and digital classroom connectivity. A key innovation in this phase was the introduction – for the first time – of a structured training program specifically designed for school leaders and their teams. This strategic choice reflects a growing awareness of the pivotal role school principals play in fostering sustainable educational innovation. Principals are central to shaping the strategic vision of the school, building trust and engagement among teachers, and creating enabling conditions for the adoption of innovative educational practices. Their active involvement supports teacher professional development (capacity building), fosters pedagogical experimentation, and nurtures a culture of continuous learning and collaboration. As part of this initiative, a participatory SWOT Analysis was

carried out with school leaders and teachers to support collective reflection on implemented actions, future goals, and potential challenges. The analysis helped identify strengths, weaknesses, opportunities, and threats associated with the implementation of the model, encouraging inter-role dialogue and contributing to the development of a shared strategic vision. This presentation outlines the main findings of the SWOT Analysis, with particular attention to organizational, pedagogical, and relational dimensions. It highlights how active leadership can function as a catalyst for systemic change, promoting a professional culture grounded in innovation, collaboration, and reflective practice.

Keywords: Educational Leadership; School Innovation; Professional Development; Small rural school; Digital Technologies.

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Empowering AI Literacy: Mapping Teacher Needs for AI Integration in Special Education

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Abstract: The integration of AI in education faces several challenges, including the perception of AI as a sophisticated and distant technology, insufficient resources, and a lack of adequate teacher training. The implementation of AI in schools is further complicated by concerns about the preservation of control over the educational process and a fragmented framework for AI use (Woodruff et al., 2023). In this context, the inadequate AI literacy among teachers reveals a significant threat to the effectiveness of AI adoption in educational settings. Without adequate training, teachers run the risk of using AI instrumentally, missing out on the opportunity to consciously integrate it into learning processes. The absence of a shared framework complicates the implementation of AI in educational settings, hindering the ability of teachers to manage various tools and rapidly evolving scenarios (Ng et al., 2021). The integration of AI in education has been extensively analysed, but there has been no research focused on identifying the perceived barriers to using AI in daily classroom teaching. The Index for Inclusion (IfI), developed by Booth and Ainscow (2002), is a framework that encourages teachers to participate in processes that bring different visions into dialogue to find a common synthesis of the challenges, risks, and opportunities associated with the use of AI technologies. It also provides a process of self-assessment and continuous improvement. Using IfI as a basis, in this work we want to lay the foundation to create a theoretical and practical framework for fostering AI literacy in special

education. To this end, we evaluate the effectiveness of AI integration in schools, gather feedback, and adapt strategies to meet evolving needs. Through surveys, interviews, and focus groups conducted among 55 curricular and special needs teachers of upper and lower secondary schools in Italy, we provide a first qualitative analysis of educators' needs to examine this emerging literacy paradigm to address the following research questions. RQ1: How do teachers perceive the impact of AI and GenAI in promoting inclusive, democratic, and personalised learning? RQ2: What barriers, obstacles, and gaps do teachers identify in integrating AI and GenAI into curricular and special education? What has been observed thus far is that the endeavour to establish a AI culture requires a strategy that is articulated at the various levels of need and challenge and needs to be regarded as a systemic issue. Integrating AI literacy involves equipping teachers with the skills to understand AI principles, interact effectively with AI systems, and critically evaluate their societal impacts (Long & Magerko, 2020). Core competencies for AI literacy should also include metacognition, as it enables critical engagement with AI technologies (Yi, 2021). Effective teacher training programmes should integrate theoretical knowledge with practical applications, focussing on project-based learning, collaborative workshops, and mentoring programmes (Song et al., 2024; Tan et al., 2024). According to Sun et al. (2023), collaborative project-based training courses focused on the pedagogical use of AI are most effective. Project-based learning can involve teachers working in teams to design AI-enhanced lesson plans that address the specific learning needs of students with special educational needs. This collaboration can provide opportunities for teachers to share best practices, troubleshoot challenges, and co-create resources. Mentorship programmes, which pair experienced AI users with novices, can offer personalised support and guidance. Aligning with the IfI principles, our study promotes a culture of collective improvement, aiming to create inclusive practices through accessible multimodal materials and personalised assessments. By focussing on participatory reflection, re-

search, and evaluation, our approach addresses fragmentation in AI usage in education, moving beyond instrumental applications to promote equitable, inclusive, and democratic education.

