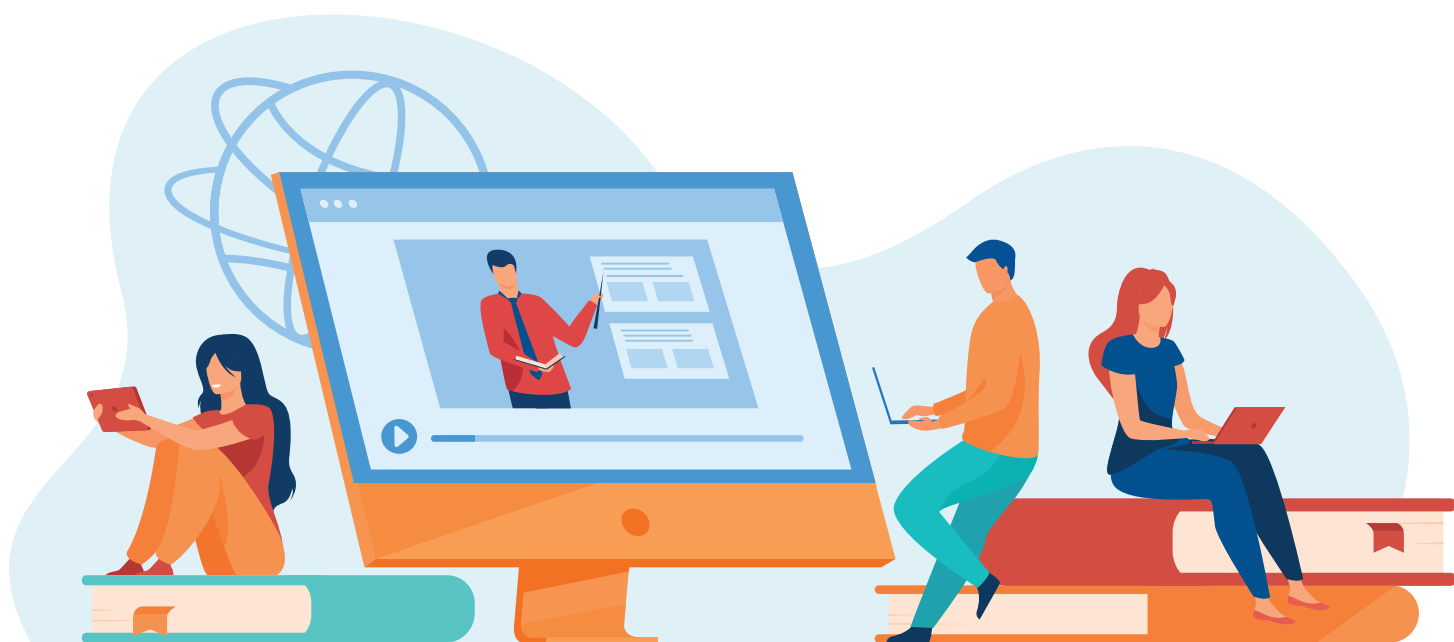


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Editoriale

MARIA RANIERI, GIANNA CAPPELLO

Questo numero include sette contributi, di cui cinque articoli scientifici e due buone pratiche, che spaziano dall'educazione ai media e alla cittadinanza digitale, alla disinformazione, alle rappresentazioni culturali nei media, fino alle applicazioni pedagogiche dell'intelligenza artificiale e alla place-based education.

Il contributo di Nicola Bruno e Annamaria De Santis – *Rimediare il prebunking nella pratica: potenziare le competenze degli insegnanti per la valutazione delle fonti digitali e il riconoscimento della disinformazione* – analizza il tema della disinformazione nell'odierno ambiente digitale, concentrandosi sul ruolo della formazione degli insegnanti come leva strategica per il rafforzamento della cittadinanza digitale. Attraverso la valutazione di un programma nazionale di formazione alla media literacy, l'articolo esamina l'efficacia di un approccio di "prebunking rimediato" nel potenziare le competenze di valutazione delle fonti digitali e di riconoscimento dei contenuti manipolati. I risultati mostrano miglioramenti significativi nelle capacità analitiche e argomentative dei docenti, in particolare nell'ambito della visual literacy, evidenziando il valore di metodologie formative attive e collaborative. Il contributo si chiude offrendo indicazioni rilevanti per la progettazione di percorsi di sviluppo professionale basati su evidenze, orientati al contrasto della disinformazione e all'educazione civica digitale.

Lo studio di Brunella Fiore e Chiara Bruttomesso – *Social media, potere e controllo: affrontare la violenza di genere digitale tra gli adolescenti* – affronta il tema della violenza di genere digitale tra gli adolescenti, analizzando il ruolo delle piattaforme digitali nella normalizzazione di pratiche di controllo, abuso e aggressione simbolica all'interno delle relazioni giovanili. Attraverso un disegno di ricerca a metodi misti, lo studio restituisce una lettura articolata delle percezioni, delle esperienze e delle strategie interpretative adottate da ragazze e ragazzi sedicenni in relazione a fenomeni quali cyberstalking, sextortion, condivisione non consensuale di immagini

intime e sorveglianza digitale del partner. I risultati mettono in evidenza profonde asimmetrie di genere nella percezione della gravità degli abusi e nella loro giustificazione, contribuendo al dibattito scientifico su media education, cittadinanza digitale e prevenzione della violenza. Il contributo propone infine implicazioni rilevanti per le politiche educative e per lo sviluppo di interventi di alfabetizzazione digitale sensibili al genere, capaci di promuovere relazioni online più eque e consapevoli.

L'articolo di Claudia Lafranconi e Cristina Gaggioli, *Rappresentazioni sociali della disabilità nei videogiochi: stereotipi, narrazioni e analisi critica*, esamina criticamente le modalità attraverso cui la disabilità viene rappresentata nel medium videoludico. Inquadrandolo il tema nel paradigma delle rappresentazioni sociali, dei Disability Studies e della media education, le autrici analizzano il ruolo di stereotipi e dispositivi narrativi nella costruzione simbolica della disabilità. Il contributo propone due framework analitici – basati sui modelli di Aarseth e di Dunlap e Kowert – per indagare l'interazione tra gameplay, struttura ludica e profondità rappresentativa. L'applicazione dei framework a una selezione di videogiochi mette in luce la persistenza di rappresentazioni stigmatizzanti, accanto a esempi più complessi e inclusivi. Pertanto, se da un lato si sottolinea il potenziale educativo del videogioco come spazio di negoziazione culturale, dall'altro si evidenzia la necessità di sviluppare competenze critiche per una fruizione consapevole e inclusiva.

Il lavoro di Maarit Jaakkola, *Domestication of Media Literacy Theory in a Non-Western Context: Models of Media and Information Literacy (MIL) in Academic Discourse in Uzbekistan*, si focalizza sui processi di adattamento della Media and Information Literacy (MIL) nel contesto uzbeko, collocandosi nel dibattito sulla de-occidentalizzazione delle teorie sui media. Attraverso una revisione sistematica della letteratura accademica pubblicata tra il 2011 e il 2025, lo studio esamina le modalità con cui la MIL è concettualizzata da attori nazionali e

internazionali. I risultati individuano, accanto al quadro di riferimento dell'UNESCO, quattro modelli principali: value-based, sintetico-tematico, user-centred e disinformation-oriented. Tali modelli riflettono diverse finalità educative e politiche, oscillando tra approcci protettivi ed emancipativi. Nel complesso, emerge l'importanza dei processi di domesticazione concettuale per lo sviluppo di framework di MIL culturalmente rilevanti e sostenibili nei contesti non occidentali.

Nell'articolo *Precocità digitale e risultati di apprendimento: un'analisi su italiano, matematica e competenza digitale* Sofia Ercolanoni, Marco Gui e Chiara Respi esaminano il tema della precocità digitale e le sue relazioni con i risultati di apprendimento, analizzando in modo comparativo le competenze in italiano, matematica e competenza digitale. A partire dai dati INVALSI dell'anno scolastico 2024/2025 relativi a studenti del decimo grado, l'articolo indaga come l'età di primo accesso a diverse tecnologie digitali si associ agli esiti scolastici e come tali relazioni siano attraversate da disuguaglianze sociali, culturali e territoriali. I risultati mostrano che l'esposizione precoce a smartphone, applicazioni di messaggistica e social media tende a correlarsi negativamente con le competenze disciplinari, mentre emergono pattern più articolati per la competenza digitale, che appare favorita da un accesso non eccessivamente anticipato. Il contributo offre evidenze rilevanti per il dibattito sulle politiche educative e sulle strategie di educazione digitale, contribuendo alla riflessione sui divari digitali e sulle condizioni di un uso formativo delle tecnologie.

La buona pratica di Serena Marrandino – *IA e progettazione formativa: una partnership tra intelligenza artificiale e intelligenza umana* – offre alcune riflessioni teoriche e spunti operativi per l'integrazione dell'Intelligenza Artificiale nella progettazione formativa. L'articolo propone un approccio che supera la logica dell'automazione, concependo l'IA come supporto intenzionale ai processi di analisi, ideazione e decisione progettuale, in dialogo costante con l'intelligenza e la responsabilità umana. Attraverso l'illustrazione di modalità operative e scenari applicativi riferiti alle diverse fasi del modello ADDIE, il contributo mette in luce potenzialità e criticità dell'uso dell'IA generativa, evidenziando il ruolo centrale della supervisione umana nella gestione di bias, omologazione e questioni etiche. La pratica descritta si configura quindi come orientamento metodologico, offrendo indicazioni utili a docenti, formatori e professionisti della progettazione educativa interessati a un'integrazione consapevole dell'IA nei processi formativi.

Infine, l'intervento documentato da Stefano Cuomo, Gabriele Biagini e Francesco Gracci, *Designing and Experiencing Place-Based Education with Socratic AI:*

Findings from a Field Workshop, riguarda il potenziale dell'intelligenza artificiale generativa, concepita come compagno socratico, nel supportare la place-based education. Lo studio si basa su un workshop sperimentale condotto nell'ambito del progetto T-Place durante la MED Summer School 2025, che ha coinvolto 20 partecipanti impegnati nella progettazione e nell'esplorazione di itinerari educativi territoriali. Al centro dell'esperienza vi è l'app T-PLACE, progettata per sostenere il dialogo riflessivo attraverso interrogazioni guidate dall'IA e pratiche transmediali. I risultati mostrano che l'interazione socratica con l'IA favorisce l'esplicitazione delle conoscenze implicite e processi di metariflessione, mentre la produzione di artefatti transmediali rafforza l'apprendimento collaborativo. In conclusione, l'articolo evidenzia come l'uso dialogico dell'IA possa arricchire l'educazione al territorio, pur segnalando la necessità di ulteriori sviluppi tecnici e sperimentazioni su scala più ampia.



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Remediating prebunking in practice: Enhancing teachers' competencies for digital source evaluation and disinformation detection

Rimediare il prebunking nella pratica: potenziare le competenze degli insegnanti per la valutazione delle fonti digitali e il riconoscimento della disinformazione

NICOLA BRUNO*, ANNAMARIA DE SANTIS, STEFANO MORIGGI

Università degli Studi di Modena e Reggio Emilia, Italy

nicola.bruno@unimore.it; annamaria.desantis@unimore.it; stefano.moriggi@unimore.it

*Corresponding author

Abstract. This study evaluates a national program for media literacy training designed to enhance Italian teachers' competencies in digital source evaluation and disinformation detection. Using a "remediated prebunking" approach, the program involved 115 primary and secondary school teachers across Italy in a blended learning experience combining online modules with hands-on workshops. The intervention focused on two core areas: digital source verification and visual literacy for detecting manipulated images. A pre-post quasi-experimental design assessed six competency domains through mixed-methods evaluation emphasizing argumentative reasoning over simple classification accuracy. Results demonstrated significant improvements across all domains, with particularly notable gains in visual literacy and collaborative analytical skills. These findings suggest that "remediated prebunking" methodologies can effectively address systematic gaps in teacher preparation for tackling disinformation in digital citizenship education, providing evidence-based guidance for scalable professional development interventions.

Keywords: disinformation, media literacy, prebunking, teacher education, visual literacy.

Riassunto. Questo studio valuta un programma nazionale di formazione alla media literacy volto a potenziare le competenze degli insegnanti italiani nella valutazione delle fonti digitali e nel riconoscimento della disinformazione. Adottando un approccio di "prebunking rimediato", il programma ha coinvolto 115 docenti della scuola primaria e secondaria di diverse regioni italiane in un percorso blended che combinava moduli online con laboratori pratici. L'intervento si è concentrato su due aree fondamentali: la verifica delle fonti digitali e la visual literacy per individuare immagini manipolate. Un disegno quasi-sperimentale pre-post ha valutato sei domini di competenza attraverso una metodologia mista, ponendo l'accento sul ragionamento argomentativo più che sulla semplice accuratezza classificatoria. I risultati hanno evidenziato miglioramenti

significativi in tutti i domini, con progressi particolarmente rilevanti nella visual literacy e nelle capacità analitiche collaborative. Questi esiti suggeriscono che le metodologie di “prebunking rimediato” possano affrontare in modo efficace le lacune sistemiche nella formazione degli insegnanti per contrastare la disinformazione nell’ambito dell’educazione alla cittadinanza digitale, offrendo indicazioni basate su evidenze per interventi di sviluppo professionale scalabili.

Parole chiave: disinformazione, media literacy, prebunking, formazione insegnanti, visual literacy.

1. INTRODUCTION

In the post-media information environment (Eugeni, 2015), where visual, textual, and algorithmically curated content converge on digital platforms, the ability to evaluate the credibility of information has become a core civic competency (Council of Europe, 2025). As disinformation proliferates across social media, messaging apps, and news aggregators (Pérez-Escobar et al., 2023), the ability to assess sources critically – especially when content is emotionally charged, visually manipulated, or algorithmically amplified – is both urgent and foundational to democratic resilience. This challenge is especially pressing within the European context, where only 9% of citizens across 11 countries report having received training on distinguishing true from false information, despite 58% expressing interest in such training (Ipsos Mori, 2021).

The present study specifically investigates teachers’ media literacy needs as a crucial precondition for empowering students to navigate today’s complex information environment. Teachers must be able to both recognize manipulative content and guide learners through the analytical practices required to navigate the digital sphere. However, multiple studies show that educators – those responsible for preparing new generations of digitally literate citizens – are themselves often underprepared to critically evaluate online information, particularly visual content (Erdem et al., 2018; Ranieri et al., 2018; ICILS, 2018; Trust et al., 2022; Tsankova et al., 2023; Zaçellari et al., 2024). Key policy frameworks and guidelines such as DigComp 2.2 (European Commission, 2022a), the *Guidelines for Teachers and Educators on Tackling Disinformation* (European Commission, 2022b), and UNESCO’s Handbook for Journalism Training (UNESCO, 2018) emphasize the crucial role of educators in tackling disinformation and mediating digital culture. These policy documents call on teachers not only to develop their own media literacy skills but also to transfer them effectively to students. Previous research (Bruno et al., 2025) shows that Italian teachers, even with some digital experience, have a hard time understanding digital sources and evaluating their trustworthiness: only one in four participants reached

the minimum threshold of proficiency in tasks related to verifying digital content, while a majority struggled with visual and contextual evaluation. While teachers can often identify assertive cues of reliability, such as verified profile badges or source URLs, their ability to evaluate content based contextual provenance (Hebbar et al., 2024) remains limited. Teachers also demonstrated polarized trust dynamics – placing disproportionate confidence in traditional media like television while dismissing digital platforms as untrustworthy. Such an imbalance suggests not just a skills deficit but a deeper cultural misalignment with the nature of today’s post-media environment (Moriggi, 2023).

These findings align with broader research from other projects, which documented systematic gaps in teachers’ digital and media literacy competencies across multiple countries, revealing that current teacher education programs inadequately prepare educators for the complex demands of digital citizenship instruction (Ranieri et al., 2018; Trust et al., 2022). Recent comparative reports such as TeaMLit (2023) confirm these patterns, emphasizing wide heterogeneity in teacher readiness and calling for differentiated approaches to professional development.

This mismatch between institutional expectations and teacher readiness is particularly concerning. While several training programs for teachers on countering disinformation and source evaluation have been promoted recently (at least in Italy through the program of professional development Scuola Futura by the Minister of Education), these interventions rarely make explicit their methodological framework, nor do they measure impact through systematic pre- and post-training assessment. This gap limits our understanding of which approaches are most effective and how to design evidence-informed interventions for teacher professional development. This lack of evaluation is particularly problematic in light of international evidence showing that not all media literacy interventions are equally effective. A meta-analysis of 49 media literacy interventions confirms that, although they can significantly reduce belief in misinformation ($d = 0.27$) and likelihood of sharing it ($d = 1.04$), effectiveness varies substantially depending on instructional strategy and intensity (Huang et al., 2024). The meta-analysis synthesized findings from 49 experimental studies ($N \approx$

81,000 participants) and reported an overall medium effect size ($d = 0.60$), with higher efficacy observed in multi-session and classroom-based interventions.

In response to the lack of empirical data on the effectiveness of professional development programs focused on disinformation, we developed and delivered a national media literacy training program between 2023 and 2024, involving 243 primary and secondary school teachers across Italy. The training was designed around a 12 hours blended learning model and integrated both synchronous and asynchronous activities in online formats, as well as in-person workshops in selected regions. The program aimed to enhance teachers' competencies in verifying digital sources, while equipping them with concrete strategies to design and implement classroom activities on media literacy. The program consisted of two core modules: (1) Evaluating Digital Sources, where teachers applied the TAG method – *Trova* (Find), *Analizza* (Analyze), *Guardati intorno* (Look around) – to assess websites and other digital sources; and (2) Visual Verification, where participants engaged with real-world examples of image-based manipulation, from decontextualized photos to doctored visuals. In both modules, teachers were challenged to go beyond surface-level cues and develop reasoning strategies based on lateral reading, contextual analysis, and the use of verification tools (e.g., reverse image search).

The pedagogical architecture of the training drew upon a remediated application of prebunking strategies, as theorized in attitudinal inoculation research (Cook, Lewandowsky & Ecker, 2017) and recontextualized for educational settings (Bruno & Moriggi, 2023a; 2023b). This approach aligns with recent rapid evidence assessment findings demonstrating that effective media literacy interventions must employ strategies that prompt conscious and rational engagement with content and develop critical thinking skills, rather than relying on passive information delivery (Anstead et al., 2025). Prebunking involves exposing learners to weakened forms of manipulative content before they encounter it in real-world scenarios, thereby fostering a form of “cognitive immunity” (van der Linden, 2023). The improvement of prebunking means combining the psychological ideas of giving warnings and countering false information with active teaching methods like case studies and working together. Crucially, the training moved beyond passive exposure to manipulative content, engaging participants in active, collaborative activities requiring them to reconstruct the genealogy of disinformation, applying an inquiry-based approach. This hands-on learning approach aimed to not only enhance understanding of concepts but also to tackle a major issue with prebunk-

ing efforts: the temporary nature of resistance to misleading information, often called “informative decay” (van der Linden, 2023). By embedding analytic reasoning in group-based case work, we sought to make protective effects more durable and transferable to classroom practice (Gallese et al., 2025).

To evaluate whether this pedagogical model could produce measurable improvements, we measured teacher competencies through pre- and post-questionnaires completed by 115 participating teachers, examining how the integration of media literacy content with remediated prebunking methodologies can improve both personal competencies and pedagogical readiness in addressing disinformation.

The structure of our evaluation was guided by two central research questions, which reflect both the effectiveness and the pedagogical mechanisms of the intervention.

- 1) How effective is a “remediating prebunking” professional development program in improving teachers' competencies across six key domains of digital source evaluation and disinformation recognition?
 - Sub-question: Does the program improve both technical accuracy and argumentative reasoning competencies in media literacy tasks?
- 2) Which training formats and pedagogical approaches within the program are most effective for developing durable media literacy competencies?
 - Sub-question: How do hands-on, collaborative workshop activities compare to other delivery formats in terms of learning outcomes?

By addressing these questions, our study contributes to the growing empirical literature on teacher education in media and information literacy (MIL), building specifically on the systematic deficiencies documented in European teacher preparation (Ranieri et al., 2018) and responding to calls for multidimensional professional development approaches (Ranieri, 2021, Trust et al., 2022). We offer practical guidance for designing scalable, evidence-informed interventions in formal, non-formal, and informal learning environments.

In current research and policy discourse, disinformation refers to false or misleading information that is fabricated, presented, or disseminated with the intent to deceive and to inflict public harm. The scientific literature distinguishes between disinformation, misinformation, and malinformation to capture the different nuances of information disorders (Wardle & Derakhshan, 2017). This distinction expands the notion of disinformation beyond the binary opposition of true and false by including the communicative intentions behind the act of information production. It also constitutes one

of the conceptual pillars of the training offer proposed to teachers, as further redefined in Bruno et al. (2023a). However, in this paper we use the term disinformation as an umbrella concept encompassing the various forms of information disorder, without emphasizing differences in intentionality, since these distinctions are not directly relevant to our analysis.

2. THE STRUCTURE OF THE TRAINING

In response to the critical gap identified in teachers' ability to evaluate sources and detect disinformation (Bruno et al., 2025), a national professional development initiative for media literacy training was launched between 2023 and 2024. The training was promoted by Open the Box, a media literacy program active in Italy since 2020, and a network of Italian schools participating in the "Scuola Futura" professional development initiative supported by the Ministry of Education. The duration of the training is 12 hours and it offered diverse delivery formats, combining fully online modules (both synchronous and asynchronous activities) with synchronous workshops (both online and in-person), depending on local organizational contexts. The program was implemented across multiple institutional and geographical settings between 2023 and 2024, reaching educators through diverse delivery modalities while maintaining pedagogical consistency. This flexible implementation strategy enabled adaptation to local organizational needs while preserving core learning objectives. Of the 233 teachers initially enrolled across seven distinct course iterations, 115 completed both the training program and the pre- and post-assessment protocols that form the basis of this analysis. Table 1 below summarizes the courses.

This paper's analysis includes only the 115 teachers who completed the final evaluation activities, out of the

total 233 enrolled. Regardless of delivery format, each course followed a shared curriculum built around two core thematic modules:

A. Evaluating Digital Sources

This module addressed the ability to assess the trustworthiness of digital sources, emphasizing lateral reading and detection of deceptive formats (clickbait, sponsored content, satirical misrepresentation), in line with Area 1.2 of the DigComp 2.2 framework: "Evaluating data, information and digital content" (European Commission, 2022a).

The first module provided both historical context and practical application frameworks for digital source evaluation. Teachers began by examining three decades of media evolution – from the emergence of citizen journalism to the contemporary proliferation of AI-generated content – and developed a conceptual understanding of how information ecosystems have transformed. Central to this module was the TAG method (Trova, Analizza, Guardati intorno), a systematic framework enabling comprehensive evaluation of digital sources across multiple formats, including websites, social media posts, and multimedia content. The TAG method is based on the Civic Online Reasoning (COR) methodology for source evaluation developed by the Stanford History Group (McGrew et al., 2023). Through hands-on analysis of real-world case studies, teachers developed competencies in evaluating source credibility, conducting reverse image searches, identifying sponsored content and clickbait techniques, and distinguishing between satirical news and verified information sources. This approach moved beyond simple checklist approaches to foster deep analytical reasoning about information provenance and reliability indicators.

Table 1. Outline of the training programme

Course Title	Participants	Pre/post Assessment	Delivery Mode
Das - Alla prova dei fatti (Investigating the facts) 1 (IC Einstein)	77	39	Online
Das - Alla prova dei fatti (Investigating the facts) 2 (IC Einstein)	44	13	Online
Media Literacy 1 (IC3 Modena)	27	6	Online
Media Literacy 2 (IC3 Modena)	10	2	Online
Critical Thinking for Digital Citizenship (IC Mondovì 2)	30	26	In-person
Media Literacy (Check It Out)	15	3	Online
Critical Thinking for Digital Citizenship (IC Borsellino - Valenza)	30	26	In-person
Total	233	115	

B. Visual Literacy and Manipulated Images

The second module addressed the critical gap in educators' visual literacy competencies (Aljalabneh, 2024), focusing specifically on image-based disinformation techniques. This module focused on visual disinformation – such as doctored photos, AI-generated images, and decontextualized visuals. Drawing from post-media aesthetic education (Moriggi, 2023), the course introduced four typologies of image manipulation and guided teachers in using tools like reverse image search, meta-data analysis, and contextual cross-checking. Teachers collaborated on identifying visual manipulation and constructing reasoned justifications for their assessments. The training emphasized the cognitive asymmetry between identifying “assertive provenance” (e.g., verified badges) and the more complex “inferred context” analysis (Hebbar et al., 2024).

Through collaborative analysis of real-world examples, teachers learned to apply verification tools and techniques, including reverse image searching, meta-data analysis, image forensics techniques and tools, and contextual cross-referencing. This hands-on approach enabled teachers to develop both technical competencies in detecting visual manipulation and critical reasoning skills for recognizing decontextualized or strategically staged imagery.

Inspired by inoculation theory (Cook, Lewandowsky, & Ecker, 2017) and adapted for educational contexts (Bruno & Moriggi, 2023a), the programme introduced a two-phase “remediated prebunking” model:

- Phase 1 – Passive Prebunking: Teachers were exposed to weakened manipulative content (e.g., deepfakes, fake headlines) and provided with forewarnings and explanatory debunking elements.
- Phase 2 – Active Prebunking: Teachers worked collaboratively to reverse-engineer the genealogy of real disinformation cases through inquiry-based, media-archaeological practices. They traced sources, checked claims, and reconstructed timelines, fostering inquiry-based reasoning.

This hybrid strategy addresses the limitations of short-lived cognitive resistance (“informative decay”) documented in recent literature (van der Linden, 2023) and promotes durability and transferability of critical literacy skills.

As highlighted above, the educational architecture of the training drew inspiration from recent reinterpretations of prebunking strategies (Cook et al., 2017; Ecker et al., 2022), adapted for educational contexts by Bruno and Moriggi (2023).

In more detail, the “remediated” prebunking activities included two different but complementary steps. At first, teachers learned about disinformation tactics by watching multimedia examples and receiving clear warnings about how these tricks work, along with explanations of why the claims are false. This foundational exposure created awareness of common manipulation strategies while building cognitive defenses against future encounters with similar content. The training then moved to active prebunking, where teachers worked together to analyze specific misinformation campaigns and figure out how they started using research-based methods. By integrating passive exposure with active, inquiry-driven casework, the training aimed to build what Ecker et al. (2022) describe as “cognitive immunity.” Participants were trained to recognize manipulative techniques and prepared to design similar educational activities for their students. This aligns with a view of teachers as co-creators of knowledge and digital culture mediators (Frau-Meigs, 2024; Trust et al., 2022).

The course helped participants build what is known as “cognitive immunity,” which means being mentally and culturally ready to understand and spot misleading information, by balancing learning about disinformation tactics with teamwork and active analysis. Acquiring this ‘immunity’ is the first step in a training program during which teachers will acquire the knowledge and skills needed to design similar immersive educational experiences with students. At the end of the training, they should be able to share tools, cases, and activities that will enable their students to learn how to decipher the logic of the unreliable through the two stages (active and passive) of remediated prebunking.

METHODOLOGY

To evaluate the effectiveness of our remediated prebunking intervention, we employed a pre-post quasi-experimental design. The assessment included four parts that aimed to gather initial information and track skill improvement: personal demographic information, the use and trust of media sources, an understanding of digital literacy concepts, and hands-on evaluation of seven different types of real-world digital content case studies. This mixed-methods approach enabled comprehensive assessment of both declarative knowledge and applied analytical skills essential for effective media literacy instruction. The practical assessment component focused on 7 core competency domains essential for digital source evaluation (see Table 2). These domains reflect DigComp 2.2's

Table 2. Overview of assessed media and information literacy competencies.

Code	Competency Domain	Description
[RELIABLE]	Source Reliability Evaluation	Distinguish between reliable and misleading websites or online information sources.
[SPONSORED]	Sponsored Content Recognition	Identify commercially sponsored news or content disguised as editorial.
[VERIFIED]	Social Media Verification	Recognize verified social media accounts and distinguish them from fake or impersonated profiles.
[SATIRICAL]	Satirical Content Discrimination	Distinguish satire or parody from factual news articles or posts.
[TRUSTWORTHY]	News Trustworthiness Assessment	Evaluate the credibility and balance of digital news items beyond surface cues.
[DECONTEXTUALIZED]	Visual Decontextualization Detection	Detect authentic images misused out of context to mislead or manipulate public perception.

Area 1.2 on “Evaluating data, information and digital content” and aim to simulate high-frequency cognitive demands in today’s online media environments. Each domain was evaluated using different but similar case studies in the pre- and post-tests for keeping the measurements consistent.

Each competency assessment combined quantitative and qualitative evaluation methods. Teachers provided binary classifications (e.g., Reliable/Unreliable) accompanied by open-ended questions for arguing their decisions. The scoring methodology weighted qualitative reasoning more heavily than simple classification accuracy, with closed-response answers contributing 25% and explanatory comments contributing 75% of the total score. This scoring design reflects our pedagogical focus on reasoning and transfer, rather than rote recognition of superficial features. Two trained reviewers assessed all open-ended answers using a set guideline that looked at the quality of evidence, the complexity of reasoning, and the correct use of verification methods. The combined score of quantitative and qualitative assessment ranged from 0 to 4 for each question; the minimum level of proficiency was set at 2.4 (60% of the total score).

Analysis focused on six of the seven competency domains: [RELIABLE], [SPONSORED], [VERIFIED], [SATIRICAL], [TRUSTWORTHY], and [DECONTEXTUALIZED]. The [MANIPULATED] domain was excluded due to technical inconsistencies in post-test administration that compromised data quality. We assessed the normality of the differences between the pre- and post-test scores for six variables using the Shapiro-Wilk test ($\alpha = 0.05$). The null hypothesis for this test is that the data are normally distributed.

Next, we conducted a one-tailed t-test on paired samples (greater, $\alpha = 0.05$) to compare the results of the two tests. The null hypothesis in this case was that the mean difference between the post-test and pre-test scores

was equal to or less than 0 (as a consequence, post-test > pre-test).

For the variables where the normality assumption was not met according to the Shapiro-Wilk test, we used the non-parametric one-sided Wilcoxon signed-rank test for paired samples (greater, $\alpha = 0.05$) instead of the t-test. The null hypothesis was that the true location shift is equal to or less than 0. The results describe further investigations into the variation of teachers’ scores, taking into account the identified proficiency point.

RESULTS

Previous publications (Bruno et al., 2025) have comprehensively detailed the demographic and baseline characteristics of our sample. Briefly, the participating teachers demonstrated moderate digital engagement patterns, with more than half reporting active use of 3–5 social media platforms. Daily social media consumption was relatively modest, with 73% of teachers spending 1–2 hours on these platforms the day before the survey, while 15% reported no social media use. Platform preferences reflected generational patterns, with universal adoption of WhatsApp, followed by Facebook (78%) and Instagram (62%). Notably, usage of platforms popular among younger demographics remained minimal, including TikTok (17%) and Pinterest (27%). Teachers demonstrated high levels of trust in traditional media sources, particularly television and online newspapers, as well as information from family networks, while expressing skepticism toward digital platforms as information sources. Baseline assessment revealed significant deficiencies across all six competency domains, confirming the need for targeted intervention. As illustrated in Figure 1 and detailed in Table 3, pre-training performance distributions showed concerning patterns. For the [TRUST-

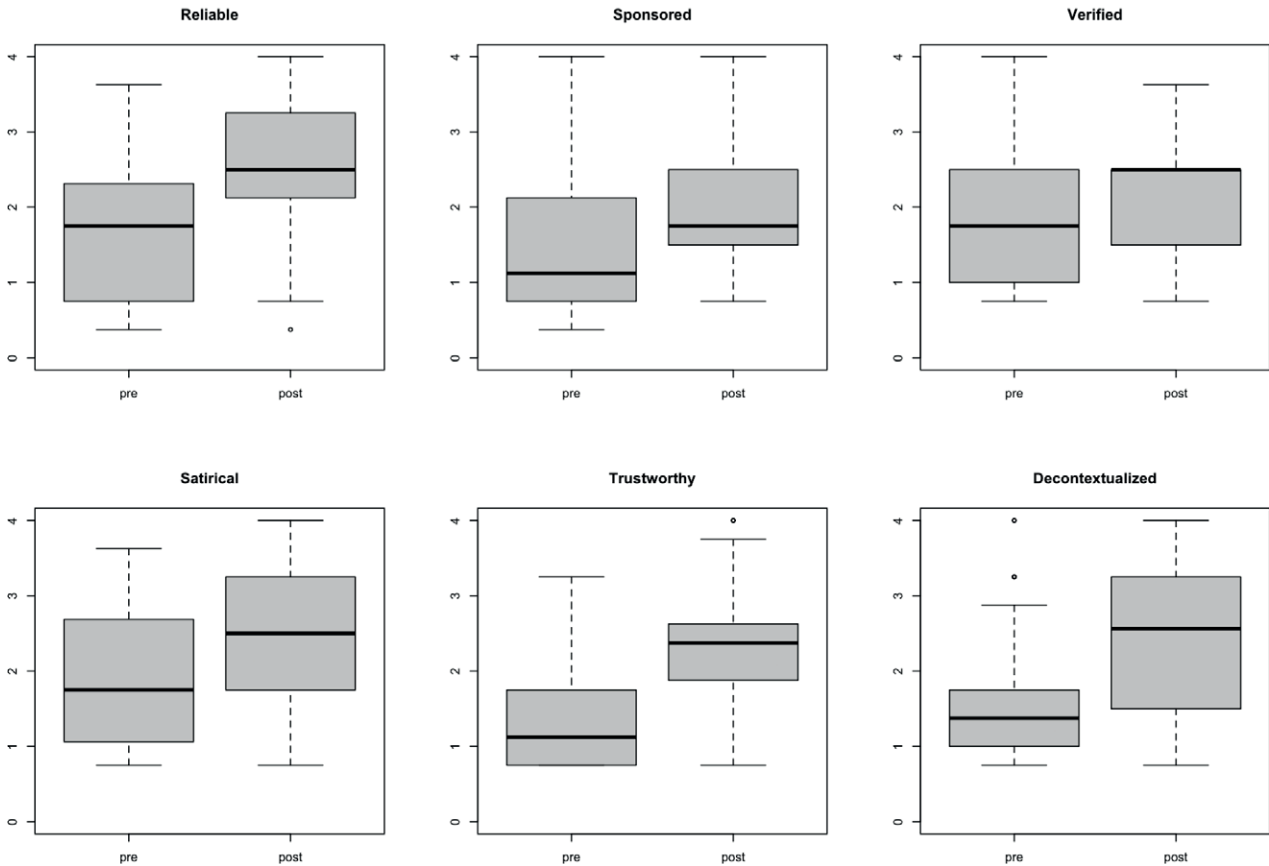


Figure 1. Boxplot of the distributions of six skills related to pre- and post-test.

WORTHY] and [DECONTEXTUALIZED] domains, even the third quartile scores fell well below the established proficiency threshold of 2.4 points, indicating that 75% of teachers lacked adequate competency in these critical areas. The [RELIABLE] and [SPONSORED] domains showed marginally better performance, with third quartile scores slightly below sufficiency, while only the [VERIFIED] and [SATIRICAL] domains demonstrated third quartile performance just above the minimum threshold.

Following the intervention, substantial improvements were observed across all competency domains. Post-training distributions demonstrated marked upward shifts, with third quartile scores exceeding the proficiency threshold for all six assessed competencies. This overall improvement shows that the remediated prebunking methodology effectively helped participants overcome the various skill gaps identified at the start, allowing most of them to reach a satisfactory level of competency in all areas of evaluating digital sources.

Before using a hypothesis test to verify that the difference in scores between the pre- and post-tests is sig-

nificant, we checked that the differences follow a normal distribution using the Shapiro-Wilk test (Table 4). Given $p < 0.05$, for the variables [SPONSORED], [SATIRICAL], and [TRUSTWORTHY], we cannot reject the null hypothesis of normality. Consequently, we applied a one-tailed paired t-test to compare the results of the pre- and post-tests. For the other three variables ([RELIABLE], [VERIFIED], and [DECONTEXTUALIZED]), we rejected H_0 and applied a one-sided Wilcoxon signed-rank test for paired samples (Table 5). In both cases, we found that the post-test results were better than the pre-test results with 95% confidence, meaning the differences are likely real and not just random chance. So, we can assume the results are related to the suggested training path, even if they aren't compared to the control group.

We verified the percentages of teachers who achieved a better score in the post-test compared to the pre-test to better understand the phenomenon and the effects of the training path on their learning (Table 6). Around 80% of the teachers obtained a better result on the post-test for the skills related to [TRUSTWORTHY], [RELIABLE], and [DECONTEXTUALIZED]. A slight-

Table 3. First and third quartile in the distribution for each skill in pre- and post- test.

Competency	Pre-test		Post-test	
	1st quartile	3rd quartile	1st quartile	3rd quartile
[RELIABLE]	0.750	2.312	2.125	3.250
[SPONSORED]	0.750	2.125	1.500	2.500
[VERIFIED]	1.000	2.500	1.500	2.500
[SATIRICAL]	1.062	2.688	1.750	3.250
[TRUSTWORTHY]	0.750	1.750	1.875	2.625
[DECONTEXTUALIZED]	1.000	1.750	1.500	3.250

Table 4. Shapiro-Wilk test for difference between pre-and post-test scores in each skill.

	Normality test Shapiro-Wilk test ($\alpha = 0.05$)			
	N.	W	p-value	H ₀
[RELIABLE]	108	0.97048	0.01667	Rejected
[SPONSORED]	115	0.98325	0.1619	Accepted
[VERIFIED]	115	0.94069	6.861e-05	Rejected
[SATIRICAL]	112	0.97817	0.06335	Accepted
[TRUSTWORTHY]	108	0.98529	0.2823	Accepted
[DECONTEXTUALIZED]	107	0.96899	0.01324	Rejected

Table 5. t-test a una coda (greater difference) for each skill.

	Hypothesis test One-tailed t-test on paired samples ($\alpha = 0.05$)			
	df	t	p-value	H ₀
[SPONSORED]	114	5.5112	1.121e-07	Rejected
[SATIRICAL]	111	7.0324	8.77e-11	Rejected
[TRUSTWORTHY]	107	12.445	2.2e-16	Rejected
One-sided Wilcoxon signed-rank test for paired samples				
	V	p-value	H ₀	
[RELIABLE]	4688.5	2.626e-12	Rejected	
[VERIFIED]	2706	1.581e-06	Rejected	
[DECONTEXTUALIZED]	4723.5	8.469e-12	Rejected	

ly lower percentage (69.6%) obtained a better result in the [SATIRICAL] question. About half of the teachers (53.9%) achieved a better score in the [VERIFIED] question, with approximately 30% of teachers maintaining the same score in both the pre- and post-tests. The percentage decreases in the [SPONSORED] question, where the score between the repeated tests increases for only 24.3% of the teachers.

Table 6. Percentage of teachers who get better or worse scores in pre- and post-test for each skill.

	N.	Pre > Post	Pre = Post	Pre < Post
[RELIABLE]	108	14.8%	5.6%	79.6%
[SPONSORED]	115	66.1%	9.6%	24.3%
[VERIFIED]	115	17.4%	28.7%	53.9%
[SATIRICAL]	112	23.2%	7.21%	69.6%
[TRUSTWORTHY]	108	11.1%	7.4%	81.5%
[DECONTEXTUALIZED]	107	19.6%	3.7%	76.6%

In addition, we subset the sample to 96 teachers, choosing those for whom no NA was recorded in the pre- and post-tests for all six skills. We then operated on the proficiency score (2.4 = 60% of the score). The percentage of teachers who exceeded the cut-off score increases with different sizes (Figure 2). The [TRUSTWORTHY] and [DECONTEXTUALIZED] variables have the biggest increases, but they also have the lowest percentage at first. They are followed in order by [RELIABLE], [SATIRICAL], [VERIFIED], and [SPONSORED].

In detail (Figure 3), we see that:

- For all the skills, there is a percentage of teachers who obtained a score lower than 2.4 in the pre-test and remained in the same range in the post-test. The quota is high for [SPONSORED], [TRUSTWORTHY], and [VERIFIED] variables (53.1%, 47.9%, and 43.8%), about 30 percent for the other skills. Although, as stated in Table 3, the improvements involved a high number of teachers, these were not enough in all cases to move teachers' skills above the proficiency level.
- Except for the [VERIFIED] question, there is a percentage of teachers who obtained proficient scores in the pre-test but lost points in the post-test. It is close to 10% for [RELIABLE] and [SPONSORED] variables, and 3–4% for the others.
- There is a percentage (from 21.9 to 53.1) of teachers who obtained not adequate scores in the pre-test and improved to proficiency in the post-test. The percentage is larger in the [DECONTEXTUALIZED] question, lower in the [SPONSORED] and [VERIFIED] ones. For the last, however, many teachers have achieved and maintained proficiency since the beginning of the course.

To better understand the mechanisms related to worsening or improving results, we investigate whether there were differences in the scores achieved in closed-ended questions and comments for all the variables. Figure 4 displays the percentage of teachers who answered

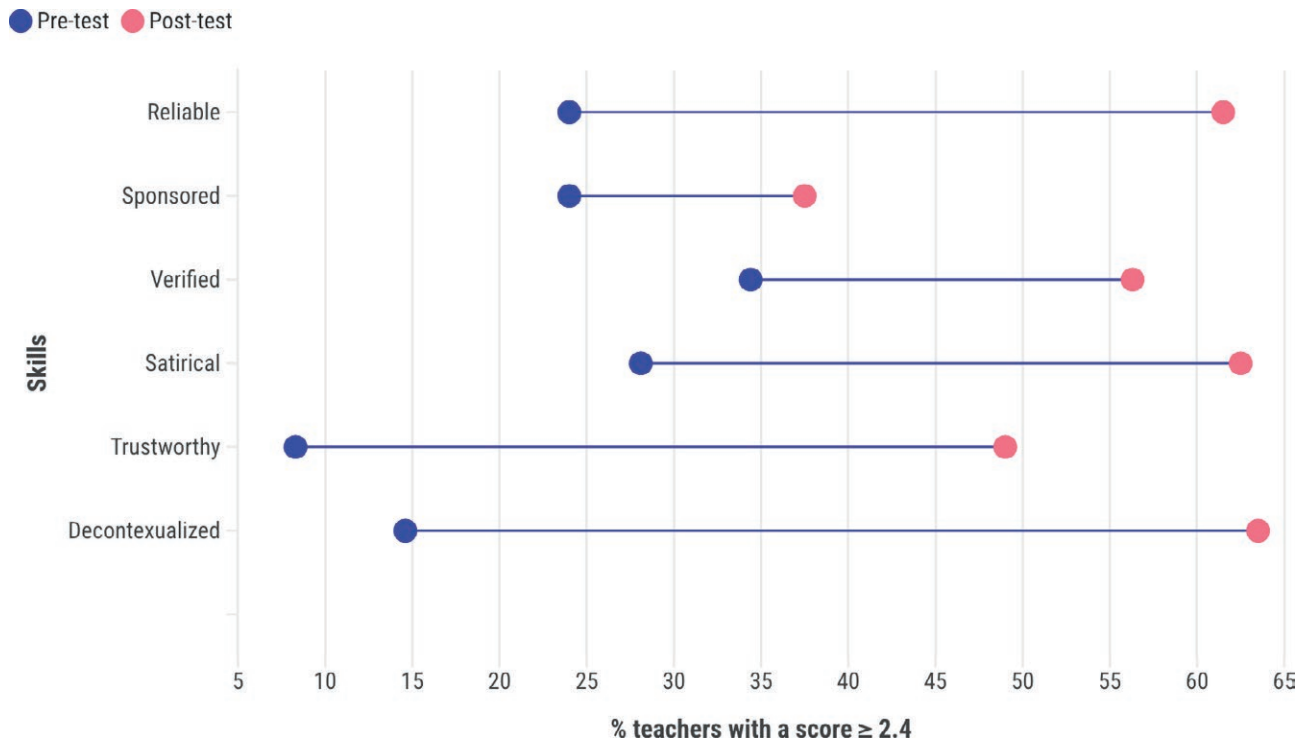


Figure 2. Comparison of the percentage of teachers that exceed the passing score in pre- and post-tests.

the closed-ended question correctly, which contributes to the score for each skill. As can be seen, this increase is relevant for the [RELIABLE] competency and moderate for the [TRUSTWORTHY] and [SATIRICAL] variables (the latter, however, started from a very high percentage). The percentages of pre- and post-tests coincide perfectly for the [VERIFIED] competency, while showing a reduction for [DECONTEXTUALIZED] and [SPONSORED] questions. For the former, there was generally an important improvement between the two repeated measures, which was not confirmed in the latter. According to these early results, the difference in scores is largely due to the teachers' comments; it can be assumed that the training was not always sufficient to yield a correct and unique answer to the closed question. However, even if there is no absolute certainty about the topics, the training path has improved teachers' argumentation and awareness of issues related to the reliability of sources.

DISCUSSION

This study set out to evaluate whether a blended, prebunking-oriented teacher training program could enhance six key competencies for detecting mis- and disinformation among Italian educators (Research Question

1), and whether hands-on, collaborative formats contributed more effectively than passive delivery to durable learning outcomes (Research Question 2). Our findings provide compelling evidence for the effectiveness of remediated prebunking approaches while revealing important insights about the nature of developing media literacy skills that extend beyond simple binary skill acquisition.

The noticeable improvements seen in all six areas – [RELIABLE], [SPONSORED], [VERIFIED], [SATIRICAL], [TRUSTWORTHY], and [DECONTEXTUALIZED] – show that preventive methods based on inoculation theory can help teachers become more resilient to digital misinformation. These results match recent studies showing that effective media literacy programs need to use methods that encourage active thinking and understanding of content instead of just giving information passively (Anstead et al., 2025). By exposing participants to weakened examples of manipulation and guiding them through structured refutation strategies, our program created the cognitive “antibodies” theorized in the prebunking literature while addressing the systematic deficiencies in teacher preparation documented across European contexts. In a digital environment saturated with emotional content and visual manipulation, even a small shift in interpretive awareness can mark the difference between passivity and agency.

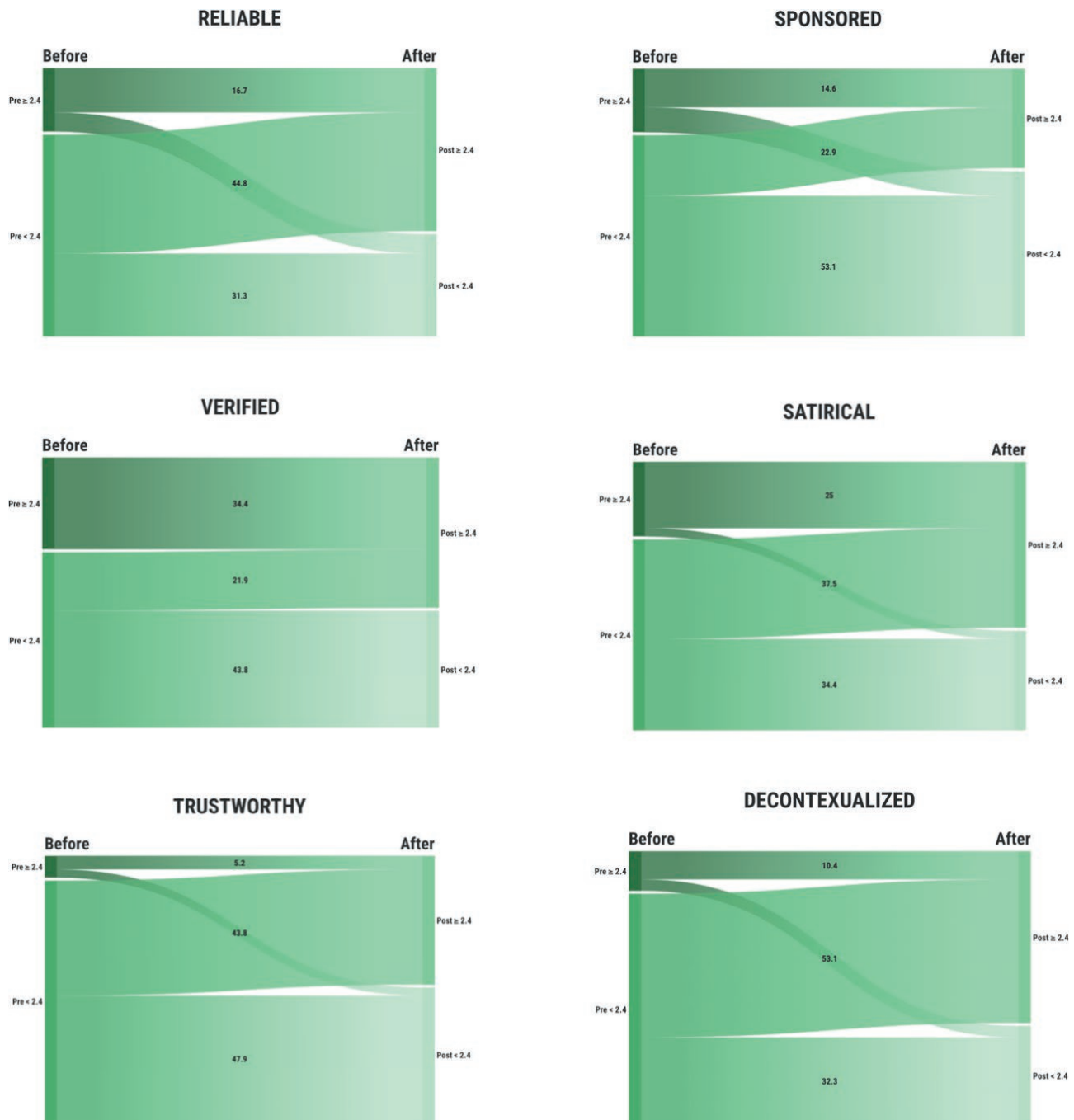


Figure 3. Comparison of the percentage of teachers who exceed or do not exceed the passing score in pre- and post-tests.

Our findings are particularly noteworthy as they extend beyond quick-fire recognition tasks to include qualitatively richer justifications and deeper analytical reasoning. Teachers demonstrated wider use of verification terminology and more explicit reference to lateral-reading heuristics in their post-training responses. It's as if teachers moved from knowing the

answer to understanding the question. They learned to trace the logic behind the manipulation, even when certainty was out of reach. This growth in quality often surpassed the improvement in correct answers, with some areas showing a big increase in teachers meeting the basic standards, even when their accuracy in simple right-or-wrong questions only improved a little.

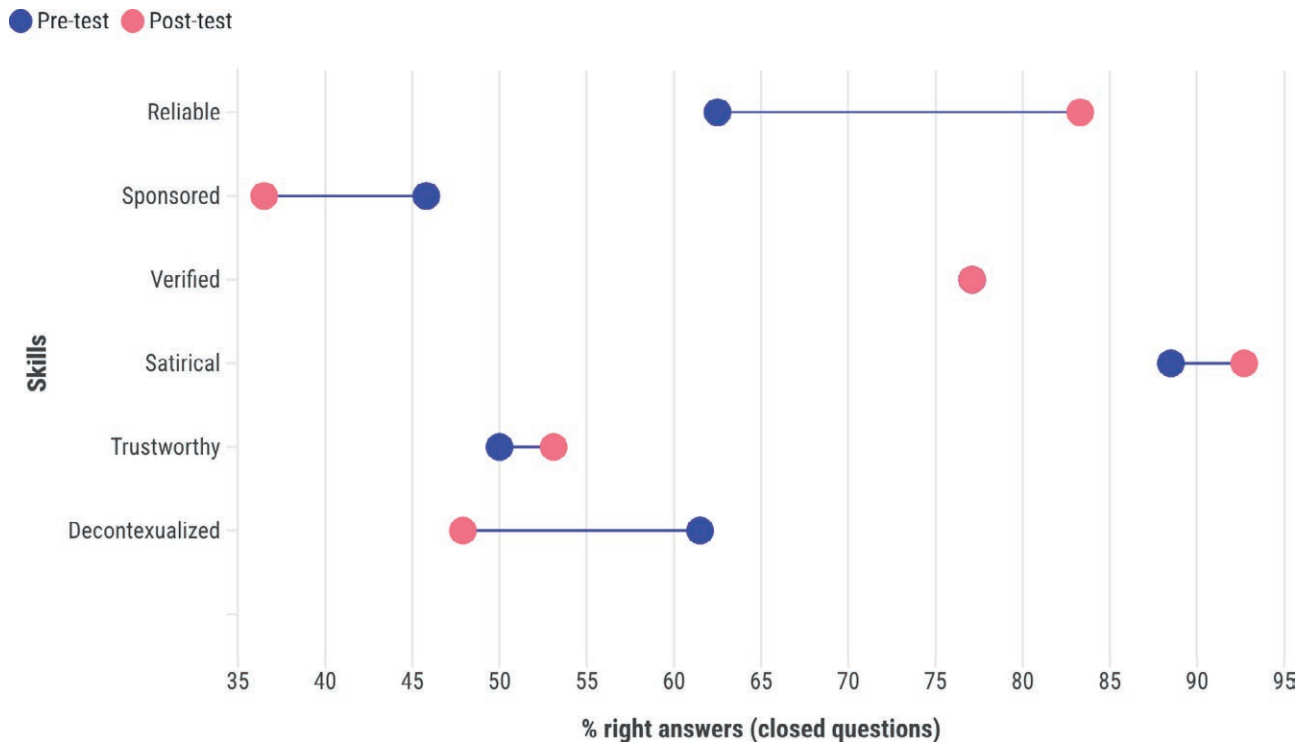


Figure 4. Comparison of the percentage of teachers who answer correctly to the closed question for each variable.

The [DECONTEXTUALIZED] domain exemplifies this pattern: while correct multiple-choice responses actually declined slightly, the proportion of teachers achieving sufficiency more than quadrupled (from 14.6% to 63.5%). The improvement in this domain means that teachers became better at explaining their reasoning, even if they didn't always find clear answers – an important skill for shifting from basic teaching methods to more advanced analytical practices.

Such argumentative competence represents perhaps the most valuable outcome of our intervention, as it equips educators to teach why content is credible or not rather than relying on checklist heuristics alone. This capability is essential because teachers must model and scaffold complex cognitive processes for their students while adapting to the visual-centric nature of contemporary post-media aesthetics (Manovich, 2001). Rather than acting as gatekeepers of truth, teachers evolved into facilitators of how to navigate uncertainty, think critically, and engage ethically with information in complex media environments. The dramatic improvement in visual literacy competencies – particularly the four-fold increase in teachers successfully evaluating decontextualized images – addresses one of the most critical gaps identified in prior research, where visual content evaluation emerged as educators' weakest competency area.

The biggest improvements happened in areas where teachers participated in hands-on, group workshops – [RELIABLE] and [DECONTEXTUALIZED] – where they worked together to figure out the origins of questionable websites and reverse-search controversial images using the TAG method. This pattern directly addresses Research Question 2 and clearly shows that hands-on, inquiry-based learning is more effective for lasting understanding than just being passively exposed to information and supports Anstead et al.'s (2025) findings that media literacy programs work better when people actively think about and engage with the real case studies. These teamwork aspects focused on the advanced teaching skills needed for today's media education, going beyond old literacy methods to include the changes that Manovich (2001) and Rivoltella (2020) say are needed in today's media landscape.

But not all gaps were bridged. Despite the overall progress, two domains – [SPONSORED] content recognition and [TRUSTWORTHY] news evaluation – remained particularly challenging. More than half of participants still failed to reach sufficiency in these areas, even after training. While [TRUSTWORTHY] showed significant relative growth, the [SPONSORED] domain lagged behind, with a high percentage of participants experiencing score regression.

A closer look at the course design reveals a likely cause: [SPONSORED] content was the only domain that lacked a dedicated hands-on workshop. Unlike [RELIABLE] and [DECONTEXTUALIZED], which benefited from group-based, inquiry-driven analysis, [SPONSORED] was addressed through brief, passive exposure.

These findings offer a clear answer to Research Question 2: formats that prioritize active, collaborative learning – such as case reconstruction and investigative tasks – lead to more robust and durable competency gains than those relying solely on expository content.

This contrast underscores a crucial pedagogical insight: awareness is not enough. Recognizing the subtle persuasive techniques embedded in native advertising or branded content requires time and reflection. Without these, even well-intentioned training may fall short. For educators to effectively mediate these challenges in the classroom, they must first engage with them in depth – not just encounter them in passing.

The ongoing difficulties in domains such as [SPONSORED] and [TRUSTWORTHY] also highlight a well-documented challenge in prebunking interventions: the phenomenon of informative decay, whereby the cognitive resistance acquired during training tends to weaken over time (van der Linden, 2023).

Like a vaccine without a booster, even well-internalized reasoning strategies can fade if they are not revisited, reinforced, or reactivated through continued engagement. In our study, this effect may partly explain the limited improvement and occasional regression in performance in areas that received only minimal active training.

To counteract this decay, future iterations of the program should include structured booster activities – such as short refresh modules, review-based case studies, or personal reflection assignments – delivered at regular intervals after the main intervention. These low-intensity follow-ups could help reactivate cognitive defenses and support longer-term retention, especially in areas where subtle persuasive strategies – like native advertising – require deeper and repeated analysis. This approach aligns with research emphasizing that sustained professional development must address both technical competencies and the cultural shifts required for effective digital citizenship education (Ranieri et al., 2021; Trust et al., 2022).

Our findings suggest that policy guidelines should promote the use of detailed assessment criteria for evaluating teacher skills instead of just using pass/fail tests. Just as we urge students to explain their reasoning, our findings suggest that evaluating teachers' media literacy must go beyond checklists and embrace interpretive complexity. The fact that giving more importance

to open-ended reasoning (75%) instead of just simple classification accuracy (25%) encourages deeper thinking shows that how we assess students can greatly affect their learning results. This insight helps ongoing conversations about the best ways to measure and improve media literacy skills while also recognizing the creative and interpretive aspects that today's media requires.

Several limitations constrain our conclusions and point toward future research directions. The study sample consisted of Italian teachers who voluntarily participated in the program, potentially introducing selection bias toward higher baseline motivation. A randomized controlled design with a true control group would strengthen causal claims about intervention effectiveness. Long-term follow-up studies are important to see how long the improvements last and to understand how skills might fade over time, especially since there are concerns about how lasting these effects are. Also, breaking down the results by how the program was delivered (completely online or in person) could help us understand how much social interaction, being present, and reflecting at different times contribute to learning outcomes.

Even with these limitations, our study shows strong evidence that improved prebunking methods can effectively fill the gaps in how teachers are prepared for media literacy while also helping them develop the important skills needed for today's digital citizenship education. The success of the intervention in improving both technical skills and critical thinking shows a hopeful way to expand effective media literacy education that understands the complicated nature of today's media environments. As disinformation becomes more advanced and widespread, helping educators improve their skills through research-based teamwork is an important investment in strengthening democracy and developing digital citizenship.

6. CONCLUSIONS

This study demonstrates that remediated prebunking approaches can effectively enhance teachers' media literacy competencies, addressing critical gaps in educator preparation for digital citizenship instruction. The big improvements seen in six areas of skills, especially in visual literacy and source evaluation, show that working together and exploring topics is more effective than just traditional teaching methods.

Three key insights emerge from our findings. First, being able to argue and explain ideas well is often more important than just getting right or wrong answers, which means how we assess students can greatly impact

their learning results. Second, experiential depth produces more durable gains than broad coverage, with hands-on workshops generating the strongest improvements. Third, the dramatic success in developing visual literacy competencies demonstrates that targeted interventions can rapidly address previously intractable skill deficits.

These findings have immediate implications for policy frameworks and teacher training design. Educational programs should prioritize active, collaborative methodologies while incorporating regular reinforcement activities to counter skill decay. As false information becomes more advanced, helping teachers improve their skills using research-based methods is essential for strengthening democracy and teaching responsible online behaviour.

AUTHORS CONTRIBUTIONS

According to CRediT system: Nicola Bruno: Conceptualization, Methodology, Investigation, Project Administration, Supervision, Writing – Original Draft, Writing – Review & Editing; Annamaria De Santis: Methodology, Formal analysis, Data Curation, Visualization; Stefano Moriggi: Conceptualization, Methodology, Investigation, Writing – Review & Editing.

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Social media, power, and control: Addressing digital gender-based violence among adolescents¹

Social media, potere e controllo: affrontare la violenza di genere digitale tra gli adolescenti

BRUNELLA FIORE*, CHIARA BRUTTOMESSO

Università degli studi di Milano Bicocca, Italy

brunella.fiore@unimib.it; c.bruttomesso@campus.unimib.it

* Corresponding author

Abstract. Digital gender-based violence (DGBV) is a pressing issue that disproportionately affects adolescents, particularly young women. This study examines how digital platforms show gender-based violence, exploring adolescents' perceptions, experiences, and coping mechanisms. Drawing on a mixed-methods approach, data were collected from 242 students (94 males and 148 females) aged 16 from upper secondary schools in Italy. Findings reveal that digital violence, including cyberstalking, sextortion, and non-consensual sharing of intimate images, is normalized among adolescents. Boys are more likely to justify or minimize the impact of digital abuse, while girls experience heightened vulnerability and distress. The research also highlights the normalization of controlling behaviors in adolescent relationships, with over 50% of boys and 25% of girls considering phone surveillance by a partner as acceptable. Additionally, perceptions of online abuse differ significantly by gender: while 63.5% of girls equate digital abuse with physical-world violence, only 44.7% of boys share this view. These findings underscore the urgent need for gender-sensitive digital literacy programs in educational institutions. Schools, policymakers, and digital platforms must work together to implement interventions that challenge harmful gender norms, enhance digital safety, and promote respectful online interactions. Addressing DGBV requires a multifaceted approach, integrating education, regulatory policies, and community engagement to foster a safer and more equitable digital environment for adolescents.

Keywords: digital gender violence, social media, cyberstalking, sextortion, digital literacy.

Riassunto. La violenza di genere digitale (Digital Gender-Based Violence, DGBV) è un problema urgente che colpisce in modo sproporzionato gli adolescenti, in particolare le giovani donne. Questo studio analizza come le piattaforme digitali veicolino la

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violenza di genere, esplorando le percezioni, le esperienze e le strategie di coping degli adolescenti. Attraverso un approccio a metodi misti, sono stati raccolti dati da 242 studenti (94 maschi e 148 femmine) di 16 anni, provenienti da scuole secondarie di secondo grado in Italia. I risultati mostrano che la violenza digitale, inclusi il cyberstalking, la sextortion e la condivisione non consensuale di immagini intime, è normalizzata tra gli adolescenti. I ragazzi tendono maggiormente a giustificare o minimizzare l'impatto degli abusi digitali, mentre le ragazze sperimentano livelli più elevati di vulnerabilità e disagio. La ricerca evidenzia inoltre la normalizzazione di comportamenti di controllo nelle relazioni adolescenziali: oltre il 50% dei ragazzi e il 25% delle ragazze considera accettabile il controllo del telefono da parte del/della partner. Le percezioni degli abusi online differiscono significativamente in base al genere: mentre il 63,5% delle ragazze equipara la violenza digitale a quella fisica nel mondo reale, solo il 44,7% dei ragazzi condivide questa opinione. Questi risultati sottolineano l'urgenza di programmi di alfabetizzazione digitale sensibili al genere nelle istituzioni educative. Scuole, decisori politici e piattaforme digitali devono collaborare per implementare interventi che contrastino le norme di genere dannose, rafforzino la sicurezza digitale e promuovano interazioni online rispettose. Affrontare la DGBV richiede un approccio multifattoriale che integri educazione, politiche regolatorie e coinvolgimento della comunità, al fine di favorire un ambiente digitale più sicuro ed equo per gli adolescenti.

Parole chiave: violenza di genere digitale, social media, cyberstalking, sextortion, alfabetizzazione digitale.

1. INTRODUCTION

Digital gender-based violence (DGBV) has become an increasingly salient dimension of adolescent life, shaped by platform architectures that amplify pre-existing gendered inequalities and expose young people to new forms of harm. Historically, GBV has been entrenched in societal norms, perpetuated through stereotypes and discriminatory practices against women. These cultural narratives have evolved over time, but their harmful impacts remain evident, particularly as they find new forms of expression in the digital landscape (Vickery, 2017; DeCook et al., 2022; Dubois & Reepschlager, 2024). In modern society, the digital realm serves as both a mirror and an amplifier of these societal inequities, fostering environments where abuse can occur with alarming ease and reach.

Digital environments, like all aspects of human interaction, are not gender-neutral. Instead, they tend to replicate the existing power dynamics found within society. The World Health Organization (WHO, 2021) reports that nearly 35% of women globally have experienced physical or sexual violence. However, such statistics fail to capture the growing incidence of non-physical abuse, especially in digital spaces. Digital violence includes forms such as cyberstalking, revenge pornography, sextortion, and online harassment, which have become increasingly common (Alonso-Ruido, Sande-Muñoz & Regueiro, 2022). These digital threats often coalesce with traditional forms of abuse, creating a continuum of harm that extends beyond the online sphere and deeply impacts victims' real lives (Narayani, 2024).

Adolescents are particularly vulnerable to such abuse (Mainardi & Voli, 2024). Growing up immersed in technology, their social interactions are frequently mediated through digital platforms. For this genera-

tion, the boundaries between online and offline experiences are increasingly blurred, with virtual interactions exerting significant influence over their social development and mental well-being (Chassiakos & Stager, 2020; Kaarakainen et al., 2024). Adolescence is a critical developmental stage marked by identity formation, emotional exploration, and the establishment of interpersonal relationships. It is also a period of heightened vulnerability to external influences, including manipulation and coercion (Chesters, 2024). Digital platforms, while offering unprecedented opportunities for connectivity and self-expression, simultaneously expose adolescents to risks such as harassment, exploitation, and control (Nyamweza, 2024). Following boyd's notion of networked publics and the insights of digital sociology, we frame adolescents' online engagement as shaped by platform affordances that simultaneously create opportunities for connection and self-expression, while also exposing young people to risks. This ambivalent environment positions social media as both a space of support and a potential arena of harm (Orton-Johnson & Prior, 2013).

Educational institutions are uniquely positioned to recognize the intersection of digital technology and DGBV. Despite the pressing need for intervention, there is a significant gap in resources and strategies tailored to adolescents. Many existing frameworks for addressing DGBV are designed with adults in mind, overlooking the specific needs and experiences of younger populations. This oversight is particularly concerning given the unique ways in which adolescents engage with technology and the distinct vulnerabilities they face. Effective prevention and intervention strategies must account for these nuances, incorporating perspectives from adolescents themselves to ensure relevance and efficacy.

Against this backdrop, the present study adopts an exploratory approach to investigate how adolescents in

two upper secondary schools in Northern Italy perceive and navigate DGBV. The analysis is grounded in the recognition that digital interactions cannot be separated from broader sociocultural dynamics, and that understanding adolescents' interpretations is essential for designing effective interventions.

To clarify the analytical direction of the study while maintaining its exploratory nature, we pose the following guiding research questions:

1. How do adolescents perceive and interpret different forms of digital gender-based violence and their manifestations across online contexts?
2. In what ways do gender differences shape adolescents' attitudes, emotional responses, and experiences related to DGBV?
3. How are controlling digital behaviours – such as monitoring, access demands, or restrictions on online visibility – normalised, justified, or contested within adolescent relationships?

These questions orient the empirical analysis and support a nuanced understanding of how digital violence becomes embedded in adolescents' everyday social and relational practices.

2. ADDRESSING DIGITAL GENDER-BASED VIOLENCE

Digital Gender-Based Violence (DGBV) encompasses a broad spectrum of gendered harms enacted, facilitated, or amplified through digital technologies. Contemporary scholarship defines DGBV as violence rooted in power imbalances and discriminatory gender norms that manifests through behaviours such as cyberstalking, image-based sexual abuse, non-consensual image sharing, online harassment, coerced sexting, doxing, and forms of digitally mediated coercive control (Powell & Henry, 2017; Jane, 2017; Dragiewicz et al., 2018; Flynn & Henry, 2021). International organisations including UN Women and UNESCO similarly emphasise that DGBV extends beyond individual acts to reflect structural inequalities and cultural norms that are reproduced and intensified through digital platforms.

Importantly, DGBV should not be conflated with other online risks such as cyberbullying: while cyberbullying may involve repeated aggression, DGBV is specifically anchored in gendered logics and often targets girls, women, and gender-diverse youth. The distinction between these phenomena helps clarify the unique relational, sexualised, and power-laden dynamics of DGBV. Furthermore, young people encounter digital risks within socio-technical ecosystems shaped by platform affordances, peer culture, and normative expecta-

tions around visibility and intimacy. We need to situate DGBV within the broader landscape of youth digital practices, acknowledging how online environments both expose adolescents to harm and serve as crucial spaces for connection, identity work, and support. By integrating these perspectives, the revised theoretical framework situates DGBV as a multi-layered construct involving technological affordances, gendered socialisation processes, and structural inequalities, therefore aligning the study with current international scholarship and providing a stronger conceptual basis for analysing adolescents' experiences.

While media representations and digital gender-based violence are distinct phenomena, they are connected through the gender norms and symbolic power relations that shape adolescents' interpretations of online behaviour. Media stereotypes contribute to a wider cultural continuum in which femininity and masculinity are differently valued, and this framework influences how young people recognise, justify, or minimise digital harm. Distinguishing these levels of analysis avoids conceptual overlap while clarifying how cultural narratives inform digitally mediated violence.

The role of media in perpetuating harmful gender stereotypes has been extensively documented (Valls, Puigvert, & Duque, 2008; Women U.N. 2015; Abbott, Weckesser, & Egan, 2021; Torp Løkkeberg et al., 2023; Andrade, Sampaio & Donard, 2024). For decades, women have been portrayed through reductive and often objectifying lenses, reinforcing societal expectations of subservience and compliance. These portrayals have shifted over time, but the underlying stereotypes persist, evolving to fit modern narratives. Today, the digital media landscape continues to propagate these stereotypes, albeit in more nuanced forms. Social media platforms play a dual role: they empower women to challenge societal norms but also serve as arenas where misogyny and harassment are rampant (Castells, 2009; 2012; DeCook et al., 2022).

Digital GBV (DGBV) encompasses various forms of abuse, including cyberstalking, non-consensual pornography, and sextortion, which have profound psychological and social impacts on victims. These behaviors often exploit the anonymity, scalability, and permanence of digital platforms, making them particularly difficult to combat (Ybarra, Diener-West & Leaf 2007; Jones, Mitchell & Finkelhor, 2013). The anonymity afforded by online platforms emboldens perpetrators, allowing them to act without fear of immediate repercussions (Powell & Henry, 2017; Sardá et al., 2019). Scalability ensures that abusive content can reach a wide audience within moments, amplifying its impact (Recuero, 2024). Final-

ly, the permanence of digital tracks means that harmful content can persist indefinitely, causing long-term psychological distress for victims. These features make digital violence a formidable challenge to address, necessitating innovative strategies that go beyond traditional approaches to combating DGBV.

2.1. Youths' use of emerging technologies for engaging services

Adolescents often lack the tools to recognize and respond to digital abuse effectively (Patton, 2020; Tinctori, Ciancimino, & Cerbara, 2024). A 2020 report by Save the Children highlights that many young people perceive certain abusive behaviors, such as excessive monitoring or unsolicited messages, as expressions of affection rather than as red flags for coercive control. This misinterpretation underscores the urgent need for education that fosters critical digital literacy and helps young individuals navigate their online interactions safely. Moreover, the normalization of digital abuse in adolescent relationships contributes to its perpetuation, with many victims hesitating to seek help due to fear of judgment or social stigma (Mainardi & Magaraggia, 2024).

Structural inequities further exacerbate the challenges faced by marginalized groups. Women, LGBTQIA+, and those from socioeconomically disadvantaged backgrounds are disproportionately targeted by both traditional and digital forms of abuse. Research by McInroy & Beer (2022) indicates that LGBTQIA+ youth frequently encounter harassment online, but they also use digital platforms as critical spaces for community building and access to mental health resources. This duality highlights the complexity of digital environments, which can simultaneously serve as sources of harm and avenues for empowerment.

Adolescents increasingly turn to digital technologies as a vital part of their social lives, shaping how they interact with peers, access information, and seek support. The last generations have grown up in a hyperconnected world where online and offline experiences are deeply intertwined (Chassiakos & Stager, 2020; Lajnef, 2023). Nearly 95% of youth own a mobile device, with a significant proportion using social media platforms daily to maintain relationships and find resources (Rideout & Robb, 2018; Fitzpatrick, Harvey & Almeida, 2024). This ubiquitous connectivity presents both opportunities and challenges in addressing issues such as DGBV. Adolescents, who are among the most active users of social media, are disproportionately affected, often lacking the tools to navigate these threats effectively.

Educational institutions have a pivotal role in addressing digital GBV by fostering awareness and promoting preventive strategies. Schools can implement gender-sensitive curricula that challenge stereotypes and equip students with critical digital literacy skills. Such initiatives can help young people recognize abusive behaviors, understand the risks associated with sharing personal content, and develop strategies for seeking support. Studies emphasize the importance of a multi-stakeholder approach in tackling digital GBV, involving educators, parents, policymakers, and technology providers (Auriemma et al., 2020; Blatterer, 2022; Scott et al., 2024). Collaborative efforts can create safer digital environments by enhancing platform accountability, promoting community engagement, and integrating digital safety features into app designs (Castells, 2012).

The pervasive use of digital platforms by adolescents provides new avenues for accessing support services, especially in cases where stigma or fear prevents individuals from seeking help through traditional methods. Digital interventions, such as apps or online counseling platforms, have shown potential in reducing barriers to access by offering anonymity and reducing perceived judgment (Storer, Nyerges & Hamby 2022). These tools also allow youth to process sensitive issues, such as intimate partner violence or digital abuse, in environments perceived as more neutral and accessible than physical services (Bailey et al., 2023).

Despite these advancements, gaps remain in understanding the effectiveness of these technologies across diverse youth populations. While digital tools facilitate access to information and support, studies highlight the critical need for education on safe online behaviors and the recognition of abusive patterns (Grignoli, Barba & D'Ambrosio 2022). Young people often struggle to distinguish between care and control in relationships, particularly in digital contexts where constant communication may be normalized. This highlights the importance of integrating digital literacy into educational programs, equipping adolescents with the skills to identify and resist manipulative behaviors online.

3. DATA

3.1. Materials and methods

The study aims to explore how technologies show digital gender-based violence (DGBV) among youth, particularly in educational settings. The research focuses on understanding how media and digital platforms shape perceptions of gender stereotypes and violence. It investigates the impact of digital abuse on adolescents.

The methodology involves quantitative approaches to capture the nuanced experiences of young individuals in a digital context (Leavy, 2022).

Understanding how adolescents relate to digital violence is a complex task for several reasons. On the one hand, it is essential to consider the developmental characteristics of this age group. Adolescents are in a stage of growth characterized by a focus primarily on themselves and their personal experiences. This introspective tendency may lead them to underestimate or overlook the consequences of their actions on others, as well as to develop a limited awareness of risky phenomena that can be difficult to recognize at such a formative age.

On the other hand, digital violence represents a relatively new phenomenon that remains under-researched compared to violence in the physical world. Therefore, gaining insight into how young people perceive and engage with digital violence is crucial for developing effective interventions. Understanding their perspectives can provide valuable insights for educators, psychologists, teachers, social workers, and other support professionals seeking to address and mitigate the impacts of digital violence. For these reasons, this study conducted a quantitative investigation aimed at analyzing adolescents' perceptions of digital violence.

For this study, a self-administered online questionnaire using Google Form was chosen as the research instrument (De Leeuw & Hox 2012; Kostyk et al., 2021). This method allows participants to provide their responses independently, without the presence of an interviewer. The questionnaire consisted of 30 closed-ended questions designed not only to explore how adolescents engage with digital violence but also to examine its various manifestations across different contexts. Additionally, several questions aimed to assess whether adolescents perceive controlling and manipulative behaviors as normal or as expressions of interest. To facilitate questionnaire administration, QR codes were used. Given adolescents' familiarity with smartphones, this approach enabled quick and easy access to the questionnaire, contributing to a high response rate (Sevón et al., 2023). Ensuring the autonomy of responses, emphasizing the credibility of the research institution, and highlighting the role of the researcher are essential aspects of scientific research (Creswell & Creswell, 2017; Leavy, 2022). To enhance transparency, the questionnaire included a link to a document providing a detailed explanation of the study. This document outlined the research objectives, the measures taken to protect privacy and anonymity, and ensured a trustworthy and transparent environment by offering both students and parents clear information about the nature of the questions.

The administration of the questionnaires differed between the two schools involved in the study.

In one of the two school, the initial approach, as decided by the principal, required students to complete the questionnaire at home using their parents' credentials to access the survey. However, this method significantly limited the response rate. This limitation may have been due to the lack of prior presentation of the study to students, which prevented them from feeling actively engaged, as well as potential time constraints on the part of parents in assisting their children with the survey completion. To address this issue, an alternative approach was agreed upon with the principal of the first school. The revised method involved teachers administering the questionnaires during class by providing QR codes only to students whose parents had given consent. This modification led to a substantial increase in response rates.

In the second school, a different level of collaboration was observed. Principal showed immediate interest in the study, recognizing its value not only for academic purposes but also for its relevance as a contemporary social issue. Additionally, some teachers emphasized the importance of introducing the research to students beforehand.

As a result, the questionnaires were administered directly by the lead researcher, in the presence of the teacher supervising the class at that time. This approach allowed students to actively participate in the research, fostering a sense of involvement rather than passive compliance. The researcher's presence facilitated meaningful interactions, enabling students to share their thoughts and perspectives on the topic. Moreover, it allowed for real-time observation of students' engagement with the questionnaire and provided an opportunity to clarify any doubts or questions.

A participative approach that prioritizes student engagement and individual participation can have a positive impact on research outcomes by fostering deeper involvement and higher response rates (Decataldo & Russo, 2022; Sevón et al., 2023).

After selecting the participating schools, the quantitative sample consisted of all students present in the second-year classes, while the qualitative subsample was recruited on a voluntary basis: five female students expressed interest in further discussing their experiences and were therefore invited to take part in semi-structured interviews. The interview guide was structured around key thematic areas emerging from the questionnaire, including adolescents' use of social media, the emotional significance of 'likes,' experiences of online insults, perceptions of intimate image sharing, attitudes

toward partner surveillance, and awareness of different forms of digital violence. Quantitative data were analysed using IBM SPSS Statistics version 29 to compute descriptive statistics and explore gender-based differences, while the qualitative interviews were transcribed verbatim and examined through thematic coding supported by NVivo 14. This integrated analytical strategy allowed for a coherent interpretation of patterns across the two datasets.

Additionally, parental consent was obtained through a digital form created using Google Forms, which was included in the official school circulars. This approach reduced paper waste and minimized the risk of students losing, damaging, or forgetting the consent form before questionnaire administration. Parents received an automatic email confirmation of their submitted consent, ensuring full transparency and documentation of their authorization.

The survey provided a broad overview of adolescents' digital practices, perceptions, and attitudes, while the semi-structured interviews offered contextualised insights that deepened the interpretation of emerging statistical patterns. Rather than functioning as separate strands, the two datasets were intentionally brought into dialogue through a process of conceptual triangulation: qualitative narratives were used to illuminate why certain quantitative trends occurred, how adolescents made sense of digital harms, and which mechanisms contributed to the normalisation of controlling behaviours. The interviews thus served to refine, nuance, and critically situate the survey findings, enhancing the overall interpretive robustness of the study.

3.2. Data and sampling

The target population consisted of 16-year-old students enrolled in the second year of upper secondary school. The research involved a significant sample of 242 students (94 males and 148 females) from the second-year classes of two upper secondary schools in Lombardy Region in Italy in May 2024. The first school is based in Milan city center, the second school is located in the hinterland of Milan within Lombardy regions: both the schools have heterogeneous cultural and socio-economic background within students. To minimize the risk of self-selection bias, a census-based analysis of entire classes was conducted. This approach ensured broader and more representative participation, as all students present in the selected classes were invited to complete the questionnaire, regardless of their prior interest or awareness of the research topic.

3.3. Data collection

Data collection was conducted using a mixed-methods approach (Creswell & Clark, 2017). Researchers utilized an online questionnaire designed to capture the attitudes, behaviors, and experiences of adolescents regarding digital violence and gender stereotypes. The survey was distributed via school networks and took approximately 20-30 minutes to complete. The questionnaire included both closed and open-ended questions to allow for both statistical analysis and qualitative insights.

In addition to the questionnaire, semi-structured interviews were conducted with a smaller subset of participants (5) to delve deeper into their personal experiences with digital violence. The interview guide was developed based on sensitizing concepts derived from the literature on DGBV, focusing on themes such as online harassment, revenge porn, sextortion, and the role of social media in perpetuating or combating stereotypes. Interviews were conducted by trained researchers and were audio-recorded with the consent of participants, ensuring confidentiality. Pre-test was made on a sample of boys and girls in the friend's network of the authors.

4. RESULTS

4.1. Social media use and the perceived importance of 'likes'

Regarding social media usage (e.g., Facebook, Instagram, Twitter), no significant disparities were observed in platform preferences. Both male and female students showed a clear inclination toward Instagram and TikTok, with nearly identical percentages favoring these platforms.

However, notable differences emerged in how young people perceive the importance of 'likes' on their content and their concerns related to them. A defining feature of platforms such as Instagram and TikTok is the presence of 'likes,' which users receive for their posted content. While for some individuals, these interactions may hold little significance, for adolescents, they appear to play a crucial role, particularly for female students.

Figure 1 presents data on the perceived importance of 'likes.' A clear gender-based distinction emerges from the analysis. Boys tend to place less importance on receiving 'likes.' Specifically, 45.7% of male students assigned a score of 1 to the significance of 'likes,' indicating a relatively low perception of them as a measure of success or approval. In contrast, female students displayed a greater sensitivity toward this feature. Only

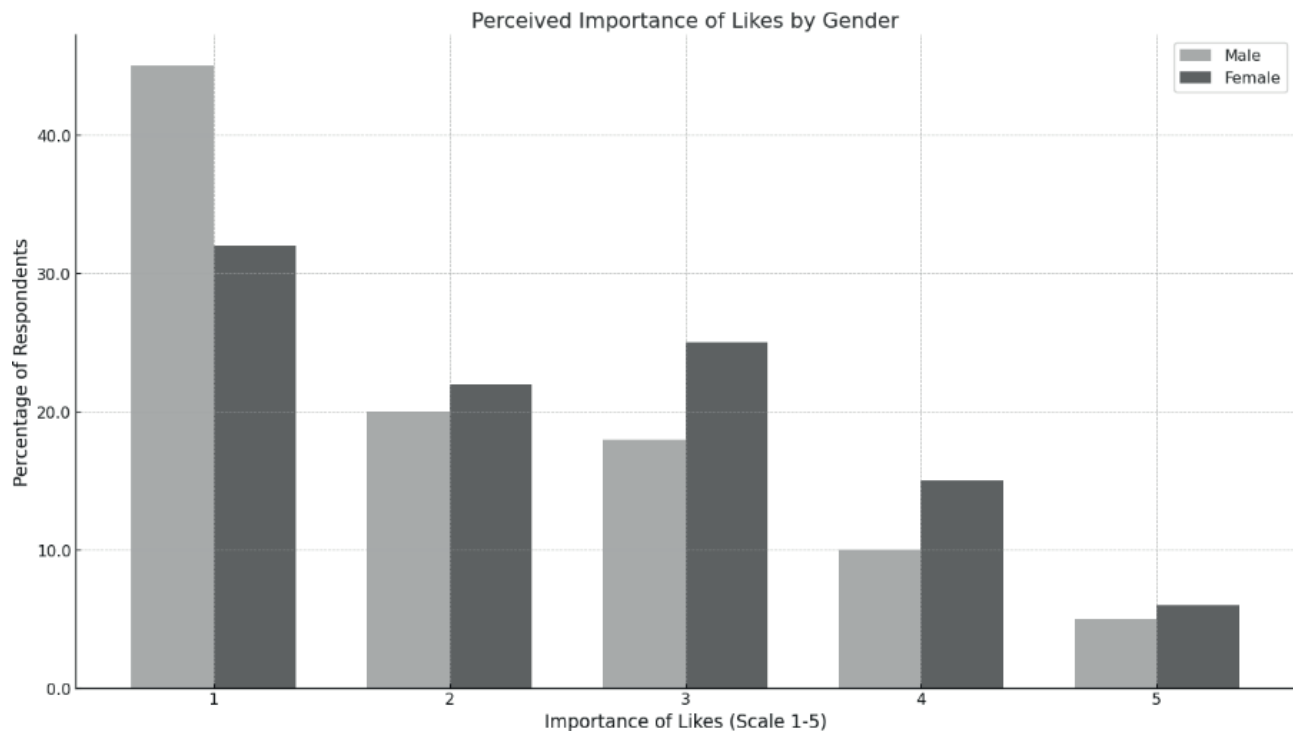


Figure 1. Gender differences in the perception of 'likes'.

30.4% of girls assigned the lowest score (1), suggesting that a larger proportion of them attribute greater value to 'likes' compared to boys.

Additionally, gender differences become evident in the middle-range scores. Among female students, 12.2% assigned a score of 4 to the importance of 'likes,' whereas this percentage drops to 8.5% among male students. These findings suggest that, for a notable portion of female respondents, 'likes' hold a more substantial social and psychological significance.

An analysis of the motivations behind the significance attributed to 'likes' revealed notable gender differences. The question aimed to explore the reasons why young people consider 'likes' highly important, targeting only those respondents who assigned a significant value to them.

The primary reason for valuing 'likes' among female students is an increase in self-esteem, reported by 58.7% of respondents. Similarly, male students also acknowledge this factor, though to a lesser extent, with 40% indicating self-esteem enhancement as their main motivation. This suggests that while external validation is significant for both genders, it appears to have a stronger impact on the self-esteem of female students.

Regarding the influence of others' judgment, 33.7% of female respondents emphasized its importance, high-

lighting the crucial role of peer opinions in shaping their self-perception. In contrast, only 18% of male students reported being significantly affected by others' opinions, suggesting that social judgment plays a less prominent role in their perception of self-worth.

Finally, 25% of female participants stated that receiving 'likes' makes them feel desired, reinforcing the idea that social approval and recognition are key factors for them. Among male students, this motivation was reported by 18%, indicating that while feeling desired is relevant for both groups, it is slightly less pronounced among males.

Overall, these findings suggest that although external validation through 'likes' is important for both genders, its impact on self-esteem, social judgment, and the need for recognition is generally stronger among female students.

As shown in Figure 2, among male respondents, 58.5% reported having no fears and feeling highly confident when sharing content. This suggests a greater sense of ease and self-assurance among boys in their use of social media platforms, possibly linked to a lower concern about external judgment.

In contrast, female respondents expressed significantly higher levels of concern. Only 20.9% of girls reported feeling completely secure when posting con-

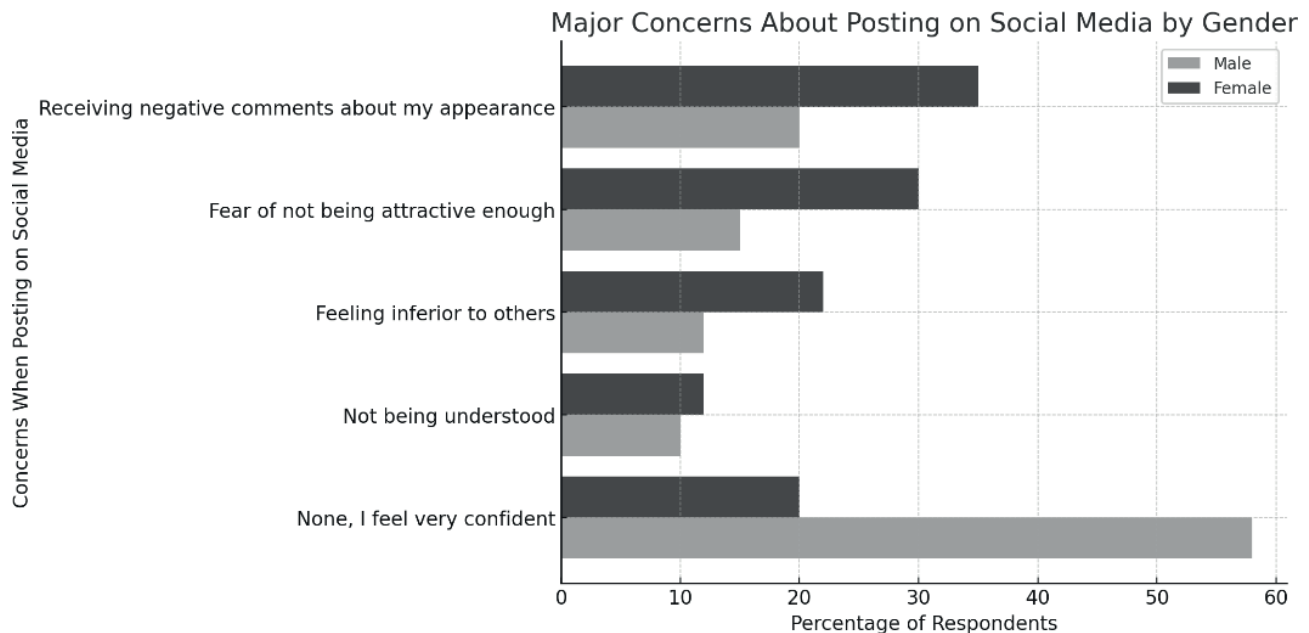


Figure 2. Concerns about posting on social media.

tent, indicating greater vulnerability and anxiety regarding online visibility. Furthermore, girls exhibited specific fears that were less prevalent among boys. Notably, 38.5% of female respondents feared receiving negative comments about their appearance, a concern shared by only 19.1% of boys. Additionally, 31.1% of girls expressed anxiety about feeling inferior to others, compared to 10.6% of boys. Similarly, 30.4% of girls worried about not being attractive enough, whereas this concern was reported by only 11.7% of boys.

These fears reflect not only the social pressures adolescent girls experience but also the crucial role that digital platforms play in their lives. Social media often becomes a battleground for social validation, deeply influencing self-perception and self-esteem. Adolescent girls, in particular, may invest significant emotional energy in conforming to beauty and success ideals promoted by media and peers. This heightened concern over their online image can lead to reduced self-confidence and negatively impact their sense of security and freedom of expression.

4.2. The echo of an offense: How online words become silent poison

A key challenge in the digital sphere is adolescents' understanding of the strong link between the virtual and real worlds. Many young people struggle to recognize how experiences and interactions on social media can

significantly impact their identity and overall well-being. As a result, they may perceive digital insults and aggression as less serious or impactful than those occurring in the physical world. The survey analyzed how adolescents perceive insults on social media, revealing both similarities and significant differences between genders. The percentage of young people who reported experiencing digital insults was similar for both boys and girls, with no major discrepancies between the two groups. However, a substantial difference emerged in their emotional reactions to these insults. The majority of boys (75.7%) reported feeling indifferent when receiving insults, whereas only 24.5% of girls expressed the same reaction. In contrast, girls exhibited stronger emotional responses, with 59.2% reporting sadness and 18.4% experiencing a sense of powerlessness. Regarding offensive behavior directed at others through social media, notable gender differences were also observed. The percentage of boys and girls who admitted to offending someone online varied significantly, suggesting that the nature of offensive behaviors and their perception differ between genders.