Keywords: AI literacy, Special Educational Needs, Mapping Teacher Needs, Democracy, Inclusion

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Inclusive Data Literacy for BVI Students

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Abstract: Data literacy – defined as the ability to articulate information needs, retrieve, evaluate, and manage data (Joint Research Centre, n.d.) – is an essential skill, projected to be paramount by 2030 (The Data Literacy Project, n.d.). However, blind and visually impaired (BVI) students face significant barriers to developing data literacy due to the reliance on visual learning materials. This paper proposes an innovative methodology that integrates Universal Design for Learning (UDL), Data Storytelling (DS), and Generative AI (GenAI) to transform traditional data education into accessible, narrative-based, and multimodal experiences tailored to individual BVI learners. UDL, based on the Design for All philosophy of the European Institute for Design and Disability (2004), is a student-centred framework that promotes inclusive education by offering multiple means of representation, action, and engagement, thus accommodating diverse learning needs through digital technologies (Aral, 2021; CAST, n.d.; Gardou, 2012). DS offers an inclusive alternative to traditional data education (Segel & Heer, 2010) by combining narrative with auditory and tactile modalities (Sarica & Yildirim, 2024), allowing BVI students to access and interpret complex information through multisensory experiences. Enhanced by GenAI, DS can be personalised in complexity and format, using well-established narrative structures – such as the three-act structure (Lo Duca, 2025), Freytag's Pyramid (Yang et al., 2022), and the Hero's

Journey (Wei et al., 2024) – to improve comprehension, retention, and engagement while reducing educator workload. The proposed methodology, grounded in both pedagogical theory and practical expertise in inclusive education, enables teachers to customise standard educational content by incorporating three key elements: the General Education Programme (GEP), the student's Individualised Education Plan (IEP), and Available Assistive and Educational Technologies (AAET). UDL personalises content and methods for individual learning requirements, DS transforms material into engaging narrative-based lessons that enhance data literacy, while GenAI combines GEP, IEP, and AAET to create a personalised educational programme, as well as multisensory and narrative-based learning experiences that address the specific needs of each BVI student while promoting inclusion and accessibility. In addition, GenAI recommends suitable assistive technologies to improve accessibility and personalised learning experiences. To test the feasibility of the proposed methodology, we performed two preliminary experiments using ChatGPT versions 4.0 and 4.5, providing each with contextual documents, including a primary school data literacy programme, a BVI student's IEP and a list of assistive technologies. The case study focused on a blind 6-year-old girl and aimed to create narrative-based adapted lessons on classifying animals by attributes such as colour and diet, using multisensory tools such as a screen reader, clay, and tactile boards. The GenAI models were prompted to generate a three-act data-driven story tailored to the student's needs. All context documents and results are available on GitHub (Anonymous, n.d.). The story generation outcomes varied between the ChatGPT models: version 4.0 produced more sensory-rich exploratory lessons, while version 4.5 created structured, digitally driven data stories aligned with the three-act format, proving more effective and suitable for classroom use. Both versions supported inclusive teaching, demonstrating how combining UDL with AI-assisted data storytelling can personalise learning for BVI students without isolating them, enhancing critical thinking, and promoting independence.

Field testing is planned for summer 2025 in collaboration with the Italian Association of BVI (Unione Italiana dei Ciechi e degli Ipovedenti, n.d.) to evaluate the effectiveness of DS in improving data literacy. A comparative study will involve two groups of K-12 students: a group will follow a traditional path without using DS. The other group will engage with the AI-assisted DS approach. Both groups will complete pre- and post-programme questionnaires to assess outcomes and measure any improvements in data literacy. If field validation progresses positively, the proposed approach could become a replicable methodology for accessible AI-enhanced data literacy education in other contexts.

Keywords: K-12 Data Storytelling, Blind and Visually Impaired Students, Generative AI, Data Literacy, Universal Design for Learning

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Virtual Napier Bones: Technological Semiotic Mediators

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1. Introduction

At the international level, there has been a significant emphasis on inclusive technologies and education, prompting strategic regulatory measures such as the STEM Educational Implementation Plan established by European Union governments, as well as Goal 4 of the 2030 Agenda, which advocates for inclusive education for all. Technology in education has become a powerful semiotic mediator for introducing alternative algorithms to support students in overcoming learning difficulties associated with traditional methods. Following the perspective of the Mathematics Laboratory and the Theory of Semiotic Mediation, the role of educational artifacts in making key concepts of algorithms explicit is emphasized.