To gain further insight, the study explored the emotions felt by those who admitted to offending others online. Among boys, the predominant emotion was satisfaction (38.5%), followed by anger (34.6%), indifference (30.8%), and a feeling of increased strength (28.8%). This latter sentiment was significantly higher than among girls, where only 4.5% reported feeling more powerful after offending someone.

Conversely, among girls, the most common emotional response was feeling provoked (50%), compared to 23.1% of boys who reported the same. Additionally, 31.8% of female respondents reported feeling both satisfied and indifferent, with a lower incidence of anger (22.7%) compared to boys. These differences suggest that adolescent experiences and perceptions of online aggression vary significantly depending on gender.

4.3. Perceptions of the severity of online insults vs. real-world offenses

The analysis of how adolescents perceive the severity of online offenses compared to those in the real world further highlights significant gender differences, warranting a more in-depth examination.

As shown in Figure 3, survey responses indicate a clear gender-based difference in the perception of online offenses. The majority of girls (63.5%) considered social media insults to be just as serious as those occurring in the real world. This suggests that girls tend to perceive digital interactions with the same level of seriousness as face-to-face interactions.

In contrast, only 44.7% of boys shared this opinion, which may indicate a tendency to downplay the severity of online offenses, possibly perceiving them as less harmful than in-person insults. Indeed, 40.4% of boys viewed online offenses as less serious, compared to just 11.5% of girls, suggesting a distorted perception of their impact. Girls appear to have a greater awareness of the potential harm caused by online insults and their impact on emotional well-being.

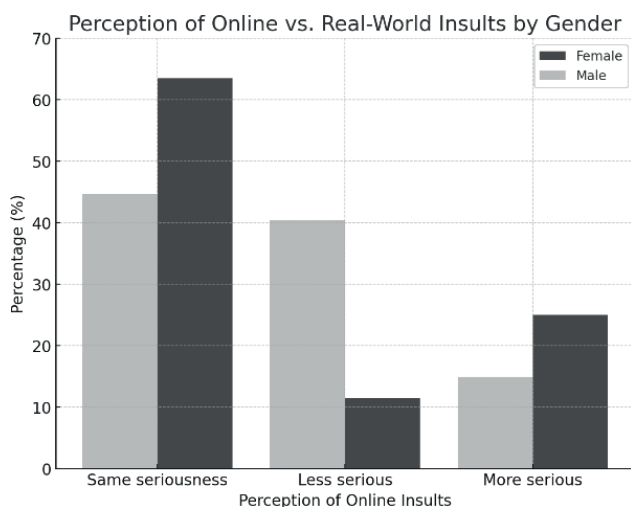


Figure 3. Offenses on social media.

Moreover, 25% of girls considered online offenses to be more severe than real-world insults, compared to 14.9% of boys. This suggests that girls may experience digital aggression more frequently and perceive it as particularly harmful or invasive.

When asked why they perceived online offenses as less severe, the majority of respondents – without significant gender differences – selected the response: «The person may not know their aggressor and therefore remain indifferent.»

However, an interesting trend emerged in the open-ended responses, where participants could freely express their views. One boy's response stood out: «The person is a pussy, so they feel powerful but actually aren't.»

This statement reflects the respondent's perception that an online aggressor is inherently weak, as indicated by the derogatory term 'pussy.' This term carries a negative connotation toward the female anatomy and is often used as an insult toward men, implying cowardice, lack of courage, or low self-esteem. It highlights a deeply ingrained gender bias, reinforcing the stereotype that weakness is associated with femininity. Such findings reveal how gender stereotypes are already internalized during adolescence.

A significant gender divide was also observed in how adolescents respond to offensive online behavior directed at others. The majority of girls (63.5%) stated that they disapproved of such behavior and actively reported it, compared to only 29.8% of boys. Among boys, the most frequent response (40.4%) was: «If they deserved it, I don't think it's wrong.»

This response suggests a concerning trend among male adolescents, indicating a greater tendency to justify or downplay offensive actions, particularly when they perceive the victim as deserving of mistreatment. This attitude may contribute to a minimization of the harmful effects of such behavior, in contrast to their female peers, who exhibit higher sensitivity toward these issues.

A striking difference also emerged in responses related to participation in offensive behavior to feel included in a group: 18.1% of boys reported engaging in such behavior for social acceptance, compared to only 1.4% of girls. This stark contrast suggests that boys may be more likely to adopt aggressive online behaviors as a means of social integration and group identity reinforcement.

4.4. From keyboard to wounds: The impact of digital violence on real life

Social media has made it easier to offend others, and these offenses are often minimized or perceived as less serious than those occurring face-to-face. However,

it is crucial to recognize that digital offenses can be just as harmful – if not more so – than those in the physical world. This is because online aggression can occur with less emotional involvement and greater boldness, as aggressors do not directly face their victims. Addressing online violence is essential, especially given the significant gender differences in exposure to digital risks. One critical aspect to examine is adolescents' perception of which gender is more exposed to digital violence.

The data presents a highly concerning picture. Both male and female respondents acknowledged that women are more vulnerable to online violence, with 60.6% of boys and an even higher 68.9% of girls agreeing with this statement. This suggests that adolescents are aware of the greater risks faced by girls in digital spaces, indicating a shared perception of the gendered nature of online violence. While this awareness is positive in terms of problem recognition, it underscores the urgent need for interventions to prevent and combat such discriminatory and violent behaviors. Furthermore, it highlights the elevated risks girls face in digital environments, emphasizing the necessity of targeted protection and awareness measures.

To further explore online risks, the study examined the practice of sharing intimate images among adolescents, aiming to assess potential gender differences in exposure and consequences. The data indicated a higher prevalence among boys, with 24.5% of male respondents reporting that they had shared intimate images, compared to 16.2% of girls. Participants who had shared intimate images were then asked whether they had feared their images being leaked or if they had actually experienced non-consensual distribution. The data shows that girls exhibited greater concern over privacy risks than boys. 41.9% of girls expressed fear that their images could be shared without consent, compared to 25.9% of boys. However, when looking at actual cases of non-consensual distribution, the numbers were similar: 14.8% of boys and 9.7% of girls reported that their intimate images had been leaked.

Gender differences were also evident in the reasons for sharing intimate content. 48% of girls stated that they shared images to please their partner, compared to only 16% of boys. Regarding sexual gratification, 48% of boys and 36% of girls reported that sharing intimate images contributed to their sexual fulfillment. This indicates a higher perception of sexual gratification among boys compared to girls.

Additionally, 36% of boys reported feeling more confident after sending intimate content, whereas only 16% of girls shared this experience. Conversely, 12% of girls stated that sending intimate images made them feel

more insecure, a sentiment not reported by any male respondents.

These findings highlight significant gender differences in the emotional and psychological consequences of sharing intimate images. Girls appear to experience greater insecurity and feel more pressure to meet their partner's expectations, while boys associate the practice more with self-confidence and sexual satisfaction. To assess adolescents' understanding of digital violence, the survey investigated their awareness of revenge pornography, sexting coercion, cyberstalking, online harassment, upskirting, and doxing. The findings revealed that most students were familiar with revenge pornography, cyberstalking, and online harassment, with similar awareness levels between boys and girls. However, a particularly interesting gender difference emerged in awareness of upskirting. More boys (18.1%) than girls (7.4%) were aware of this form of abuse. This disparity suggests that boys may be more curious about upskirting while simultaneously failing to recognize it 'as a form of sexual harassment.'

4.5. A digital cage: When control is disguised as care

Considering the sensitive nature of adolescence, it is important to understand how young people perceive controlling behaviors in romantic relationships through digital tools. The survey sought to analyze how adolescents interpret these behaviors and whether they perceive them as signs of interest or affection (Jamieson 2013; Pérez-Marco et al., 2020). Respondents were asked whether they considered it normal for a partner to request access to their phone or to forbid them from posting pictures online.

The results revealed a significant gender gap. 53.2% of boys considered phone-checking by a partner as normal. Given that 94 male students participated in the survey, this means that more than half (50 boys) accepted phone surveillance as a standard practice in relationships. The percentage of girls who found this practice normal is about 25%. With 148 female respondents, this indicates that 37 girls accepted phone-checking as a normal behavior.

This gender difference suggests that boys are more likely to accept or request this behavior compared to girls, potentially reflecting perceived power dynamics in adolescent relationships. A high percentage of boys viewing phone surveillance as acceptable could indicate a normalization of controlling behaviors, which may be mistaken for acts of care or protection. However, such behaviors are often symptomatic of unhealthy and potentially abusive relationships.

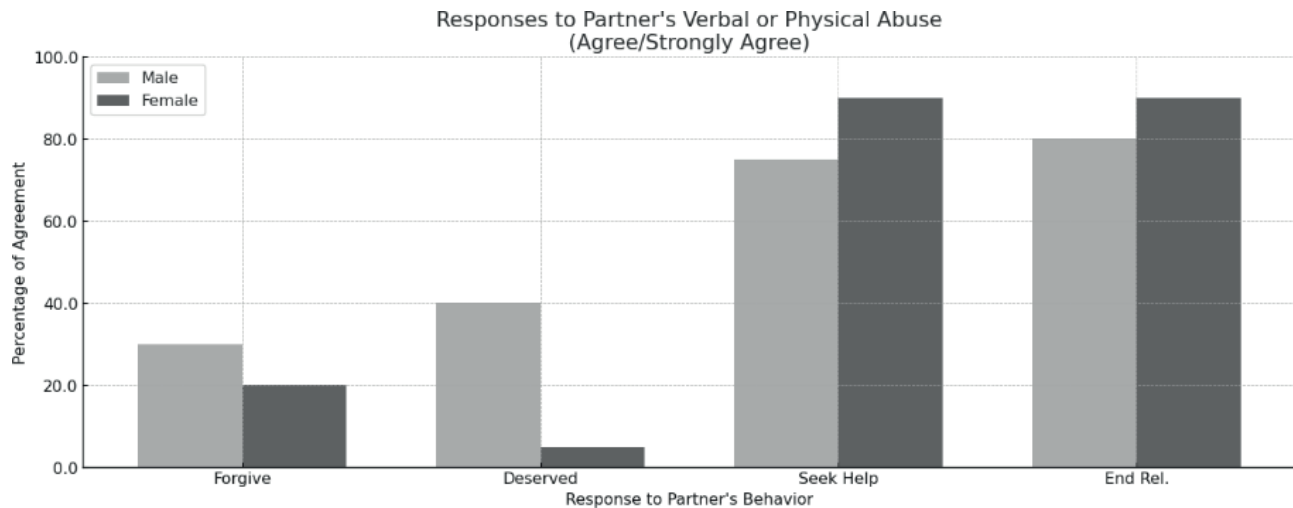


Figure 4. Offenses on social media.

Girls' responses, while lower than boys', still indicate a social or relational pressure leading them to accept these behaviors.

As shown in Figure 4, the survey also examined responses to the question 'If my partner forbids me from posting a picture online.' The results further demonstrated differences in attitudes toward control in relationships:

- 66.9% of girls and 42.6% of boys rejected the prohibition, considering it a violation of their personal freedom.
- 34% of boys, however, stated that they would accept the restriction out of respect for their partner, suggesting that some interpret control as a form of care rather than a violation of rights.
- Only 12.8% of girls shared this perspective, indicating that most female respondents did not view control as a sign of respect.

Moreover, 4.7% of girls and 11.7% of boys stated that they would accept the restriction because they themselves impose similar rules on their partner. This response reflects a reciprocity in control, further reinforcing the normalization of such behaviors in adolescent relationships.

These findings reveal important gender differences in how control is perceived and accepted. While a majority of adolescents reject controlling behaviors, a substantial portion normalizes them, interpreting them as signs of love and commitment.

During the survey, an interesting reflection emerged from a male student regarding relationship control through digital tools. The student observed that many couples he knew used the application 'Life 360' to track

each other's locations in real time. When asked about the reasons for this habit, the student explained: «People use it to make sure there are no betrayals. But in my opinion, that's not a sign of love; it's a sign of a lack of trust. Loving someone means trusting them, not monitoring them.»

He further added: «For me, this isn't normal, but now it's something that happens a lot... umh... they're happy with it. It would have been useful to include a question about this, because that app is really widespread.

This reflection highlights two key points:

1. Some adolescents perceive controlling behaviors as normal and associate them with care and love.
2. Others recognize these behaviors as abusive and indicative of mistrust, rather than genuine affection.

Hearing a 16-year-old express such a mature perspective demonstrates a sincere interest in understanding the normalization of digital control in relationships. It also emphasizes the importance of educating young people on healthy relationship dynamics and the difference between protection and control (Storer, Nyerges & Hamby, 2022).

These findings underscore the need for comprehensive education on digital violence, healthy relationships, and gender dynamics to prevent harmful behaviors from becoming normalized in adolescent interactions.

The descriptive operationalisation of DGBV developed in this study can be understood as an initial 'attribute space' that organises the key dimensions through which adolescents encounter and interpret digital violence. This framework – encompassing forms of aggression (e.g., harassment, coercive control, image-based abuse), relational contexts (peer, romantic, group

dynamics), and gendered patterns of emotional response – provides a structured lens for future mixed-methods research. While the present study employed the attribute space primarily for descriptive and exploratory purposes, it offers a conceptual foundation for more formalised integration strategies, such as mapping qualitative themes onto quantitative indicators or developing typologies of adolescent digital experiences. In this sense, the attribute space serves not only as an analytical tool for the current study, but also as a scaffold for future investigations aiming to compare, extend, or deepen the understanding of DGBV across contexts.

5. DISCUSSION

The findings of this study highlight the urgent need to address DGBV as an integral part of adolescent education and intervention strategies. With the increasing integration of technology into daily life, digital spaces have become arenas where traditional gender-based violence extends into new and often more pervasive forms (Powell & Henry, 2017). The results indicate that girls are disproportionately affected by digital abuse, including cyberstalking, sextortion, and non-consensual sharing of intimate images (Alonso-Ruido, Sande-Muñiz, & Regueiro, 2022). Boys, while also experiencing digital violence, tend to normalize and justify certain behaviors, reflecting entrenched gender norms (Sundaram, 2013).

A key observation from this research is the normalization of controlling behaviors in adolescent relationships, often perceived as signs of care rather than coercion. The findings indicate that over 50% of boys and 25% of girls consider it acceptable for a partner to check their phone or restrict their social media activity. This suggests a pressing need for educational interventions that challenge such attitudes and emphasize healthy, respectful relationships. Without targeted awareness campaigns and preventive measures, these controlling behaviors may escalate into more severe forms of abuse in adulthood (Tintori, Ciancimino, & Cerbara, 2024).

One of the most concerning trends emerging from the data is the perception of online harassment as less severe than real-world aggression, particularly among boys. While 63.5% of girls equate digital abuse with physical-world violence, only 44.7% of boys share this view. This disparity in perception highlights a gap in digital literacy and awareness that needs to be bridged through comprehensive education on the impact of online abuse. The anonymity, scalability, and permanence of digital interactions make online harassment particularly insidious, requiring innovative strategies to combat it effectively (Recuero, 2024).

The integration of quantitative and qualitative data provides a more nuanced understanding of how adolescents perceive and navigate digital gender-based violence. Survey results highlighted marked gender differences in the emotional and behavioural responses to online aggression – girls reporting higher levels of sadness, anxiety, and fear of exposure, while boys displayed greater indifference and a tendency to justify harmful behaviours. The qualitative interviews helped contextualise these patterns by revealing the interpretative frameworks adolescents use to make sense of digital interactions. For instance, girls described feeling vulnerable to online judgement and reputation damage, which resonated with the survey finding that they place greater emotional weight on social media validation. Conversely, boys frequently framed offensive online behaviour as ‘banter’ or a normative part of peer culture, aligning with quantitative data showing their reduced perception of harm.

Qualitative narratives also shed light on the normalisation of controlling behaviours. While over half of the boys in the survey considered partner phone-checking acceptable, interviews revealed that some boys (by the point of view of girls) interpreted surveillance as a sign of loyalty or a way to maintain relational certainty. At the same time, a minority articulated critical perspectives, recognising such practices as rooted in mistrust – thus qualifying the broader statistical trend. These integrative insights underscore the value of a mixed-methods approach, allowing the study to capture not only behavioural prevalence but also the meanings adolescents attach to digital practices.

The influence of social media in shaping adolescent self-perception and gender identity is another critical aspect that emerged from the study. Female participants reported higher levels of concern regarding their online image, with many associating social media validation (e.g., ‘likes’) with self-worth. This reliance on external validation contributes to increased vulnerability to online abuse, cyberbullying, and manipulation. Programs promoting digital resilience and self-esteem must be incorporated into school curricula to help young people navigate online spaces safely (Rideout & Robb, 2018; Perry et al., 2023).

The role of educational institutions in combating digital gender violence cannot be overstated. Schools serve as essential platforms for fostering digital literacy and gender-sensitive education. The implementation of structured programs that address digital consent, healthy relationships, and the ethical use of technology is imperative. Equipping educators with the tools to recognize and address digital abuse will further strengthen the protective environment necessary for adolescent development.

Recent evidence highlights the importance of grounding school-based prevention efforts in established educational models. Approaches inspired by programmes such as Lights4Violence and the EU Kids Online framework demonstrate how structured activities can help adolescents recognise digital consent, identify controlling or abusive behaviours, and strengthen bystander intervention. Within this perspective, gender-sensitive digital literacy becomes central: curricula should address platform affordances, privacy governance, and the power dynamics embedded in everyday online interactions, offering students concrete tools to navigate digital environments in safer and more autonomous ways.

Additionally, policymakers and social media platforms must collaborate to create safer digital environments. Regulatory measures that enhance privacy protections, improve reporting mechanisms, and hold perpetrators accountable are crucial in mitigating the spread of digital gender violence. Encouraging platforms to integrate AI-driven content moderation and user-controlled safety settings can empower adolescents to protect themselves from digital abuse.

Parental involvement is also a critical component in addressing DGBV. Educating parents on digital safety, open communication strategies, and the risks associated with online interactions can provide adolescents with a supportive network for navigating digital challenges. A balanced approach that fosters autonomy while ensuring guidance is essential in creating a safer digital landscape for young people.

In conclusion, addressing digital gender-based violence requires a multifaceted approach involving education, policy, technological innovation, and community engagement. By implementing targeted interventions, fostering digital literacy, and challenging harmful gender norms, we can create a safer and more equitable digital environment for adolescents. This research underscores the importance of proactive measures to prevent digital abuse and promote a culture of respect and empowerment in online and offline spaces.

6. LIMITS AND CONTRIBUTION'S POINTS OF STRENGTH

This study provides insights into the normalization of digital gender-based violence (DGBV) among adolescents, highlighting the ways in which young people perceive and experience online abuse. By employing a mixed-methods approach, it was possible to capture both quantitative trends and qualitative reflections, offering a comprehensive understanding of the issue. The find-

ings contribute to ongoing discussions on gender norms, online safety, and digital literacy, emphasizing the urgent need for targeted educational interventions. The study also sheds light on controlling behaviors in adolescent relationships, revealing how digital tools can be misused to exert power and surveillance, often under the guise of care and affection.

However, despite these contributions, the study has certain limitations that should be acknowledged. First, the research is based on a sample of 242 students from two upper secondary schools in Lombardy, Italy. While this allows for an in-depth examination of adolescent experiences within a specific educational and cultural context, it may limit the generalizability of the findings to broader populations. Future studies could expand the sample to include a wider geographic range, incorporating data from multiple regions or even cross-national comparisons to better understand how digital gender-based violence manifests across different socio-cultural environments.

Another limitation is the cross-sectional nature of the study. The research captures adolescent perceptions at a single point in time, providing valuable but static insights into their understanding of digital violence. However, attitudes, behaviors, and coping mechanisms evolve over time, particularly as young people gain more awareness, digital literacy, and personal experiences. A longitudinal study would be beneficial in tracking how perceptions of digital abuse change with age and whether interventions – such as educational programs – have a lasting impact on reducing harmful behaviors.

Additionally, while the study effectively highlights the gendered dynamics of digital violence – particularly how boys are more likely to justify or minimize digital abuse while girls experience greater emotional distress – there remains an opportunity for further exploration. The experiences of LGBTQ+ youth and male victims of online abuse were not explicitly addressed, despite evidence suggesting that these groups face unique risks in digital spaces. Future research should incorporate a more intersectional approach, examining how sexual orientation, gender identity, and other social factors influence experiences of digital violence.

The study also presents policy recommendations, advocating for digital literacy programs, awareness campaigns, and intervention strategies in schools. However, further discussion is needed regarding the practical challenges of implementing such measures. Schools may face resource constraints, lack of teacher training, or resistance from students and parents. Examining successful case studies from other educational systems could provide actionable insights on how to effective-

ly integrate digital violence prevention programs into school curricula.

Finally, ethical considerations played a key role in this research. While parental consent was required, we observed variations in response rates between the two schools, partly due to differences in administrative procedures and parental involvement. This may have introduced selection bias, potentially underrepresenting students who experience higher levels of parental control or digital surveillance at home. Furthermore, given the sensitive nature of digital violence, future research should explore additional ways to ensure emotional support for participants who may recognize their own experiences in the study's themes.

Despite these limitations, this study makes a meaningful contribution to understanding digital gender-based violence among adolescents, offering new evidence on how gender norms influence online interactions. The findings emphasize the urgent need for interventions in schools, stronger digital safety policies, and increased awareness among young people, educators, and policymakers. By addressing the identified gaps, future research can build upon these insights to further develop effective prevention strategies and promote a safer, more equitable digital environment for all adolescents.

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Rappresentazioni sociali della disabilità nei videogiochi: stereotipi, narrazioni e analisi critica

Social representations of disability in video games: stereotypes, narratives, and critical analysis¹

CLAUDIA LAFRANCONI*, CRISTINA GAGGIOLI

Università per Stranieri di Perugia, Italia

claudia.lafranconi@unistrapg.it; cristina.gaggioli@unistrapg.it

*Corresponding author

Abstract. This paper critically examines the ways in which disability is portrayed in video games, exploring representational patterns, recurring stereotypes, and narrative devices that contribute to the social construction of meaning. In the first section, the analysis discusses the literature on the concepts of stereotype, representation, and identification processes, placing them within the paradigm of media education and special pedagogy, with particular attention to educational implications and models of cultural accessibility. Subsequently, two analytical frameworks are presented, aimed at systematically exploring the interaction between the modes of representation of disability and the playful, aesthetic, and narrative structures specific to video game environments. Finally, the application of the frameworks to a selection of video game titles highlights the forms of social representation that emerge, highlighting both the inclusive potential and the stigmatizing tendencies that can influence players' processes of perception, interpretation, and participation.

Keywords: disability, media education, representations, stereotype, videogames.

Riassunto. Il contributo esamina criticamente le forme attraverso cui la disabilità viene configurata nei videogiochi, approfondendo schemi rappresentazionali, stereotipi ricorrenti e dispositivi narrativi che concorrono alla costruzione sociale dei significati. Nella prima sezione, l'analisi discute la letteratura sui concetti di stereotipo, rappresentazione e processi di identificazione, collocandoli all'interno del paradigma della media education e della pedagogia speciale, con particolare attenzione alle implicazioni educative e ai modelli di accessibilità culturale. Successivamente, vengono presentati due framework analitici finalizzati a esplorare in modo sistematico l'interazione tra le modalità di rappresentazione della disabilità e le strutture ludiche, estetiche e narrative proprie degli ambienti videoludici. Nella parte conclusiva, l'applicazione dei framework

¹ Il presente lavoro è stato concepito e sviluppato congiuntamente dalle autrici; si segnala, tuttavia, che i paragrafi 2 e 3 possono essere attribuiti a Claudia Lafranconi, mentre i paragrafi 1 e 4 e la revisione scientifica del contributo sono a cura di Cristina Gaggioli.

a una selezione di titoli videoludici consente di evidenziare le forme di rappresentazione sociale che emergono, mettendo in luce sia le potenzialità inclusive sia le derive stigmatizzanti che possono orientare i processi di percezione, interpretazione e partecipazione dei giocatori.

Parole chiave: disabilità, media education, rappresentazioni, stereotipi, videogiochi.

1. RAPPRESENTAZIONI SOCIALI E DISABILITÀ: UN QUADRO TEORICO

Le rappresentazioni sociali costituiscono sistemi collettivi di significati attraverso i quali le società interpretano e organizzano la realtà. Esse non si riducono a semplici opinioni individuali, ma configurano veri e propri dispositivi simbolici e normativi che orientano la percezione di ciò che è ritenuto normale o deviante, accettabile o marginale (Moscovici, 2021). Insieme ad altri criteri di differenziazione sociale quali la nazionalità, l'appartenenza religiosa, l'orientamento sessuale o le condotte sociali, la disabilità è una di quelle realtà attorno a cui si producono processi di stigmatizzazione (Goffman, 1968). Essa si configura come esito delle rappresentazioni sociali che, attraverso codici simbolici e culturali condivisi, attribuiscono alla differenza corporea o cognitiva un valore socialmente determinato, dal quale può derivare, in modo variabile, una forma di stigma capace di orientare i processi di riconoscimento e partecipazione. Il tipo di rappresentazione sociale costruita intorno al concetto di disabilità, attribuisce inevitabilmente a tutti i soggetti che vivono quella condizione una posizione simbolica nel sistema sociale, stabilendo confini identitari e generando processi di inclusione o esclusione (Straniero, 2025). Le rappresentazioni sociali della disabilità, dunque, influenzano atteggiamenti, pratiche educative e relazioni interpersonali, producendo nel tempo narrazioni che possono consolidare lo stigma o, al contrario, favorire processi di riconoscimento e di emancipazione.

Nel corso dei secoli, la rappresentazione della disabilità ha assunto forme e significati profondamente differenti, oscillando tra la stigmatizzazione e la spettacolarizzazione (Schianchi, 2025). Fin dall'antichità, nelle civiltà egizia e greco-romana e nei testi biblici, le persone con disabilità sono state oggetto di narrazioni che ne evidenziavano la diversità come segno di inferiorità, colpa o mostruosità, inscrivendo il "corpo disabile" entro un sistema simbolico che ne faceva il riflesso di una condizione morale o spirituale negativa. Lo stigma, tuttavia, non appartiene alla persona, ma è una costruzione sociale che prende forma attraverso dinamiche culturali e collettive (Goffman, 1968). Per molti secoli, in assenza di un sapere scientifico diffuso, le credenze popolari hanno alimentato concezioni deformanti della disabi-

lità, che trovavano espressione tanto nella marginalizzazione quanto nella spettacolarizzazione del "mostro" o del "diverso". Soltanto nel XIX secolo, con l'affermarsi di un approccio scientifico e la progressiva distinzione tra disabilità, malattia e disagio psichico, si avvia un mutamento di prospettiva: la disabilità comincia a essere interpretata entro i saperi medici, pedagogici e sociali come condizione umana e non più come anomalia morale o prodigio naturale, aprendo così la strada alla visione contemporanea fondata sui diritti e sull'inclusione (Schianchi, 2025).

In epoca contemporanea, le rappresentazioni della disabilità si sono estese anche al linguaggio mediale, che non si limita a mostrare la disabilità presente nel mondo, ma contribuisce a costruirne socialmente il significato, configurandola come fenomeno culturale. Il cinema, ad esempio, attraverso tipizzazioni ricorrenti, ha contribuito a collocare la persona con disabilità entro categorie stereotipate, dall'essere sinistro e malvagio al soggetto passivo e dipendente, fino alla figura eroica del *supercrip*, alimentando retoriche di pietà, compassione o eccezionalità (Bocci, 2025). Queste rappresentazioni, pur diversificate, tendono a rinforzare l'idea di una norma da cui la disabilità si discosta, agendo come dispositivi simbolici che regolano la percezione sociale della differenza e contribuiscono alla costruzione dello stigma.

Allo stesso modo, anche i videogiochi, oggi diffusi trasversalmente per sesso, ceto sociale e fasce d'età (Entertainment Software Association, 2025), veicolano stereotipi (Ranieri & Gaggioli, 2020) contribuendo, a loro volta, a diffondere immagini e significati sulla disabilità, che rendono indispensabile lo sviluppo di una consapevolezza e di una competenza digitale capaci di orientare una fruizione critica e inclusiva. Uno studio (Caselli, Nardone e Soriani, 2022) sottolinea come le rappresentazioni della disabilità nei videogiochi restino marginali e spesso stereotipate, con personaggi secondari o non giocabili e protagonisti la cui condizione viene neutralizzata o trasformata in elemento puramente estetico o potenziamento straordinario. La disabilità fisica risulta essere più frequente di quella cognitiva o psichica, e si osservano tipologie ricorrenti: il *paziente*, isolato e passivo nella narrazione; il *reduce*, la cui disabilità influisce temporaneamente sul gameplay; il *bersaglio*, che subisce limitazioni funzionali come ostacolo al gio-

catore; il *villain*, la cui disabilità accentua la pericolosità o malvagità; e il *cyborg*, (assimilabile al *supercrip*) che trasforma la disabilità in potenziamento straordinario, ampliando le capacità del personaggio.

Anche i videogiochi, infatti, in quanto artefatti culturali (Buckingham & Burn, 2007) richiedono un approccio critico che consideri la rappresentazione della realtà sociale, la combinazione dei linguaggi mediali e le modalità di produzione e commercializzazione. La *game literacy* implica la capacità di analizzare e valutare i giochi, sviluppando un metalinguaggio per descriverne forme, strutture e regole, nonché una comprensione dei contesti sociali, economici e istituzionali che influenzano esperienze, identità e pratiche dei giocatori (Gee, 2013; Felini, 2012). L'analisi critica deve inoltre considerare l'esperienza ludica emergente dall'interazione tra gioco e giocatore, con particolare attenzione al *gameplay*, ossia l'insieme di regole e meccaniche che rendono possibile l'esperienza di gioco (Ranieri, Fabbro & Nardi, 2019).

La rappresentazione della disabilità nei media può essere quindi intesa come l'insieme di immagini, narrazioni, ruoli e stereotipi attraverso i quali film, televisione, videogiochi e altri media contribuiscono a costruire socialmente il significato della disabilità. Tali rappresentazioni non sono meri riflessi della realtà, ma processi attivi di costruzione culturale che influenzano la percezione pubblica della diversità a carico di funzioni e/o strutture corporee. Esse possono consolidare stigma ed esclusione, rinforzando visioni limitanti della disabilità, oppure aprire spazi di riconoscimento e inclusione, promuovendo una comprensione più complessa e sfumata delle esperienze delle persone con disabilità. In questo senso, l'analisi delle rappresentazioni mediatiche risulta fondamentale per comprendere i modi in cui la società interpreta, accetta o marginalizza la disabilità, offrendo strumenti critici per decodificare schemi e stereotipi diffusi.

Scopo di questo lavoro è analizzare come le rappresentazioni sociali della disabilità vengano costruite e veicolate nei videogiochi, evidenziando schemi, stereotipi e possibili strumenti di lettura critica.

2. DISABILITÀ: RAPPRESENTAZIONI E STEREOTIPI NEI VIDEOGIOCHI

Il rapporto tra disabilità e videogiochi² apre riflessioni e sfide da differenti punti di vista, data la forte componente socioculturale insita nel medium stesso. Le

discussioni che ne emergono offrono un terreno fertile per indagare “sul tema centrale delle rappresentazioni, delle presenze e delle assenze narrative in un media contemporaneo e trasversale a diverse generazioni” (Caselli et al., 2022, p. 27).

Il valore delle rappresentazioni, intese come insieme di immagini, narrazioni e stereotipi legati al mondo della disabilità, diventa una componente fondamentale quando il videogioco viene utilizzato in contesti di *ludus* in cui è possibile veicolare significati in modo involontario, quando il giocatore è meno vigile, completamente immerso nel *flow* dell'attività ludica (Csikszentmihalyi, 1990).

Il gioco porta inevitabilmente con sé dei significati, che si esplicano nelle rappresentazioni, interiorizzate, più o meno inconsciamente dal giocatore. La relazione tra giochi e rappresentazioni si esplica verso due direttrici: i giochi possono rappresentare (*games can represent*), perché raffigurano personaggi, storie, realtà, ambienti e comportamenti che acquisiscono significato proprio perché interni alla realtà di gioco; i giochi sono rappresentazioni (*games are representation*), quando le singole parti diventano il *tutto ludico*, un sistema di rappresentazioni completo e in continua dialettica tra le parti (Zimmerman & Salen, 2003). Da questa dialettica emerge che, anche una sola cattiva rappresentazione, all'interno del mondo del gioco ha la possibilità di produrre stigmatizzazioni negative, soprattutto perché nella resa di un videogioco, si cerca sempre di proporre un pluralismo, non una promozione della diversità nei mondi creati (To et al., 2018). Inoltre, la rappresentazione della diversità nei videogiochi si è soffermata principalmente su un numero minore di categorie sociali, come nazionalità e genere, tralasciando realtà quali l'orientamento sessuale e la neurodiversità anche in videogiochi maggiormente inclusivi. Ad oggi, quando si parla di *diverse games*, si intende categorizzare quei giochi definiti come maggiormente inclusivi e la letteratura vi inserisce principalmente videogiochi in cui sono presenti realtà marginalizzate, come le rappresentazioni del genere (Hawreliak & Lemieux, 2020; Shell, 2021), delle nazionalità e delle etnie (Hutchinson, 2017; Shell, 2021). Una minore attenzione è stata invece prestata all'area delle rappresentazioni dei personaggi con disabilità (Caselli et al. 2022).

Le rappresentazioni non sono però solamente interne al mondo del videogioco, ma instaurano una stretta dialettica anche con il mondo reale, in quanto creano possibilità di identificazione, facilitano la formazione di gruppi sociali e promuovono lo scambio interculturale. È cruciale quindi veicolare significati positivi attraverso la creazione di personaggi realistici ed inclusivi, al fine di prevenire la produzione di stigmatizzazioni negative nella società.

² Ai fini della presente trattazione, il termine *videogioco*, verrà utilizzato riferendosi a tutti i prodotti ludici digitali, siano essi fruibili sul computer, su console e su altri strumenti digitali.

Assumendo il paradigma dei *Disability Studies*, fondato su un approccio critico e interdisciplinare alla disabilità e volto a superare la prospettiva medico-individuale in favore di una valorizzazione della dimensione sociale, culturale e politica (Gibbons, 2015), la disabilità viene interpretata attraverso il modello sociale. Quest'ultimo distingue due dimensioni concettuali fondamentali: l'*impairment*, inteso come condizione corporea o funzionale dell'individuo, che può incidere sul suo vissuto ma può essere percepita anche in termini neutri o positivi; e la *disability*, concepita come esperienza di marginalizzazione generata dalle barriere fisiche, culturali e simboliche prodotte dal contesto sociale. In questa prospettiva, la società tende a non riconoscere le differenze e le variazioni nelle abilità come espressioni della diversità umana, ma piuttosto ad accentuare la dimensione della "non-abilità", riproducendo così forme di esclusione e disuguaglianza (Shakespeare, 2006; Pfeiffer, 2002). L'assunzione del modello sociale della disabilità favorisce una rappresentazione positiva e inclusiva della persona, valorizzandone la partecipazione attiva alla vita comunitaria. In opposizione alla prospettiva medico-individuale, che accentua la dimensione dell'alterità e rischia di alimentare processi di esclusione e svalutazione, il modello sociale orienta verso un riconoscimento pieno della diversità come risorsa (Goering, 2015).

I media hanno spesso mostrato *cliché* nei confronti delle disabilità, rappresentandola come uno stato assoluto di alterità, che si oppone a un corpo standard e normativo (Snyder et al., 2002), in una persistente opposizione tra ciò che è considerato "abile" e ciò che non lo è, favorendone la stigmatizzazione. Per questo motivo, i protagonisti di numerosi videogiochi *mainstream* si pongono in contrasto con questa alterità e vengono rappresentati spesso come maschi, bianchi, di nazionalità occidentale e con una sessualità coincidente con l'eteronormatività. La loro rappresentazione funge da esempio di "normalità" e abilità, spesso incarnando strutture corporee non reali che vengono erroneamente a definirsi come standard (Burgess et al., 2007; Shell, 2021).

La nascita di stereotipi sorge da una sorta di esigenza economica di categorizzazione, atta a favorire una semplificazione di una realtà particolarmente complessa (Fratini, 2016), come meccanismo di difesa. Gli stereotipi hanno spesso natura mista, possono infatti sia rappresentare positivizzazioni della realtà che forti negativizzazioni (Rohmer & Louvet, 2012). Questa natura ambivalente degli stereotipi è frutto della commistione tra norme sociali e realtà. La persona con disabilità, spesso, viene percepita in maniera negativa, è reputata debole, sofferente, non intelligente, provocando così un meccanismo di esclusione sociale (Ciccanti, 2008). Quando l'evitamen-

to non è possibile, emerge il pietismo, che si esplica, nel medium videoludico, con esplicite meccaniche di gioco. Queste tendono a veicolare immagini distorte delle persone con disabilità che risultano spesso marginalizzate e relegate nella forma di metafore o come oggetti di scena narrativi, per aggiungere curiosità alla vicenda. Quando, seppur raramente, le persone con disabilità compaiono nella narrazione come personaggi principali, esse risultano comunque inserite all'interno di schemi fortemente stereotipati. La condizione di disabilità viene spesso "superata" attraverso processi di normalizzazione, rappresentati, ad esempio, dall'acquisizione di super-abilità o poteri straordinari. In altri casi, una disabilità fisica visibile o un disturbo psichico, come schizofrenia o psicosi, diventa elemento narrativo che trasforma il personaggio in antagonista (*villain*), la cui diversità è enfatizzata da tratti sinistri o malvagi, in opposizione al protagonista che incarna la "normalità", la forza e il valore morale. Quando invece i poteri straordinari sono rappresentati positivamente, la persona con disabilità assume il ruolo di aiutante, ma sempre in forme stereotipate (ad esempio, la persona non vedente che agisce come oracolo). Infine, nei casi in cui non rivesta un ruolo centrale, la disabilità viene utilizzata come espediente narrativo per suscitare pathos, enfatizzando fragilità e dipendenza e riducendo il personaggio alla sola dimensione della sua condizione (Barnes, 1992; Bennett et al., 2021).

La scarsa presenza di personaggi con disabilità è sottolineata da Shell (2021) attraverso una analisi di 108 videogiochi, prodotti dal 2010 al 2016. Lo studioso ha dimostrato come il 18.52% di questi (20 videogiochi) presentava un personaggio con disabilità. Tra questi, 15 erano personaggi principali e 10 giocabili; a loro volta, il 75% ritraeva personaggi primari o secondari. Nella maggior parte dei casi è stata dimostrata la loro presenza come protagonisti ed è stato sottolineato come, anche in questi casi, la presenza della disabilità implicasse un accrescimento dei poteri, per superare le barriere imposte da essa. All'interno della ricerca si è inoltre sottolineata fortemente questa mancanza di rappresentazioni veritiere in grado di influire sul rafforzamento di quelle che sono le barriere sociali che impediscano una partecipazione alla vita attiva.

L'abbattimento di barriere stereotipate può avvenire tramite la creazione di *avatar* atti a rappresentare il giocatore in un ambiente digitale, in grado di migliorare l'esperienza di gioco (Nowak & Fox, 2018). Spesso però, vi è una totale mancanza di *features* per rappresentare la disabilità nella creazione del proprio avatar, soprattutto nelle piattaforme più comuni; queste mancanze risultano maggiormente visibili quando si parla di disabilità "invisibili" (Mack et al., 2023). Quando un giocatore tro-

va, nella creazione dell'avatar, la possibilità di esprimere la propria identità, si può sentire psicologicamente più coinvolto ed incluso, poiché ha finalmente l'opportunità di esprimere parti di sé che non sono visibili nel mondo reale (Kafai et al., 2010).

3. RAPPRESENTAZIONI DELLA DISABILITÀ NEI VIDEOGIOCHI: UN'ANALISI CRITICA

La progettazione del mondo videoludico rappresenta un processo complesso, poiché richiede la considerazione di una molteplicità di elementi, narrativi, estetici, interattivi e simbolici, al fine di garantire coerenza interna e verosimiglianza rispetto all'esperienza proposta. In questa prospettiva, il presente paragrafo introduce due *framework* teorici di riferimento che consentono di analizzare, in una fase successiva, il rapporto tra videogioco, costruzione del mondo virtuale e rappresentazione della disabilità al suo interno.

Il primo *framework* (F1) definisce la realtà del gioco da un punto di vista di estetica, che si colleghi in modo adeguato ad una metodologia di ricerca coerente con l'oggetto di studio. La proposta di modello proviene da Espen Aarseth (2003), che cerca di definire tre dimensioni generali nell'ambito dei giochi virtuali: il *gameplay*, le azioni dei giocatori, le strategie e i motivi; la *struttura del gioco*, le regole, comprese quelle di simulazione; il *mondo del gioco*, l'elemento di *fiction*, il design. Nelle parole di Aarseth: "Almost any game, from football to chess, can be described by this tripartite model. Since a game is a process rather than an object, there can be no game without players playing. Since these games are about controlling and exploring a spatial representation, the game must take place inside a clearly defined game world. And since all games have rules for advancing or losing, the game-structure of rules is perhaps the most fundamental of the three elements. Without rules to structure actions, but with a (virtual) world, we would have free play or other forms of interaction, but not *gameplay*" (Aarseth, 2003, p. 2). Ognuna di queste dimensioni può essere a sua volta specificata al suo interno, creando combinazioni e specifiche tra le parti inferiori, con rapporti profondi di interdipendenza. Ad ogni dimensione corrispondono poi prospettive di ricerca differenti, atte a sottolineare il profondo rapporto di interdisciplinarietà che caratterizza i *game studies*.

Il secondo modello (F2) che si intende utilizzare, viene proposto principalmente per la rappresentazione della salute mentale all'interno dei videogiochi, ma risulta applicabile anche per rappresentazioni di disabilità più in generale: Dunlap e Kowert (2021) parlano di

Mental health in 3D, un modello di analisi ripreso poi da numerosi altri studi (Kasdorf, 2023). Si tratta di un modello a tre dimensioni: la prima dimensione, 1D (*one-dimension*) o rappresentazione *decorativa*, definisce rappresentazioni piatte, che mancano di definizione e non sono critiche per quanto concerne il *gameplay*; la seconda dimensione, 2D (*two dimension*) o *definizione*, porta ritratti con proprietà definite, che hanno il compito di dimostrare l'identità di un personaggio, pur mancando di profondità; la terza ed ultima dimensione, 3D (*three dimension*), ha il compito di superare le precedenti in profondità, dimensionalità e prospettive di rappresentazione, ed è infatti la prospettiva *dimensionale*. Queste tre specifiche permettono di definire in maniera approfondita ogni presenza di disabilità all'interno dei videogiochi e della narrativa più generale.

L'adozione di questi due *framework* permette, da un lato, di analizzare la struttura del videogioco e le sue componenti fondamentali e dall'altro di valutare la presenza e la rappresentazione di specifiche categorie sociali, con particolare attenzione alla disabilità. Di fatto, utilizzando i *framework* proposti come strumenti di analisi, si esplora una selezione di videogiochi per osservare come la disabilità e le pratiche inclusive vengano rappresentate e integrate nelle esperienze di gioco. L'obiettivo è applicare le cornici di analisi per valutare la profondità e la qualità della rappresentazione della disabilità, valorizzandone la narrazione. Una ricerca preliminare, condotta attraverso Google Scholar e Web of Science utilizzando il prompt di ricerca "rappresentazioni di disabilità nei videogiochi", ha permesso di identificare i titoli ricorrenti dei prodotti videoludici citati nelle trattazioni degli studiosi di *game studies*. La ricerca ha adottato una metodologia basata sull'analisi di 70 articoli scientifici selezionati tramite criteri di pertinenza rispetto agli studi sui videogiochi e alla media education. Da tali articoli sono stati estratti, attraverso una *content analysis* qualitativa, 27 titoli videoludici esplicitamente citati. Le menzioni sono state normalizzate e registrate in un database, contabilizzando frequenze e contesti d'uso. Sulla base di ricorrenza, rilevanza educativa e varietà tipologica, è stato individuato un insieme finale di otto videogiochi, considerati maggiormente rappresentativi all'interno del corpus e funzionali agli obiettivi della ricerca. I paragrafi successivi si concentreranno sulle rappresentazioni di differenti condizioni di disabilità, organizzate in categorie, al fine di consentire un'analisi più approfondita, sistematica e mirata (Tab. 1).

3.1. Disabilità psichiche e intellettive

Numerosi videogiochi attualmente in commercio e disponibili su molteplici piattaforme, fanno riferimen-

Tabella 1. Sintesi delle rappresentazioni di disabilità all'interno dei videogiochi analizzati, secondo i due framework individuati (Dunlap e Kowert, 2021; Aarseth, 2003).

Disabilità	Videogioco	F1		F2	
		Gameplay	Game Structure	Game world	Dimensione
Disabilità psichiche e intellettive	<i>What remains of Edith Finch</i>	Le strategie di gioco subiscono modifiche	Le regole del gioco si modificano durante tutto il <i>gameplay</i>	Il mondo si trasfigura in base al personaggio giocato	Non è un personaggio primario, rimane nella prospettiva della <i>definizione</i> (2D)
	<i>Hellblade: Senua's Sacrifice</i>	Sono necessarie alcune modifiche nelle strategie di gioco in base alla psicosi	I continui momenti di psicosi modificano le regole del gioco	Il mondo continua a modificarsi in base agli attacchi psicotici	Terza dimensione, prospettiva <i>dimensionale</i> , profondità di rappresentazione (3D)
Disabilità fisiche o motorie	<i>Dead Space</i>	Le strategie sono dedicate al mantenimento della normalità in contrasto con una non-normalità. Si mantiene un <i>gameplay</i> standardizzato	la disabilità presente è solo un <i>cosmetic</i> orrifico che non cambia le regole del gioco	Il mondo del videogioco è impregnato di disabilità intesa come realtà "altra" in contrasto con il soggetto "normale"	Prima dimensione, <i>decorativa</i> , assenza di profondità (1D)
	<i>Grand Theft Auto: San Andreas</i>	Non sono necessarie modifiche nelle strategie di gioco conseguenti alla presenza di un personaggio non vedente	Le regole del gioco non subiscono modifiche	Il <i>game world</i> è fortemente stereotipato, la rappresentazione di disabilità, pur essendo <i>decorativa</i> , mostra il personaggio in modo positivo	Prima dimensione, <i>decorativa</i> , assenza di profondità (1D)
Neuro divergenze	<i>Mass Effect</i>	Le strategie di gioco vengono modificate e influenzate continuamente	Le regole di gioco devono subire modifiche quando il personaggio è presente nella scena	Il mondo del videogioco è futuristico e tecnologico, impregnato di rappresentazioni di disabilità intesa come possibilità di ottenere una modifica tecnologica	Terza dimensione, prospettiva <i>dimensionale</i> , profondità di rappresentazione (3D)
	<i>Overwatch</i>	Le strategie non vengono modificate, la disabilità è un elemento narrativo	Le regole non subiscono modifiche	Mondo futuristico non modificato dalla presenza di un personaggio con disabilità	Seconda dimensione, più approfondita, nella prospettiva della <i>definizione</i> (2D)
	<i>Auti-Sim</i>	La disabilità è <i>gameplay</i> , è narrazione, pur mancando di una struttura narrativa approfondita	Le regole sono fortemente dipendenti dalla disabilità	Il <i>game world</i> è la disabilità stessa	Seconda dimensione, più approfondita, nella prospettiva della <i>definizione</i> , pur avendo come obiettivo una rappresentazione più profonda (2D)
	<i>Borderlands</i>	L'intera strategia di gioco è completamente dipendente da un <i>game world</i> dominato dalla disabilità	Le regole cambiano a causa della presenza della disabilità all'interno del <i>game world</i>	La disabilità è anche il <i>game world</i> , che crea difficoltà nei personaggi e nel giocatore	Seconda dimensione, più approfondita, nella prospettiva della <i>definizione</i> (2D)

to a disabilità psichiche o intellettive. In una ricerca del 2022, Buday e colleghi dimostrano come su un campione di 456 videogiochi, 54 di questi proponessero una rappresentazione di disturbo psichico, con una percentuale quindi del 12%. Nella maggior parte dei casi venivano mostrati sintomi di schizofrenia sottolineandone violenza, tendenze omicide, sofferenza proveniente da

delusione e allucinazioni; altre rappresentazioni riguardavano principalmente disturbi di personalità, psicosi, depressione seguita da abuso di alcolici e rischio suicidario (Buday et al., 2022). In alcuni casi sono state rappresentate anche forme di intervento psicologico o psichiatrico. Il medesimo quadro di rappresentazioni viene offerto da Ferrari e colleghi (2019) che, attraverso una

analisi linguistica su oltre 100 giochi, hanno dimostrato come i personaggi, siano essi primari che secondari, venivano principalmente descritti come “‘psychotic’, ‘crazy’, ‘mad’, ‘eccentric’, ‘paranoid’, ‘unusual’, ‘evil’, and ‘insane’. In approximately 30% to 35% of games, characters were portrayed as either *being violent* and/or as *being lost, lonely, or helpless*” (Ferrari et al., 2019, p. 5). Altri studiosi hanno allargato questa lista inserendo termini quali “‘dysfunctional invalid’, ‘paranoid conspiracy theorist’, ‘comic eccentric’, or ‘afflicted victim’” evidenziandone nuovamente la componente negativa (Shapiro & Rotter, 2016, p. 1593).

Un esempio di rappresentazione di disabilità psichica viene da *What remains of Edith Finch*: un gioco di esplorazione in cui il giocatore deve attraversare tutta la genealogia della famiglia Finch, entrando in contatto con Lewis Finch, un personaggio con “instabilità mentale”.

FRAMEWORK 1: a livello di *gameplay* e *game structure*, il gioco diventa fortemente condizionato dalla presenza di un personaggio con disabilità che, non essendo primario, rimane nel quadro della *definizione*, senza approfondire lo stato della sua salute psico-fisica. Nonostante ciò, la presenza di questo personaggio modifica il *game world* anche attraverso lo stile audiovisivo di tutto il gioco, che si modifica procedendo nella narrazione. La storia del personaggio si fonde, infatti, con la realtà da lui inventata per scappare dalla sua situazione: all’interno del videogioco, questo espediente narrativo viene mostrato tramite *mini-videogame* che avvengono contemporaneamente al gioco stesso, come dimostrazioni di realtà alternative rispetto a quella personale.

FRAMEWORK 2: tramite un contatto con il suo psichiatra, scopriamo che la condizione del personaggio lo porterà al suicidio, con un esplicito collegamento tra l’incidenza che il deficit ha avuto nella sua storia di vita amplificando sentimenti di delusione e distacco; tutto ciò attraverso l’utilizzo di sistemi audiovisivi e di controllo (Anderson, 2020). La rappresentazione di disabilità in questo videogioco risulta particolarmente approfondita, rientrando quindi nella seconda dimensione, della *definizione* (2D).

Un’altra rappresentazione della disabilità psichica all’interno dei videogiochi, presa come esempio da molti studiosi (Anderson, 2020; Austin, 2021; Buday et al., 2022; Dunlap & Kowert, 2021; Fordham & Ball, 2019) è *Hellblade: Senua’s Sacrifice* (Ninja Theory, 2017). Si tratta di un *action game* in terza persona, basato sulla risoluzione di puzzle intervallata da combattimenti con numerosi mostri. La storia segue il percorso di Senua mentre discende negli inferi per salvare il suo amato, una sorta di Orfeo al femminile.

FRAMEWORK 1: durante tutto il gioco, Senua presenta episodi di allucinazioni audiovisive che ricordano esperienze di psicosi; all’interno del *game world*, questi episodi prendono il nome di *darkness*. Queste sue esperienze psicotiche ricalcano tutte le stereotipie precedentemente sottolineate come dono, frutto di abilità e competenze, condanna e passaggio per superare le proprie difficoltà. Per quanto concerne il *gameplay* e il mondo del gioco, questi sono fortemente condizionati da questa realtà, che modifica il modo di relazionarsi del giocatore stesso al gioco, e che rende complesso il compimento di azioni in questi momenti di *darkness*.

FRAMEWORK 2: la rappresentazione di disabilità all’interno del videogioco rientra nella terza dimensione, con una analisi approfondita e quindi tridimensionale, frutto anche del consulto di psichiatri e persone con psicosi, che sono state interrogate per offrirne la migliore rappresentazione possibile.

3.2. Disabilità fisiche o motorie

Dopo aver esaminato la rappresentazione delle persone con disabilità psichiche e intellettive, ci si concentra ora sulle disabilità fisiche, osservando come esse vengano ritratte nei videogiochi. In molti casi, queste sono rappresentate attraverso stereotipi che le presentano come “altro” o come elementi negativi, con una prevalenza nei titoli di genere *science-fiction* o horror.

Un esempio è *Dead Space* (EA Redwood Shores, 2008). Il personaggio principale ha una “prosthetic skin” (Carr, 2014), che lo protegge dall’andare in frantumi; allo stesso tempo, a contrastare il protagonista, vi sono numerosi esseri mostruosi e distorti, i *Necromorphs*. In questo videogioco, l’idea di disabilità compare come una minaccia al corpo-abile del protagonista che, però, a sua volta necessita di strumenti ausiliari per mantenere la sua abilità, e quindi la sua “normalità”.

FRAMEWORK 1: in questo caso il *gameplay* è indirizzato verso il mantenimento di una “normalità”, in contrasto con il *game world* dominato dalla rappresentazione della disabilità in ottica orrorifica, che non modifica però la struttura del gioco.

FRAMEWORK 2: la stigmatizzazione raggiunge anche la dimensionalità della rappresentazione, in una forma che appare meramente superficiale, come sfondo ad una realtà di per sé distorta, rimanendo quindi in una prima dimensione di rappresentazione, in una prospettiva *decorativa*.

Un altro esempio che rientra all’interno della categoria delle rappresentazioni di disabilità fisica viene mostrato in un videogioco *Triple A* – genere di videogiochi prodotti da grandi o medi editori, con produzione su larga scala – particolarmente famoso in tutto il mondo.

Si tratta di *Grand Theft Auto: San Andreas* (Rockstar Games, 2004), ad oggi ancora in commercio con numerose sue varianti. All'interno del videogioco, oltre ad immagini profondamente stereotipate dei maggiori conflitti razziali e sottolineature di scontri fra fazioni mafiose che richiamano molte caricature cinematografiche, si incontra una rappresentazione di disabilità visiva nei confronti del boss cieco Wu Zi Mu, di origine cinese.

FRAMEWORK 1: il giocatore scopre solamente grazie al personaggio stesso della sua disabilità, poiché questa non modifica in nessun modo il *gameplay* e la struttura del gioco (Hutchinson, 2017), ma, in compenso, in un *game world* formato principalmente da realtà stigmatizzate e criminali, il personaggio viene mostrato positivamente nonostante la sua disabilità.

FRAMEWORK 2: la rappresentazione di disabilità, nonostante la sua visualizzazione in termini positivi, non raggiunge particolari livelli di profondità rappresentativa, rimanendo quindi ancora una volta, nella dimensione *decorativa*.

In un'altra serie di videogiochi di *role-playing* video-game (RPG), *Mass Effect* (BioWare, 2007), il pilota Joker – pseudonimo di Jeff Moreau – ha una patologia ossea, immaginaria e ideata per mantenere la finzione di gioco, chiamata "Vrolik Syndrome" (Jerreat-Poole, 2020) che prende spunto da una malattia rara, l'osteogenesi imperfetta.

FRAMEWORK 1: la sua disabilità non è frutto di stigmatizzazione, non è centrale alla narrazione ma è una presenza costante. Favorisce il *gameplay*, lo anima e ha impatti sulla narrazione stessa: lo si vede in difficoltà nella corsa e obbliga i compagni ad aspettarlo, modificando quindi anche la *game structure* e quindi le norme di gioco. In questo caso, nonostante la rappresentazione di un *game world* futuristico e impregnato da strumenti tecnologici atti a migliorare le abilità dei personaggi, Joker, e così i compagni, scelgono spesso di non modificare le loro capacità tramite l'ausilio di strumenti che potrebbero permettere il superamento di ostacoli, in contrasto con le stereotipie presentate nei paragrafi precedenti.

FRAMEWORK 2: la rappresentazione della sua disabilità rientra in una prospettiva *dimensionale*, quindi molto più approfondita e definita all'interno del mondo del videogioco.

3.3. Neurodivergenze

In ultimo, la rappresentazione delle neurodivergenze nei videogiochi comporta sfide specifiche, poiché queste condizioni, spesso invisibili, possono essere sottorappresentate o ritratte in modo stereotipato.

Un passo verso una buona rappresentazione è offerto da *Overwatch* (Blizzard Entertainment, 2016), un *First Person Shooter* (FPS) online basato sulla competizione. Uno dei numerosi personaggi del videogioco, Symmetra, è stato pubblicizzato dalla stessa casa di produzione come una persona con disturbo dello spettro autistico. La particolarità di questa rappresentazione risiede nel fatto che è raro riscontrare questo genere di rappresentazioni all'interno di videogiochi *Triple A*, dimostrando come l'interesse per queste tematiche si stia lentamente diffondendo in modo positivo (Hawreliak & Lemieux, 2020).

FRAMEWORK 1: parte integrante del *gameplay* del gioco, non ne influenza la struttura e non modifica particolarmente il *game world* poiché è un personaggio interno alla narrazione, di cui si vedono solo caratteristiche tipiche della neurodivergenza.

FRAMEWORK 2: nonostante l'ottimo punto di partenza dato dalla volontà di predisporre una rappresentazione chiara di una persona con neurodivergenze, Symmetra rimane un personaggio in 2D, senza una particolare profondità, non discostandosi dalla dimensione della *definizione*.

Auti-sim (Adev123, 2013) è stato, contrariamente, giudicato dalla maggior parte degli *user* come non veritiero nei confronti delle persone con autismo. Il videogioco consiste maggiormente in una simulazione in prima persona della vita di un bambino con autismo (Sarge et al., 2020). I suoni forti risultano essere stereotipati, così come le numerose distorsioni visive (Gibbons, 2015). Nonostante il gioco si ponga come obiettivo la costruzione di una conoscenza a livello sociale, per garantire una maggiore inclusione nei confronti delle persone con autismo, per la maggior parte dei giocatori le emozioni principali non sono state di consapevolezza, ma di pietà.

FRAMEWORK 1: il gioco manca di una struttura narrativa, e quindi di un *gameplay* vero e proprio, mentre il *game world* consiste propriamente nella rappresentazione della disabilità stessa, poiché viene rappresentato un parco giochi in cui ogni azione è condizionata dalla neurodivergenza: muoversi diventa complesso a causa dei rumori forti e la vista è offuscata a causa della confusione, cercando di richiamare l'esperienza di un bambino con autismo.

FRAMEWORK 2: nonostante ciò, il videogioco manca di una profondità narrativa e, pur ponendosi come rappresentazione di disabilità in 3D, in realtà rimane particolarmente superficiale, fermandosi in una dimensione di *definizione*.

Tuttavia, non in tutti i videogiochi la condizione di disabilità è attribuita direttamente ai personaggi; talvolta essa si manifesta come elemento del mondo virtuale stesso, influenzando le dinamiche di gioco e le esperienze dei giocatori.

Un esempio è la serie *Borderlands*, un *First-Person Shooter* (FPS), analizzato da numerosi studiosi (Anindya & Rahmanty, 2023; Meints & Green, 2019) nei suoi altrettanto numerosi capitoli. Nel videogioco, lo stesso universo narrativo non è adatto alle persone che lo abitano, gli strumenti e le armi che i personaggi trovano, spesso non sono adatti alle loro necessità.

FRAMEWORK 1: la disabilità diventa *gameplay*, sottofondo sempre presente all'interno della narrazione videoludica, ma anche *game world* e *game structure*: la realtà crea difficoltà per i personaggi, le regole cambiano e il giocatore è costretto a cambiare il suo atteggiamento nei confronti del gioco stesso.

FRAMEWORK 2: nonostante questa rappresentazione di una realtà così complessa tenda a scansarsi dalle solite rappresentazioni pietistiche, il gioco rimane correlato a una stigmatizzazione della disabilità come mera non abilità, trovandosi in un ambiente post-apocalittico e mantenendo spesso un linguaggio non inclusivo, di conseguenza, pur andando più a fondo nella rappresentazione delle disabilità, si persiste comunque nella dimensione della *definizione*.

4. RIFLESSIONI CONCLUSIVE

Il presente contributo ha indagato, in una prospettiva media educativa, il complesso rapporto tra videogiochi e rappresentazioni sociali della disabilità, mostrando come tali rappresentazioni agiscano da dispositivi simbolici capaci di orientare la percezione sociale della differenza (Moscovici, 2021; Goffman, 1968). L'analisi condotta ha evidenziato l'interdipendenza tra la necessità di sviluppare prodotti videoludici accessibili (Anderson & Schrier, 2022; Caselli et al., 2022; Gaggioli, 2022) e il rischio, ancora diffuso, di riprodurre forme di stigmatizzazione attraverso rappresentazioni stereotipate (Barnes, 1992; Bennett et al., 2021; Ciccani, 2008). L'applicazione dei *framework* di Aarseth (2003) e di Dunlap e Kowert (2021) ha consentito di approfondire le connessioni tra le strutture del *gameplay* e la qualità delle rappresentazioni della disabilità, mettendo in luce come, nella maggior parte dei casi analizzati, i personaggi con disabilità vengano ridotti a ruoli stigmatizzanti come il "villain", l'"aiutante" o l'"oggetto di scena", che ne negano la complessità identitaria.

Tali rappresentazioni contribuiscono inevitabilmente a costruire socialmente l'immagine della disabilità, definendo confini simbolici di inclusione ed esclusione (Straniero, 2025). La prevalenza di narrazioni basate su *cliché* e semplificazioni rivela la persistenza di un'inerzia culturale che tende a riprodurre lo stigma piuttosto che

a decostruirlo. Tuttavia, alcuni esempi virtuosi, come nel caso di *Hellblade: Senua's Sacrifice* (Austin, 2021; Fordham & Ball, 2019), mostrano come la collaborazione tra sviluppatori ed esperti possa favorire una rappresentazione più autentica, capace di promuovere consapevolezza e inclusione.

In questa prospettiva, il videogioco, in quanto artefatto culturale (Buckingham & Burn, 2007), si configura come spazio di negoziazione simbolica in cui le rappresentazioni sociali della disabilità possono essere riprodotte o trasformate. Il giocatore partecipa a un processo complesso di mediazione e interpretazione; da un lato, è esposto alle narrazioni dominanti e agli schemi sociali preesistenti, che possono influenzarne la percezione della disabilità; dall'altro, grazie a una solida *game literacy* e a una cultura dell'inclusione, potrebbe essere in grado di analizzare criticamente gli stereotipi, rielaborarli e riformulare le narrazioni in chiave emancipativa, trasformando l'esperienza ludica in un'occasione di apprendimento riflessivo e di promozione di atteggiamenti inclusivi. È in questo spazio che il potere trasformativo della pedagogia speciale si intreccia con le competenze critico-riflessive della *media education*, consentendo al videogioco di diventare un contesto di apprendimento, capace di promuovere atteggiamenti inclusivi e una piena valorizzazione delle differenze.

Il presente contributo intende offrire un punto di partenza per ampliare la riflessione scientifica sulle rappresentazioni della disabilità nei videogiochi, collocandola all'interno del dibattito pedagogico contemporaneo sull'inclusione e sulla cittadinanza digitale, con l'auspicio che il tema delle rappresentazioni dei personaggi con disabilità venga ulteriormente esplorato in prospettiva pedagogico-speciale e media-educativa, al fine di approfondire il ruolo dei videogiochi come contesto di apprendimento, di costruzione identitaria e di trasformazione delle rappresentazioni sociali della disabilità.

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Domestication of Media Literacy theory in a non-western context: Models of Media and Information Literacy (MIL) in academic discourse in Uzbekistan

Addomesticamento della teoria della Media Literacy in un contesto non occidentale: modelli di Media e Information Literacy (MIL) nel discorso accademico in Uzbekistan

MAARIT JAAKKOLA

University of Gothenburg, Sweden
maarit.jaakkola@gu.se

Abstract. This paper builds on calls to dewesternise media theories by examining the conceptualizations of Media and Information Literacy (MIL) in Uzbekistan, suggesting that we should examine more individual countries' MIL understandings from their internal, emic perspectives. As a Central Asian country situated at the crossroads of multiple influences along the Silk Road, Uzbekistan faces the challenge of gradually developing a unified vision for MIL on its own grounds. Understanding how MIL has been framed and applied by key stakeholders – including academics, practitioners, and policymakers, both national and international – is therefore essential. With the help of a systematic literature review of academic publications addressing MIL in Uzbekistan from 2011 to 2025, this study identified a growing number of national, regional, and international perspectives on MIL, with practical applications and pedagogical implications. Besides the UNESCO's widely adopted global framework, a thematic analysis identified four distinct MIL conceptualisations: the value-based, synthetic-thematic, user-centred, and the disinformation model, which can be observed to entail protective, evaluative and emancipatory elements. These models and their implementation are analysed in the broader context of developing culturally relevant and sustainable MIL frameworks.

Keywords: media and information literacy (MIL), systematic literature review, thematic analysis, MIL policy, Uzbekistan.

Riassunto. Questo articolo si sviluppa a partire dagli appelli a de-occidentalizzare le teorie sui media esaminando le concettualizzazioni della Media and Information Literacy (MIL) in Uzbekistan, suggerendo la necessità di esaminare più approfonditamente la ricezione dell'MIL nei singoli paesi dalle loro prospettive interne, emiche. L'Uzbekistan, essendo un paese dell'Asia centrale situato al crocevia di molteplici influenze lungo le Vie della Seta, si trova ad affrontare la sfida di sviluppare gradualmente una visione unitaria dell'MIL sul proprio territorio. Comprendere come l'MIL sia sta-

ta inquadrata e applicata dai principali stakeholder, tra cui accademici, professionisti e responsabili politici, sia a livello nazionale che internazionale, è quindi essenziale. Con l'ausilio di una revisione sistematica della letteratura accademica che affronta l'MIL in Uzbekistan dal 2011 al 2025, questo studio ha identificato un numero crescente di prospettive nazionali, regionali e internazionali sull'MIL, con applicazioni pratiche e implicazioni pedagogiche. Oltre al quadro di riferimento globale ampiamente adottato dall'UNESCO, un'analisi tematica ha identificato quattro distinte concettualizzazioni del MIL: il modello basato sui valori, quello sintetico-tematico, quello incentrato sull'utente e quello della disinformazione, che possono essere osservati come caratterizzati da elementi protettivi, valutativi ed emancipativi. Questi modelli e la loro implementazione vengono analizzati nel contesto più ampio dello sviluppo di quadri di riferimento del MIL culturalmente rilevanti e sostenibili.

Parole chiave: media and information literacy (MIL), rassegna sistematica della letteratura, analisi tematica, politica della MIL, Uzbekistan.

1. INTRODUCTION

Establishing media and information literacy (MIL) policy frameworks in different parts of the world is a question of situated knowledge and practice. Theories in the field of media, journalism and communication have been criticised to entail a Western bias (Mohammed, 2022; Iwabuchi, 2014; Ullah, 2014; Thussu, 2013; Wasserman & De Beer, 2009). As theories, concepts and models have been largely developed with understandings of democratic media, education and sociocultural systems in mind, they both reinforce and normalise a certain kind of freedom of speech, quality of education, and independent media. As such, their capability to describe and capture the essentials of existing autocratic and transitional societies are restricted.

Consequently, ideas developed within the Western frames cannot be directly transformed and inserted into another cultural context to develop to strengthen democratic development. As Miike (2022) points out, the situation is complex, and dewesternising attempts of existing Western-oriented theories may remain cosmetic, reinforcing the US- and Eurocentrism as a global or universal standard, and rendering research as hegemonic monologue among Western and Westernized elites in the world. Setting more emic agendas, that is, agendas that become centric to the communities in question, requires active elaboration of perspectives that emerge from within these communities (Miike, 2006). For example, creating an Asia-centric agenda implies, according to Miike (2019, p. 164), «the self-conscious process of actively centring diverse and distinct Asian traditions as essential intellectual resources and of developing concepts, comparisons, postulates, and principles». Local cultures are then not treated as «peripheral targets of data analysis and rhetorical criticism» but «become central resources of theoretical insight and ethical reflection» (ibid.). Many scholars argue that a combination of emic and etic perspectives is the most effective way to understand cul-

tural phenomena: the emic perspective ensures cultural congruence, while the etic perspective allows for cross-cultural comparisons and theoretical generalizations, crystallising the uniqueness of the object of inquiry.

In this paper, I discuss the adoption of the idea of MIL by academics in the Global South, where development of MIL policies, pedagogies and practices is a prevalent issue. I intend to synthesize local traits of theory formation and conceptualization that has been conducted in a country that has been widely left beyond the scope of discussions of MIL. The Republic of Uzbekistan, surrounded by Afghanistan, Kazakhstan, Tajikistan, Kyrgyzstan and Turkmenistan as neighbours, is a Central Asian country with 32 million people, in which the newly shaped freedom of speech is only a couple of years old. Central Asia forms a desert in the academic knowledge, as it has been literally left out in global comparative studies on journalism, media and communication, driven by the Western understandings. It has not been systematically incorporated into significant global comparative studies in media, journalism, and communication or is subsumed under the broad category of «Asian media» (Hanusch, 2020; Hanitzsch et al. 2019; Hallin & Mancini, 2012). Besides, it is often unclear what is included in the Central Asian area (Roche, 2018). For more multifaceted research, as outlined by scholars promoting multicultural dialogue (Miike, 2022), it would be beneficial to break barriers between Western and non-Western spaces and pursue negotiation between traditions, especially between the globally oriented concept of MIL and the Asian approaches, as MIL is thought to be a shared global concept.

This paper pursues two primary objectives. First, it aims to develop an emic understanding of MIL by analysing Uzbek academic literature on MIL, thereby exploring local manifestations of MIL frameworks. I analyse locally grounded perspectives on a globally and transnationally conceptualised subject – what can be termed a «think locally» approach. Conceptually, the adaptation of global ideas in local contexts is about *domestication* of MIL, a

process by which new ideas are integrated into the existing macrostructures of societal sectors and made familiar, routine, and meaningful within the specific sociocultural context. Second, as a scholar situated within a Western academic framework, I employ the systematic literature review as a methodological effort to examine the process of dewesternisation in scholarly inquiry. The reflections drawn from this analysis aims at contributing to the advancement of culturally congruent and contextually sensitive methodological approaches to literature reviews.

I will first examine the dominant global policy and collaboration concept of MIL proposed by UNESCO in the context of dewesternising efforts. Thereafter, I will describe the Uzbek conditions of MIL in terms of MIL maturity of the society. I will proceed to describing the research design and presentation of the results of the systematic literature review.

2. DEWESTERNISING EFFORTS

The dynamism between emic and etic perspectives is especially true to the concept of MIL, which has been developed to work in line with the principle «think globally, act locally», largely influenced by Marshall McLuhan's idea of the global village (Mihailidis, 2009). The global framework of MIL was officially launched by UNESCO in 2011 at the conference in Fez in Morocco, after decades of preceding declarations and consultations (Wilson et al., 2011). The framework has been accompanied seminal materials serving to establish the concept and enable its implementation across local contexts, form of revised curriculum guidelines (Grizzle et al., 2023) to policy implementation and assessment guidelines (UNESCO, 2013; Grizzle et al., 2013; see also Frau-Meigs et al., 2017), as well as handbooks and manuals highlighting the practical and pedagogical aspects across different sectors, such as media (Ireton & Posetti, 2018; Jaakkola, 2024), education of new technologies (Miao & Cukurova, 2024; Miao & Shiohira, 2024; Frau-Meigs, 2024), content creation (Ha, 2024), and youth work (Acero Pulgarin et al., 2024). Besides, ideas are regularly boosted by educational events and MOOCs (massive open online courses), such as the MOOC on MIL for adult educators developed by the UNESCO Institute for Lifelong Learning (UIL, 2024) or for government officials and policymakers developed by the UNESCO, the Autonomous University of Barcelona and the United Nations University (UAB, 2023).¹ The adaptation of

these global ideas has been richly examined across continents in the UNESCO MILID Yearbooks, but case studies often remain descriptive, and comparative studies have remained scarce. More attempts for emic understandings of MIL conceptualisations should be made.

Studies that seek to draw on local conceptual development encounter several challenges. First, the theoretical and conceptual work conducted in the Global North and in the Global South may be not come into contact with each other, because of imbalances in infrastructures of academia, constraints in freedom of speech, and lack of resources (Jonbekova, 2018; Komil-Burley, 2021). Second, texts that entail theoretical and conceptual work in local contexts and based on local conditions may not be published in shared international fora, not even in South-South dialogues (see e.g. Medrado & Rega, 2023). In many countries of the Global South, the practices of open access publishing are often underdeveloped, as databases, repositories, open access cultures and mindsets are lacking, while the capacity of promoting models, best practices and ideas related to MIL may be limited to local physical communities. Third, local research communities may not always have the overview and contextual awareness of what is unique and special in their conditions. As researchers may not be globally networked and connected, they can find it difficult to see the forest for the trees and focus on features in the local conditions that would be relevant in terms of broader contexts. Fourth, researchers may neither connect to dominant theories and concepts of theory formation in Western or international discursive spaces nor form a uniform vocabulary at the local level, which can result in the local theory formation remaining more or less inaccessible to both external and internal parties.

Moreover, reviewing literature in transcultural settings can present certain challenges. Academic conventions for presenting and publishing analyses vary across different contexts. In some cases, the expectations regarding the explication of research design, methodological rigor, transparency, and ethical commitments may differ from those commonly applied in Western academic traditions. Besides, translating ideas into a foreign language without a proofreading support can result in misleading or poor language use and expression of ideas. Emerging publication cultures may still be in the process of aligning with established international ethical and quality frameworks. As a result, differences in standards and approaches may create disparities when using texts as data for systematic literature reviews, which, as an established methodology, are mainly developed in the Western world (see e.g. Petticrew & Roberts, 2008; Gough et al., 2012). Therefore, even for literature

¹ International MOOCs with relevance for MIL can be found on UNESCO's (2025) webpage or the international online course platforms Coursera, edX and FutureLearn, as well as at Knight Foundation.

reviews, a central methodological challenge is thus how to avoid Euro- or US-comparatism by setting the Western theories and methodologies as the highest standard.

So far, country- and region-specific descriptions and comparisons of MIL have been mainly conducted by describing the structures of the MIL ecologies, consisting of MIL actors (organisations and societal structures for implementation and promotion of MIL frameworks), initiatives (projects, campaigns and other educational interventions by MIL actors), resources (teaching, learning and educational materials produced for implementation and promotion purposes), pedagogies (approaches and the underlying (see e.g. Chapman & Rokša-Zubčević, 2024; EDMO, 2025). Cross-country comparisons on *MIL conceptualisations* remain few (see e.g. Forsman, 2020; Stix & Jolls, 2020). Comparativity is partly restricted by the diversity of definitions when it comes to MIL; as often mentioned, Potter (2022) found in his systematic literature review over 400 definitional elements for MIL, and, in similarity to attempts to break down journalism cultures, identities and role performances for the sake of comparativity (Hanitzsch et al., 2019; Mellado et al., 2016), there is not a widely accepted universal model of the cultural constituents of MIL – if not UNESCO's standard framework, to be addressed in brief in the Uzbek context next, can be characterised as such.

3. MIL MATURITY OF UZBEKISTAN

The strive for a conceptualisation of media skills or competences has been a 21-st-century political priority across the globe, supported by the creation of the global policy framework by UNESCO. UNESCO's global MIL framework serves as a broad umbrella framework for policy intended to be adapted and implemented in national ecologies through local initiatives. Footed in the human rights perspective and democratic development of societies of the Global South, it defines MIL as people's ability to access, analyse, evaluate and create information in a variety of media forms (Wilson et al., 2011), suggesting that these capacities should be supported by various societal sectors in collaboration with each other.

The «UNESCO model» has become the standard of MIL development worldwide, including in Uzbekistan, in which the local representative office of UNESCO has played a central role (Cherny & Murovana, 2021; Gendina, 2016; Kukier, 2020). While only a handful of countries in the world have a centralised MIL strategy, countries typically begin their MIL development work by introducing MIL in the national school curricula. Ismailova (2016, p. 124) summarised

the developmental stage of MIL in Uzbekistan almost a decade ago as follows:

In Uzbekistan, there is no concept of a national model for the development of media education, there is no unified system of media pedagogy. Media education projects are more likely to be found in informal education (trainings of non-governmental educational institutions, advanced training courses, etc.). There is a shortage of specialists who can effectively teach media literacy. There are few training centers that prepare highly qualified media educators. Moreover, such a specialty remains unclaimed due to the lack of demand for such specialists in the modern labor market.

This does not mean that a «unified system of media pedagogy» is preferred or can be introduced, but the parallel implementation of MIL across sectors may make actors more aligned with each other and contribute to a shared understanding. Uzbekistan is characterised in V Dem's categorisation (Angiolillo et al., 2025) as a «closed autocracy», in which the development has been hindered by media capture – a strong governmental control of public broadcasters and media regulatory bodies – use of state resources in favour of pro-government media, and the existence of a circle of loyal oligarchs to run private media in the government's interest. In the World Press Freedom Index (RSF, 2024), Uzbekistan occupied the rank 148, compared to 120 in Kyrgyzstan, 142 in Kazakhstan and 178 in Afghanistan. In Freedom House's (2025) scoring, Uzbekistan ranks the same as Russia, having 2 political rights and 10 civil liberties. Still, the MIL landscape is characterized by prolific efforts to promote MIL especially in educational as well as library and information services sectors, even at the grassroot level where pedagogical and practical MIL initiatives by NGOs have resulted in a growing body of teaching and learning resources.

Uzbekistan became a member state of UNESCO in 1993, and the representative office in the capital of Tashkent was established in 1996. UNESCO's MIL model has been introduced in local settings, not the least because of guidebooks translated into local languages (e.g. Mamatova & Sulaymanova, 2015; Cherny & Murovana, 2021). Chelysheva (2019, p. 5) calls the local UNESCO textbook by Mamatova and Sulaymanova (2015) as one of the key learning resources, in which media and information literacy is viewed as a tool of democracy, including all media resources (media, libraries, archives, etc.). Moreover, thanks to a number of international organisations active in the area, the concepts of media literacy (ML) and media and information literacy (MIL) have gained a widespread acceptance in the public discourse. The

local terms for MIL include *media va axborot savodxonligi* (MAS) in Uzbek, *медиа и информационная грамотность* (МИГ) in Russian, which is still widely used as the language of administration, as well as *саводнокии ВАО ва иттилоотӣ* in Tajik and *media hám informatsiyalıq sawatlılıq* in Karakalpak, which are recognized minority languages. Also, the terms media literacy (*mediasavodxonlik*, *медиаграмотность*), media education (*media ta'lim*, *медиаобразование*) and information cultures (*axborot madaniyatlari*, *информационные культуры*) are widely used to refer to MIL or aspects of MIL. The literacy word *savodxonlik* is applied to subliteracies such as *kompyuter savodxonligi* (computer literacy), but also other expressions denoting literacy are frequent: *o'qishni o'rganish* (learning to read), *mahorat* (skill, competence), *l'fabetizatsiya* and *bilimlari* (knowledge, from *bilish*, 'to know').

While there is no presidential decree on MIL education, the work in Uzbekistan has been conducted in the discursive spaces of digitalisation of education and legal regulation (Atavullaev et al. 2020). After the death of the former president Islam Karimov in 2016, the new president Shavkat Mirziyoyev has introduced reforms for modernization (Dadabaev, 2019), not the least the national strategy New Uzbekistan 2030, which entails investments in digitalisation (Begalov & Zhukovskaya, 2022; Makhmudova et al., 2022), resulting in a digital transition and platformization of education (Makhmutkhodjaeva, 2021; Zhukovskaya, 2021). The reforms have not always delivered the expected outcomes, and the progress of the «upgraded autocracy» has been turned out to be slow (Schiek, 2018). Even if the president has assured to be «on the side of free-thinking journalists» (Kun.uz, 2023), freedom of speech has been reported to be curbed by state control and self-censorship (Amnesty International, 2025). Boundaries between state and civil society are blurred, which means that a high level or NGOs are initiated and controlled by the state as GONGOS, government-organised non-governmental organisations. Still, local researchers from different disciplines have assessed the COVID-19 pandemic as a turning point towards a heightened awareness of the need of critical thinking and MIL (Muratova & Nikadambaeva, 2021; Ubaydullaeva, 2021). At the time of writing, preparations for a MIL strategy are underway (Jaakkola, 2025). In his inaugural speech at the UNESCO General Conference in Samarkand in October 2025, president Mirziyoyev addressed the urgency of combatting disinformation in the digital sphere and developing a MIL strategy based on UNESCO's model (Tuhsinov, 2025).

According to the cultural map by Inglehart and Welzel (2005; see WVS, 2023), Uzbekistan is located at the

limits of the African-Islamic cultural sphere, in which traditional and survival values dominate, but it is placed in proximity to the Latin-American sphere where traditional values are combined with self-expression values. With a large in-country variation (Aminova & Jegers, 2014), especially with differences between urban and rural areas, Uzbekistan shows a high tendency towards uncertainty avoidance, which is one if the cultural dimensions in Hofstede's (2001) cultural difference comparison framework, while showing a power distance and degree of collectivism that is at approximately same levels than in Western countries such as Germany (Majidi et al., 2015).

4. RESEARCH QUESTIONS AND METHODOLOGY

This study analyses academic texts on MIL published in 2011–2025 by researchers in Uzbekistan. It conducts a systematic literature review of published literature explicitly addressing MIL or a variation of it (ML, media education), intending to make sense of the meanings and understandings of MIL in the local context. The overall question for the study reads as follows: What kind of conceptualisations of MIL have been applied in the academic studies, supported by pedagogical materials production, and how do these conceptualizations resemble or deviate from the global model outlined by UNESCO? This question is regarded as important to understand how the domestication of the MIL concept unfolds in a country under vivid reforms.

The literature review conducted by searching international databases Web of Science, Google Scholar, ERIC, Scopus, and Directory of Open Access Journals (DOAJ) with search terms *Uzbek*/o'zbek*/узбек** combined with «*media litera**» and «*media and information litera**», *mediasavodxonli**, «*media va axborot savodxonli**», and *медиаграмотност**. The database searches retrieved 1,094 items in total, of which many were, however, irrelevant and needed to be harvested manually. In addition to database searches, references were supplemented by examining the citations within the identified articles and by searching in the digital platform ResearchGate. As an outcome of database searches and reference cross-validations, I could identify 60 relevant research publications written in 2011–2025 in English, Uzbek and Russian languages, mostly by researchers from Uzbekistan. The articles are listed in the Appendix 1.

The number of the articles in total, 4.2 papers per year on average, is limited, and it can be clearly seen in Figure 1 that most of the publications have been published only during the past couple of years, indicating a

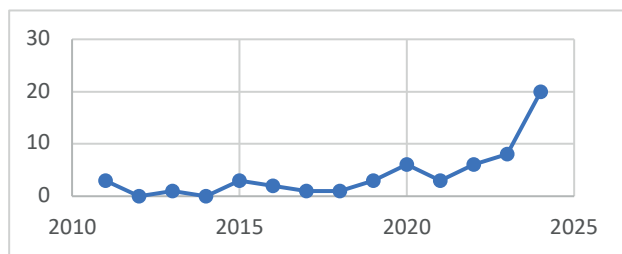


Figure 1. Number of publications (N=57) explicitly addressing MIL 2011–2024.

growing interest in MIL. The concept of MIL – which was officially introduced with the launch of the global MIL curriculum in 2011 (Wilson et al., 2011) in conjunction to the Fez Declaration (UNESCO, 2011) – has only existed in the compound form of «media» and «information» for 15 years now, and the literature review only included articles directly addressing the concept or topic of MIL, leaving articles with indirect relevance out of scope (cf. Jaakkola, 2023). In addition, while the information searches retrieved academic papers only, there are training manuals and resource books published by both national and international actors, some of which were mentioned in the articles, as such institutionally produced pedagogical materials are part of implementation of ideas of MIL.²

Researchers in Central Asian states have suffered from shortcomings in freedom of speech, career guidance and empowerment, as well as lacking academic support structures (see Jonbekova, 2018), making them obliged to create alternative strategies for the access of information (Komil-Burley, 2021). Publishing academic articles has been mostly possible in English- and Russian-language journals abroad, which has required academic skills of publishing and support for these skills in the local academic environment. Nevertheless, the articles identified in the literature review can be assessed to form the core of the national academic literature in Uzbekistan, dealing directly and explicitly with MIL and been published and openly accessible.

Indeed, researchers had not widely published in journals that are indexed in international databases. The journals where researchers had published articles the most frequently included the Uzbek journals *International Scientific Journal of Media and Communications in Central Asia* and *O'zMU xabarlari*, the Taylor & Francis-owned international journal *Central Asian*

Survey and the Slovak journal *Media Education (Media-obrazovanie)*. There are also local magazines publishing popular-scientific (or hybrid) essays, such as the «scientific-theoretical and educational-methodical journal» *Xalq ta'limi: Muammolar, izlanishlar, yechimlar* («Public education: Problems, research, solutions», see <https://avloniy.uz/en/journal>) established in 2021 by the National Institute of Pedagogical Excellence Named after A. Avloni and *O'zbekistonda oliy ta'lim* («Higher education in Uzbekistan», see <https://edujournal.uz>) established in 2022 by the Center for the Research on Development of Higher Education under the Ministry of Higher Education, Science and Innovations. The scientific quality of the article shows significant variation, particularly in terms of methodological design and empirical analysis. However, the primary objective of this study is not to assess the scientific quality of the publications – which is also bound to Western assumptions – but to examine and capture the underlying conceptual frameworks and perspectives embedded within the approaches.

The literature retrieved was addressed in groups of, and each article was grouped into a category formed the help of a qualitative thematic analysis (Guest et al., 2012). Articles were grouped into the categories of national, regional, international and sector-specific conceptualisation. A qualitative analysis of texts in each group was conducted to search for their common features.

Qualitative thematic analysis (Guest et al., 2012) was employed to examine the literature. A grouping of texts was elaborated inductively to identify their common features. This process involved iterative comparison to ensure that the themes accurately reflected the conceptual distinctions and variations present in each category. Themes were then from within the data by identifying recurring patterns, and key concepts, which seemed to be connected to the geographical levels, forming national, (inter)regional and international/global models.

The author of this article comes from a Western area, more particularly, from a Nordic country. Finland, Sweden, Norway, Denmark and Iceland are known for developing proactive policy approaches to MIL early on, based on their long traditions in media and mass communication education, including integration of MIL elements in formal school curricula and centralized multistakeholder or cross-sectoral MIL policy work (see e.g. Forsman, 2020; Carlsson, 2019). The author has authored a draft strategy on MIL for Uzbekistan to assist the development of a MIL strategy in tight collaboration with the national UNESCO office within the project “Empowering the government and citizens of Uzbekistan by strengthening access to information, accountability of institutions and media competence” (2023–2026), fund-

² Materials produced in other Central Asian countries than Uzbekistan are left out of the scope of this study, even if especially if they can be expected to play a crucial role in education.

ed by the Swiss Development Cooperation (SDC) (see UNESCO, 2025). The academic literature review is part of the process of collecting evidence and information on the existing development of MIL in the country. The literature review was, however, conducted as a separate independent study.

5. RESULTS

The journal articles, book chapters and entire PhD theses that were identified to form the sample could be grouped into three according to their topics. Many articles started by generally discussing MIL and its importance as part of societal development of the country, but their intention was more specific. The first group ($n=26$) presents articles that tried to outline a national model in which traditionalism, heritage and history, togetherness and communitarism, as well as the discussion of the country's future, were in the foreground. They typically saw these traits as part of «modernisation», «development» and «reform» processes. The second group ($n=10$) focused on individuals as users, seeking a holistic perspective on media and information management from the individual's user perspective. The third group ($n=7$) made a distinction from this by trying to synthesise different topics in the context of CIS or Post-Soviet countries. The fourth group ($n=3$) was also individual-centric but what distinguished it from the previous one was its focus on a single topic, namely disinformation. The fifth group ($n=13$) included case or context-specific studies focusing on specific sectors and target groups, discussing MIL in a non-holistic perspective of the previous groups.

The models could be found at national (Uzbekistan), regional (Central Asian or Eurasian countries) and international levels (global), summarized in Table 1.

In terms of geocultural intentions, we can observe that the national models sought to establish their foundation in national cultures, particularly in traditional values and cultural heritage. A central aim was to identify motivations and epistemic underpinnings that would create a conceptualisation perceived as inherently belonging to the population and that the population could claim ownership for. Articles focusing on regional modellisation were often anchored in comparativist intentions between Central Asian states, Eurasia or CIS countries (countries of the former Soviet Union committed to the Commonwealth of Independent States, namely Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Belarus, and Russia.) These models were typically developed from a Russian perspective. Even if there were some references to Chinese and Singaporean education in the texts, no influences were systematically adopted from these regions, probably because of a linguistic and cultural barrier, which is lower towards countries where Russia is widely spoken.

The international models were adaptations of models that were originally created as global and culturally sensitive, to enable their flexible adaptation to countries they are exported to. The influential role of foreign aid organisations in countries like Uzbekistan has been identified by several studies (Dadakhonov, 2024a, 2024b, 2024d; Kukier, 2020). The role of international experts is widely acknowledged and respected as part of the progress of the country. Besides UNESCO, IREX, DW Akademie, Internews and OSCE (Organization for Secu-

Table 1. Models of media literacy addressed in the sample.

Model	Type	Literature ¹	Objective	Functional focus
Value-based	National	Djumanova (2022, 2023), Kholmurzaev et al. (2020); Berdiyeva (2024)	In-native development	National values and legislation, «Uzbek model»
User-centred	Regional	Ablazov (2023a), Mahmudova (2021), Gendina (2016), Gendina & Kosolopova (2019a, 2019b, 2019c), ¹ Abdullayeva et al. (2024)	Digital hygiene and wellbeing	Individual's information cultures
Synthetic thematic	Regional	Fedorov (2011), Fedorov and Levitskaya (2018, 2019)	Thematic coherence	Awareness and skills, thematic alignment
Disinformation (single-thematic)	International	Braesel & Karg (2021), ¹ Reineck & Lublinski (2015), Dadakhonov (2024c), Nitsche (2020), Imankulov et al. (2018), IREX (2025), ¹ Shturkhetsky (2018), ¹ Gorokhovskiy (2021) ¹	Resilience	Disinformation, manipulated content
Actor-based	International	UNESCO (2011), ¹ Mamatova & Sulaymanova (2015), ¹ Cherny & Murovana (2021) ¹	Aligned collaboration of MIL actors	Awareness and skills, collaborator alignment

¹ Training/pedagogical material (otherwise academic literature).

rity and Co-operation in Europe) have been active in the MIL area in the Central Asian region, where American and European funding has played an important role.