2. The "Napier's bones" educational laboratory

Inspired by these research studies, we designed an experimental learning lab using a virtual version of Napier's Bones (software designed by the authors) as a mediation tool to facilitate both procedural and conceptual understanding of multiplication for 3° grade students. The activity is carried out using both traditional and virtual Napier's Bones to approach multiplication through different semiotic registers, favoring different

learning styles of children (Palatnik et al., 2023). In particular, they facilitate rapid calculation by reducing the risk of mistakes, support visual and logical thinking by making calculation steps visible, and help students better understand mathematical concepts. From an inclusive standpoint, an activity that utilizes tangible tools while simultaneously harnessing the capabilities of dedicated software fosters an embodied approach to mathematics learning. This method aims to enhance students' autonomy by enabling them to perform operations without the necessity of memorizing multiplication tables. It encourages progressive learning and strengthens numerical skills. The educational laboratory promotes an interdisciplinary perspective by connecting with history of mathematics and Napier's methodologies, effectively stimulating intellectual curiosity. A contemporary virtualization of Napier's Bones not only preserves but intensifies their semiotic character. Digital implementations allow for dynamic interaction, real-time feedback, and layered representations that far surpass the static constraints of physical rods (Bartolini Bussi & Mariotti, 2008). In this sense, the virtual bones exemplify Latour's (1992) theory of delegation, where nonhuman actors assume significant roles within socio-technical networks. The digital interface does not simply assist human users; it reconfigures the very cognitive and procedural norms associated with calculation. Here, agency is distributed across a hybrid assemblage of human and technological elements, revealing the profound entanglement between cognition and material culture. From a semiotic perspective, the interaction with virtual bones constitutes a triadic relation of signification akin to Peirce's (1958) model of semiosis. The visualized operations function as signs, the mathematical relationships as objects, and the user's interpretive understanding as the interpretant. Such a dynamic underscores that technologies are not passive conveyors of information but constitutive elements in the production of meaning. Stiegler's (1998) theorization of technics as prosthetic extensions of human memory and temporality further illuminates this re-

lationship: the virtualization of calculation reconfigures not merely the how but the what of mathematical understanding. Moreover, the virtualization of Napier's Bones aligns with Hutchins' (1995) concept of distributed cognition, which frames cognitive processes as emerging from interactions among individuals, artifacts, and environments. In the virtual context, users no longer "possess" arithmetic skills internally but co-create those skills through dynamic engagements with the digital tool. The computational interface thus acts as an epistemic partner, rather than a mere passive instrument. Reimagining Napier's Bones within a digital environment foregrounds the recursive relationship between technology and cognition: the tools we employ to externalize thought actively reshape cognitive architectures themselves, as Vygotsky's (1978) theory of mediated action suggests. Virtual Napier's Bones thus exemplify this feedback loop, illustrating how semiotic mediation through technological artifacts constitutes a foundational dimension of knowledge practices.

Keywords: Napier's bones, technology, semiotic mediators, Mathematics education, experimental laboratory

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Teaching Ecoliteracy with AI: the Role of Teachers in a New EcoAI Framework

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Abstract: The use of artificial intelligence in education in its various forms, from intelligent tutoring systems to adaptive learning platforms and data-driven insights, has the potential to meet both individual and collective learning needs, ultimately improving educational efficiency and effectiveness. However, the success of implementing artificial intelligence in school contexts depends on a deep understanding of these aspects and on the teacher's ability to act as a "trait d'union" between students and new AI technologies. In this contribution we explore the nascent relationship between a teacher and a robot co-teacher in the field of ecoliteracy, to unite totally artificial instances with natural reality. This paper presents an innovative approach to environmental education with the development and implementation of an EcoAI framework through an AI-powered robotic teaching assistant to enlighten the possible relationship between teachers and AI agents. Built considering Sterling's (2021) whole-systems approach to sustainability education, the research aims to establish a novel pedagogical framework that positions the AI assistant as a collaborative teaching tool in education, connecting robotic and LLMs in a tout-court vision of a novel human-machine paradigm for ecoliteracy. This requires a transition from the traditional teacher-speaker model to an unprecedented teacher-designer of experiences. Despite some studies (Cooper, 2023) have restricted teacher leadership to formal roles that few teachers often occupy, in this context teacher leadership requires the ability to reshape roles