Policy models and frameworks have different weight, as promoted by both individual researchers and world-wide organisations, and advanced in varying degrees of academic and pedagogical documentation, but for the sake of a conceptual analysis, they are juxtaposed. They also have different directions of origin, stemming from various intellectual and political contexts. I contend that the models diverge in three fundamental dimensions: the intended or imagined audience, the conceptualization of culture that informs the framework, and the underlying rationale for motivation – the justification for promoting MIL. Next, I will discuss the value-based, synthetic-thematic, user-centred and disinformation models in respective order as models proposed for Uzbekistan.

5.1. Value-based models

Local researchers addressing MIL have made efforts to make the concept culturally congruent or maybe even nascent within the local culture. The effort to create an articulated «Uzbek model» of MIL is reflected in many of the Uzbek researchers, especially most explicitly outlined by Djumanova (2022, 2023). The idea is that the Uzbek model would draw on international ideas but be anchored in national values. Indeed, the frequently expressed concept of «national values» (*milliy qadriyatlar*) as part of the «national spiritual and moral education» and «a child's upbringing» (Siddiqova, 2023, p. 662), as well as «healthy thinking» (Sattarov, 2025) are of high importance on the agenda of «New Uzbekistan», affecting educational ideologies and practices (Ismoilova & Muxammedova, 2022; Ismagilova et al., 2020; Berdiyeva, 2024). Educators talk about «germination» of certain values in children, and «spiritual education», which in the Western frame could be referred to as cultivation and *Bildung*. More specifically, the national values most often refer to the commitment to the state (patriotism – expressed in the programme «From national revival to national progress» as «devotion to the Motherland»), appreciation of family and community, as well as protection and enculturation of young people. Invertedly, the Republic Spirituality and Enlightenment Center (2025) identifies the following values as non-preferred values: «the indifference to the fate of the nation, localism, tribalism, corruption, disregard for family values, and irresponsibility for the upbringing of youth» (n.p.; translation by the author). The values of communitarism also include the central role of diaspora communities (Urpekova, 2022), as Uzbek youth is expected to take care of

their older family members, and religious convictions, the «Islamic needs» (Saber et al., 2022).

In general, the Jadid ancestors (*Jadidlar*), engaged in science and (spiritual) education as well as in creating the modern public sphere, play an important role in the contemporary public imaginary of intellectual life and learning (Samadova, 2025). The progressive reforms of the Muslim-identity Jadids,³ who were born in the second half of the 19th century and died, having faced persecution and execution, in mid-20th century, also provides the people with the mindset for reforms in public life today. Intellectual roots are also searched for in pre-Soviet literature such as *O'tkan Kunlar – Bygone days* (1927) by Abdullah Qodiriy that has a special place in the decolonial Uzbek literature.

The country-native formation of ideas makes an attempt to remain sensitive towards the traditional and religious ways of living. Islamic cultures are still challenging to be addressed in public, Islamic education and MIL has been studied elsewhere in Asia, for example, in Indonesia (see Syukri et al., 2023; Devi et al., 2023; Sukawati, 2023; Balya et al. 2023), but not that much in secular Uzbekistan. Still, the ideological orientation of the national model can turn out to be promising for incorporating inter-faith dialogue and peace education, as has been developed in the Indian anti-violence context (Kundu, 2011).

The Uzbek model, accompanied with production of national resources (see e.g. Voronina et al., 2021), can be characterised as a protective, value-based, and community-centred model. The national Uzbek model is thus value- and community-based, seeking epistemic and moral footings in traditions and heritage and the togetherness of shared values that are, as Asian values, community-oriented. National models are often described for the intended national audience, with an intention to make sense of the local ownership of foreign models. The national models indicate a strong emphasis on protection of young people from harmful information and effects of the public sphere, as well as their education into citizens complying with the national frames.

5.2. Synthetic-thematic models

There is no common understanding of MIL between Central Asian states, which show significant differences

³ The figures include, among others, Burhonov Abdulvohid (1875–1934), Munavvarqori Abdurashidxonov (1878–1931), Shukuriy Abduqodir (1875–1943), Ubaydulla Asadullaxo'jayev (1878–1939), Abdulla Avloniy (1878–1934), Abdurauf Fitrat (1885–1938), Ismoil Gasprinskiy (1851–1914), Is'hoqxon Ibrat (1862–1937), Obidjon Mahmudov (1871–1936), So'fizoda Muhammadsharif (1880–1937), and Po'latxo'jayev Usmonxo'ja (1878–1968).

in terms of their governance, democratic development and media environments (Anonymous, 2023; Dadakhonov, 2024b). Regional collaboration has, however, resulted in the production of seminal pedagogical and promotional resources,² such as the platforms Mediasabak (<https://www.mediasabak.org>) and Qlever (<https://uz.qlever.asia>).

Against this backdrop, Fedorov and Levitskaya (2018, 2019) attempted to synthesise a common model for CIS countries, with a conclusion that there was no unified understanding other than the holistic view that is also found in UNESCO's components of MIL. They pointed out that in difference from UNESCO's model, the ingredients of ICT, media production and counter-propaganda were weak in CIS countries, with the exception of Ukraine that was «seasoned with clear anti-Russian position» (ibid., p. 30). Still, their «synthetic model» has become established to denote media education in countries close to Russia. It is called «synthetic» and has, as such a similar objective as UNESCO's model, driven from a more West-Global-South perspective, as the idea is to outline a model that would collect the different elements that hosted by media education. Namely, Fedorov (2011) had previously identified five emphases in media education models: informative (learning about media), ethical-ideological (philosophies, religions), aesthetic (arts and culture), cognitive-sociocultural (development of a creative personality), and practice-based (practical training of media production).

Despite their conclusion of the lack of a common model, Fedorov and Levitskaya (2019, p. 31) divided the CIS-country media education models into the following: models focused on the analysis of the role and functions of media and media culture in society (analysis of media texts or the development of analytical thinking); models focused on practical activities, models focused on the ideas of a civil and democratic society, journalism models («designed mainly to prepare young audience for admission to the faculties of journalism»), and counter-propaganda models, focused «on the search for fake media messages and propaganda». They note (ibid.) that the models focused on the ideas of a civil and democratic society have been «promoted in recent years by media agencies of the European Union countries in Kazakhstan, Kyrgyzstan, Azerbaijan, Uzbekistan and Moldova». These groups distinguish models by both topic (analytical thinking, journalism, democratic ideals, disinformation), method (analysis–production or theory–practice) and promoter (CIS countries, EU).

The attempt to identify common traits between countries of the former Soviet Union can be interpreted as a pursuit to cover a geocultural area. However, the

countries included in the area neither share an educational system nor follow a common developmental path, so the model can be seen more as a normative or ideal conceptualization, potentially driven more by political or strategic cultural intent than by content.

5.3. User-centred models

An individual- or user-centred conceptualisation has been outlined by the «personal cultural model» or an individual-centred MIL model (Gendina, 2016; Ablazov, 2023a; Mahmudova, 2021), in which the personal awareness of one's own media uses and construction of a personalised media landscape, as well as digital hygiene and information security, play a central role.

The National Library of Uzbekistan has promoted the cognitive-sociocultural dimension by adopting Russian Gendina's (2017) views on «information cultures». Gendina and Kosolopova's (see e.g. 2014) manuals written in Russian for primary school grades were translated into Uzbek (Gendina & Kosolopova, 2019a, 2019b, 2019c). The idea of information cultures has been adopted by governmental bodies, as, for example, the Ministry of Higher Education, Science and Innovation has produced a textbook on MIL (Abdullayeva et al., 2024). The Republican Scientific and Methodological Center for the Development of Education of the Republic of Uzbekistan, a governmental authority for development of educational materials and practices, has advanced the global 4C's – Communication, Collaboration, Critical Thinking, and Creativity – as part of 21st-century skills widely adapted in American and European frameworks as the «4K model» to educate Uzbek teachers in this cognitive-sociocultural dimensions (Rajapbayeva, 2024). The ideas of «living in harmony with the internet» and choosing proper «internet food» or media diet are also reflected in pedagogical materials produced by international organisations in collaboration with other Central Asian actors (Imankulov et al., 2018 by IREX and Tekimbajeva 2020 by DW Akademie).

DW Akademie, the section for international media development of the German public-service channel Deutsche Welle, has been active in Central Asia and established their «DW model» (Dadakhonov, 2024c; see Braesel & Karg, 2021). Reineck and Lublinski (2015) discuss DW Akademie's approach as a human rights based model, but also UNESCO's model is deeply rooted in the same idea. Even DW's definition of MIL resembles UNESCO's as a compound concept: «a composite set of knowledge, skills, and attitudes that enables and empowers citizens to competently and critically engage with media and information, in order for them to increase

their individual autonomy and collective solidarity in society» (Reineck and Lublinski, 2015, p. 5). What distinguishes DW's ideas from UNESCO's is their stronger emphasis on media, instead of information, while still maintaining the user-centred perspective. Similar to UNESCO's understanding, DW focuses on seven core competences of MIL, namely the access, use, evaluation and creation of media content, as well as participation in media, knowledge about media contexts and the demanding of media quality and rights, which are additions to the UNESCO's definition (*ibid.*).

5.4. Disinformation models

The international models, which have been mostly funded by European and American actors, have the aim of promoting pluralism and media awareness in countries of less democratic development. The focus lies on resisting propaganda, external disinformation influences and creating societal resilience through individual behaviour. The models are basically imported and adapted to national, local conditions by international aid organisations working with the country. International organisations such as DW Akademie, IREX and Internews – and also UNESCO – have not only abundant experience from different regions in the Global South, but also the best possibilities to make resources available in different languages. Indeed, multilingualism – the use of the parallel languages of Uzbek, Russian, English, and, sometimes, Karakalpak and Tajik – is pivotal for a proper outreach and creating equal learning conditions for the entire population.

IREX, the International Research & Exchanges Board, has developed a «Learn to discern» model that focuses on people's ability to recognise and resist manipulative content, with training manuals adapted to linguistic regions (IREX, 2025). The training manual by IREX Europe for Central Asian countries (Shturkhetsky, 2018) was funded by British sources and developed in collaborators in Kazakhstan and Kyrgyzstan. Leaning on UNESCO's concept of MIL, it breaks down its topic into the concepts post-truth, hate speech and stereotypes as entries into democratic discourse and media, media hygiene as an entry into information security, addresses propaganda as a phenomenon and presents the aims and workings of journalism and content creation. In the beginning, American experts from Yale, Princeton and other Ivy League universities encourage students to «think for yourself» (*ibid.*, p. 9), and at the end, there are practical exercises. In the similar line of

thought, the regional BRYCA project⁴ published a training manual in critical thinking for vulnerable youth (Gorokhovsky, 2021).

The international models powerfully place the individual to the centre; for example, in both DW and IREX manuals, an individual's personal relationship to media and information structures is strongly embedded. Besides the me-centredness, international models also share the point of departure in human rights and the individual's rights of access to information. While the international models ensure a sufficient quality in terms of extension and depth of MIL work, they are not always fully attuned to the specific cultural, social, and educational contexts of local settings. As a result, these models require careful adaptation and contextualization to ensure their relevance and effectiveness in addressing local needs and challenges.

6. DISCUSSION

The study at hand examined the domestication of ideas of MIL at the country level in the context of Uzbekistan. Several MIL models were identified and discussed in the literature, and they are not necessarily mutually exclusive, but they typically contain similar, parallel or shared elements and co-exist within a MIL ecology, since, in fact, all cultures are always hybrid (Glück, 2015). The models, emerging from different structural conditions, are conceptual syntheses that serve as idealized frameworks or normative guidelines for the implementation and development of MIL across various sectors and within cross-sectoral collaborations. It may be worth noticing that, in fact, models inherently remain aspirational and cannot be fully realized in practice. They represent efforts to achieve internal coherence in conceptualizing MIL, but they may lack a systematically developed relationship to other existing models. They are often comprehensive and flexible to host a variety of media and communication forms, practices, pedagogies, domains and everything that people need to deal with digital environments. The models also entail political or instrumental endeavours, as the synthetic model, as a creation of Russian researchers, can be observed to serve Post-Soviet connectivity, and the UNESCO model serving as a tool for democratising the Global South.

⁴ The Qlever platform was developed within the EU-funded project «Media and information literacy for enhancing critical thinking of young people in Central Asia» (BRYCA) implemented by the NGO ERIM (France), Media Support Center (Kyrgyzstan), International Center for Journalism MediaNet (Kazakhstan), Center for Development of Modern Journalism (Uzbekistan) and the public Organization Gurdofarid (Tajikistan).

The MIL models are characterized by a dynamic interplay between etic and emic perspectives. Typically, the consideration of cultural contexts in model development and conceptualisation is framed within notions of cultural congruence or sensitivity. However, local efforts to outline models and generate context-specific insights from within individual countries present approaches that challenge the conventional, unidirectional understanding of cultural sensitivity. While global models often treat local conditions as factors that must be adjusted to fit an allegedly universal framework, local modelling efforts reveal a more complex and multidirectional dynamic. Many international models – such as disinformation frameworks or the UNESCO MIL model – are, still, rather based on the idea of cultural flexibility, offering relatively neutral or universal components that can be adapted to various cultural settings. National models, with their emic efforts that Ezumah (2019) identifies as processes of glocalization and hybridization, go further by embodying a culturally native and locally sustainable approach. The development of ideas is meant to be deeply rooted in the local cultural climate, in the Uzbek context explicitly framed in terms of «national values». These models not only adapt to but originate from within the cultural context they aim to serve.

Although the models employ different vocabularies and emerge from varying starting points, their differences are not necessarily substantial. What remains to be explored is the extent to which these models «speak the same language» in practical, situational interventions, and how MIL actors can meaningfully relate to and apply them. For practitioners, particularly educators, constructive guidance is essential. A structured juxtaposition and comparison of models, alongside fostering dialogue between them, can support effective pedagogical implementation. Without such comparative efforts, the proliferation of diverse MIL models may risk causing confusion among both educators and learners, obscuring their distinct contributions and pedagogical implications, and potentially rendering them counterproductive. Therefore, systematic identification and analysis of locally developed models can play a crucial role in advancing a more coherent understanding of MIL approaches and enhancing their educational relevance.

The literature review is constrained by what can be described as the «window of publishing» – that is, the public framing shaped by open access publications. Only those ideas, practices, and models that have been reified and made visible through openly accessible documents can be identified and critically examined. Conversely, innovations developed within communities that are not documented in shareable, accessible formats remain out-

side the scope of public discourse. Put differently, if ideas are not published online with open access, they tend to be obscured within the realm of so-called grey literature, collective local memory, or oral histories. This limitation is particularly relevant in the context of MIL development in a country with rapid change such as Uzbekistan.

7. CONCLUSION

This study, conducted in the context of dewesternising intentions of media theories, focused on the emerging conceptualisations of MIL in the post-Soviet (non-Baltic) republic of Uzbekistan. It disclosed national models of MIL that were value- and community-based, regional models that were thematically aligned, and international models that were more individual-based and focused on one single topic such as disinformation. Countries in the Global South need to approach different models and their political, economic and sociocultural underpinnings carefully, and it is not surprising that the development of a national model, independent of different external and etic cultural influences, stands out as a priority. Therefore, as also pointed out by the UNESCO's overall framework, the process of domestication seems to be an important element of local MIL development and needs to be conducted with local actors.

Creating innate models of MIL is important for fostering ownership of the media educational mission of a societies, especially in non-Western regions where the understanding of media, journalism, and democracy deviate from those in Western liberal democracies. MIL frameworks are embedded in the structural conditions of a society, such as the legal regulation of the public sphere and the degrees of freedom of speech, which create opportunities and challenges for the presence of the MIL concept. The study helps cast light on how MIL development is not neutral and needs to be de- and reconstructed in local settings to increase our understandings of cultural native and flexible models. While UNESCO's overall framework may help identify structures, the thematic foci are sought through models such as identified in this study. Dewesternising efforts may in the form of international disinformation models result in rewesternising (Glück, 2015), if the cultural factors are not developed with emic approaches and by local factors.

The window of publishing that is created by a literature review like the study at hand highlights the importance of engaging researchers as part of MIL development processes, encouraging documentation work among policymakers and pedagogical pioneers, as well as supporting cultures of openness and transparency, in which

a common acceptance of sharing of materials is achieved. If countries with reform intentions include the priority of strengthening research in their agendas, they receive evidence-based knowledge about local conceptual, pedagogical and practical development of MIL in their MIL policy agendas, which, more broadly, benefits the disciplinary field of media literacy and education research.

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APPENDIX

Academic publications included in the study

Categorisation:

- [A] Value-based model, with a focus on national conditions and values
 - [B] User-based model, with a focus on individual media or technology users
 - [C] Synthetic-thematic model, with a focus on outlining a common approach between thematic and geographical areas
 - [D] Disinformation model, with a focus on combatting disinformation and propaganda
 - [E] Sector-specific approach, with a focus on a specific sector or target group
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Precocità digitale e risultati di apprendimento: un'analisi su italiano, matematica e competenza digitale

Digital precocity and learning outcomes: an analysis of Italian, mathematics, and digital competence

SOFIA ERCOLANONI*, MARCO GUI, CHIARA RESPI

Università degli studi di Milano-Bicocca, Italia

s.ercolanoni@campus.unimib.it; marco.gui@unimib.it; chiara.respi@unimib.it

*Corresponding author

Abstract. The present study is part of the growing body of literature examining the consequences of early exposure to digital technologies. To date, research has largely focused on the relationship between intensity of use and well-being/mental health, while less attention has been paid to the long-term effects of age at first access. In this paper, we examine how early exposure to different technologies is associated with learning performance and digital competence, and how socio-economic, cultural, and territorial differences shape these dynamics. The study uses INVALSI data from the sample of Grade 10 students in the 2024/2025 school year. In addition to Italian and mathematics test scores, the data include information on students' digital histories and a new measure of digital competence, based on a test whose design the authors directly contributed to. The results show that students in Southern Italy and those with a migrant background tend to have earlier access to digital devices. Digital precocity is negatively associated with Italian and mathematics achievement, with the notable exception of personal computers and – partly – gaming consoles. The relationship with digital competence is more complex, as it favors students who access technologies at an intermediate age. Overall, the study provides evidence that can help inform educational policies and contribute to reducing digital divides.

Keywords: digital competence, academic skills, inequalities, early exposure, digital technologies.

Riassunto. Il presente studio si inserisce nel crescente filone di letteratura che analizza le conseguenze dell'esposizione precoce alle tecnologie digitali. La ricerca si è finora concentrata sulla relazione tra intensità d'uso e benessere/salute mentale, mentre minore attenzione è stata dedicata agli effetti di lungo periodo dell'età del primo accesso. In questo lavoro esaminiamo come l'esposizione precoce a diverse tecnologie si associa alle performance di apprendimento e alla competenza digitale, e in che modo differenze socio-economiche, culturali e territoriali influenzano tali dinamiche. Lo studio impiega dati INVALSI relativi al campione degli studenti di grado 10 dell'anno scolastico 2024/2025. Essi includono – oltre ai punteggi di italiano e matematica – delle infor-

mazioni sulla storia digitale degli studenti e una nuova misura di competenza digitale, grazie ad un test alla cui progettazione gli autori hanno direttamente contribuito. I risultati mostrano che gli studenti del Sud Italia e con background migratorio hanno accesso anticipato ai dispositivi. La precocità digitale ha relazioni negative con le competenze in italiano e matematica, con la rilevante eccezione del computer personale e -in parte - della console. Più complessa la relazione con la competenza digitale, che premia chi accede ad un'età intermedia. Lo studio offre evidenze utili a orientare le politiche educative e a ridurre i divari digitali.

Parole chiave: competenza digitale, competenze scolastiche, disuguaglianze, esposizione precoce, tecnologie digitali.

1. INTRODUZIONE

L'accesso alle tecnologie digitali avviene ad età sempre più precoci. Attualmente, l'età media di acquisizione di uno smartphone personale si colloca tra i 10 e i 12 anni, una tendenza accelerata dalla pandemia di COVID-19 (Madigan et al., 2022; Gerosa et al., 2024). In questa fase, la maggior parte dei bambini acquisisce anche un accesso autonomo a Internet, inizia a utilizzare applicazioni di messaggistica istantanea e, spesso, crea i primi profili sui social media (Antheunis et al., 2016; Faverio & Sidoti, 2024), nonostante le normative europee fissino a 16 anni l'età minima per l'accesso indipendente alle piattaforme online (14 anni in Italia¹).

Se da un lato campagne come Wait Until 8th negli Stati Uniti, Smartphone Free Childhood nel Regno Unito e Patti Digitali in Italia promuovono un accesso più tardivo, alcuni studiosi suggeriscono che un'introduzione guidata a tali ambienti digitali da età precoci possa favorire un maggiore controllo sulle esperienze online (Shapiro, 2019) oppure contestano che si possa stabilire un'età universalmente appropriata per l'adozione dei dispositivi personali, ponendo attenzione invece all'autoregolazione e la consapevolezza individuale (Moreno e Radesky, 2023; Gallese et al., 2025). Queste prospettive contrastanti generano incertezza tra genitori ed educatori su quando e come consentire l'accesso digitale, in particolare per smartphone e social media (Livingstone & Blum-Ross, 2020), un'incertezza alimentata anche da raccomandazioni divergenti da parte di esperti e ricercatori (Chong et al., 2023). La ricerca accademica si è finora concentrata principalmente sulle implicazioni dell'intensità d'uso del digitale sul benessere e sugli esiti di apprendimento, riportando risultati contrastanti sia per il benessere sia per le competenze (Dempsey et al., 2020; Respi et al., 2025; Rioseco-Pais et al., 2024). Pochi studi hanno esaminato l'impatto dell'età di accesso, mostrando relazioni problematiche tra precocità nell'uso di smartphone e social media e performance scolastiche

(Gerosa et al., 2024; Dempsey, 2019). Inoltre, evidenze recenti indicano che opportunità e rischi legati all'esposizione precoce, così come i livelli di competenza, non sono distribuiti uniformemente tra gruppi sociali, culturali e aree geografiche (Respi et al., 2025).

Ancora meno sviluppata è la ricerca sulla relazione tra precocità digitale e competenza digitale, anche per la poca disponibilità di misure standardizzate di quest'ultima. La maggior parte delle grandi survey continua a misurare le competenze digitali attraverso questionari di autovalutazione, spesso non coerenti con il framework europeo DigComp, mentre il metodo più accurato risulta quello *performance-based* (Siddiq et al., 2016). In Italia, fino a quest'anno, non era disponibile alcuna valutazione nazionale rappresentativa delle competenze digitali degli studenti. Il nostro gruppo di ricerca è stato coinvolto nello sviluppo del test su larga scala allineato al framework DigComp, somministrato all'interno del Sistema Nazionale di Valutazione (INVALSI).

Sulla base di questi presupposti e disponibilità di dati, il presente articolo si propone di rispondere alle seguenti domande di ricerca:

1. Quali associazioni esistono tra esposizione precoce alle tecnologie digitali e competenze curriculari e digitali degli studenti?
2. Quali fattori sono correlati alla classe di prima esposizione alle tecnologie digitali?
3. In che modo la relazione tra precocità digitale e competenze varia tra diversi gruppi sociali e aree geografiche?

Il presente studio intende fornire indicazioni per le politiche educative, contribuire alla riduzione della povertà educativa digitale e supportare la progettazione di strategie di educazione digitale più efficaci e inclusive.

2. LETTERATURA

2.1. Quantità d'uso, tipologia di utilizzo e esiti di vita

Un consistente corpus di studi ha esaminato la relazione tra uso delle tecnologie digitali e benessere, campo nel quale esiste una discussione particolarmente acce-

¹ Decreto Legislativo 10 agosto 2018 n. 101, recante disposizioni per l'adeguamento della normativa nazionale alle disposizioni del Regolamento UE 2016/679 'GDPR'

sa tra gli studiosi. Un uso intensivo dello smartphone è stato associato a una qualità del sonno inferiore (Christensen et al., 2016; Hughes & Burke, 2018), a una riduzione della capacità di concentrazione (Kim et al., 2019a; Kushlev et al., 2016) e a livelli più bassi di relazioni sociali e soddisfazione di vita (Kim et al., 2019b; Mahapatra, 2019; Rotondi et al., 2017). Allo stesso modo, un uso intensivo dei social media è correlato a una diminuzione del sonno, dell'attenzione e della soddisfazione di vita (Woods e Scott, 2016; Twenge & Campbell, 2018; Boer et al., 2020). Alcuni studiosi spingono oltre questa interpretazione, sostenendo che un uso intenso dei social media abbia un ruolo causale nei problemi di salute mentale degli adolescenti (Haidt e Twenge, 2023; Haidt, 2024). Gli studi che hanno indagato questa relazione con metodi causali mostrano anche l'esistenza di dinamiche contro-causali, dove un basso benessere psicologico indurrebbe ad un uso più intenso dei social (Puukko et al., 2020; Heffer et al., 2019; Kelly et al., 2022; Orben, 2020; Orben et al. 2022).

Rispetto invece alla rilevanza sostantiva degli effetti, alcuni studi sostengono che l'ampiezza degli effetti negativi individuati è talmente piccola da non giustificare azioni urgenti da parte delle politiche (Przybylski e Weinstein, 2017, 2019; Orben e Przybylski, 2019). Questi stessi autori mostrano, tuttavia, che in alcuni specifici momenti dello sviluppo (la pubertà e la tarda adolescenza) ragazzi e ragazze siano particolarmente sensibili agli effetti collaterali dei social (Orben et al., 2022). Come osservato in una recente review (Perlmutter et al., 2024), tali inconsistenze possono riflettere differenze metodologiche nel modo in cui vengono misurati i pattern di utilizzo, l'esposizione e gli esiti.

Un numero inferiore di studi ha analizzato l'impatto del possesso dei dispositivi e della frequenza d'uso sul rendimento scolastico. Evidenze consolidate suggeriscono che un uso moderato e strutturato delle tecnologie dell'informazione e della comunicazione (ICT), sia a scuola sia a casa, possa migliorare le performance in lettura, matematica e scienze, mentre un utilizzo superiore a circa due ore giornaliere si associ negativamente con la performance accademica (Gui, 2012; OECD, 2023; Giancola e Salmieri, 2024). Tale risultato si conferma anche in studi longitudinali (Paulich et al., 2021). Inoltre, un uso problematico dello smartphone è spesso associato a risultati scolastici più bassi in diverse discipline (Przepiorka et al., 2021; Sinsomsack e Kulachai, 2018; Nehra e Mehrotra, 2022). In Italia, Gerosa et al. (2023) hanno riportato che livelli più elevati di pervasività d'uso dello smartphone tra gli adolescenti predicono risultati inferiori nelle prove standardizzate di Italiano e Matematica per gli studenti che hanno avuto una infanzia altamen-

te digitalizzata. Sono stati identificati anche meccanismi indiretti: un uso problematico può amplificare difficoltà attentive e sintomi depressivi, i quali a loro volta compromettono le relazioni con i pari e il successo scolastico (Seo et al., 2016).

Oltre alla quantità d'uso, ricerche recenti hanno evidenziato l'importanza della finalità d'uso, cioè se i dispositivi vengano impiegati per attività scolastiche o ricreative. Le evidenze indicano che un utilizzo educativo o orientato agli obiettivi, come svolgere compiti, accedere a risorse online o utilizzare applicazioni didattiche, tende a correlare positivamente con il rendimento scolastico (Yun e Kim, 2025; Mayen et al., 2025). Al contrario, l'uso ricreativo, che include gaming, intrattenimento e social network, risulta generalmente associato a esiti scolastici più bassi e a livelli più elevati di distrazione (Mayen et al., 2025; Lin et al., 2021). Questo rispecchia la letteratura che ha esaminato l'impatto dell'uso degli strumenti mobili per attività circoscritte, pianificate didatticamente e guidate dai docenti, trovando relazioni positive (Talan, 2020; Garzòn et al., 2025).

Infine, oltre agli esiti scolastici, alcune evidenze suggeriscono che l'esposizione digitale possa contribuire positivamente allo sviluppo delle competenze digitali. Ad esempio, Lim (2022) ha riscontrato che un aumento del tempo trascorso davanti agli schermi è associato a livelli più elevati di competenza digitale. Altre evidenze mostrano però che la competenza digitale, misurata in test di performance, è correlata al voto in italiano (INVALSI, 2025) che a sua volta si associa negativamente con la pervasività d'uso dello smartphone (Respi et al., 2025). Questa duplice dimensione, rischi per il benessere e per gli esiti scolastici da un lato, opportunità di sviluppo delle competenze digitali dall'altro, incornicia il dibattito attuale e sottolinea l'importanza di esaminare non solo la quantità, ma anche la tempistica dell'esposizione digitale.

2.2. Età di esposizione alle tecnologie digitali e esiti di vita

Sebbene la maggior parte delle ricerche si sia concentrata sulla quantità di utilizzo di Internet, smartphone e social media, un esiguo numero di studi ha iniziato ad analizzare tali fenomeni attraverso la prospettiva dell'accesso precoce alle tecnologie digitali.

Per quanto riguarda il benessere, le evidenze disponibili, seppur limitate, presentano risultati eterogenei, analoghi a quelli osservati negli studi sull'intensità d'uso del digitale. Sebbene alcune ricerche svolte in comunità svantaggiate o con metodi qualitativi non rilevino relazioni significative tra l'età del primo possesso ad uno smartphone e il benessere (Vaterlaus et al., 2021), diversi

studi mostrano – al contrario – delle associazioni negativa tra precocità nel possesso dei dispositivi e benessere psico-sociale (Dempsey et al., 2019) e uso problematico futuro dello stesso smartphone (Gerosa et al., 2023; 2024). L'accesso precoce alla rete è stato inoltre collegato a riduzioni del sonno e dell'attività fisica nei bambini e negli adolescenti (Bruni et al., 2015; American Academy of Pediatrics, 2016).

La ricerca che esplora la relazione tra accesso precoce alle tecnologie digitali e risultati accademici è ancora più limitata. Gui et al. (2020) hanno rilevato un'associazione negativa tra l'età del primo possesso dello smartphone e la performance nelle prove standardizzate INVALSI tra gli studenti delle scuole superiori italiane: coloro che hanno ricevuto uno smartphone dopo gli 11 anni tendevano a ottenere risultati migliori rispetto a chi lo aveva ricevuto in età più precoce. Analogamente, Dempsey et al. (2019) hanno mostrato che i bambini che hanno acquisito uno smartphone entro i 9 anni presentavano performance inferiori in lettura e matematica rispetto a quelli che lo avevano ricevuto più tardi. Analisi condotte sui dati del Programme for International Student Assessment (PISA) 2018 hanno ulteriormente confermato che sia un uso più frequente delle tecnologie digitali sia un'esposizione più precoce erano associati a punteggi inferiori in matematica e scienze, mentre non sono emerse differenze significative per la lettura (Navarro-Martinez e Pena-Acuna, 2022). Evidenze più sfumate provengono da Gerosa e Gui (2023), il cui studio longitudinale non ha rilevato un effetto complessivo del possesso precoce dello smartphone sulle traiettorie delle competenze linguistiche, ad eccezione di coloro che già prima del possesso erano forti utilizzatori di media digitali, per i quali l'impatto è risultato negativo. Un recente studio che ha esaminato il primo accesso ai profili social da parte degli studenti più giovani, utilizzando dati INVALSI e impiegando tecniche longitudinali, ha riscontrato che un coinvolgimento precoce nei social media influisce negativamente sugli esiti di apprendimento (Respi et al., 2025).

La relazione tra accesso digitale precoce e competenze digitali costituisce un'area di ricerca ancora più recente e ancora meno esplorata. Alcuni studi suggeriscono che il possesso e la familiarità con i dispositivi digitali possa effettivamente favorire maggiori abilità digitali (Bhat et al., 2023; Rioseco-Pais et al. (2024), ma ciò non implica necessariamente lo sviluppo di competenze digitali avanzate (Cullen et al., 2024). La competenza digitale va infatti oltre la capacità tecnica di utilizzare i dispositivi: include anche la capacità di cercare, interpretare, valutare, creare, condividere e collaborare su contenuti digitali in modo critico e responsabile

(Mensonides et al., 2024). Gli studi sui cosiddetti nativi digitali, individui esposti alla tecnologia fin dalla prima infanzia, evidenziano chiaramente tale discrepanza. pur essendo molto familiarizzati con i dispositivi digitali, essi non mostrano competenze digitali ampie e consolidate (Chaiwchan et al., 2023; Erwin et al., 2022). Le loro abilità, in particolare quelle legate alla alfabetizzazione digitale, mostrano una forte variabilità (Krempkow et al., 2022). Di conseguenza, l'educazione digitale emerge come un fattore cruciale per promuovere uno sviluppo significativo delle competenze (DeAssunção et al., 2024; Ardiansyah, 2022; Adeleye et al., 2024). Gli studi di Gui et al. (2020) e Gerosa et al. (2024) hanno rilevato paradossalmente che gli studenti che hanno avuto accesso allo smartphone in età più precoce mostravano in realtà livelli inferiori di competenza digitale critica. Ciò suggerisce che l'accesso, da solo, non è sufficiente per sviluppare competenze digitali complete, una conclusione condivisa anche da Cerda e Saiz (2018), che osservano come, pur essendo molti utenti capaci di utilizzare i dispositivi in modo efficace, spesso manchino loro le abilità critiche necessarie per un'analisi approfondita e una valutazione consapevole dell'informazione digitale. In modo analogo, Ardiansyah (2022) sottolinea la necessità urgente di programmi educativi progettati per rafforzare la alfabetizzazione digitale, in particolare nelle aree del pensiero critico e dell'impegno etico online.

3. DISUGUAGLIANZE

3.1. Accesso alle tecnologie digitali e disuguaglianze

Molta ricerca svolta in Italia mostra in modo consistente che un'esposizione precoce ai dispositivi digitali e ai media è più frequente tra adolescenti provenienti da famiglie immigrate, tra le ragazze e tra giovani con background socio-economici più svantaggiati (Respi et al., 2025; Vitullo et al., 2021; Gui et al., 2015; Gerosa et al., 2024). Ciò si rileva anche a livello internazionale: le famiglie con maggiori risorse socio-economiche tendono a essere più protettive, ritardando l'uso non supervisionato delle tecnologie digitali rispetto ai nuclei familiari meno avvantaggiati (Ito et al., 2010; Livingstone & Blum-Ross, 2020; Livingstone et al., 2015). Studi precedenti hanno inoltre mostrato che gli adolescenti provenienti da contesti svantaggiati trascorrono più tempo sui social media rispetto ai coetanei più avvantaggiati, anche quando i livelli complessivi di accesso sono comparabili (Odgers e Jensen, 2020). Possibili spiegazioni includono minori livelli di alfabetizzazione digitale dei genitori e una ridotta disponibilità di tempo da dedicare ai figli a causa di esigenze lavorative, elementi che diminuiscono

la capacità degli adulti di monitorare l'attività online o di offrire alternative ricreative. Evidenze longitudinali dal Regno Unito mostrano che, pur partendo da un accesso inizialmente limitato, gli adolescenti svantaggiati tendono a un utilizzo più intenso dei social media una volta online (Kurten et al., 2025). Anche le differenze di genere contribuiscono a tali disuguaglianze. Sebbene alcune ricerche evidenzino una convergenza nei livelli di competenze digitali tra ragazzi e ragazze (Gui et al., 2022), le ragazze sembrano più vulnerabili agli aspetti problematici della connettività costante. Esse presentano una maggiore probabilità di sviluppare pattern compulsivi di utilizzo dello smartphone e dei social media (Kwon et al., 2013) e di sperimentare confronti corporei e difficoltà legate all'autostima negli ambienti online (Twenge e Farley, 2021). Anche le appartenenze etniche e socio-economiche influiscono sulle modalità con cui i giovani utilizzano i social media, sebbene la guida genitoriale e l'alfabetizzazione digitale possano mediare tali effetti (Livingstone & Third; Gui et al., 2023).

Questi risultati confermano – ma per alcuni versi aggiornano – prospettive teoriche consolidate. Gli autori che hanno parlato di «capitale digitale» (van Dijk, 2017) come accumulazione diseguale di risorse sociali, culturali ed economiche fanno oggi i conti non solo con vantaggi derivanti da maggiore possibilità d'uso e competenze ma anche con maggiore controllo e supervisione dei minori nei contesti avvantaggiati (Ragnedda e Ruiu, 2020). Una introduzione precoce dei device rappresenta quindi una soluzione pratica che però diventa problematica senza competenze critiche adeguate. Molti studi suggeriscono nell'ambito della 'parental mediation' suggeriscono, infatti, che l'istruzione dei genitori sia un fattore chiave nella gestione dei media in ambito familiare, influenzando la misura in cui gli adolescenti traggono benefici o subiscono effetti negativi dalle proprie attività online (Livingstone & Third 2017).

3.2. Competenze digitali e disuguaglianze

Le disuguaglianze nelle competenze digitali riflettono da vicino quelle riscontrate negli esiti educativi tradizionali. Un intreccio di fattori individuali, socio-culturali e territoriali spiega sia il possesso di competenza digitale sia la capacità di usarla per trarre benefici concreti dall'uso della rete (Helsper et al., 2015; Van Deursen et al., 2016). Numerosi studi mostrano che le competenze digitali dei bambini e degli adolescenti aumentano con l'età (Haddon et al., 2020; Gui et al., 2024; Van De Werfhorst et al., 2022).

Per quanto riguarda il genere, alcune evidenze indicano una progressiva riduzione delle differenze (Lim,

2022), mentre altre ricerche suggeriscono una lieve differenza persistente: i ragazzi eccellono in competenze tecniche, mentre le ragazze risultano più competenti nelle abilità sociali e relazionali online (Smahel et al., 2020; Gui et al., 2024).

Lo status socio-economico (SES) e il livello di istruzione dei genitori restano comunque i più forti predittori delle competenze digitali. Gli adolescenti provenienti da famiglie con elevato capitale educativo mostrano livelli più alti di digital literacy (Gui & Argentin, 2011; Van De Werfhorst et al., 2022) e, anche a parità di risorse tecnologiche, ottengono performance migliori (Heinz, 2016). Ciò è spiegato dal fatto che genitori con maggiori competenze digitali sono più capaci di riconoscere rischi, adottare strategie di regolazione dell'uso e sostenere lo sviluppo digitale dei figli (Livingstone & Third 2017). Inoltre, gli studenti con background più avvantaggiati utilizzano le tecnologie digitali per scopi educativi in misura maggiore rispetto ai coetanei provenienti da famiglie meno abbienti (Van De Werfhorst et al., 2022).

Anche il background migratorio risulta un fattore rilevante. Nel contesto italiano, gli adolescenti nati nel Paese mostrano competenze digitali più elevate, seguiti dai giovani di seconda generazione, mentre i nati all'estero presentano livelli significativamente inferiori (Vitullo et al., 2021; Gui et al., 2024; Van De Werfhorst et al., 2022). Persistono inoltre marcate disparità territoriali, in linea con le ben note differenze in altri ambiti della povertà educativa (Save the Children, 2021; Pratesi, 2022). Nel 2021, i Paesi dell'Europa settentrionale registravano livelli più alti di competenze digitali rispetto a quelli dell'Europa meridionale ed orientale. L'Italia si colloca ancora sotto la media europea: solo il 61,3% dei giovani tra i 16 e i 29 anni possedeva competenze digitali almeno di base, a fronte del 71,06% nell'UE (EUROSTAT, 2023), rimanendo distante dal target dell'Agenda 2030 dell'ONU fissato all'80% (ISTAT, 2023). Anche all'interno del Paese le disuguaglianze sono marcate, con i giovani del Mezzogiorno che riportano livelli di competenza inferiori rispetto ai coetanei del Nord (Gui et al., 2024).

4. GAP NELLA LETTERATURA

La rassegna degli studi esistenti evidenzia diverse lacune che limitano una comprensione completa di come l'accesso precoce alle tecnologie digitali sia correlato con gli esiti degli studenti. La ricerca attuale si è concentrata principalmente sulla quantità e sulla tipologia di utilizzo dei dispositivi tra preadolescenti e adolescenti, con un'enfasi predominante sul benessere e sulla salute mentale (Twenge & Campbell, 2018; Haidt, 2024; Orben &

Przybylski, 2019). Sebbene l'accesso precoce sia spesso al centro del dibattito, le evidenze empiriche sul suo impatto rimangono limitate, in particolare per quanto riguarda gli esiti scolastici (Gui et al., 2020; Dempsey et al., 2019; Respi et al., 2025) e lo sviluppo delle competenze digitali, per le quali i risultati disponibili risultano scarsi e contrastanti (Rioseco-Pais et al., 2024; Gui et al., 2020). I meccanismi tramite cui nel dibattito pubblico ci si attende un impatto della precocità d'uso sulle competenze hanno a che fare soprattutto con la distrazione, l'interferenza con il sonno e gli effetti di contenuti problematici (Gui, 2026). Tuttavia, non esistono studi di questa relazione effettuati con dati amministrativi su campioni rappresentativi a livello nazionale. In linea con questa povertà di evidenze sull'accesso precoce, altrettanto limitate sono le informazioni sulle relative disuguaglianze.

Inoltre, gli studi volti a sviluppare strumenti di valutazione delle competenze digitali basati su prove concrete (performance-based), piuttosto che su autovalutazioni, e in particolare quelli ispirati al framework DigComp, sono ancora limitati (Mieg et al., 2024; BAIT Index²). Ciò risulta particolarmente vero per i minori, sebbene sia possibile osservare una tendenza in crescita. Esperienze significative in questo ambito includono Cortoni & Lo Presti (2018) e Gui et al. (2024). A livello internazionale, iniziative come 'PIX'³ in Francia, 'Educa en Digital'⁴ in Spagna, 'Kompetenzrahmen Medienbildung'⁵ in Germania e 'Digital Turn'⁶ in Estonia hanno sviluppato test nazionali per la misurazione delle competenze digitali. In Italia, invece, non era disponibile alcun test standardizzato progettato specificamente per l'applicazione all'interno del Sistema Nazionale di Valutazione, fino alla recente introduzione del test INVALSI di competenza digitale per il grado 10.

5. DATI, VARIABILI E ANALISI

Il presente studio si basa su dati raccolti nel maggio 2025 dall'Istituto Nazionale per la Valutazione del Sistema Educativo di Istruzione e Formazione (INVALSI). I dati riguardano informazioni dettagliate sul background socio-economico degli studenti, raccolti tramite il questionario studente, e sulle loro performance nelle prove di Italiano e Matematica.

Inoltre, i dati comprendono una misura della competenza digitale degli studenti. Il nostro gruppo di ricerca ha collaborato con INVALSI allo sviluppo di un nuovo test di competenza digitale basato sulle performance, allineato al framework europeo DigComp, usato per produrre il dataset. Insieme al test, un questionario sull'uso passato e presente delle tecnologie digitali da parte degli studenti, ideato dal nostro team e integrato da INVALSI, ha fornito dati centrali sulla storia digitale degli studenti. L'introduzione di questo strumento rappresenta un elemento di rilevante innovazione nel panorama italiano: mentre in diversi Paesi europei, tra cui Francia, Spagna e Germania, esistono già sistemi strutturati per la misurazione delle competenze digitali degli studenti a livello nazionale, in Italia fino ad oggi non era disponibile un indicatore standardizzato e comparabile su scala nazionale. Inoltre, a differenza delle indagini che si basano prevalentemente su misure di autovalutazione, il nostro strumento è fondato su una misurazione standardizzata e *performance-based* di queste competenze, approccio riconosciuto dalla letteratura come più accurato per la rilevazione delle competenze digitali reali (Siddiq et al., 2016). Il test si basa sul DigComp 2.2, il quadro europeo di riferimento ampiamente adottato dagli Stati membri, dalla comunità scientifica e dagli attori dell'educazione. Lo strumento valuta quattro delle cinque aree di competenza delineate dal DigComp 2.2: Alfabetizzazione su informazioni e dati, Comunicazione e collaborazione, Creazione di contenuti digitali e Sicurezza. L'area relativa al Problem Solving è stata esclusa per la sua natura fortemente trasversale, così come alcune sotto-dimensioni (Proteggere la salute e il benessere, Proteggere l'ambiente e Programmazione): le prime due per mantenere la coerenza interna della scala, la terza in quanto relativa alla programmazione, ambito che avrebbe potuto introdurre bias legati alla tipologia di indirizzamento scolastico frequentato dagli studenti del 10° grado.

Entrambi gli strumenti sono stati somministrati da INVALSI mediante procedure standard informatizzate e successivamente processati secondo i protocolli operativi e di pre-processing dell'Istituto. In particolare, INVALSI ha ricalcolato i pesi di campionamento delle scuole partecipanti per garantire la rappresentatività nazionale e per macro-area geografica. Per i test di competenza, gli indicatori sono stati costruiti adottando il modello di Rasch, che consente di stimare l'abilità dei rispondenti indipendentemente dalla difficoltà dei singoli item, e la difficoltà degli item indipendentemente dalle caratteristiche del campione. Tale procedura assicura stime robuste, non influenzate dalla variabilità degli item o dalla composizione del campione. Inoltre, i punteggi sono stati

² <https://www.bait.eus/Bait/index>

³ <https://pix.org/en/the-tests>

⁴ <https://www.red.es/es/iniciativas/educa-en-digital>

⁵ <https://mebis.bycs.de/beitrag/kompetenzrahmen-zur-medienbildung>

⁶ <https://www.euneoscourses.eu/courses/digital-turn-how-to-make-your-school-more-digital/>

corretti per minimizzare eventuali effetti di cheating, incrementando la validità e l'affidabilità dei risultati.

Il set di dati analizzato è costituito dagli studenti del 10° grado che hanno partecipato al ciclo di rilevazione INVALSI 2024/2025, primo anno in cui l'Istituto ha raccolto informazioni sulle competenze digitali. Il campione di partenza è rappresentativo della popolazione nazionale del 10° grado. A seguito delle operazioni di integrazione dei dati provenienti dalle diverse prove e delle procedure di pulizia dei dati, il campione analitico finale risulta composto da 19.925 studenti.

5.1. Variabili

Le principali variabili dipendenti per questo studio sono i punteggi degli studenti in Italiano, Matematica e Competenze Digitali, trattati come misure continue standardizzate (media nazionale della prova ≈ 200 , deviazione standard = 40, secondo le impostazioni di INVALSI). Le principali variabili indipendenti catturano l'età del primo accesso alle tecnologie digitali, (smartphone, applicazioni di messaggistica, account social (personali dello studente), computer, tablet e console da gioco (anche in condivisione con altri membri della famiglia)). Queste misure, di tipo ordinale, prevedevano 12 categorie di risposta (Prima della primaria, gradi scolastici da 6 a 10, non ho mai avuto accesso) ed erano già state validate nel progetto EYES UP (Respi et al., 2025). Esse sono utilizzate qui anche come variabili dipendenti nelle analisi che esplorano i fattori correlati all'esposizione digitale precoce. Per studiare le disuguaglianze sociali e territoriali, si includono le covariate genere, background migratorio (nativi, I generazione, II generazione), macro-area geografica (Nord Ovest, Nord Est, Centro; Sud, Sud e Isole⁷) e status socio-economico e culturale (ESCS⁸). Queste ultime vengono usate anche come controlli⁹.

5.2. Metodi

Per esaminare la relazione tra esposizione digitale precoce e competenze digitali e tradizionali, sono stati stimati modelli di regressione lineare includendo controlli per variabili socio-economiche, indicatori di accesso ad altri dispositivi digitali e termini quadratici delle

variabili di primo accesso alle tecnologie digitali, al fine di cogliere eventuali pattern non lineari nell'associazione. Inoltre, per ciascuna tecnologia digitale è stato calcolato, mediante un modello di regressione logistica ordinale un Generalized Propensity Score (GPS), in cui le covariate socio-demografiche¹⁰ degli studenti sono utilizzate per modellare la probabilità condizionata dei diversi livelli di esposizione. Per ogni individuo è stata quindi estratta la probabilità stimata corrispondente al livello effettivamente osservato di età di primo accesso, ottenendo così il GPS individuale. I pesi GPS risultanti sono stati inclusi nei modelli di OLS come pesi di regressione per correggere la selezione nei diversi livelli di accesso e migliorare l'equilibrio delle covariate tra gruppi riducendo il bias nelle stime delle associazioni tra esposizione digitale precoce e risultati di competenza.¹¹

Le variabili di primo accesso ai dispositivi sono state trattate come quasi-continue. Tale scelta deriva dal fatto che le categorie riflettono un ordine temporale omogeneo (gli anni scolastici)¹², che approssima una metrica a intervalli. Questa specificazione consente inoltre di modellare esplicitamente eventuali pattern non lineari attraverso l'inclusione di termini polinomiali (quadratici). Quindi, il coefficiente dell'OLS indica la variazione media dei punteggi nelle competenze per un aumento unitario nelle categorie delle classi di accesso alle diverse tecnologie digitali. Per l'analisi delle determinanti dell'accesso precoce, tenuto conto della natura ordinale della variabile dipendente, sono stati stimati anche modelli di regressione logistica ordinale. Tuttavia, poiché i risultati ottenuti con il modello ordinale e con il modello lineare risultano empiricamente sovrappo-

¹⁰ Genere, Origine, ESCS

¹¹ Per valutare il bilanciamento delle covariate dopo la stima del Generalized Propensity Score (GPS), abbiamo confrontato le distribuzioni delle principali covariate (ESCS, genere, background migratorio) prima e dopo la pesatura. A differenza dei trattamenti binari, per cui è possibile calcolare lo Standardized Mean Difference (SMD), il nostro trattamento (età di primo accesso alle tecnologie digitali), è una variabile ordinale con 12 livelli. Lo SMD classico non è quindi direttamente applicabile. Per questo motivo, il bilanciamento è stato valutato mediante statistiche descrittive pesate (medie, deviazione standard e percentili) e grafici boxplot pre e post pesatura. I risultati mostrano che le covariate chiave hanno distribuzioni simili dopo l'applicazione dei pesi GPS, con mediane e percentili ben allineati tra i diversi livelli di trattamento. In particolare, i boxplot post-pesatura risultano sovrapponibili rispetto a quelli non pesati, indicando che l'equilibrio tra gruppi è stato raggiunto. Per il bilanciamento delle covariate si veda in appendice le figure da A3 a A8

¹² Si noti che anche la prima categoria (prima della primaria) e l'ultima categoria (ho mai avuto accesso) sono incluse nella codifica quasi-continua. La prima categoria rappresenta l'inizio cronologico dell'esposizione, mentre l'ultima categoria, nel contesto del campione (ragazzi di grado 10), corrisponde a un'esposizione successiva al grado scolastico dei partecipanti. Pertanto, entrambe le categorie possono essere coerentemente trattate come estremi della scala temporale, senza interrompere l'ordine e la continuità della variabile.

⁷ Le regioni comprese nella categoria Sud sono: Abruzzo, Molise, Campania e Puglia; le regioni comprese nella categoria Sud e Isole sono: Basilicata, Calabria, Sicilia e Sardegna

⁸ Variabile elaborata da INVALSI con PCA che comprende le variabili: Titolo di studio dei genitori, Situazione occupazionale dei genitori e possesso di alcuni beni materiali (<https://www.invalsiopen.it/indicatore-esecs-valutazione-equa/>)

⁹ Per le statistiche descrittive delle variabili si veda tabella A2 in appendice

nibili, sia in termini di segni sia di stime marginali dei coefficienti, abbiamo mantenuto l'OLS come specificazione principale. Questa scelta è ulteriormente motivata dalla maggiore trasparenza interpretativa dell'OLS, che permette di quantificare in modo diretto la variazione associata al passaggio tra categorie successive dell'età di primo accesso. Per questi motivi, nella presentazione dei risultati riportiamo i modelli stimati mediante regressione lineare, garantendo inoltre continuità e coerenza metodologica con le altre analisi dello studio, che adottano anch'esse specificazioni lineari.

Per aumentare la robustezza delle stime, nei modelli predittivi dell'accesso precoce sono stati utilizzati errori standard robusti, mentre per i modelli predittivi delle competenze gli errori standard sono stati clusterizzati a livello di classe per tener conto del contesto condiviso tra studenti della stessa classe e di ottenere stime corrette della varianza dei coefficienti, riducendo il bias dovuto alla correlazione intra-class. La dimensione media dei cluster è di 19.93 studenti (mediana = 20, minimo = 7, massimo = 33), valori che assicurano un numero di osservazioni per cluster sufficiente sufficiente per stimare stime robuste della varianza.

Sono stati stimati, per ciascuna tipologia di competenza (Italiano, Matematica e Digitale), modelli OLS distinti per ogni tecnologia digitale considerata, per un totale di 18 modelli principali. Per valutare l'eterogeneità degli effetti rispetto alle principali dimensioni di disuguaglianza, sono stati stimati ulteriori modelli in cui ciascuna variabile principale di accesso è stata interagita separatamente con ciascun fattore socio-demografico. Questi modelli, sempre stimati separatamente per ciascuna tecnologia e per ciascun outcome, ammontano complessivamente a 90 modelli aggiuntivi. Infine, per ogni dispositivo digitale è stato stimato un modello volto a identificare i predittori socio-demografici dell'età di primo accesso (per un totale di 6 modelli). Tutti i modelli riportati sono utilizzati per rispondere alle domande di ricerca. In aggiunta, limitatamente ai modelli predittivi dell'età di primo accesso, sono stati stimati anche modelli di regressione logistica ordinale, coerenti con la natura ordinale della variabile dipendente. Tali modelli sono stati utilizzati esclusivamente come verifica di robustezza, ma non vengono presentate nel testo principale.

6. RISULTATI

6.1. Descrittive

Il primo risultato del nostro studio mostra una quasi sovrapposizione tra le distribuzioni delle classi di primo accesso allo smartphone e all'app di messaggistica istan-

tanea, in entrambi i casi, la media si attesta durante la prima secondaria di I grado (grado 6). Un pattern simile emerge per l'apertura del profilo personale sui social media: sebbene la maggior parte dei ragazzi crei il primo account social personale durante il grado 6, la distribuzione è leggermente spostata verso le classi successive, con una media attorno al grado 7. Ciò suggerisce che l'ingresso sui social media avvenga, in media, un po' più tardi rispetto allo smartphone e alle app di messaggistica. Diverso è invece il quadro per computer, tablet e console per videogiochi, dove le distribuzioni risultano più uniformi lungo tutte le classi scolastiche. Pur avendo anch'essi una media di primo accesso intorno al grado 6 (per la console videogiochi, tra il grado 5 e il grado 6), questi dispositivi mostrano una variabilità maggiore tra gli studenti. È interessante notare, ad esempio, che, tra coloro che hanno accesso a tablet e console videogiochi, la classe modale è il grado 3, quindi significativamente precedente rispetto alla media¹³.

Nel complesso, quindi, emergono due grandi pattern distinti. Da un lato, smartphone, app di messaggistica e social media mostrano una dinamica di adozione molto concentrata e tendenzialmente sincronizzata intorno al grado 6, con uno slittamento solo leggermente più tardivo per i social. Dall'altro lato, computer, tablet e console presentano modalità di accesso molto più eterogenee e distribuite lungo l'intero percorso scolastico, con picchi di utilizzo anticipati (ad esempio nel grado 3) ma medie comunque vicine al grado 6.

6.2. Esposizione digitale precoce e competenze

Le analisi relative alla prima domanda di ricerca evidenziano pattern differenti a seconda del tipo di dispositivo digitale e mostrano che la relazione tra classe di accesso alle tecnologie digitali e competenze non è sempre lineare. Le illustriamo di seguito separando le tre diverse variabili dipendenti.

Competenze in italiano e matematica:

Per quanto riguarda le competenze in Italiano, emergono andamenti eterogenei a seconda del tipo di dispositivo. L'associazione con la classe di primo accesso risulta non lineare per smartphone, computer e tablet, mentre appare più lineare nel caso delle applicazioni di messaggistica istantanea, degli account social e delle console per videogiochi.

In particolare, l'analisi della classe in cui gli studenti ottengono il primo smartphone personale mostra che

¹³ Per la specifica del valore medio per ogni dispositivo vedere tabella statistiche descrittive A2 in appendice

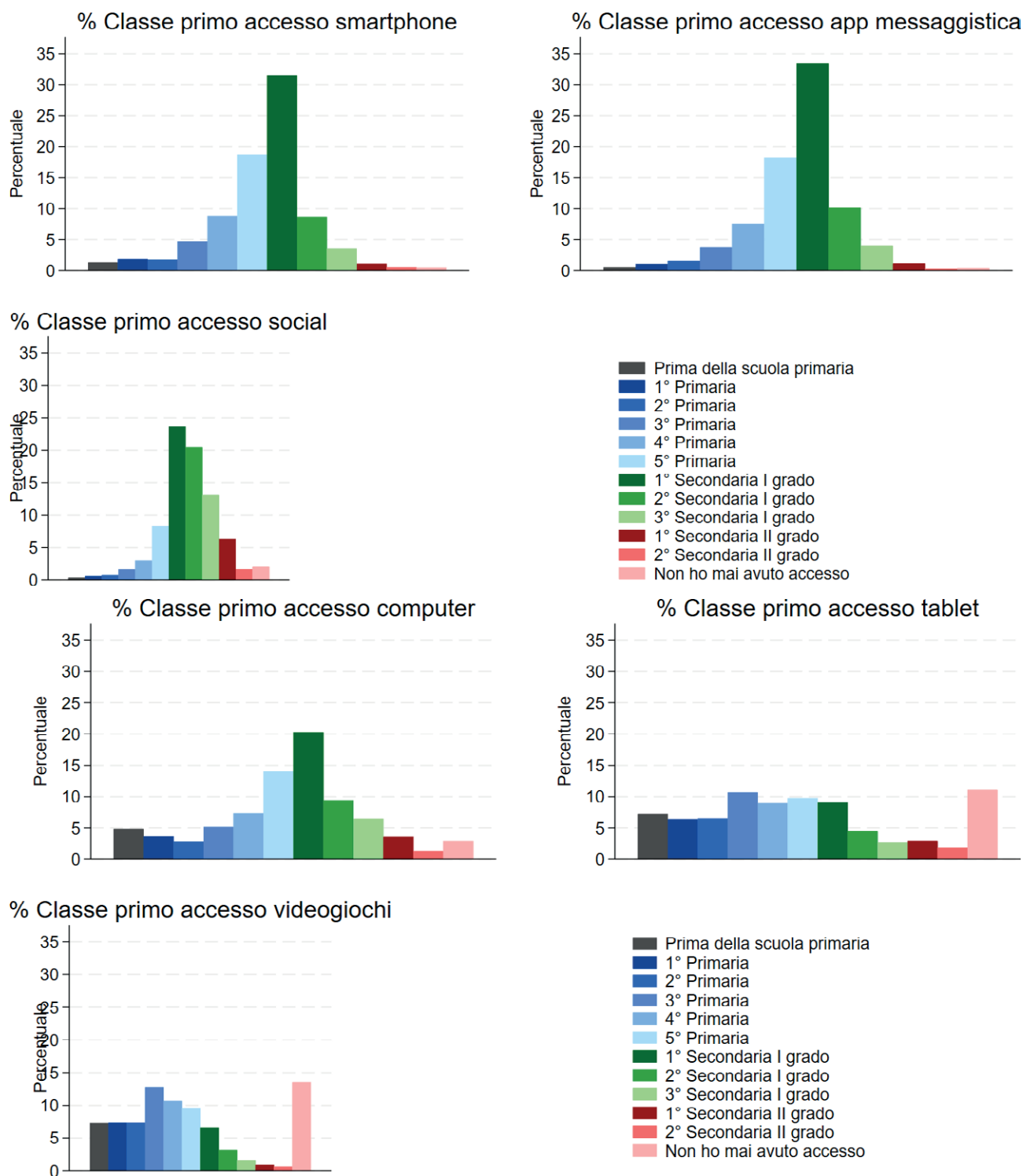


Figura 1. Distribuzione classe primo accesso tecnologie digitali.

un accesso posticipato fino al sesto grado è associato a livelli più elevati di competenze in Italiano, seguito da un lieve decremento in corrispondenza di accessi ulteriormente tardivi. Diversamente, per le applicazioni di

messaggistica istantanea, gli account social e, seppur in misura più contenuta, le console per videogiochi, un accesso più tardivo risulta sistematicamente correlato a competenze più elevate in Italiano (Fig. 2). Per rende-

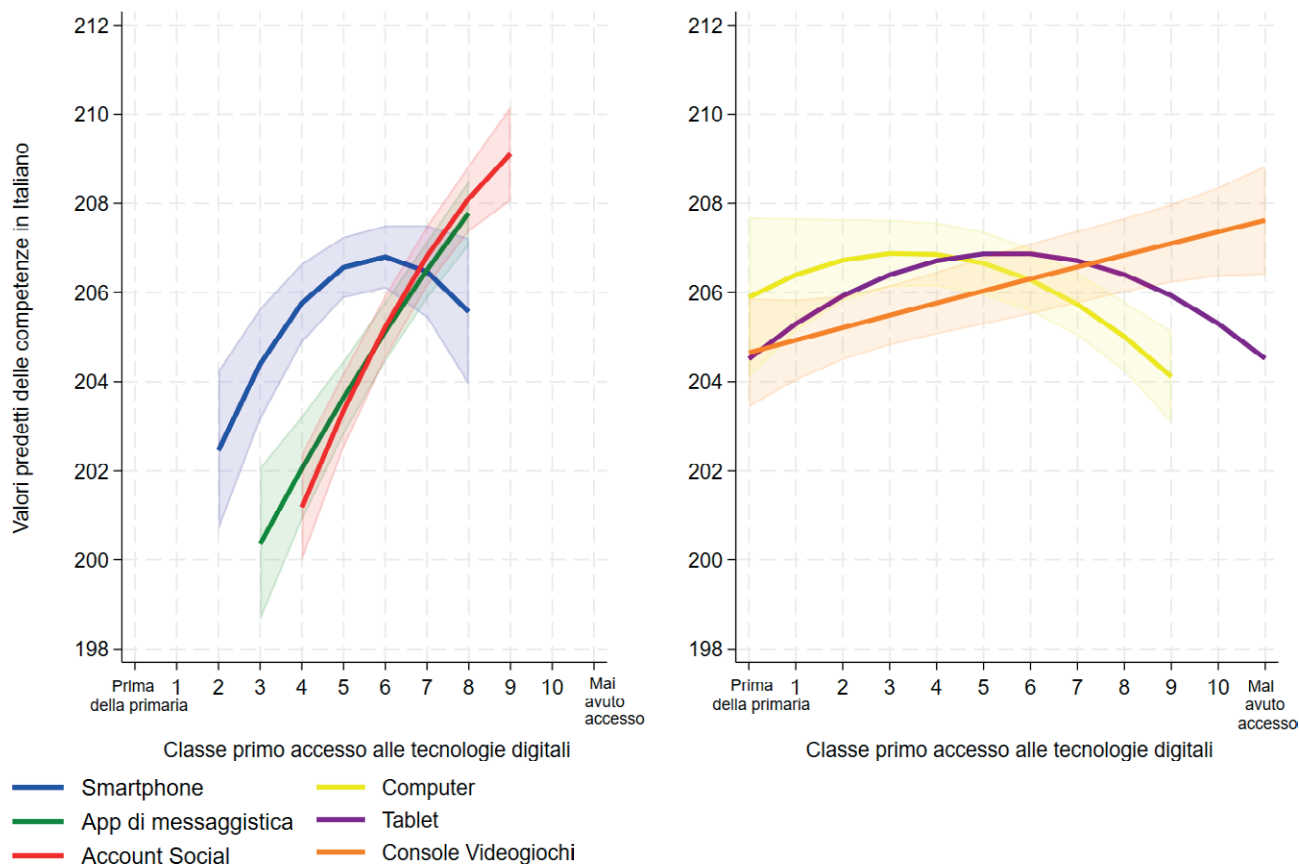


Figura 2. Valori predetti dei punteggi di competenza in Italiano per le diverse classi di accesso alle tecnologie digitali (N =14.158). Nota: Le analisi sono condotte controllando per genere, background migratorio, status socio-economico e culturale (ESCS), peso delle osservazioni (stimato tramite GPS sulle principali covariate: genere, origine ed ESCS), area geografica, tipologia di scuola, punteggi in Matematica e competenze digitali, nonché per tutti gli altri dispositivi digitali diversi da quello considerato di volta in volta nell'analisi. Per ciascun dispositivo, al fine di ridurre l'influenza di valori estremi, sono mostrati solo i risultati relativi alle classi di primo accesso comprese tra il 5° e il 95° percentile della variabile indipendente principale.

re più chiaro il peso delle differenze osservate, possiamo confrontarle con altre disuguaglianze già note: nel nostro campione, la differenza media nei punteggi di italiano tra studenti e studentesse è di circa 9 punti, una disuguaglianza ben documentata e stabile anche in studi precedenti. La differenza nei punteggi di italiano tra chi accede precocemente a un account social o a un'app di messaggistica e chi vi accede più tardi è di circa 8 punti percentuali, indicando quindi un divario sostanziale e comparabile alle altre fonti di disuguaglianza educativa.

Per quanto riguarda le competenze in matematica, le relazioni osservate risultano più lineari rispetto a quelle rilevate per Italiano. In particolare, per smartphone, applicazioni di messaggistica istantanea e account social emerge un andamento piuttosto chiaro: maggiore è il ritardo nell'accesso a questi dispositivi, maggiori sono i livelli di competenza in matematica osservati. Al contrario, per il computer e la console per videogiochi si rileva

un pattern differente: posticipare l'acquisizione di questi dispositivi risulta debolmente associato a un leggero decremento nelle competenze in matematica (Fig. 4).

Competenze digitali:

I risultati indicano che gli studenti che ritardano l'acquisizione di smartphone personali e applicazioni di messaggistica istantanea fino al grado 5 presentano livelli più elevati di competenza digitale rispetto a coloro che accedono a queste tecnologie in età più precoce. Un pattern simile emerge per la prima apertura di un account personale sui social media, con uno spostamento temporale di circa due anni: gli studenti che aprono il loro primo account social durante il grado 7 mostrano livelli di competenza digitale più elevati. Tuttavia, i dati evidenziano anche che la relazione non è lineare: un accesso eccessivamente tardivo può risultare associato a livelli inferiori di competenza digitale.

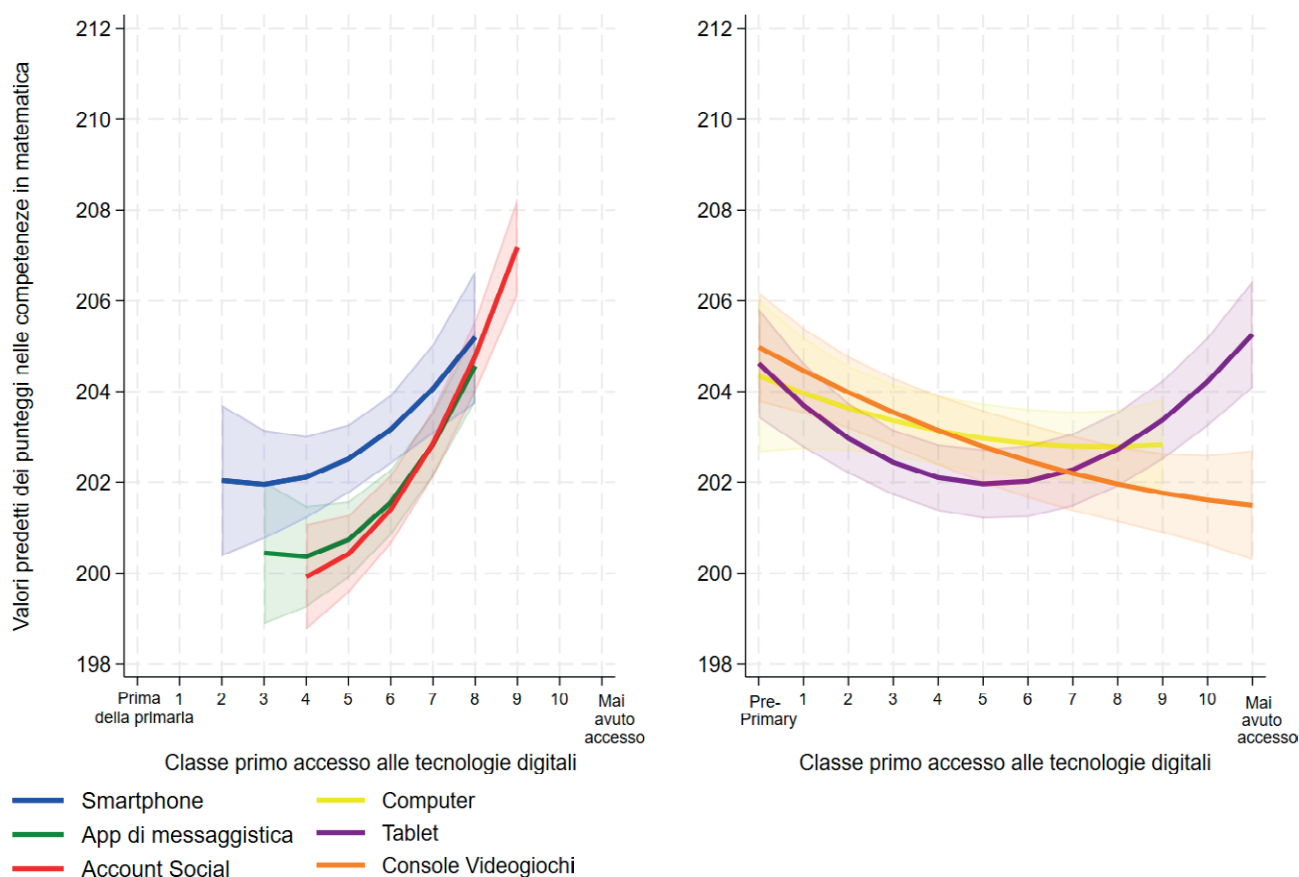


Figura 3. Valori predetti dei punteggi di competenza in Matematica per le diverse classi di accesso alle tecnologie digitali (N =14.158). Nota: Le analisi sono condotte controllando per genere, background migratorio, status socio-economico e culturale (ESCS), peso delle osservazioni (stimato tramite GPS sulle principali covariate: genere, origine ed ESCS), area geografica, tipologia di scuola, punteggi in Italiano e competenze digitali, nonché per tutti gli altri dispositivi digitali diversi da quello considerato di volta in volta nell'analisi. Per ciascun dispositivo, al fine di ridurre l'influenza di valori estremi, sono mostrati solo i risultati relativi alle classi di primo accesso comprese tra il 5° e il 95° percentile della variabile indipendente principale.

Per quanto riguarda computer e console per videogiochi, la relazione appare più lineare: in generale, maggiore è l'anticipazione nell'acquisizione di questi dispositivi, più elevate risultano le competenze digitali degli studenti. Al contrario, per quanto riguarda il tablet, non emergono differenze sostanziali nei livelli di competenza digitale in relazione all'età di primo utilizzo (Fig. 4). Come per Italiano la differenza nell'accedere precocemente a Smartphone, account social e app di messaggistica rispecchia il divario di genere nei punteggi in matematica tra studenti e studentesse.

6.3. Disuguaglianze

Per rispondere alla seconda domanda di ricerca, l'analisi ha evidenziato come alcune caratteristiche degli studenti siano correlate con l'esposizione precoce alle

tecnologie digitali. In particolare, l'area geografica di residenza e il background migratorio risultano fattori associati alla classe in cui gli studenti accedono per la prima volta ai dispositivi digitali. Gli studenti provenienti dalle regioni del Sud e delle Isole mostrano una probabilità maggiore di avere accesso a smartphone, applicazioni di messaggistica istantanea, social media e tablet approssimativamente tra sei mesi e un anno prima rispetto ai coetanei del Nord-Ovest e quasi un anno e mezzo prima rispetto agli studenti del Nord-Est. Per quanto riguarda il background migratorio, i risultati indicano che essere uno studente di prima o seconda generazione è correlato con un'acquisizione precoce di smartphone, app di messaggistica e, in misura ancora maggiore, dei social media. Al contrario, per quanto riguarda le console per videogiochi, l'associazione si inverte: gli studenti di prima generazione, e ancor più quelli di seconda generazione, sembrano ritardare rispet-

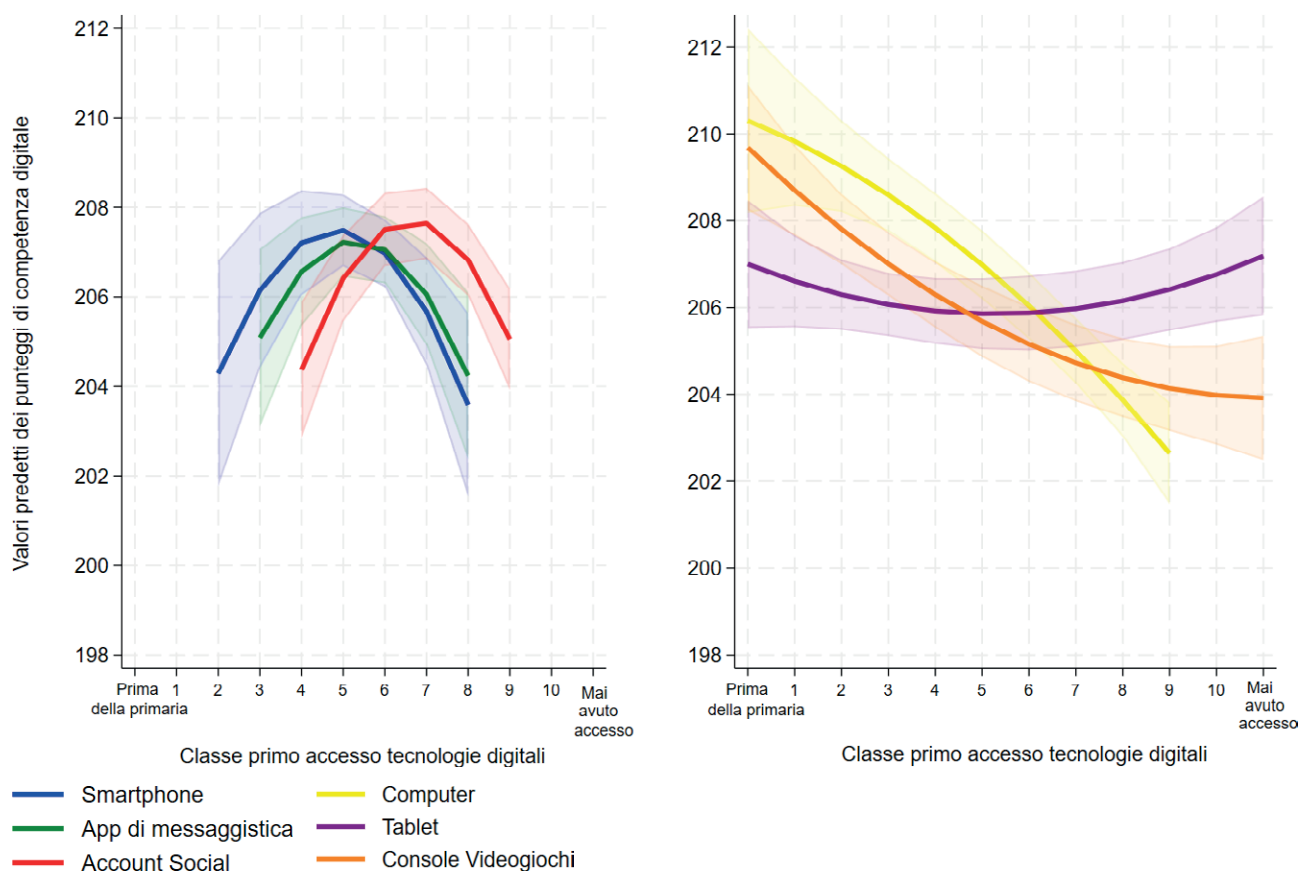


Figura 4. Valori predetti dei punteggi di competenza digitale per le diverse classi di accesso alle tecnologie digitali (N = 14.158). Nota: Le analisi sono condotte controllando per genere, background migratorio, status socio-economico e culturale (ESCS), peso delle osservazioni (stimato tramite GPS sulle principali covariate: genere, origine ed ESCS), area geografica, tipologia di scuola, punteggi in Italiano e Matematica, nonché per tutti gli altri dispositivi digitali diversi da quello considerato di volta in volta nell'analisi. Per ciascun dispositivo, al fine di ridurre l'influenza di valori estremi, sono mostrati solo i risultati relativi alle classi di primo accesso comprese tra il 5° e il 95° percentile della variabile indipendente principale.

tivamente di circa un anno e di un anno e mezzo l'acquisizione di tali dispositivi rispetto agli studenti nativi italiani. Lo status socio-economico e culturale degli studenti (ESCS), invece, non sembra rappresentare un fattore determinante, così come il genere, ad eccezione delle console per videogiochi. In questo caso, l'essere femmina risulta associato a un ritardo di circa un anno e mezzo rispetto ai maschi nell'acquisizione di questo dispositivo digitale (Fig 5).

Poiché i fattori descritti nella sezione precedente risultano associati alla classe di accesso ai dispositivi, era rilevante verificare se tali fattori potessero contribuire a spiegare l'associazione robusta tra classe di accesso alle tecnologie digitali e i punteggi nelle competenze digitali e nelle competenze scolastiche tradizionali. Le analisi delle interazioni restituiscono tuttavia un quadro eterogeneo e non sempre di agevole interpretazione. Di segui-

to riportiamo le associazioni statisticamente significative più rilevanti¹⁴.

Genere. Per quanto riguarda il genere, esso risulta un fattore rilevante esclusivamente in relazione alle competenze digitali. I dati mostrano che, tra i maschi, ritardare l'acquisizione dello smartphone oltre il grado 5 è associato a un maggiore decremento dei punteggi rispetto alle femmine (Fig. 6). Un andamento differenziato tra ragazzi e ragazze emerge anche rispetto all'accesso ai videogiochi: per le ragazze, ritardare l'uso della console è associato a un calo costante delle competenze digitali, mentre per i ragazzi il ritardo fino al grado 7 e 8 si associa a una diminuzione più marcata dei punteggi, seguita però da un successivo leggero incremento.

¹⁴ Le ulteriori analisi e la documentazione completa, originariamente presentate in appendice, non sono incluse per esigenze di sintesi e possono essere richieste contattando gli autori.

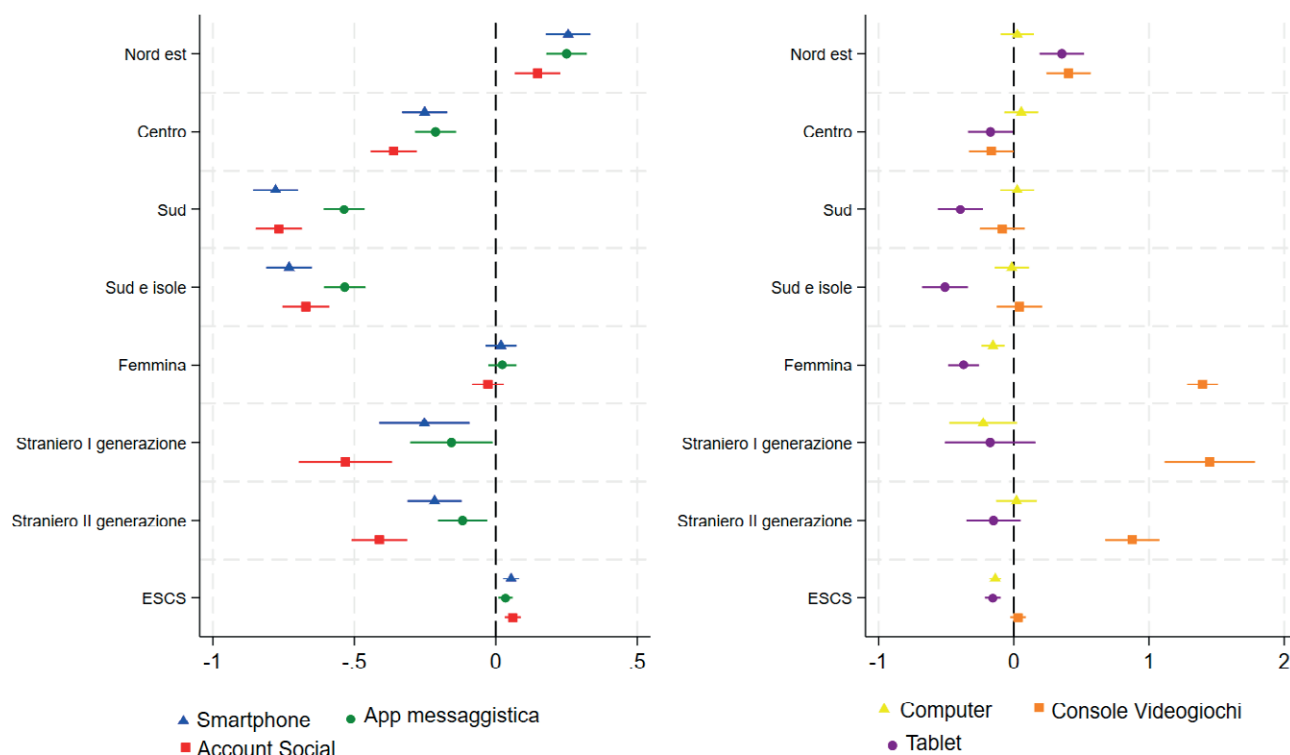


Figura 5. Predittori della classe di primo accesso alle tecnologie digitali. (Smartphone, N = 16245; App messaggistica, N = 16028; Account Social, N = 15964; Computer, N = 15879; Tablet, N = 15851; Console videogiochi, N = 15826). Nota: Le analisi sono condotte controllando per tutte le caratteristiche socio-demografiche degli studenti e per la tipologia di scuola frequentata. I risultati riportati si basano su modelli OLS e risultano coerenti con quelli ottenuti mediante modelli OLOGIT.

Tipo di scuola. Considerando il tipo di scuola, le associazioni più consistenti riguardano nuovamente le competenze digitali. Per gli studenti degli istituti professionali, ritardare l'acquisizione dello smartphone e delle applicazioni di messaggistica istantanea (fino grado 6) e dei social network (fino grado 7) risulta associato ad un aumento maggiore delle competenze digitali rispetto agli studenti degli altri indirizzi. In relazione ai videogiochi, invece, gli studenti degli istituti professionali presentano un andamento opposto rispetto agli altri: ritardare l'accesso alla console fino al grado 6 è associato a punteggi più alti nelle competenze digitali, mentre oltre questo punto l'associazione diventa negativa (Fig 7).

Macro-area Geografica. Anche per l'area geografica l'associazione più evidente riguarda le competenze digitali. Se per tutti gli studenti ritardare l'accesso al computer si associa a punteggi più bassi, la riduzione dei punteggi risulta più marcata per gli studenti provenienti dal Sud.

Origine degli studenti. L'origine rappresenta infine l'unico fattore per il quale emergono associazioni significative anche con i risultati in matematica e in italiano. Per la matematica, ritardare l'accesso al computer è più negativamente associato ai punteggi degli studenti immigrati di I

generazione rispetto ai nativi e agli studenti di II generazione. Guardando i punteggi in Italiano, tra gli studenti di I generazione l'accesso posticipato al computer fino al grado 6 è associato ad un maggiore incremento dei punteggi rispetto agli altri gruppi, mentre oltre tale soglia l'associazione tende a invertirsi. Infine, nessun risultato statisticamente significativo è stato riscontrato rispetto allo status socio economico-culturale (ESCS) degli studenti.

7. DISCUSSIONE E CONCLUSIONI

Le analisi presentate in questo studio confermano e ampliano le poche evidenze esistenti sulle relazioni tra precocità di esposizione alle tecnologie digitali e competenze scolastiche, aggiungendo un contributo originale relativo alla competenza digitale. Il nostro lavoro rappresenta infatti il primo in Italia a utilizzare i nuovi dati INVALSI sulla competenza digitale al grado 10 (test somministrato per la prima volta nel 2025), offrendo una fotografia completa delle associazioni robuste tra diverse forme di precocità digitale e un insieme ampio di esiti, includendo sia competenze disciplinari sia digitali.

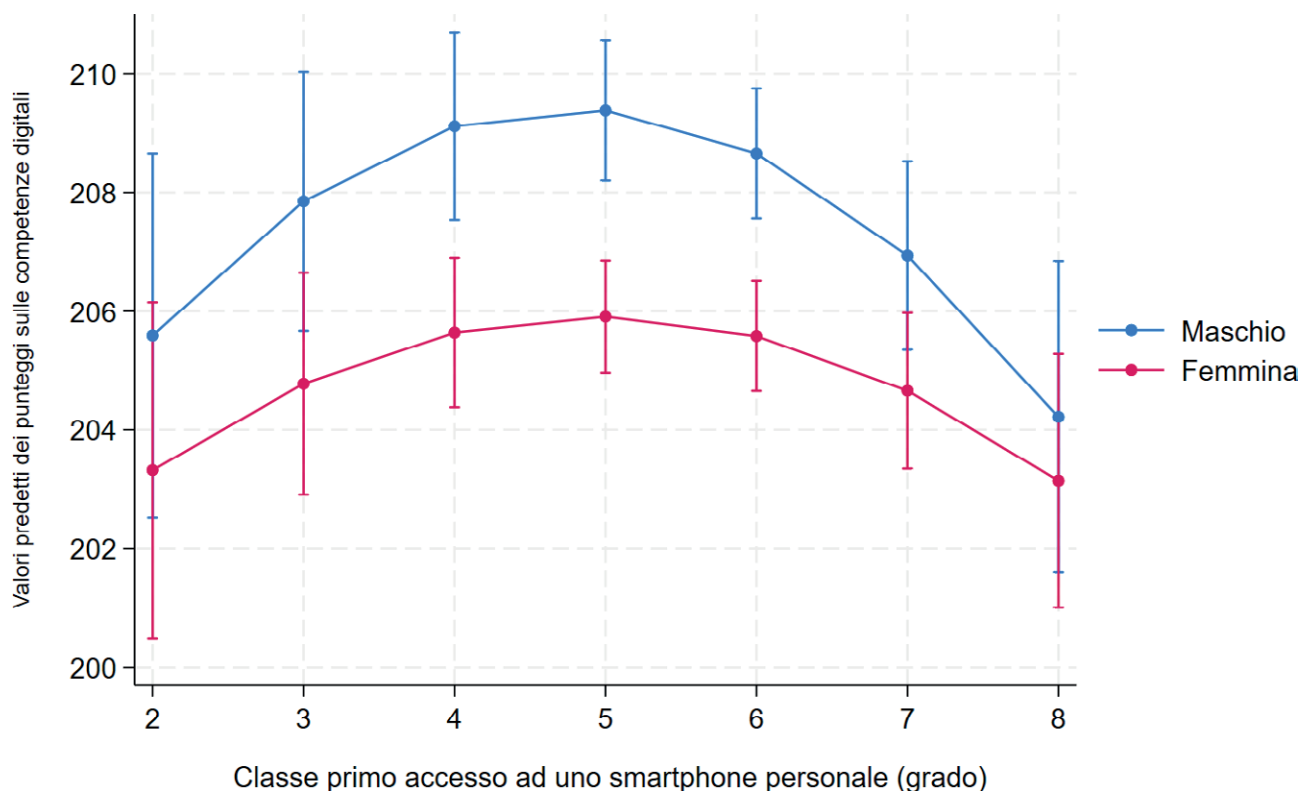


Figura 6. Valori predetti della competenza digitale per classe di primo accesso allo smartphone, in interazione con il genere (N =14.158). Nota: Al fine di ridurre l'influenza di valori estremi, sono mostrati solo i risultati relativi alle classi di primo accesso comprese tra il 5° e il 95° percentile della variabile indipendente principale.

Il tema della precocità digitale è oggetto di un dibattito particolarmente attivo, caratterizzato da un'elevata richiesta di nuove evidenze empiriche. I risultati ottenuti mostrano che la relazione tra età di primo accesso e competenze varia in modo rilevante a seconda del tipo di dispositivo e ambiente digitale considerato. Per le competenze in italiano e matematica emergono pattern generalmente coerenti: una maggiore precocità nell'uso di smartphone, applicazioni di messaggistica e social media è sistematicamente associata a livelli inferiori di competenze. Il divario osservato è comparabile a quello legato alle differenze di genere, una forma di disuguaglianza già ben documentata in studi precedenti. Si tratta di un risultato in linea con quanto osservato da ricerche precedenti, come lo studio EYES UP (Respi et al., 2025), basato su dati longitudinali, che ha documentato impatti negativi dell'esposizione anticipata ai social media sulle competenze scolastiche, con tecniche di inferenza causale.

Il quadro appare invece più complesso per la competenza digitale. I nostri risultati indicano un andamento non lineare: fino a una certa soglia, accedere troppo presto a smartphone, app di messaggistica o social network è associato a livelli più bassi di competenza digita-

le. Tuttavia, un ritardo eccessivo oltre questo punto torna a essere associato a un decremento delle competenze. Questo pattern 'a montagna' suggerisce un equilibrio tra familiarizzazione precoce con gli ambienti online e maturità cognitiva necessaria per trarne un beneficio formativo. È importante sottolineare che queste evidenze, pur solide, derivano da un test relativamente nuovo e che solo nei prossimi anni sarà possibile confermare questi risultati con analisi longitudinali.

I risultati mostrano però che il caso dei dispositivi più strutturalmente legati ad attività didatticamente significative è diverso. L'anticipo nell'accesso al computer risulta costantemente associato a migliori competenze digitali e, seppur più debolmente, anche a esiti leggermente migliori in italiano e matematica. Le console per videogiochi mostrano invece pattern più articolati e meno lineari, con associazioni che variano sensibilmente a seconda dei gruppi sociali e del tipo di competenza considerata.