and responsibilities within educational settings, beyond the traditional classroom dynamics, to positively influence student learning, instructional practices, and school improvement efforts (Ghamrawi et al., 2023). Traditional environmental education methods have been criticized for failing to change students' attitudes and behaviours toward sustainability (Chen et al., 2020). The pedagogical methodology called EcoAI Flexible Hybrid Learning Model extends Graham's (2006) framework of blended learning and Capra's (2005) ecological literacy principles, by integrating multiple pedagogical approaches with environmental education. The design incorporates Horn and Staker's (2014) hybrid learning frameworks while addressing precited Sterling's (2001) sustainability education criteria. Although the literature is starting to indicate attention to maintaining the centrality and proactivity of the role teacher (teachers' agency), AI environments offer potential support in teaching practice. For example, in designing guided discussions and problem-based activities, LLMs can generate realistic scenarios and provide real data that can be used in simulations and role play games, allowing abstract and theoretical concepts to be applied to concrete contexts, generate provocative questions and stimulating, encouraging students to reflect and participate in discussions meaningful, thus improving their critical thinking skills and their understanding of the content itself. The connection between these two worlds can be better explained exploring at first the role of an embodied AI and then the role of the teacher before showing our solution to answer at questions like: can ecoliteracy be taught using an AI agent as co-teacher? Will the role of the teacher be improved, resized or even substituted? Embodied AI has contributed to a paradigm shift in AI research from the initial perception to be more cognitive (Anderson, 2003; Shapiro & Stolz, 2019). In the early realisations AI were more seemingly to run in a network environment such as a Windows, icon, mouse, and pointer or WIMP interface (Burden, 2008). AI's quality about abstract thinking and problem-solving are earning their place to systems that can interact with their environment autonomously

(Pfeifer, 2001). According to Duan (Duan et al., 2022) in the shift from an Internet AI to an Embodied AI, learning happens in situ, through interactions with the environments from an egocentric perception similar to humans, advancing embodied AI trough deep reinforcement learning and increasing interest from the computer vision, NLP, and robotics communities where the AI algorithms and agents no longer learn only from videos, datasets of images, or text predominantly from the internet (Weihs et al., 2020). By doing this, robots are frequently and successfully used as tool in educational fields: from pre-school to university environments, they globally have been shown to encourage the advancements of collaborative problem-solving capacities and abstract thinking, as well as assist learning in multiple fields like specific scientific, literary and artistic disciplines expected by standard school curricula (Bredenfeld et al., 2010; Catlin & Balmires, 2010). Following the embodied cognition principles outlined by Skulmowski et al. (2016), the physical embodiment through a robotic interface stimulates curiosity, enhancing student engagement and facilitating complex environmental concepts through interactive demonstrations and real-time environmental data visualization.

Keywords: Co-teaching, AI, Ecoliteracy, Embodied AI, High school, Framework

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Navigating the infodemic: What can we learn from the COVID-19 crisis?

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1. Introduction

In times of uncertainty, an excess of information can become a significant source of psychological distress. The COVID-19 pandemic thrust millions into a whirlwind of fear and confusion, in which access to reliable information offered a sense of security against invisible threats (Gao et al., 2020; Garfin et al., 2020). However, amid the urgent search for clarity, a parallel crisis quietly unfolded: a dramatic increase in global information consumption, often marked by the spread of misinformation and fake news (Cinelli et al., 2020; Masip et al., 2020; Ramírez et al., 2020). In this context, understanding how individuals sought, interpreted, and placed trust in information offers valuable lessons for addressing future global crises and developing effective strategies to combat infodemic.

2. Methodology

The present study sought to explore how individuals navigated infodemic during the COVID-19 pandemic. Focusing on members of two virtual communities (N = 371), we employed a mixed-methods, exploratory approach to capture both quantitative and reflective insights. Data were collected through an ad hoc online questionnaire (Sánchez-Reina & González-Lara,

2022) designed to assess four key dimensions of the participants' experience: (a) media consumption habits, (b) perception of information, (c) trust in information sources, and (d) emotional state. Additionally, participants shared their attitudes toward COVID-19-related content and offered personal reflections on how the pandemic shaped their emotions.