Il secondo contributo rilevante dello studio riguarda le disuguaglianze nei tempi di primo accesso. Le analisi mostrano che area geografica di residenza e background migratorio sono fattori associati alla precocità digitale:

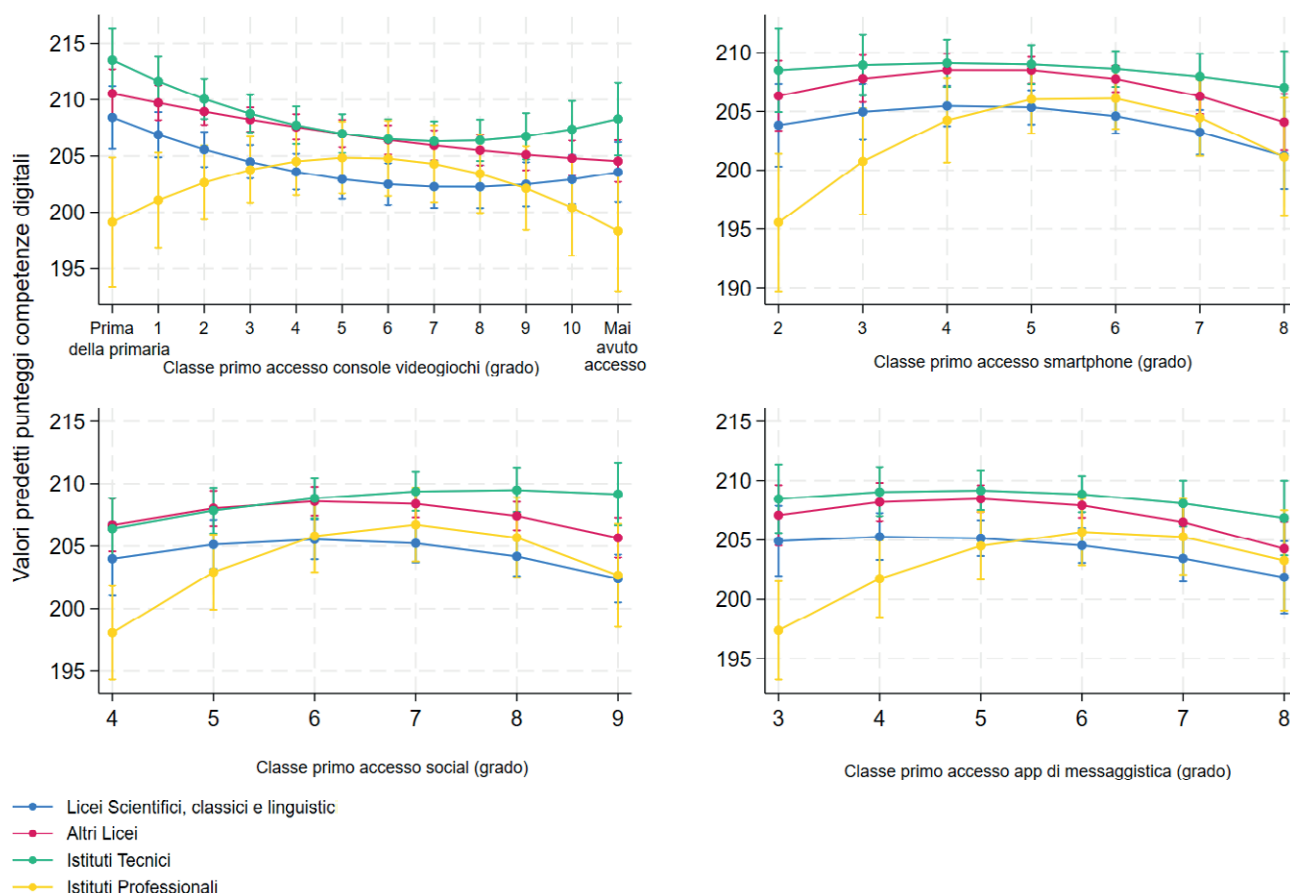


Figura 7. Valori predetti della competenza digitale per classe di primo accesso alle tecnologie digitali, in interazione con il tipo di scuola scelto dagli studenti (N =14.158). Nota: Al fine di ridurre l'influenza di valori estremi, sono mostrati solo i risultati relativi alle classi di primo accesso comprese tra il 5° e il 95° percentile della variabile indipendente principale.

gli studenti del Sud e delle Isole accedono ai principali dispositivi (smartphone, messaggistica, social, tablet) con diversi mesi di anticipo rispetto ai coetanei del Nord, mentre gli studenti di prima e seconda generazione accedono prima a smartphone, app di messaggistica e social, ma più tardi alle console per videogiochi. Lo status socio-economico e culturale (ESCS) non risulta invece associato in modo significativo alla precocità digitale, né lo è il genere, salvo per le console per videogiochi, per cui le ragazze tendono ad accedere più tardi dei ragazzi. Questo potrebbe riflettere una maggiore diffusione e accessibilità generalizzata che può considerarsi un'ulteriore riprova della sempre maggiore chiusura del divario digitale di primo livello che ormai da anni viene riscontrato da diversi studi (Park e Lee, 2015). Infine, i risultati delle analisi di interazione mostrano che la relazione tra precocità digitale e competenze non è omogenea nei diversi gruppi sociali. In particolare, emergono due dinamiche principali. La prima riguarda la relazione maggiormente negativa della precocità di smartphone

e social media con le competenze per i segmenti meno avvantaggiati della popolazione studentesca. Per quanto riguarda le competenze digitali, gli studenti che frequentano istituti professionali mostrano una relazione sistematicamente più problematica con l'uso precoce degli strumenti digitali.

La seconda dinamica invece emerge rispetto alla relazione positiva di un possesso precoce del computer, dove, in questo caso, sono i benefici ad essere maggiori per gli studenti svantaggiati. Per gli studenti del sud emerge infatti un maggiore danno derivante dal ritardo nel possesso di un personal computer, che mostra l'esigenza di un accesso precoce a strumenti didatticamente significativi come il pc soprattutto nelle aree più digitalmente svantaggiate. Risultati simili si osservano anche per gli studenti immigrati di prima generazione, per i quali un accesso anticipato al PC sembrerebbe favorire, più che per gli altri, le competenze matematiche. Queste evidenze suggeriscono che alcune categorie meno avvantaggiate di studenti non solo traggono i maggiori bene-

fici dall'uso precoce di strumenti didatticamente significativi, ma subiscono anche gli effetti negativi più forti dall'uso precoce di strumenti legati invece allo svago. È come se per questi studenti convivessero sia i danni del digital divide tradizionale (mancanza di accesso a strumenti utili) sia quelli di un digital divide 'capovolto' (uso eccessivo di strumenti distraenti, si veda Respi et al., 2025). Complessivamente, questi risultati indicano che l'accesso precoce alle tecnologie digitali non si distribuisce né opera allo stesso modo per tutti, e che il suo ruolo può essere compreso appieno solo considerando la combinazione di più dimensioni individuali e contestuali.

Nel complesso, i risultati rafforzano l'idea che l'accesso precoce agli ambienti digitali più pervasivi nella quotidianità adolescenziale – smartphone e social – si associ a competenze scolastiche più deboli. Allo stesso tempo, suggeriscono che l'esposizione mediamente posticipata – dopo la prima media ma non troppo oltre – possa rappresentare una condizione più favorevole allo sviluppo della competenza digitale, mentre un accesso particolarmente tardivo rischia di tradursi in un'occasione mancata di apprendimento in questa specifica competenza.

8. LIMITI DELLA RICERCA E IMPLICAZIONI PER LE POLICY

Questo studio presenta alcuni limiti che è importante considerare nell'interpretazione dei risultati. In primo luogo, lo status socio-economico e culturale è misurato tramite un indice composito (ESCS), costruito attraverso un'analisi delle componenti principali su vari indicatori. Sebbene tale misura sia consolidata nella ricerca comparativa internazionale, l'utilizzo di un indice aggregato può mascherare l'effetto specifico di singole componenti, in particolare il titolo di studio dei genitori – e soprattutto della madre – spesso associato in modo più diretto ai livelli di competenza degli studenti. Analisi future che scompongano l'indice nelle sue dimensioni originarie potrebbero offrire una lettura più fine delle disuguaglianze nella precocità digitale. Un secondo limite riguarda la misurazione retrospettiva dell'età di primo accesso ai dispositivi, che può comportare errori da parte degli studenti che però non è possibile controllare da parte dei ricercatori (ciò nonostante questa misura è stata già utilizzata in diversi progetti di ricerca, già citati nella rassegna). Inoltre, questa misura è basata su categorie ordinali riferite agli anni scolastici. Sebbene tali categorie siano ordinate e consentano un uso coerente in modelli lineari, la distanza tra categorie, soprattutto in riferimento alla prima e all'ultima categoria, potrebbe non essere perfettamente continua,

introducendo un margine di imprecisione. Un ulteriore limite riguarda la natura trasversale dei dati. Le analisi presentate sono basate su una singola rilevazione (a.s. 2024/2025), e ciò consente di identificare esclusivamente associazioni robuste e non relazioni di tipo causale. Con l'estensione progressiva del test di competenza digitale a più gradi scolastici e con l'accumulo di dati longitudinali sulle diverse coorti, sarà possibile adottare disegni di ricerca più avanzati, inclusi approcci quasi-sperimentali, che permetteranno di esplorare con maggiore solidità l'evoluzione della precocità digitale e delle competenze nel tempo. Inoltre, l'attuale campione – seppur rappresentativo a livello nazionale e di aree specifiche del paese – non coincide ancora con l'intera popolazione studentesca, limite che verrà superato nelle prossime annate.

I risultati di questo studio suggeriscono che una gestione più consapevole dei tempi di accesso ai diversi dispositivi, in particolare a smartphone e ambienti social, potrebbe contribuire a sostenere lo sviluppo equilibrato delle competenze digitali e disciplinari, soprattutto quando accompagnata da interventi educativi mirati. Per la scuola e per le politiche educative, ciò implica la necessità di promuovere linee guida e percorsi formativi che valorizzino un uso progressivo e guidato delle tecnologie, anziché un'esposizione molto precoce e non mediata.

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NOTA ATTRIBUZIONE

La stesura del manoscritto e il disegno complessivo dello studio sono stati curati principalmente da Sofia Ercolanoni, che ha anche condotto l'analisi dei dati e si è occupata della revisione dell'articolo e della pulizia del dataset. L'idea dello studio è stata proposta da Mar-

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APPENDICE

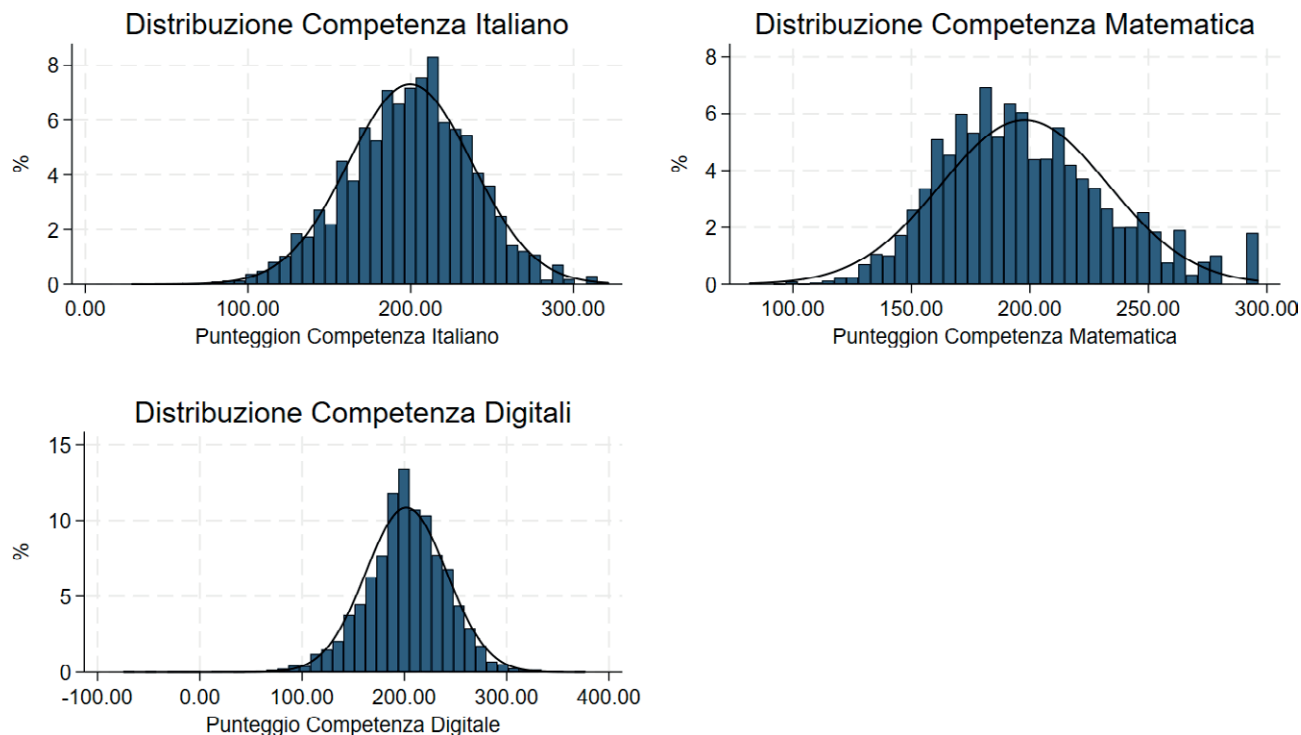


Figura A1. Distribuzioni competenze nel campione (Italiano N=18.876; Matematica N=19.008 Competenze digitali N=19.020).

Figura A2. Statistiche descrittive.

	N	Media	Dev. standard	Minimo	Massimo
Classe di acquisizione/accesso...					
computer	16.215	6,38	2,54	1	12
account social	16.300	7,68	1,73	1	12
smartphone	16.592	6,38	1,70	1	12
tablet	16.188	6,02	3,38	1	12
console di videogiochi	16.163	5,77	3,46	1	12
app di messaggistica	16.367	6,58	1,52	1	12
Punteggio test di...					
matematica	19.008	197,74	35,41	81,56	296,41
italiano	18.876	199,67	38,18	28,55	321,82
competenza digitale	19.020	201,86	39,64	-74,83	377,10
Area geografica	19.925			1	5
Tipo di scuola	19.925			1	4
Genere	19.925			1	2
Origine	19.402			1	3
ESCS studente	17.453	0,10	1,00	-3,75	2,60

Figura A3. Bilanciamento covariate pre-post Primo accesso Smartphone.

Classe primo accesso Smartphone													
	Prima della primaria	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	Non ho mai avuto accesso	Tot
Origine-Pre													
Nativo	1,41	1,99	1,9	5,61	10,88	22,87	38,3	10,54	4,22	1,27	0,54	0,48	100
Straniero I generazione	3,26	4,9	5,59	6,76	8,39	20,05	27,97	9,79	7,23	3,26	0,93	1,86	100
Straniero II generazione	2,18	3,09	3,31	5,72	8,13	21,14	38,53	9,78	4,74	1,88	0,98	0,53	100
Origine-Post													
Nativo	7,85	7,82	7,75	8,43	8,8	8,65	8,62	8,63	8,3	7,93	8,33	8,88	100
Straniero I generazione	8,38	9	10,62	5,14	3,46	3,85	3,48	4,65	8,56	13,37	9,2	20,3	100
Straniero II generazione	10,34	9,86	11,55	7,13	5,19	6,36	6,8	6,42	7,6	9,56	11,48	7,7	100
Genere-Pre													
Maschio	2,4	2,66	2,73	6,02	10,58	20,42	36,92	10,66	4,64	1,45	0,67	0,85	100
Femmina	0,98	1,87	1,63	5,34	10,63	24,39	38,75	10,26	4,06	1,29	0,52	0,26	100
Genere-Post													
Maschio	10,22	8,31	9,09	7,38	6,98	6,38	6,92	7,37	7,75	7,63	8,68	13,28	100
Femmina	5,74	7,82	7,31	9,03	9,57	10,26	9,65	9,2	8,79	9,17	8,69	4,78	100

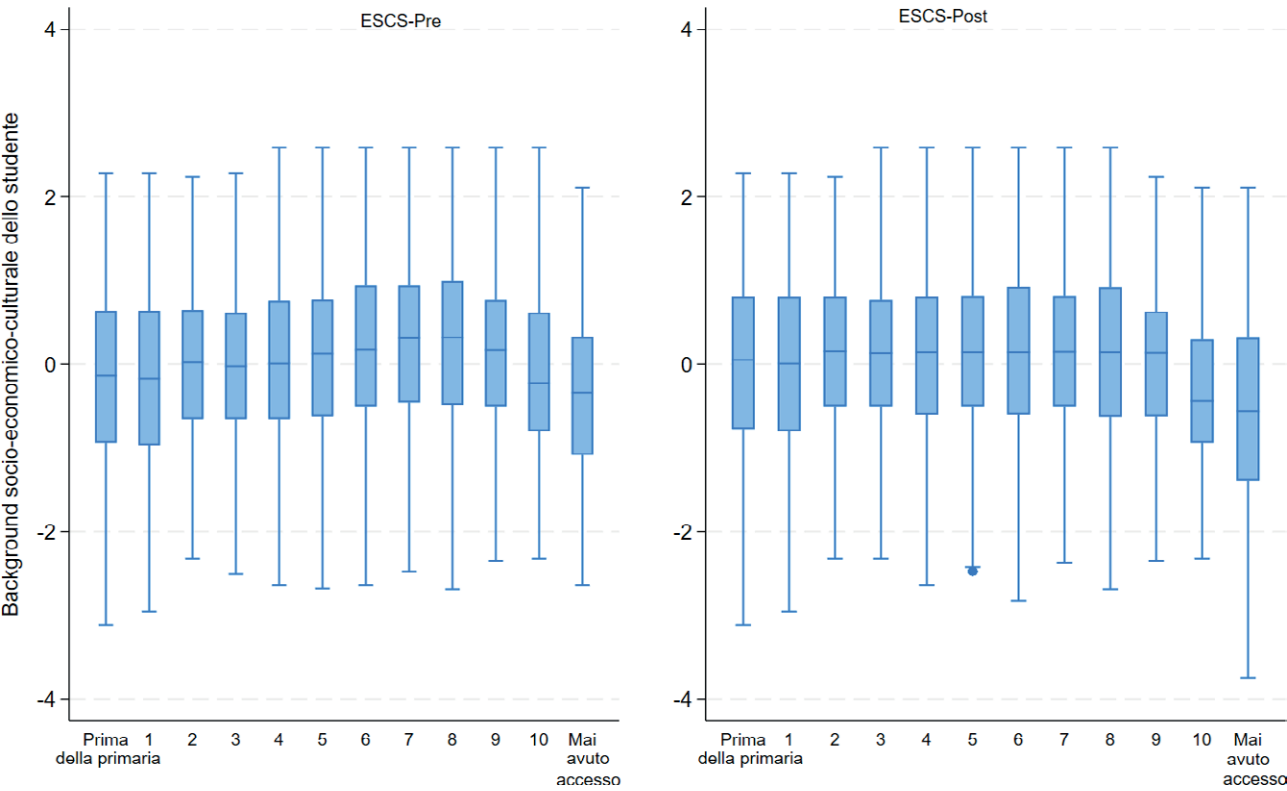


Figura A4. Bilanciamento covariate pre-post Primo accesso App di messaggistica.

Classe primo accesso App messaggistica													
	Prima della primaria	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	Non ho mai avuto accesso	Tot
Origine-Pre													
Nativo	0,35	0,58	0,76	1,88	3,51	9,93	28,63	25,45	16,22	8,02	2,12	2,55	100
Straniero I generazione	0,72	3,36	3,12	5,04	4,56	9,83	31,18	20,14	10,07	6,47	1,92	3,6	100
Straniero II generazione	0,62	0,93	1,46	3,01	4,16	12,1	31,46	21,97	16,27	4,55	1,62	1,85	100
Origine-Post													
Nativo	7,79	7,71	7,8	8,15	8,65	8,64	8,55	8,6	8,4	8,59	8,51	8,62	100
Straniero I generazione	6,35	20,14	11,81	8,85	4,64	3,89	5,17	5,11	4,61	7,59	7,77	14,08	100
Straniero II generazione	10,26	7,82	10,11	8,71	7,53	7,96	7,92	7,53	9,77	6,02	8,11	8,26	100
Genere-Pre													
Maschio	0,68	0,97	1,07	2,27	3,77	9,95	29,27	24,45	15,22	7,04	2,01	3,29	100
Femmina	0,18	0,49	0,74	1,87	3,5	10,28	28,56	25,46	16,67	8,23	2,12	1,9	100
Genere-Post													
Maschio	12,45	9,72	8,14	7,76	7,43	7,07	7,43	7,31	7,3	7,11	7,76	10,5	100
Femmina	3,08	6,58	8,17	8,72	9,43	9,81	9,36	9,5	9,52	9,65	9,19	6,99	100

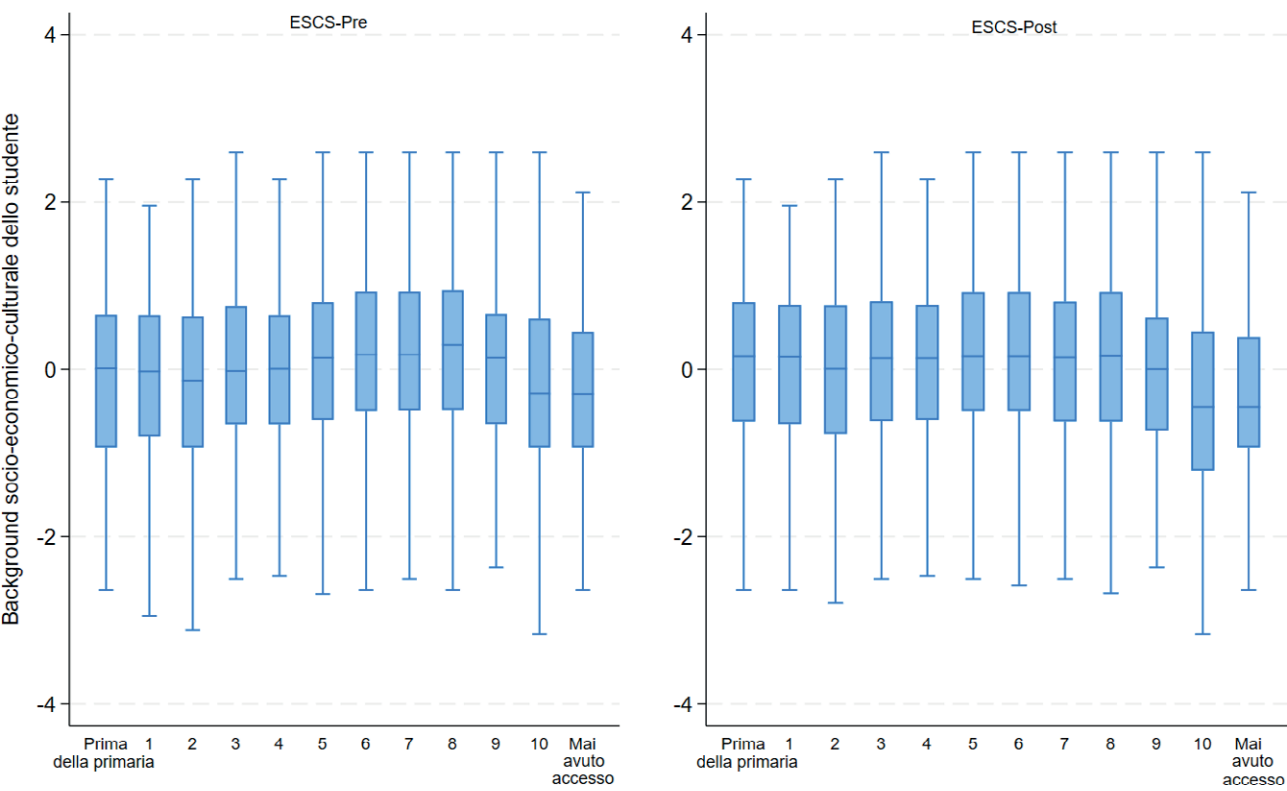


Figura A5. Bilanciamento covariate pre-post Primo accesso Account Social.

Classe primo accesso Account Social													
	Prima della primaria	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	Non ho mai avuto accesso	Tot
Origine-Pre													
Nativo	0,51	1,26	1,73	4,46	9,32	22,62	40,89	12,34	4,75	1,42	0,32	0,38	100
Straniero I generazione	1,42	2,61	4,98	6,4	7,58	17,77	35,07	11,85	6,87	3,79	0,71	0,95	100
Straniero II generazione	0,61	1,46	2,84	5,76	7,6	18,97	41,17	12,98	6,3	1,31	0,46	0,54	100
Origine-Post													
Nativo	7,82	8,11	7,54	8,2	8,61	8,68	8,58	8,59	8,26	8,46	8,52	8,61	100
Straniero I generazione	13,08	8,98	12,8	6,48	4,11	3,92	4,19	4,74	6,74	12,68	9,93	12,36	100
Straniero II generazione	8,93	8,64	11,75	9,61	6,42	6,32	7,13	7,14	8,82	5,93	9,55	9,76	100
Genere-Pre													
Maschio	0,96	1,67	2,51	5,12	9,93	20,19	39,08	12,6	5,24	1,53	0,44	0,73	100
Femmina	0,27	1,11	1,45	4,24	8,49	23,8	41,99	12,12	4,65	1,42	0,28	0,17	100
Genere-Post													
Maschio	11,8	7,98	8,63	7,35	7,31	6,18	6,6	7,14	7,45	7,33	9,18	13,06	100
Femmina	3,63	8,48	7,6	9,37	9,33	10,83	10,3	9,7	9,24	9,77	8,05	3,7	100

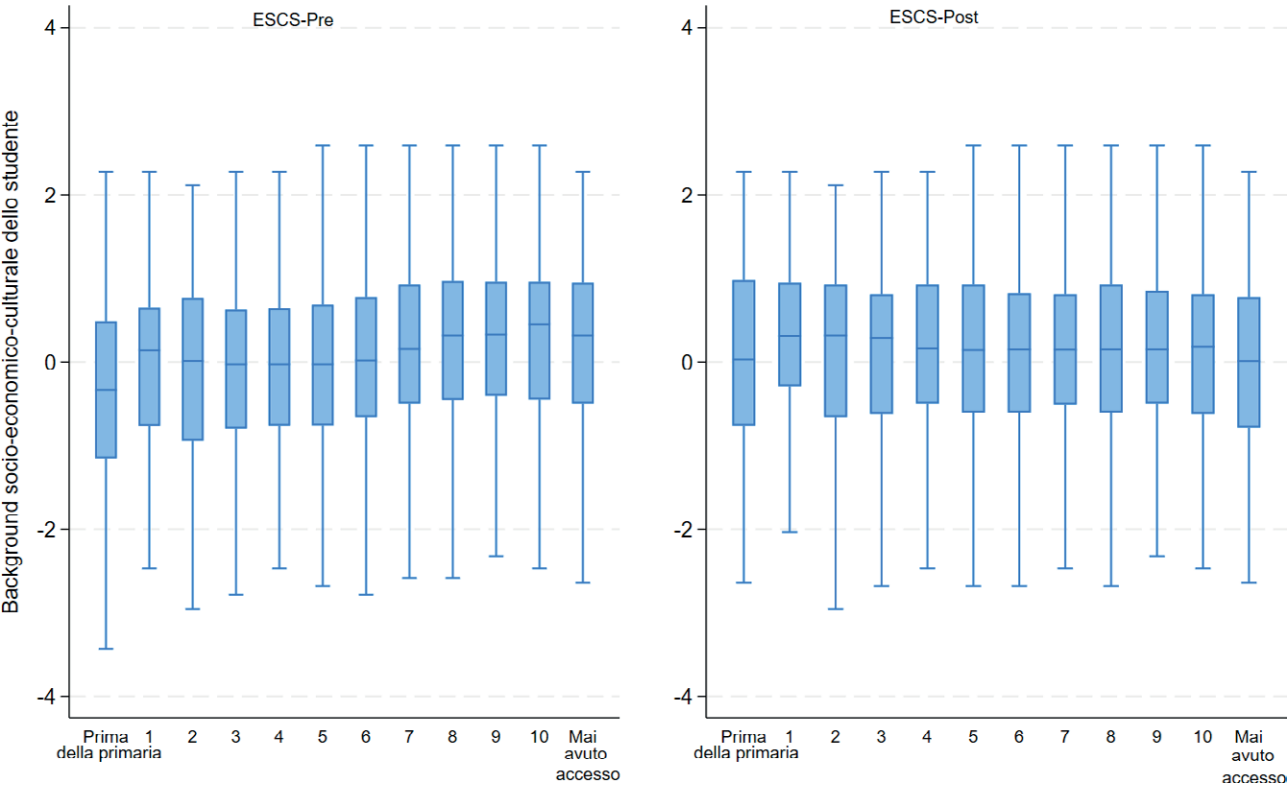


Figura A6. Bilanciamento covariate pre-post Primo accesso Computer.

Classe primo accesso Computer													
	Prima della primaria	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	Non ho mai avuto accesso	Tot
Origine-Pre													
Nativo	5,59	4,41	3,23	6,37	9,11	17,59	25,45	11,62	7,89	4,11	1,44	3,19	100
Straniero I generazione	9,95	7,11	4,98	5,69	6,87	12,8	21,33	9,95	8,29	5,21	2,84	4,98	100
Straniero II generazione	7,64	4,17	4,48	6,17	8,18	14,51	21,3	11,57	8,33	6,17	2,31	5,17	100
Origine-Post													
Nativo	8,28	8,4	8,19	8,59	8,64	8,65	8,64	8,47	8,43	8,16	7,86	7,69	100
Straniero I generazione	10,8	10,73	9,88	6,21	5,1	5,21	6,13	6,37	7,52	8,9	12,69	10,45	100
Straniero II generazione	10,54	7,59	10,43	7,57	6,97	6,38	6,21	7,09	7,28	9,48	10,28	10,18	100
Genere-Pre													
Maschio	6,88	4,69	3,43	6,52	8,17	14,47	23,5	12,93	8,69	4,97	1,9	3,86	100
Femmina	5,12	4,37	3,33	6,19	9,64	19,48	26,17	10,38	7,25	3,74	1,23	3,1	100
Genere-Post													
Maschio	10,06	8,64	8,58	8,59	7,47	6,78	7,34	8,48	8,28	8,66	9,13	7,99	100
Femmina	7,15	8,17	8,32	8,27	9,24	9,8	9,27	8,1	8,31	7,97	7,39	8,01	100

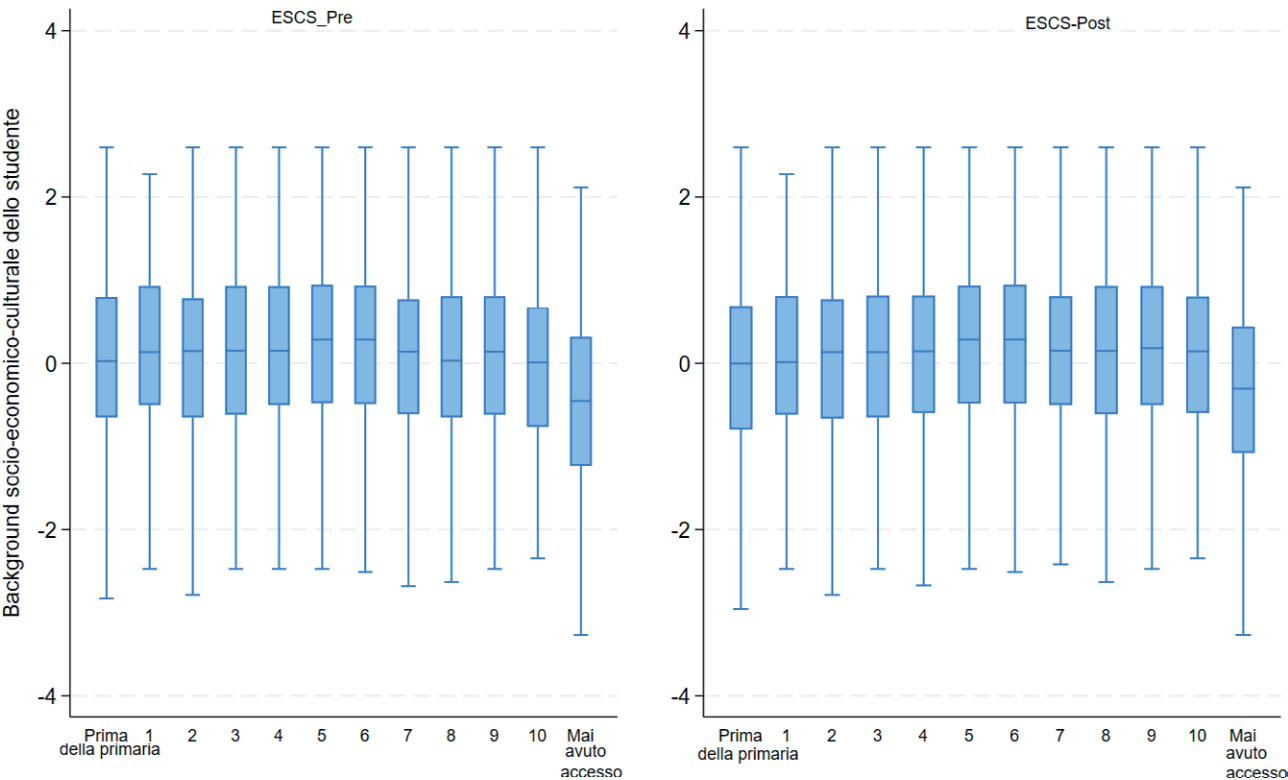


Figura A7. Bilanciamento covariate pre-post Primo accesso Tablet.

Classe primo accesso Tablet													
	Prima della primaria	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	Non ho mai avuto accesso	Tot
Origine-Pre													
Nativo	8,6	7,57	7,86	13,34	11,2	12,38	11,37	5,59	3,22	3,5	2,12	13,24	100
Straniero I generazione	10,77	10,29	11	10,05	9,33	8,61	9,57	5,02	1,91	2,87	2,63	17,94	100
Straniero II generazione	10,2	9,43	8,5	12,91	9,04	9,04	9,51	4,79	3,63	3,55	3,01	16,38	100
Origine-Post													
Nativo	8,24	8,15	8,28	8,44	8,53	8,6	8,48	8,47	8,37	8,39	8,04	8,01	100
Straniero I generazione	9,4	10,48	11,14	6,29	6,96	6,13	7,51	7,71	5,21	7,24	10,6	11,33	100
Straniero II generazione	9,29	9,6	8,27	7,9	6,67	6,12	6,98	7,18	8,81	8,29	11,33	9,57	100
Genere-Pre													
Maschio	9,35	7,78	8,73	13,25	9,9	10,17	10,38	4,8	3,04	3	1,6	18	100
Femmina	8,41	7,85	7,32	13,09	11,9	13,61	11,75	6,16	3,37	3,9	2,7	9,95	100
Genere-Post													
Maschio	9,56	8,89	9,74	8,88	7,89	7,33	8	7,35	7,97	7,27	6,12	11	100
Femmina	7,41	7,9	7,26	7,92	8,68	9,12	8,59	9,12	8,6	9,2	10,16	6,04	100

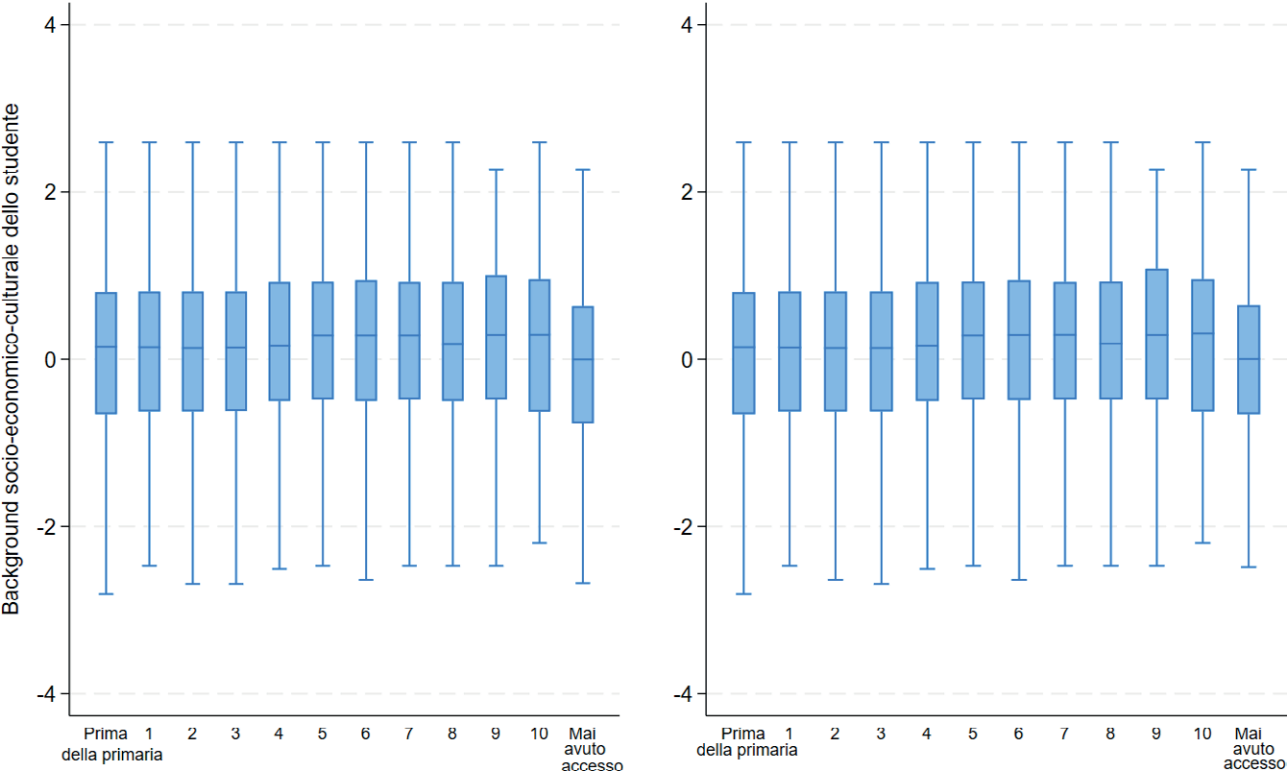
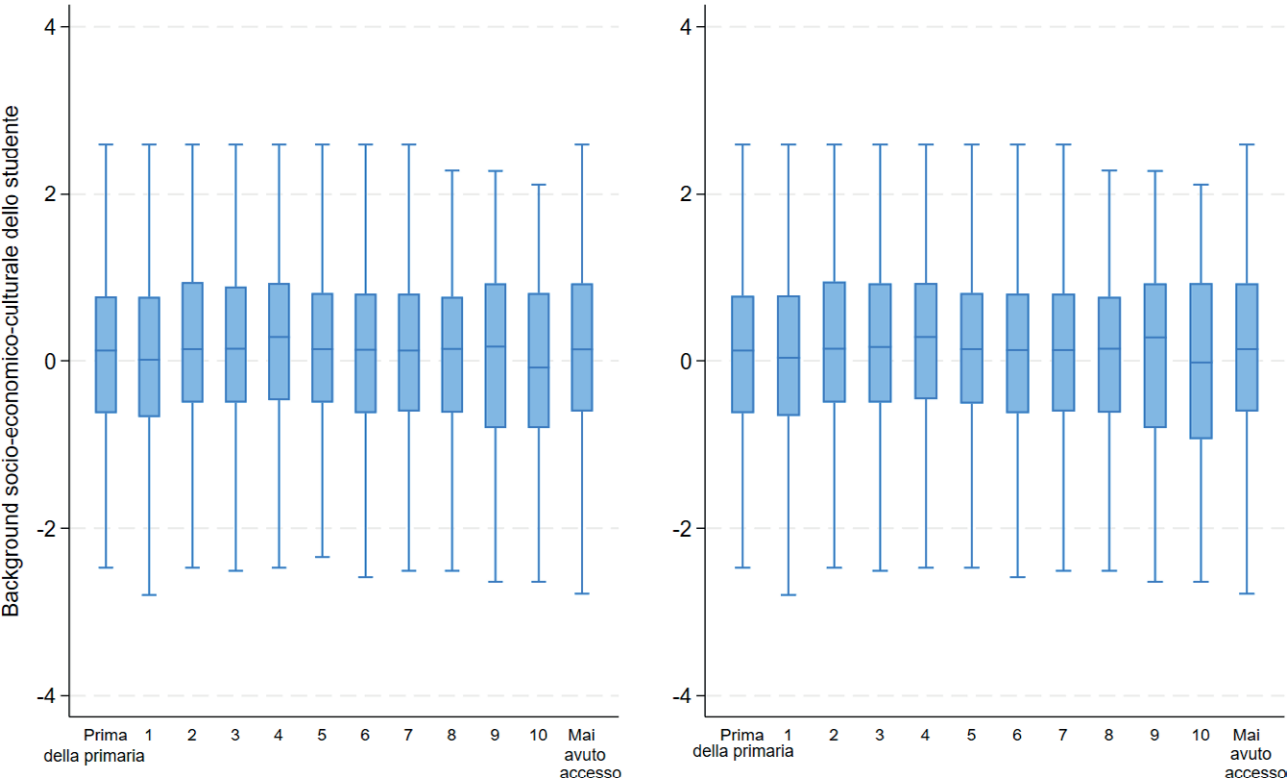


Tabella A8. Bilanciamento covariate pre-post Primo accesso Console Videogiochi.

Classe primo accesso Console Videogiochi													
	Prima della primaria	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	Non ho mai avuto accesso	Tot
Origine-Pre													
Nativo	9,01	9,18	9,22	16,3	13,58	11,83	8,13	3,69	1,78	1,03	0,66	15,59	100
Straniero I generazione	6	7,19	7,19	8,87	10,07	11,75	6,47	5,28	4,32	1,92	2,16	28,78	100
Straniero II generazione	8,81	7,47	7,15	11,48	10,46	11,4	8,41	4,95	2,91	1,97	1,26	23,74	100
Origine-Post													
Nativo	8,4	8,71	8,66	8,67	8,64	8,56	8,81	8,38	8,2	7,89	7,65	7,43	100
Straniero I generazione	9,63	9,11	9,35	5,31	6,13	6,76	4,73	7,55	10,68	8,31	15,38	7,05	100
Straniero II generazione	11,06	8,53	7,72	6,45	6,21	6,84	6,93	8,3	9,28	10,87	10,12	7,68	100
Genere-Pre													
Maschio	11,02	9,95	10,09	18,27	14,81	12,13	9,03	3,89	2,05	1,02	0,7	7,05	100
Femmina	7,15	8,19	8,07	13,44	11,74	11,39	7,32	3,78	1,83	1,22	0,79	25,09	100
Genere-Post													
Maschio	7,44	7,05	7,46	8,41	8,91	8,86	10,31	9,53	10,04	8,8	8,8	4,38	100
Femmina	9,86	10,31	9,7	8,33	7,8	7,86	6,77	7,2	6,76	7,56	7,43	10,42	100





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Buone pratiche

IA e progettazione formativa: una partnership tra intelligenza artificiale e intelligenza umana

AI and instructional design: A partnership between artificial intelligence and human intelligence

SERENA MARRANDINO

Ricercatrice indipendente
serena.marrandino97@gmail.com

Abstract. This paper presents a proposal for using Artificial Intelligence (AI) as a support tool for instructional design, targeting learning professionals, instructional designers, HR, and teachers. The aim is to offer practical insights for integrating AI consciously, moving beyond mere automation to embrace the concept of a cognitive “teammate.” The article analyzes AI’s strengths (divergent thinking, predictive capabilities) and risks (bias, homogenization), proposing mitigation strategies based on human supervision. Finally, it illustrates the practical application of AI across the ADDIE model phases, demonstrating how the synergy between human and artificial intelligence can enhance the creative and decision-making processes in training.

Keywords: Artificial Intelligence, instructional design, ADDIE Model, generative AI, human-AI collaboration.

Riassunto. Questo contributo presenta una proposta di utilizzo dell’Intelligenza Artificiale (IA) come strumento di supporto alla progettazione formativa, rivolgendosi a professionisti del learning, instructional designer, HR e docenti. L’obiettivo è offrire spunti operativi per integrare l’IA in modo consapevole, superando la visione dell’automazione per abbracciare quella del “teammate” cognitivo. Vengono analizzati i punti di forza (pensiero divergente, capacità predittive) e i rischi (bias, omologazione) dell’IA, proponendo strategie di mitigazione basate sulla supervisione umana. Infine, l’articolo illustra l’applicazione pratica dell’IA nelle fasi del modello ADDIE, dimostrando come la sinergia tra intelligenza umana e artificiale possa arricchire il processo creativo e decisionale nella formazione.

Parole chiave: Intelligenza Artificiale, progettazione formativa, instructional design, Modello ADDIE, human-AI collaboration.

FINALITÀ DEL CONTRIBUTO

Questo contributo presenta una proposta di utilizzo dell'Intelligenza Artificiale (IA) come strumento di supporto alla progettazione formativa, illustrando alcune buone pratiche per un utilizzo efficace. Si rivolge in primo luogo ai professionisti del mondo learning, instructional designer, HR, formatori aziendali e docenti, ma intende essere utile anche a chiunque si trovi a progettare esperienze educative nei contesti scolastici, universitari o non formali. L'obiettivo è offrire spunti operativi per integrare l'IA nella progettazione formativa in modo consapevole, riconoscendone potenzialità e limiti.

INTRODUZIONE: L'IA NELLA PROGETTAZIONE EDUCATIVA

La diffusione delle tecnologie di Intelligenza Artificiale generativa ha avviato un cambiamento significativo nel campo della formazione. Il report "State of Instructional Design Survey" (Synthesia, 2024) mostra come l'adozione dell'IA sia in crescita costante: l'84% dei professionisti learning dichiara di aver sperimentato strumenti come ChatGPT, e il 57% afferma di usarli come strumenti principali di progettazione. Questi dati evidenziano che le IA generative sono ormai entrate nella pratica quotidiana di chi si occupa di formazione e stanno modificando il modo in cui si analizzano i bisogni, si generano contenuti o si progetta un'esperienza formativa.

Non si tratta solo di adottare nuovi strumenti, ma di rinegoziare il rapporto tra progettista e tecnologia in modo critico e consapevole. Questo scenario solleva una serie di interrogativi per chi si occupa di media education e formazione. L'IA può rappresentare una risorsa utile nella progettazione? Quale postura e ruolo occupa il progettista davanti all'IA? Per quali attività l'IA risulta utile e quando, al contrario, genera bias e allucinazioni?