3. Results

The study shows that information consumption was a regular activity among the respondents. Unlike the younger population, adults over the age of 30 seek information more frequently and spent more time consuming it. Digital media consumption surpassed that of other media, with digital press and social media being the primary sources of information for the respondents. Regarding the perception of being informed, our analysis reported that "infodemic" consistently accompanied the COVID-19 pandemic. More than a third of internet users believe there is an excess of information about the COVID-19 pandemic. As for trust in information sources, the results show that respondents place more trusted in information from government institutions than from other sources, such as official or alternative media or family members. Finally, concerning the emotional state of the interviewees, the study shows that excessive information consumption has mostly led to states of anxiety and uncertainty, particularly related to fears of contagion, illness, or the loss of loved ones.

4 . Discussion and Conclusions

Our study highlights how individuals navigated the overwhelming information landscape during the COVID-19 pandemic, revealing key vulnerabilities in the way people access and process media during crises. While digital platforms allowed widespread access to updates, they also contributed to information saturation, eroding the public's sense of being adequately informed. Trust in institutions, particularly government and media, was af-

fected by inconsistent or unclear messaging, while emotional fatigue, driven by continuous exposure to alarming content, emerged as a significant consequence across demographic groups. Our findings point to critical lessons for future crisis communication. Effective strategies must prioritize clarity, credibility, and emotional sensitivity rather than relying on the sheer volume of messages. Promoting digital literacy and integrating mental health considerations into public information efforts are essential for fostering resilience. Ultimately, managing communication in future emergencies requires a thoughtful, humane approach, one that supports not just informed decision-making, but also psychological wellbeing in the face of uncertainty.

Keywords: Infodemic, Crisis Communication, Health Communication, COVID-19, Media Education, Digital Literacy

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Beyond Passive Audiences: Children's Agency in Media Literacy Research

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1. Introduction

One of the most salient contemporary debates in media research concerns the role of child audiences. The enduring legacy of media-centric approaches has contributed to the construction of childhood as marginalized or invisible, frequently framing young audiences as passive recipients (mere vessels or sponges). This perspective has often eclipsed essential questions such as: What do children do with the media and information they consume? What meanings and interpretations do they construct from content that is frequently presumed to "affect" them? (Buckingham, 2013; Kellner & Share, 2007; Livingstone, 2004). This paper analyzes the opportunities and challenges of conducting fieldwork with children, framed by the principles of the sociology of childhood. The study highlights key indicators that underscore the relevance of this perspective in our research and critically reflect on the practical limitations encountered in studying young audiences.

2. Methodology

This paper analyzed the field protocols from two research projects in Spain focused on media literacy, involving children aged 8 to 12 in school and community settings. The analysis aimed to assess the design, relevance, and effectiveness of data collection instruments, including semi-structured interviews, activity-based group sessions, and visual elicitation techniques.

Collected data were organized into thematic matrices and analyzed qualitatively using Atlas.Ti (Version 8), allowing us to identify patterns in how children engage with, interpret, and make sense of media content.

3. Results

Our analysis indicated a consistent effort of both research projects to position children as active agents in both media consumption and the making sense of social experience. The research instrument, ranging from interactive online resources to visual and narrative-based tool, were tailored to align with the developmental stages, interests, and communication styles of participants aged 8 to 12. The proposed child-centered approach in both projects fostered greater engagement and more nuanced insights. Nevertheless, constraints related to limited human resources and suboptimal research environments, such as overcrowded classrooms or limited access to private spaces, affected the overall quality and depth of the data collected. Although creative methodologies enabled the inclusion of children from varied social backgrounds across school and community contexts, the research process remained significantly shaped by institutional bureaucracies. Gaining access, coordinating with school authorities, and obtaining parental consent presented persistent challenges, underscoring the structural barriers that continue to restrict child-centered research in realworld settings.

4. Discussion and Conclusions

While there is growing recognition across academia of the importance of child-centered approaches in media research, this shift has not been fully mirrored in institutional practices (Jociles et al. 2011). Bureaucratic barriers such as complex ethical review processes, rigid school protocols, and parental gatekeeping are not only increasingly significant but often impede meaningful engagement with children as active participants. These constraints, though often justified on the grounds of protection and legal re-

sponsibility, can inadvertently limit children's agency within the research process, reducing their role to that of passive subjects rather than co-constructors of knowledge. This ongoing tension reflects a broader societal tendency to objectify childhood, positioning adults as the sole arbiters of children's needs, capabilities, and educational trajectories. Despite efforts to shift the paradigm, research with children remains shaped by adult-centric frameworks that prioritize control over collaboration (Calderon, 2015). To move toward more authentic, child-inclusive methodologies, it is essential to critically interrogate these structures and advocate for ethical models that recognize children's right to participate, express, and shape the narratives that concern them. True progress in child-centered media research will require not only methodological innovation but also institutional courage to reframe assumptions about childhood and expertise.

Keywords: Sociology of Childhood, Media Literacy, Research in Education, Inclusion, Audience Research, Researching with children, Child Agency

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The Digital Divide in Education: A critical analysis from a constitutional perspective

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Abstract. This contribution aims to analyze, from a juridical-constitutional perspective, the complex issue of the digital divide in the educational context, a phenomenon which, although not expressly contemplated by the Italian Constitution due to its technologically contingent nature, assumes constitutional relevance today by virtue of its impact on fundamental rights such as education, equality, and human dignity. The progressive digitalization of teaching dynamics, accelerated by the COVID-19 pandemic, has highlighted profound asymmetries in access to technological resources and digital skills, configuring a framework of de facto discrimination that requires a careful reinterpretation of constitutional principles in light of emerging social needs. The constitutional framework of the issue stems from the analysis of Article 34 of the Constitution, which enshrines the right to education as a fundamental social right, in conjunction with Article 3, second paragraph, which requires the Republic to remove economic and social obstacles that, by limiting the freedom and equality of citizens, prevent the full development of the human person. From this perspective, the digital divide in education is configured as an obstacle that the Republic is called upon to remove in order to fully implement the principle of substantive equality. No less relevant is the connection with Article 2 of the Constitution, insofar as the digital divide hinders the full development of personality in social contexts, as well as with Articles 9 and 33, which respectively protect the development of culture and freedom of teaching. Constitutional jurisprudence, though not yet having ad-

dressed ex professo the specific issue of the digital divide in education, has progressively outlined the contours of an incompressible core of the right to education which, in a digitalized society, cannot disregard the guarantee of equitable access to digital resources. Particularly significant is judgment no. 215/1987, which qualified the right to education as a full and unconditional subjective right, as well as the more recent ruling no. 42/2017, which reaffirmed the existence of minimum benefits that must be guaranteed throughout the national territory. These principles, applied to the context of educational digitalization, require the establishment of measures suitable to guarantee universal access to digital resources necessary for learning. A critical analysis of the legislative landscape reveals structural criticalities that compromise the effectiveness of the right to digital education. The critical examination of the regulations reveals not only the fragmentary nature of the interventions but also their intrinsic inadequacy with respect to the constitutional dimension of the problem. Law no. 107/2015, while introducing the National Digital School Plan (PNSD), betrays a merely instrumental conception of digitalization, reduced to technical support for traditional teaching, without grasping its transformative value for the entire educational process. Decree-law no. 18/2020, with its emergency allocations, reveals the absence of strategic planning, confirming the contingent and reactive approach of the legislator. Even the National Recovery and Resilience Plan (PNRR), while allocating substantial resources to school digitalization, does not overcome the economistic approach, which subordinates the implementation of fundamental rights to budget logic, in contrast with constitutional jurisprudence on the primacy of rights over financial needs. The most evident gap remains the absence of a configuration of the right to digital access as a perfect subjective right, enforceable against the public administration, with consequent compromise of its effectiveness. Critical analysis of constitutional doctrine reveals the insufficiency of current hermeneutic approaches, which do not fully grasp the complexity of the phenomenon. The qualification of access to

digital technologies as a component of the incompressible core of the right to education, although agreeable, clashes with the persistent performative conception of the right to education, which limits its effectiveness to the availability of financial resources, in open contradiction with constitutional jurisprudence on incompressible rights. Equally insufficient is the mere attribution of the issue to the principle of substantive equality, which, although relevant, does not provide adequate conceptual tools to configure actionable subjective claims. The perspective of an autonomous "right of digital citizenship," though suggestive, risks translating into an empty formula, devoid of prescriptive content, in the absence of adequate normative support. There is, therefore, a need for a critical rethinking of the entire constitutional system of social rights, overcoming the traditional dichotomy between liberty rights and social rights and recognizing the hybrid nature of the right to digital education, which partakes of both categories. Critical analysis of the phenomenon highlights how the current configuration of the Italian regulatory system does not allow full protection of the right to education in its digital dimension. This determines an evident friction with the constitutional dictate, especially in light of an evolutionary interpretation of Articles 2, 3, and 34 of the Constitution, which requires the legislator to adapt the instruments of protection to technological and social evolution. The contribution concludes with a critical analysis of the current regulatory framework, highlighting how the fragmentary approach adopted by the legislator is inadequate with respect to the complexity of the phenomenon and its constitutional relevance. It is noted, in particular, how the absence of explicit recognition of the subjective right to access digital resources in education determines a gray area of protection, in which administrative discretion risks translating into arbitrariness, with consequent violation of the principle of substantive legality. The failure to establish specific jurisdictional protection instruments, moreover, compromises the effectiveness of the right to education in its digital dimension, in open contrast with the dictate of Article 24 of the Constitution. The need

for an organic rethinking of the matter is therefore highlighted, which overcomes the emergency logic that has prevailed so far and configures a system of guarantees consistent with the constitutional design.

Keywords: digital divide**;** constitutional right to education; educational equality.

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Podcasting and digital literacy didactic methods: a school-based intervention for media literacy improvement

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Abstract: Several studies demonstrate the importance of media literacy, a skill that has become indispensable in all areas of life for men and women. Among the methodologies useful for promoting the acquisition of this fundamental skill, digital storytelling stands out, that is, the use of media and digital tools in order to promote the acquisition of a series of skills (narrative, linguistic, emotional, etc.) through the sharing of opinions and stories. In recent years, given its diffusion in pop culture, podcasts have proven to be one of the most suitable tools for using digital storytelling in the educational field. The following study analyzes the results of the "School Rec" project, carried out by the Learning Science Institute of the University of Foggia in five classes of lower and upper secondary schools. The research sample was selected through a non-randomized method. The schools that joined the School Rec research project proposed to students the participation in educational laboratory interventions based on the implementation of the digital storytelling methodology, conveyed through a podcasting laboratory. The students, after an initial training session, were asked to design, write and produce a hypothetical episode of a podcast, with the aim of encouraging them to develop critical thinking, collaboration skills, entrepreneurial skills, and media literacy skills. The research design used is quasi-experimental (pre-post test). Secondary school stu-

dents from different institutes (N: 168; F: 75 - M: 93; Age: 16 ± 1.3) filled out a specially constructed questionnaire (a: 0.87) and participated in a training period lasting (3 months). Result. In the four domains investigated by the questionnaire (CP: + 4.79; TRE: + 2.69; DS: + 2.15; PP: 1.45) a significant increase was recorded (r < .0001). The results suggest a significant difference between the pre- and post-test assessment. Despite the limitations of the study related to the research design and the sample selection, the results suggest an improvement in the participants' performance, suggesting that the proposed intervention significantly contributed to the implementation of skills in the field of media literacy and digital storytelling. Future research should investigate whether this teaching methodology can actually contribute to learning.

Keywords: Digital literacy; Media literacy; School based intervention; Assessment.

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Seeing, exploring, learning: visual and experiential approaches in museum education

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1. Introduction

This study explores the potential of visual education as an innovative methodological approach in museum education, with a focus on its ability to enrich and diversify the educational offerings of museums (Limone, 2012; Romano, 2023). In a context in which visual languages assume increasing centrality and there is a need to promote more engaging and inclusive ways of learning, the integration of visual education in museum practices emerges as a strategic and highly significant resource. Such an approach not only enhances the educational role of museums, but also addresses the need to connect cultural heritage with new generations through immersive and meaningful educational experiences.

2. Methodology and research

The proposed method is based on the creative use of photography and Information and Communication Technologies (ICT), tools capable of stimulating forms of experiential, critical and reflective learning. The main objective is to promote a profound and conscious relationship with cultural heritage, stimulating in users – particularly students – an active, emotionally engaging and intellectually stimulating participation (Campitiello et al., 2022; Governa & Pellecchia, 2023; Luigini & Panciroli, 2018). In this context, visual education proves to be a powerful catalyst for the development of transversal competences, such as creativity, critical thinking and

narrative and communication skills (Panciroli & Rivoltella, 2021; Previtali, 2021; Triacca, 2020). Despite the fact that visual education and museum didactics have often developed in distinct fields, they share numerous epistemological and pedagogical assumptions: both revolve around the enjoyment of art, visual culture and the enhancement of iconic languages as tools for knowledge, communication and interpretation of the world (Previtali et al., 2025). The research is divided into two main phases. The first consists of a systematic literature review to define the theoretical and methodological framework of visual education applied to museum contexts. The second involves the administration of a questionnaire to school teachers of all levels, with the aim of analysing perceptions, practices and needs related to the use of visual education in museums. This survey enables an articulated picture to be drawn of the potentialities and criticalities perceived by school operators, providing a useful empirical basis for the design of targeted educational interventions.

3. Conclusion

The results of the research aim to culminate in the development of operational guidelines for integrating visual education into museum itineraries. These guidelines will be supported by the creation of a dedicated web platform, designed as a dynamic sharing and updating space for teachers, students, museum educators and professionals. This platform will offer concrete tools and good practices, demonstrating how visual education can transform the museum experience into an inclusive and participatory process. The aim is to demonstrate, through concrete tools and good practices, how visual education can transform the museum experience into an inclusive, participatory and culturally meaningful process, capable of fostering a deeper, more accessible and shared understanding of cultural heritage (Zuccoli, 2014).

Keywords: Visual education, museum didactics, learning

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Relationships That Generate Meaning: A Vision for Hybrid Learning Environments

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1. Theoretical Framework

Artificial Intelligence (AI) is profoundly redefining the paradigms of contemporary education, influencing teaching, learning, and assessment practices (Hwang et al., 2020; Remian, 2019). The introduction of generative AI in 2022 has intensified this transition, highlighting not only its potential for personalization and immediate feedback (Wu & Yang, 2022), but also concerns regarding the possible marginalization of the teacher's role within techno-solutionist narratives (Selwyn, 2019). In response, a critical and relational approach is emerging – one that views AI as a catalyst for hybrid and intelligent educational environments, in which the teacher acts as both a mediator of meaning and a designer (Holmes et al., 2019; Roll & Wylie, 2016).

2. Research design. Methods & Data analysis

The research presented here, conducted at the University of Foggia in 2025, is situated within this theoretical and pedagogical framework. It adopts a quantitative design with a descriptive and exploratory character, involving 156 students from the Degree Course in Primary Education. The CAWI questionnaire administered assessed digital familiarity, attitudes toward AI, and openness to educational relationships mediated by intelligent tech-

nologies. Inferential analyses reveal that the fear of being replaced by AI is a negative predictor of the willingness to integrate suggestions from intelligent systems. Conversely, technological familiarity is not a significant factor, suggesting that the dialogic integration of AI is more a matter of identity and values than of technical skill.

3. Results and conclusions

These results support the hypotheses of the post-teaching model (Perla & Agrati, 2024) and of the teacher as a builder of hybrid relationships (Vinci & Berardi, in press), in which AI is recognized as a fully-fledged educational actor. These approaches move beyond the human/machine binary and promote a vision of teacher professionalism grounded in the ability to negotiate meaning, manage complexity, and build generative relationships with AI. Within this framework, the concept of cruel optimism – which describes the ambivalence between fear and desire for technological support – proves particularly useful in understanding the tensions experienced by pre-service teachers (Perla et al., 2025). The study concludes with a pedagogical proposal focused on the need for a non-instrumental form of AI literacy, one rooted in ethics, reflexivity, and care (Cope et al., 2020; Holmes et al., 2019). The challenge is not simply to "learn to use" AI, but to consciously inhabit a learning environment in which AI is an active participant – without dominating. In this scenario, the teacher remains irreplaceable not by nature, but because of the quality of the educational relationship they are capable of generating, in the ongoing dialogue between human vulnerability and artificial intelligences.

Keywords: AI literacy, Hybrid Learning Environments, Teacher training

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Educational digital content and its dimensions in developing the school curriculum

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Abstract: As digital technology continues to transform the educational landscape, it has become imperative to integrate multimedia and interactive tools into classrooms for teaching and learning. This study focuses on analyzing the role of digital educational content in developing and modernizing curricula. The research relies on a descriptive and analytical approach to identify the components of digital content, its various dimensions, and the theoretical foundations upon which it relies, in addition to its pedagogical, technical, and interactive impacts. The researcher also analyzes international models – Finland, Singapore, Saudi Arabia, and the United Arab Emirates – to highlight successful approaches and common obstacles to digital integration. Concluding, the research results indicate that well-designed digital content enhances student engagement in the classroom, encourages self-directed learning (teacher-free learning), and achieves effective and successful alignment with the goals and requirements of modern education in the 21st century. Based on the analysis, the study recommends developing and updating national strategies, working to train teachers in modern methods, and providing culturally and linguistically compatible digital materials to improve the quality of learning and increase the effectiveness of curricula.

Keywords: digital content, school curriculum, interactive tools, modern education, self-directed learning.

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