CAMBIARE PARADIGMA: L'IA COME TEAMMATE

L'Intelligenza Artificiale viene spesso concepita come uno strumento per automatizzare attività ripetitive o velocizzare la produzione di contenuti. Questa visione, però, è sempre più messa in discussione da studi che ne esplorano un uso più strategico e integrato nei contesti lavorativi. La ricerca "The Cybernetic Teammate" (Dell'Acqua et al., 2024) suggerisce che l'IA generativa, se utilizzata in modo intenzionale nei processi lavorativi, possa contribuire attivamente alla collaborazione tra colleghi, trasformandosi in un partner cognitivo in grado di migliorare i risultati. Non si tratta più, quindi, di

un semplice strumento di supporto, ma di un agente che partecipa al processo, con cui è possibile dialogare, confrontarsi e generare valore.

In ambito scolastico, una visione simile emerge dallo studio "Backwards Planning with Generative AI: Case Study Evidence from US K12 Teachers" (Keppler et al., 2024), in cui è stato analizzato l'impatto dell'IA sulla progettazione didattica da parte degli insegnanti. I risultati mostrano che si ottengono esiti migliori in termini di efficacia e qualità progettuale non quando l'IA viene utilizzata per delegare attività isolate, bensì quando viene usata per stimolare il pensiero creativo e strategico all'interno del flusso di lavoro. Gli insegnanti che hanno usato l'IA come partner per generare idee hanno raggiunto performance superiori rispetto a chi si è limitato a usarla per completare singoli task.

Queste evidenze ci richiedono un cambio di paradigma dal punto di vista pedagogico e progettuale: il valore dell'IA non risiede solo nell'efficienza operativa, ma nella possibilità di abilitare nuove forme di pensiero, confronto e iterazione progettuale. Di conseguenza, anche il ruolo del progettista (instructional designer, docente, formatore) si modifica: non più mero controllore dell'output prodotto da una macchina, ma facilitatore di un'interazione intelligente, in cui il contributo umano e quello artificiale si combinano in modo sinergico. Risulta evidente che questa relazione richieda competenze specifiche: saper porre le domande giuste, riconoscere punti di forza dell'IA, per sfruttarli al meglio e riconoscere i punti deboli, per mitigarli.

PUNTI DI FORZA E DI DEBOLEZZA

Sono due le aree che meritano attenzione quando si parla di IA a supporto della progettazione formativa: la stimolazione del pensiero divergente e le capacità predittive.

Lo studio "AI outperforms humans in standardized tests of creative potential" ha mostrato che modelli linguistici generativi come ChatGPT sono in grado di attivare pensiero divergente in modo più efficace rispetto agli esseri umani (Hubert et al., 2024). In contesti in cui è necessario generare molteplici soluzioni, alternative o ipotesi, come accade nella fase ideativa di un percorso formativo, l'IA dimostra una maggiore capacità di creare collegamenti interdisciplinari, produrre risposte originali e variabili, grazie alla sua esposizione a vasti insiemi di dati e alla sua architettura statistica. Questo non implica che l'IA sia "più creativa" in senso umano, ma suggerisce che può fungere da stimolo e facilitatore per l'adozione di prospettive nuove.

Un secondo ambito in cui l'IA mostra un vantaggio significativo è quello delle capacità predittive. Secondo lo studio "The Algorithmic Automation Problem: Prediction, Triage, and Human Effort" (Raghu et al., 2019), gli algoritmi predittivi si dimostrano più precisi degli esseri umani nel prevedere problemi complessi e nel fare triage informativo, soprattutto in contesti di alta incertezza. Nella progettazione educativa, questo tipo di intelligenza può supportare l'analisi dei dati di apprendimento, individuare pattern nascosti nei learning analytics, anticipare difficoltà o abbandoni e contribuire a rendere più tempestivi e mirati gli interventi didattici.

Questi punti di forza, tuttavia, non sono esenti da limiti e rischi di cui occorre tenere conto.

Uno dei principali rischi è la mancanza di varietà. Le risposte generate dall'IA tendono a essere meno variabili rispetto a quelle umane, portando a risultati omogenei, soprattutto se l'interazione è guidata da prompt generici o non esplorativi (Bisbee et al., 2024). Per mitigare questo limite è utile incorporare nel processo prospettive anomale o casi limite, sollecitare intenzionalmente angolazioni inusuali e, se possibile, integrare contributi e dati reali, provenienti da stakeholder diversi, per aumentare la ricchezza interpretativa e contestuale.

Un secondo rischio è la riproduzione di bias demografici. Poiché i modelli si allenano su grandi quantità di dati, spesso riflettono e amplificano stereotipi o squilibri già presenti (Hewitt et al., 2024). Una strategia di mitigazione consiste nell'inserire esplicitamente nel prompt profili demografici diversi, punti di vista minoritari o gruppi sottorappresentati, con l'obiettivo di riequilibrare la rappresentazione. Anche in questo caso, il ruolo umano è decisivo per vigilare sulla qualità etica, inclusiva e critica delle soluzioni generate.

Un ulteriore aspetto riguarda il quadro etico entro cui l'Intelligenza Artificiale viene adottata. La fiducia rappresenta una condizione imprescindibile nella formazione: tra progettista e committente, ma anche tra progettista-formatore e utenti finali. Per questo la trasparenza, la tracciabilità e la possibilità di ispezione delle decisioni supportate da algoritmi sono elementi indispensabili per costruire e mantenere tale fiducia (Janssen et al., 2020). Ciò implica che il progettista debba chiarire fin dall'inizio in che modo e in quali fasi l'IA viene utilizzata, distinguendo il ruolo di supporto predittivo o creativo dell'algoritmo dalla responsabilità umana nelle decisioni finali.

Un secondo elemento riguarda la gestione dei dati. L'IA necessita di una grande mole di dati per produrre risultati, ne deriva una "fame" che, per essere saziata, non può che sollevare questioni di privacy, sicurezza e tutela delle informazioni riservate degli utenti. È quin-

di consigliabile adottare strumenti che consentano il controllo sull'uso dei dati (ad esempio, sistemi che permettono di disattivare la raccolta o l'addestramento sui contenuti generati) e minimizzare l'esposizione di dati sensibili. Solo integrando principi di data governance responsabile diventa possibile garantire un equilibrio tra innovazione e fiducia.

SPUNTI OPERATIVI: QUANDO E COME USARE L'IA?

Dopo aver analizzato in chiave critica il potenziale e i limiti dell'intelligenza artificiale nei processi educativi, forniamo alcuni spunti applicativi per chi si occupa di progettazione formativa. Si tratta di idee pratiche pensate per offrire un punto di partenza utile e ampliabile, adatto a diversi contesti: scolastici, universitari, aziendali o informali.

Uno dei primi ambiti in cui l'IA può offrire un supporto concreto è l'analisi dei bisogni formativi. In questa fase, strumenti come ChatGPT, Claude o Gemini possono essere utilizzati per simulare interviste con stakeholder differenti (dirigenti, docenti, studenti...) per raccogliere punti di vista diversificati. Ad esempio, un prompt per iniziare l'intervista può essere: «Sei un [inserisci dettagli della persona]. Quali sono le tue principali esigenze di apprendimento / obiettivi personali / obiettivi aziendali in merito a [argomento specifico]?». Proseguendo con le interazioni si avrà la possibilità di porre domande di follow up per approfondire caratteristiche e punti di vista di ciascuna persona presa in considerazione.

È anche possibile creare profili fittizi (anche detti *personas*), basati su dati ed esperienze, che ci aiutino a immaginare il nostro pubblico, le sue aspettative, motivazioni, dubbi e bisogni (Learn Worlds, 2024). Un esempio di prompt per creare i profili dei propri corsisti potrebbe essere: «Sei un instructional designer che sta creando un corso per aiutare [audience] a migliorare / imparare [argomento specifico]. Crea [X] *personas* di [audience] che vogliono [obiettivo]. Per ogni *personas* indica: nome, età, ruolo, background, obiettivi e conflitti attesi».

Inoltre, possiamo utilizzare l'IA per identificare il bisogno formativo: «Che cosa devono essere in grado di fare, sapere o comprendere i miei corsisti alla fine di questo percorso?». L'IA ci può aiutare a formulare obiettivi formativi centrati e specifici (Learn Worlds, 2024). Ad esempio, se volessimo migliorare la scrittura dei nostri obiettivi utilizzando la tassonomia di Bloom potremmo chiedere: «Sto creando un corso per [audience] su [argomento]. Usa la Tassonomia di Bloom per migliorare gli obiettivi formativi che ho scritto: [obiettivo 1], [obiettivo 2]».

Nella fase di design dell'esperienza il dialogo con l'IA stimola la riflessione sul come raggiungere gli obiettivi, permettendo al progettista di testare più strade in tempi rapidi, valutando opportunità e rischi di ciascuna scelta metodologica.

Durante lo sviluppo dei contenuti, oltre che una funzione di supporto alla produzione può revisionare contenuti già elaborati, segnalando incongruenze, passaggi poco chiari o migliorando il tono comunicativo per adattarlo al target. Inoltre, può essere utilizzata come beta tester per individuare punti di forza e elementi di debolezza della progettazione, per migliorarla ricorsivamente (Learn Worlds, 2024). Per ogni persona coinvolta nel progetto possiamo chiedere: «Sei un [Studiante/Docente/Leader Aziendale], rivedi il contenuto che ti allego e individua [i punti principali / parti irrilevanti / elementi confusi]».

Inoltre, occorre tenere presente che la qualità delle interazioni dipende non solo dalla qualità delle domande che poniamo, ma anche dalla nostra capacità di contestualizzare. In questo senso, la scrittura di prompt efficaci non è un'abilità puramente tecnica, ma una vera e propria competenza progettuale: richiede di fornire indicazioni chiare sul ruolo da attribuire all'AI, sul contesto in cui ci muoviamo (con le sue caratteristiche specifiche) anche utilizzando dati di prima mano da fornire all'IA per orientarla nelle sue risposte (Hardman et al., 2024).

Partendo dall'idea di integrare l'intelligenza artificiale nella progettazione formativa, è interessante osservare come la collaborazione tra intelligenza umana (IU) e IA possa tradursi concretamente all'interno del Modello ADDIE. In ogni fase del processo progettuale, le due intelligenze possono sostenersi a vicenda, valorizzando punti di forza complementari (Hardman et al., 2024).

– **Fase di analisi (Analysis):**

- **IA:** supporta l'elaborazione e l'analisi dei dati, crea profili archetipici, simula interviste, individua pattern e suggerisce potenziali obiettivi di apprendimento.
- **IU:** seleziona i dati rilevanti, interpreta e contestualizza i risultati, conduce interviste, valida le priorità e i bisogni formativi.

– **Fase di progettazione (Design):**

- **IA:** propone strategie didattiche, idee per attività di apprendimento e metafore per rappresentare i contenuti.
- **IU:** combina le proposte dell'IA con la propria esperienza, valuta coerenza metodologica, contesto e fattibilità, selezionando le soluzioni adatte.

– **Fase di sviluppo (Development):**

- **IA:** genera bozze di contenuti, suggerisce elementi interattivi, supporta la creazione di

storyboard o materiali multimediali, analizza i contenuti per individuarne i punti di debolezza.

- **IU:** rielabora e affina i contenuti in modo iterativo e garantisce l'allineamento con gli obiettivi pedagogici.

– **Fase di implementazione (Implementation):**

- **IA:** analizza i learning analytics in itinere e propone modifiche adattive ai contenuti o alle attività.
- **IU:** interpreta i dati prodotti dall'IA e si relaziona direttamente con gli stakeholder per monitorare l'andamento del percorso.

– **Fase di valutazione (Evaluation):**

- **IA:** analizza i learning analytics e i dati provenienti dagli strumenti di valutazione o di gradimento, individua elementi ricorrenti e parole chiave, evidenzia aree di miglioramento e fornisce suggerimenti basati sui dati raccolti.
- **IU:** interpreta criticamente i risultati, valuta elementi contestuali e personali che potrebbero aver influenzato i dati e definisce strategie di revisione e miglioramento del percorso.

CONCLUSIONI

L'integrazione dell'Intelligenza Artificiale nei processi di progettazione formativa sembra aprire la strada ad un cambio di paradigma: non tanto come rivoluzione tecnica, quanto come evoluzione del modo in cui i professionisti della formazione concepiscono il loro rapporto con la tecnologia all'interno dei processi creativi e decisionali. L'IA non si configura più come uno strumento da utilizzare per svolgere compiti ripetitivi, ma assume il ruolo di un collaboratore, un partner con cui dialogare, confrontarsi e co-creare.

In tutte le fasi della progettazione, dall'analisi dei bisogni alla definizione degli obiettivi, fino allo sviluppo e alla revisione dei contenuti, l'IA può agire come partner critico. La sua efficacia dipende tuttavia dalla qualità delle domande che poniamo e dalla nostra capacità di integrare le risposte in un disegno progettuale coerente, critico e orientato al valore educativo.

Scrivere un prompt efficace, dunque, non è un'azione meccanica o scontata, ma un atto riflessivo che accompagna e sostiene il pensiero progettuale. È un modo per rendere esplicita l'intenzionalità formativa, per chiarire i nostri obiettivi e affinare la qualità del processo di ideazione nel dialogo con l'IA.

In chiusura si può dire che l'uso consapevole dell'IA e la capacità di costruire prompt efficaci rappresentano nuove competenze da aggiungere alla cassetta degli

attrezzi dell'instructional designer. Non si tratta di sostituire il ruolo umano, ma di arricchirlo, favorendo nuove forme di pensiero collaborativo e creativo. Solo così potremo trasformare la tecnologia in un vero alleato per la progettazione educativa, capace di supportare e amplificare la nostra capacità di creare esperienze di apprendimento significative e innovative.

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Buone pratiche

Designing and experiencing place-based education with Socratic AI: Findings from a field workshop¹

L'educazione al territorio con il supporto di una intelligenza artificiale socratica: un'evidenza sperimentale

STEFANO CUOMO^{1*}, GABRIELE BIAGINI¹, FRANCESCO GRACCI²

¹ University of Florence, Italy

² Mathema S.r.l. / University of Modena and Reggio Emilia, Italy

stefano.cuomo@unifi.it; gabriele.biagini@unifi.it; francesco@mathema.com

*Corresponding author

Abstract. This paper explores how generative AI, conceived as a Socratic companion, can support place-based education. The study draws on a workshop within the T-Place project, in which AI-guided questioning was tested to foster inquiry and collaborative interpretation in territorial learning contexts. The field experiment took place at the MED Summer School 2025 in Ferrara with 20 participants, alternating between the role of designers of educational itineraries and users engaged in exploration. Central to the experience was the T-PLACE app, developed to sustain Socratic dialogue during exploration. Participants designed and experienced itineraries with its support, producing transmedia artefacts that documented and reinterpreted their discoveries. Data sources included design templates, exploration routes and questionnaire responses, offering evidence of both processes and outcomes. Findings indicate that the AI dialogue encouraged users to make implicit knowledge explicit and to sustain meta-reflection, while the transmedia outputs transformed exploration into resources for collective learning. Overall, the results suggest that generative AI, when employed in a Socratic mode, can enrich place-based education by stimulating critical engagement with territory. Despite some technical constraints related to the prototype stage, the experience demonstrates the potential of combining dialogic AI with transmedia practices to support inquiry, reflection and continuity in teaching and learning.

Keywords: dialogic AI, media education, place-based learning, Socratic method, transmedia storytelling.

Riassunto. Questo articolo indaga in che modo l'intelligenza artificiale generativa, concepita come un compagno socratico, possa supportare la place-based education. Lo studio si basa su un workshop realizzato all'interno del progetto T-Place, nel quale è

¹ Although the authors jointly conceived both the workshop activities and the present study, specific contributions were as follows: S. Cuomo authored Sections 1, 2.1, 2.2, 2.4, 4; G. Biagini authored the Section 3; F. Gracci authored Sections 2.3 and 5

stata sperimentata una modalità di interrogazione guidata dall'IA per favorire l'indagine e l'interpretazione collaborativa nei contesti di apprendimento territoriale. L'esperimento sul campo si è svolto durante la MED Summer School 2025 a Ferrara, coinvolgendo 20 partecipanti che hanno alternato il ruolo di progettisti di itinerari educativi e quello di utenti impegnati nell'esplorazione. Fulcro dell'esperienza è stata l'app T-PLACE, sviluppata per sostenere il dialogo socratico durante l'esplorazione. Con il suo supporto, i partecipanti hanno progettato e sperimentato itinerari, producendo artefatti transmediali che documentavano e reinterpretavano le loro scoperte. Le fonti dei dati comprendevano template di progettazione, tracciati esplorativi e risposte a questionari, offrendo evidenze sia sui processi sia sui risultati. I risultati indicano che il dialogo con l'IA ha incoraggiato gli utenti a esplicitare conoscenze implicite e a sostenere forme di metariflessione, mentre gli output transmediali hanno trasformato l'esplorazione in risorse per l'apprendimento collettivo. Nel complesso, i risultati suggeriscono che l'IA generativa, quando impiegata in modalità socratica, può arricchire la place-based education stimolando un coinvolgimento critico con il territorio. Nonostante alcuni vincoli tecnici legati alla fase prototipale, l'esperienza dimostra il potenziale della combinazione tra IA dialogica e pratiche transmediali nel supportare indagine, riflessione e continuità nei processi di insegnamento e apprendimento.

Parole chiave: IA dialogica, media education, place-based learning, metodo socratico, transmedia storytelling.

1. INTRODUCTION

1.1. Inside the concept of “Educazione al Territorio”

In the Italian pedagogical and cultural discourse, the concept of “territorio” holds a singular status. Unlike the English terms land or place, which often highlight respectively the physical environment or the sociocultural dimension of space (Agnew, 2011; Rajala et al., 2020; Merschdorf & Blaschke, 2018), *territorio* is a dense and multidimensional notion. It combines natural landscapes, cultural heritage, historical memories and social practices into what is often referred to as the *genius loci* of a community (Costa & Andrade, 2023). This layered meaning has made the expression *educazione al territorio* difficult to translate, although *place-based education* is the most adequate translation, yet particularly fruitful as an educational paradigm. As Giorda and Puttilli (2011) have argued, *educare al territorio ed educare il territorio* implies a dual movement: on the one hand, fostering learners' awareness and critical understanding of the places they inhabit; on the other, enhancing the territory itself as a shared resource for knowledge, identity and participation.

Such an approach has become increasingly relevant in contemporary contexts. Place-based education is not only a strategy to promote environmental awareness or cultural literacy, but also a way to cultivate democratic citizenship, social inclusion and a sense of belonging. The integration of multiple perspectives – geography, cultural heritage, pedagogy and digital technologies – helps learners to grasp the complexity of territories as evolving, contested and lived spaces. Mobile and immersive technologies have opened new possibilities for situated learning, enabling learners to explore environments through cross-media narratives, interactive simulations (Scippo et al., 2024; Ranieri & Pieri, 2014; Pachler et al.,

2010) and digital augmentations that connect physical presence with mediated representations and the integration of AI now offers dynamic personalisation and intelligent scaffolding (Wang et al., 2024)

1.2. The T-Place project

In this perspective, the “T-Place – Thinking Places, Building Communities” project² was conceived within the Italian PNR 2021–2027 as an attempt to rethink cultural and territorial education in participatory and inclusive terms. Its guiding idea is that the knowledge should be co-constructed with communities through processes of documentation, narration and exploration. In this sense, the project explicitly aligns with the Faro Convention, which frames cultural heritage as a collective resource for democracy, human rights and community life.

From an educational perspective, T-Place emphasises two main directions (Ranieri et al., 2023; Ranieri, Tucci & Azzari, 2025). First, the sharing of historical memory: places are seen not as static repositories of monuments but as living contexts in which material traces, oral histories and social practices intersect. Making these dimensions visible through cross-media narratives and digital technologies means enabling learners to access the multiple voices that shape the identity of a territory. Second, the promotion of active citizenship: learners, whether students or citizens at large, are not passive recipients of expert knowledge but are involved as active producers of content. Through crowdsourcing, storymapping and digital documentation, they contrib-

² The T-Place Project is an interdepartmental initiative of the University of Florence, coordinated by Prof. M. Ranieri and funded by the European Union – NextGenerationEU under Ministerial Decree 737/2021, CUP B55F21007810001 (www.t-place.unifi.it)

ute to building a common heritage, reinforcing both individual belonging and collective responsibility.

Pedagogically, T-Place proposes a model that connects place-based education with media education. By combining on-site exploration with digital tools such as augmented reality, 360° videos, or generative AI, the project fosters an experiential approach where learning emerges from the interplay between embodied presence and mediated representation, to cultivate learners' ability to interpret, re-narrate and inhabit places in ways that strengthen active citizenship and community cohesion (Luzzi & Cuomo, 2025).

1.3. AI and the Socratic Method

When the T-Place project was first conceived in 2022, the large-scale diffusion of generative AI – and in particular large language models – was not yet foreseen. The sudden rise of these technologies confronted the project with unexpected challenges, while at the same time opening new opportunities that reshaped its pedagogical potential in ways that had not originally been anticipated (Storey et al., 2025; Ogunleye et al., 2024).

One of the most significant affordances of generative AI lies in its capacity for adaptive questioning: the ability to adjust prompts dynamically in response to users' answers, uncertainties, or errors. Unlike static scripts, this adaptivity allows the system to modulate the difficulty, framing, or focus of subsequent questions, steering learners towards deeper reflection. Importantly, the AI can sustain multi-turn coherence, drawing on prior conversational context to revisit ambiguous points, ask for clarification, or enrich exploration. This design challenge echoes earlier research on intelligent tutoring systems, where Socratic questioning has been recognised as a central concern in educational technology since its early days (Collins & Stevens, 1982; VanLehn, 2011). In this sense, large language models can be seen not as a rupture but as part of a longer pedagogical trajectory, supporting learners in advancing their critical understanding (Crompton & Burke, 2024).

Recent studies have begun to explore how AI can support learning through different forms of scaffolding. Research in areas such as visual learning analytics and academic writing has shown that proactive AI agents, designed to pose guiding questions rather than simply respond, can improve comprehension and foster metacognitive awareness compared with passive systems (e.g., Yan et al., 2025; Guo et al., 2025). Other contributions highlight the potential of “Socratic” chatbots that structure dialogue through successive prompts, helping learners to articulate their reasoning and engage in

reflection (Degen, 2025; Favero et al., 2025; Hilliger et al., 2025). While the field is still evolving, this growing body of work suggests that, when carefully designed, AI can move beyond content delivery to act as a dialogic partner in inquiry, supporting deeper and more self-regulated learning (Garzón et al., 2025).

Within this framework, the T-PLACE app was developed within the project as a joint effort: the design component, focused on pedagogical modelling and user experience, was carried out by the Educational Technology Laboratory of the University of Florence (coordinated by Prof. M. Ranieri and involving S. Cuomo and G. Biagini), while the technical development was led by F. Gracci at Mathema, in the context of his doctoral research. The goal was not to provide definitive answers but to ask probing questions, stimulate reflection and scaffold inquiry during the exploration of the territory (Kaldaras et al., 2024; Teixeira de Melo et al., 2025). Rather than delivering explanations, the system offered sequences of hints, counter-questions, or prompts to help learners bridge the gap between current understanding and new concepts, echoing Vygotsky's idea of the zone of proximal development (Vygotsky, 1978). At the same time, the AI could act as a metacognitive prompt, inviting learners to justify their reasoning, confront uncertainties and consider alternative perspectives (Stanton et al., 2021; Mazari, 2025).

Designing such dialogues is not without challenges. Overly frequent or intrusive questioning can disrupt the flow of exploration, while too little prompting risks leaving learners unguided. The quality of prompt design, the appropriateness of interventions and consistency across turns are demanding issues, both pedagogical and technical (Qian, 2025). These tensions motivated us to test the approach in a realistic setting through a dedicated workshop, conceived as a field experiment to evaluate its opportunities and limitations in practice.

1.4. Research questions

On this basis, the research group designed a field test with real users to explore whether the Socratic mode implemented through the T-PLACE app could effectively sustain inquiry and reflection in an authentic context. Conducted during the Summer School of the Italian Association for Media Education (MED) in Ferrara (July 2025), the workshop represented a field experiment aimed at assessing not only the app itself but also its integration with complementary educational instruments, such as the educational design template and transmedia products, to capture both opportunities and

limitations of the approach in practice. The inquiry was therefore articulated around two guiding questions:

RQ1: How did participants evaluate the educational tools in terms of (a) usability and (b) educational value, both during the design and in-field experience?

RQ2: Which elements of the experimented approach were deemed transferable to everyday educational practice?

RQ1 was articulated into two complementary dimensions – technical usability and educational significance – each investigated through specific questionnaire sections and triangulated with qualitative data. RQ2 was primarily addressed through the open-ended questions in the final section of the questionnaire complemented by the educational design templates and StoryMaps as contextual supporting artefacts. These two questions guided the exploration of whether and how GenAI, in a Socratic guise, could meaningfully support media-mediated territorial education.

2. METHODOLOGY

2.1. The workshop context and participants

As outlined in the previous section, the T-Place project was conceived as an educational practice to connect place-based education with media education, using generative AI in a Socratic mode to stimulate observation, questioning and reflection. At the centre of this experiment was the T-PLACE app, designed not as a provider of information but as a dialogic companion for learners exploring unfamiliar environments. At the time, the system was still under development: it had undergone some internal testing, but only limited exposure to users outside the development team. The workshop therefore represented the first real opportunity to examine its functioning in an educational context with participants who, while familiar with educational technologies, had never engaged with this tool.

In this framework, the workshop offered a unique chance to integrate experimental research into a training programme for professionals. The activities unfolded over two intensive days, alternating group work, theoretical framing, outdoor exploration and digital production. The overarching goal was not only to test the usability of the app but also to reflect on the methodological potential of combining generative AI with media-education practices focused on the territory.

A total of 20 participants attended the workshop, with a balanced mix of media educators, teachers and doctoral researchers. This heterogeneity, a typical feature

of the MED Summer School groups, was particularly valuable for this experiment, bringing together a rich mixture of pedagogical expertise and professional backgrounds.

Regarding digital competence, participants reported a medium-high level of confidence ($M = 4.25$ on a five-point scale), as measured through their self-assessment in item Q03 of the questionnaire. This suggested that they could use the app without being hindered by basic technological barriers, while still being able to critically evaluate its affordances and limitations.

As for previous experience, most respondents had occasionally created digital or interactive learning paths, while only a minority had never done so, and a smaller group reported frequent practice.

A crucial element in the design of the workshop was that almost none of the participants were familiar with Ferrara. This was a deliberate choice to create conditions for authentic interaction with the app: their lack of local knowledge meant that the AI's questions, explanations and prompts could genuinely mediate their experience, drawing attention to details that might otherwise have been overlooked. The resulting situation was pedagogically significant: experienced educators acting as novice explorers, engaging with an unfamiliar urban landscape through the mediation of a digital Socratic guide.

This combination of contextual factors – a prototype tool, a diverse group of educational professionals and a largely unknown setting – created an experimental environment well suited to examining both the opportunities and the challenges of the T-Place approach. It provided a testing ground where methodological assumptions about AI, inquiry and media education could be confronted with the realities of practice, thereby generating evidence for the research questions at the heart of this study.

2.2. The structure of the activities

The workshop was designed as a structured pathway that combined theoretical framing, design practice and field exploration. Its overarching aim was to test how the Socratic mode of the T-PLACE app could sustain inquiry and collaborative reflection in real contexts, while simultaneously introducing participants to the principles of media and territorial education. The sequence of activities followed a progressive logic: from introductory sessions and ice-breaking tasks to collaborative planning, outdoor exploration and final digital restitution through StoryMaps. This organisation reflected the dual nature of the event, serving both as a professional training opportunity and as an experimental field study.

Each phase was meant to connect theoretical framing with practical exploration, allowing participants to experience the same inquiry process they were designing for their learners. Within this framework, the collaborative design activities focused on creating short territorial routes that integrated AI-guided questioning, digital documentation and transmedia narration. The workshop unfolded across two consecutive days and was articulated in phases that balanced introductory framing, collaborative design, field exploration and digital presentation. All phases were centred on hands-on, participatory engagement. A central concern was the formation of working groups and considerable attention was devoted to this process. The aim was to create small teams that combined diverse expertise, professional backgrounds and levels of digital confidence. This focus on group cohesion was deliberate: the design drew inspiration from constructionist principles (Papert, 1980; Papert & Harel, 1990). These emphasise that learners deepen their understanding when they actively construct meaningful artefacts in social, tangible contexts. Consistent with research on collaborative learning, group composition and dynamics were therefore considered crucial to fostering both creativity and mutual support (Dillenbourg, 1999), ensuring that all participants could contribute and learn collaboratively.

Once the groups had been established, participants were introduced to the template for educational design, a structured grid that guided them in developing a short territorial itinerary. The template asked each group to define the target audience, learning objectives, activities, content elements and sources of information. Such structured approaches to learning design are consistent with prior research on design representations and scaffolds (Persico et al., 2013). By working through it collaboratively, participants articulated their pedagogical intentions and translated them into concrete activities. This step was not only instrumental for the subsequent exploration phase but also served as a reflective exercise, prompting participants to consider how the app could be aligned with educational goals and classroom practices.

After the design phase, the groups exchanged itineraries, so that each team explored the route designed by another. This mechanism added authenticity: participants were not simply testing their own ideas but engaged with paths designed by peers, mediated by the T-PLACE app. The exchange underscores the situated nature of knowledge (Brown, Collins, & Duguid, 1989), emphasising that learning is rooted in context, interaction and negotiation and that educational meaning emerges through shared interpretation.

The workshop concluded with two complementary moments. First, each group produced a digital transmedia narrative (e.g. a StoryMap) that synthesised their itinerary through locations, texts and images. These artefacts functioned not only as tangible outputs but also as resources for collective discussion. Second, the groups presented their narratives in a plenary reflection session, sharing both the artefact and the reasoning behind their design choices. This moment served a dual function: participants evaluated their itineraries as concrete artefacts and simultaneously reflected on their experience of exploring unfamiliar territory via the app. In pedagogical terms, this step elevated restitution from mere reporting into an occasion for situated meta-reflection, where meaning is negotiated through dialogue and interpretive discussion (Lousberg et al., 2019).

Taken together, the structure of the activities emphasised active participation, collaborative construction and authentic inquiry over transmissive approaches. By guiding participants through design, exchange, exploration and restitution, the workshop enacted the principles of media education in practice, positioning learners as co-creators of knowledge rather than passive recipients (Hobbs & Jensen, 2009; National Association for Media Literacy Education [NAMLE], 2023).

2.3. *The T-PLACE app*

As mentioned earlier, the central tool of the workshop was the T-PLACE app. The application was originally conceived for students aged 10 to 14, corresponding to primary and lower secondary education and was meant to be used under the supervision of a teacher. At the same time, its design proved flexible enough to make it suitable for other audiences, as demonstrated in this workshop where it was used with adult participants from diverse professional backgrounds. This adaptability highlights its potential beyond the school context, opening possibilities for lifelong learning and community engagement.

In the perspective of acting as a “Socratic companion,” its role was not to provide answers but to guide learners through a process of questioning and reflection, prompting them to notice details, make connections and articulate interpretations of the places they encountered. In this sense, the app, according to constructionist principles, encourages knowledge-building through active engagement with meaningful artefacts – in this case, the narratives and representations of the territory.

The functioning of the app unfolded in three stages. In the initial stage, users were welcomed and introduced to the context, often through simple prompts that acti-



Figure 1. Sample screenshots of the T-PLACE App.

vated curiosity and set the baseline for exploration. The exploration stage constituted the core of the experience: here the app posed guiding questions, invited observations and provided contextual information responsive to the user's input. In the synthesis stage, interaction was oriented towards reflection, encouraging users to consolidate their discoveries and to connect them with prior knowledge or broader cultural frames. Figure 1 shows an example of the app's dialogue and visual interface used during the exploration phase.

Beyond its dialogic capacity, the app integrated transmedia affordances. Users could access and create content in multiple formats – text, images, audio – and during fieldwork they documented their experience by taking photographs that were incorporated into the itinerary. This enriched the learning process by combining inquiry with production and by fostering transmedia literacies alongside territorial awareness.

Supporting the app was a digital platform that enabled teachers and educators to design customised itineraries and to upload relevant multimedia materials. Equally significant was the platform's ability to collect and archive user interaction logs. These traces could

later be analysed to support assessment, stimulate reflection, or generate narrative restitutions. In the context of the workshop, this function proved particularly valuable, as it offered authentic evidence of how participants engaged with the AI during their exploration.

Ultimately, rather than providing a definitive validation, this trial marked the beginning of a longer process of refinement, offering insights into how a Socratic AI tool can be integrated into media education practices for territorial learning.

2.4. Methodology and data collection

To address the two research questions, the study adopted a mixed-methods approach combining quantitative and qualitative evidence. The main data source was a structured questionnaire comprising 50 items. The first ten collected background information and feedback on the instrument itself, while items Q11–Q50 explored the dimensions related to usability, educational value and transferability. The questionnaire included both closed-ended items, analysed through descriptive statistics and

open-ended questions, qualitatively examined to identify recurrent themes and main findings emerging from participants' reflections.

For RQ1 – *How did participants evaluate the educational tools in terms of (a) usability and (b) educational value, both during the design and in-field experience?* – data were drawn primarily from the questionnaire, designed by the authors, complemented by the interaction logs automatically recorded by the app.

The questionnaire investigated three main dimensions:

1. Educational design (teachers' perspective): clarity, usefulness and ease of use of the educational design template;
2. Acceptance of the app (students' perspective): intuitiveness, clarity of instructions, navigation and technical reliability;
3. Educational significance in the field (students' perspective): the extent to which the app effectively connected digital information with the physical environment.

Alongside the quantitative ratings, open-ended questions invited participants to comment on perceived advantages, limitations and possible improvements. The interaction logs served as complementary, illustrative evidence of how users engaged in AI-guided questioning during exploration but were not included in the statistical or thematic analysis.

For RQ2 – *Which elements of the experimented approach were deemed transferable to everyday educational practice?* – evidence was again drawn mainly from the questionnaire, particularly from its final open-ended section (Q46–Q50) and from the Net Promoter Score (NPS) item, used as a concise indicator of overall satisfaction and willingness to recommend the tools. Additional artefacts produced during the workshop, such as the design templates and StoryMaps, were considered supportive materials. They provided contextual insight and helped to interpret participants' perceptions, but they were not systematically coded or subjected to separate analysis.

This configuration ensured methodological coherence while maintaining analytical focus. The questionnaire provided the primary quantitative and qualitative evidence addressing both research questions, whereas the supplementary outputs (templates, StoryMaps, interaction logs) functioned as triangulating sources that confirmed and contextualised the main findings within the broader learning process.

3. RESULTS

3.1. Overview of empirical materials and sources of evidence

The empirical analysis presented in this section draws on a rich corpus of materials generated during the workshop, encompassing both tangible artefacts and process-related traces. These elements collectively provided the foundation for addressing the two research questions, allowing the study to link users' perceptions with the design practices and learning dynamics observed in the field. Each type of material corresponded to a distinct phase of the activity – planning, exploration and reflection – embodying both educational and research value.

The first set of sources consisted of the educational design templates elaborated by the working groups during the planning sessions. Structured around target audiences, learning objectives, activities, content elements and references, the templates guided participants in the creation of short territorial itineraries to be experienced through the T-PLACE app. By requiring teams to articulate pedagogical intentions and translate them into operational designs, these grids acted simultaneously as planning instruments and reflective artefacts. They revealed the reasoning processes behind each itinerary and made explicit how participants conceptualised the relationship between digital mediation and territorial education.

The second group of materials derived from the exploration routes carried out in the city of Ferrara. Each team experienced the itinerary designed by another group, engaging with the app's Socratic questioning in real environments and responding to its prompts through observation, interpretation and dialogue. This cross-exchange mechanism created authentic inquiry conditions in which participants, acting as learners, encountered unfamiliar spaces while interacting with AI-guided scaffolding. During these activities, the system automatically generated interaction logs recording user inputs and AI responses. Although these traces are not analysed in depth in the present section, they represent a valuable source for contextual understanding and a potential dataset for future research on dialogic learning and metacognitive prompting in outdoor educational contexts.

The StoryMaps developed in the final restitution phase constituted the most visible and communicative outcomes of the process. Each digital narrative combined geographical locations, textual explanations, images and short commentaries, forming a transmedia representation of the itineraries. Beyond their documentary function, these artefacts played a crucial pedagogical role: they stimulated group discussion, fostered compari-

son of perspectives and enabled collective meta-reflection on the experience. Through this multimodal storytelling, participants reinterpreted their explorations and transformed them into shareable resources for teaching and learning. This dimension resonates particularly with RQ2, illustrating how transmedia storytelling can function as a bridge between experimental practice and everyday educational contexts.

Complementing these qualitative sources were the questionnaire responses, which provided the main quantitative and qualitative data for evaluating usability, educational value and perceived transferability. The questionnaire thus constituted the core analytical instrument of the study, while the other materials – templates, StoryMaps and interaction logs – served primarily as triangulating and interpretive supports, enriching the contextual understanding of participants' experiences.

In summary, the combination of structured data and creative outputs enabled a comprehensive reading of the workshop as both an instructional experiment and a field of inquiry. The following sections build on this corpus to examine, first, participants' evaluations of the tools and, second, the perceived transferability of the approach to everyday educational practice.

3.2. Research Question 1: How did participants evaluate the educational tools in terms of (a) usability and (b) educational value, both during the design and in-field experience?

Before analysing the quantitative and qualitative outcomes, it is important to recall that all participants alternated between two complementary roles during the workshop. Each acted both as a teacher, responsible for designing educational itineraries and structuring objectives, and as a student, experiencing in situ the paths created by others through the T-PLACE app. This dual perspective was central to the evaluation process: it enabled participants to assess the tools not only in terms of technical usability and pedagogical clarity, but also through the lens of authentic learning experience. Consequently, the results reported below should be read as a synthesis of both viewpoints rather than as separate datasets.

Usability and acceptance of the app

In their student role, participants assessed the T-PLACE app in terms of intuitiveness, navigation and technical performance. The overall evaluation (Q11–Q15) was positive ($M = 4.11$; $SD = 0.99$), confirming

that the prototype was functional and accessible despite its experimental status. The linear navigation structure and the clarity of prompts were appreciated, though several participants noted that the initial familiarisation required some additional effort. A few reported minor issues – occasional delays in page loading or unstable connectivity – but these did not substantially affect task completion. The app was therefore perceived as a reliable companion rather than a barrier to exploration. Comments suggested that its guided questioning kept users focused and oriented during fieldwork, though some expressed a desire for greater personalisation and a more distinctive conversational tone from the AI.

Evaluation of the educational design template

When acting in the teacher role, participants rated the design template very positively across all three dimensions – clarity (Q16–Q23), usefulness (Q24–Q31) and ease of use (Q32–Q39). Mean scores ranged between 4.5 and 4.6 on a five-point scale, with usefulness obtaining the highest ratings ($M = 4.63$; $SD = 0.78$). Respondents found the structure of the template logical and coherent, particularly appreciating the sequence of fields guiding the formulation of learning objectives and activities. Some fields, such as those related to assessment or visibility, were perceived as more demanding, suggesting the need for additional scaffolding or examples. Qualitative comments emphasised that the template helped teachers to make their pedagogical intentions explicit and to translate them into concrete design decisions. Overall, the data indicate that the template successfully supported participants in aligning conceptual aims with practical planning while encouraging reflection on the design process itself.

Educational significance in the field

When considering the app's role in supporting learning during real exploration, responses were slightly more varied. Participants rated the connection between digital information and physical environment (Q41) at an average of 3.6/5 ($SD = 0.75$). Qualitative data highlight moments of discovery and surprise, where AI prompts led users to notice details they might otherwise have overlooked – historical traces, architectural features, or social uses of space. At the same time, some noted contextual barriers such as glare on screens, background noise, or variable network coverage, which occasionally interfered with smooth interaction. Despite these constraints, participants agreed that the experience

Table 1. Summary of participants' quantitative evaluations (five-point scale).

Dimension assessed	Corresponding items	Mean (M)	SD	Description
App usability and acceptance - intuitiveness, navigation, reliability	Q11–Q15	4.11	0.99	Prototype considered functional and accessible, with minor technical issues.
Educational design template - clarity, usefulness, ease of use	Q16–Q39	4.5 - 4.6	0.78	Structure perceived as logical and coherent; most valued aspect was usefulness (M = 4.63).
Educational significance in the field - link between digital and physical environment	Q41	3.60	0.75	Experience promoted reflection and discovery, though occasionally hindered by contextual barriers.

stimulated inquiry and reflection, confirming the app's potential as a tool for situated learning.

Taken together, these results portray a coherent pattern: the design template effectively supported pedagogical planning; the app was accepted as usable and meaningful in practice; and the combination of both enabled participants – alternating between teacher and student roles – to experience the complete learning cycle from conception to implementation. The quantitative indicators are reinforced by qualitative evidence, showing that the system not only functioned technically but also fostered awareness of the interplay between design, dialogue and place-based inquiry.

3.3. Research Question 2: Which elements of the experimented approach were deemed transferable to everyday educational practice?

While the first research question focused on usability and perceived educational value, the second explored the transferability of the experimented approach to everyday teaching and training contexts.

The analysis of RQ2 relied primarily on qualitative data drawn from the open-ended questions of the user-experience questionnaire (Q46 – Q50) and from the participants' final comments. These responses were examined through thematic analysis to identify recurring patterns related to feasibility, adaptability and perceived pedagogical value. Quantitative indicators, such as the Net Promoter Score (Q47), were used only as complementary evidence to validate general trends emerging from the qualitative findings.

Perceived transferability of the educational design template

When reflecting on their experience in the teacher role, participants reported that the educational design template could be easily integrated into ordinary lesson

planning and used as a practical scaffold for structuring learning activities. Responses to Q46 ("What is the greatest advantage you see in using AI in this type of activity?") and Q48 ("What did you appreciate most?") indicate that teachers valued the template's clarity and internal coherence, recognising it as a reusable framework that promotes systematic thinking and consistency across different projects. Several participants emphasised that the template could be employed not only for outdoor explorations but also for classroom-based activities, where it would help align objectives, activities and resources. A few comments suggested that adding examples or increasing flexibility in specific sections – particularly those related to assessment – could enhance its adaptability to diverse educational levels and subjects.

Transferability of the T-PLACE app

Participants also reflected on the potential of the T-PLACE app to be incorporated into regular educational practice. Open-ended responses, especially to Q46 and Q49 – Q50, reveal a generally positive attitude: users perceived the app's interface and guided questioning as accessible and pedagogically meaningful. Teachers envisioned using it for inquiry-based learning, collaborative projects and formative assessment. Some noted that its dialogic structure could support reflection and engagement in subjects as varied as local history, civic education, or environmental studies. However, several participants highlighted technical or infrastructural prerequisites – stable connectivity, reliable devices and minor functional improvements such as the inclusion of quizzes, geolocation, or voice interaction – that would make the system more seamless in everyday teaching contexts.

Transmedia practices and StoryMaps

Among all components of the approach, StoryMaps emerged as the element most clearly perceived as trans-

ferable. Qualitative evidence from Q48 (“What did you appreciate most?”) shows that participants considered this tool already familiar in school settings and directly reusable for documenting excursions, narrating historical topics, or creating thematic portfolios. The practice of combining text, images and maps was recognised as an effective means of connecting fieldwork and classroom activities, fostering both engagement and creative communication. For many respondents, the StoryMaps represented a natural continuation of the inquiry process, transforming exploration into shareable multimodal artefacts that could easily be integrated into existing teaching routines.

Quantitative synthesis: the Net Promoter Score (Q47)

To complement the qualitative findings, the Net Promoter Score (NPS) was calculated from Q47, which asked participants how likely they would be to recommend the educational tools to colleagues (Biesok, 2021). The average rating was 8.87/10 (SD = 1.13), indicating strong overall satisfaction and perceived applicability. This high score supports the qualitative evidence suggesting that the approach was not perceived as an isolated pilot but as a feasible and appealing model for wider adoption. Comments linked this positive stance to the combination of dialogic AI, collaborative design and transmedia restitution, which together made the learning experience coherent and replicable.

In summary, the qualitative analysis demonstrates that participants perceived the T-PLACE approach as both innovative and feasible. The design template provided a structured entry point for planning, the app offered an engaging means of exploration and the transmedia restitution enabled reflection and communication of results. These insights, derived mainly from the open-ended responses (Q46 – Q50), reveal that participants’ dual experience – as designers and learners – was instrumental in perceiving the model as realistic and adaptable. The consistently high NPS further supports this interpretation, highlighting the potential scalability of the approach across diverse educational contexts.

4. DISCUSSION AND CONCLUSIONS

Overall, the findings outlined above provide a consistent view of how participants experienced the T-Place approach, revealing both its educational strengths and the conditions required for its wider adoption. These considerations frame the discussion that follows, which revisits the research questions in light of the theoretic

cal perspectives introduced earlier. The experience also exemplifies a form of media education in action, where learners engage critically with an algorithmic medium, reflecting on how technological mediation shapes inquiry and meaning-making.

Revisiting the research questions

The results provide a coherent picture of how participants perceived the potential of the T-PLACE approach.

In relation to RQ1, data show that both the educational design template and the app were evaluated as usable, pedagogically meaningful and mutually reinforcing. The dual role of participants – as teachers and students – proved crucial, as it allowed them to experience the whole cycle of design, enactment and reflection.

For RQ2, qualitative evidence from the open-ended responses indicated that the model was regarded as transferable to everyday educational practice. Participants recognised its feasibility within ordinary school routines, particularly through the reusability of the template and the familiar nature of the transmedia component.

The Socratic use of AI and its pedagogical implications

Findings confirm that the pedagogical strength of AI does not lie in its ability to provide answers, but in its capacity to sustain questioning and reflection. This aligns with the literature on Socratic tutoring and intelligent tutoring systems (VanLehn, 2011; Degen, 2025; Favero et al., 2025).

Participants valued the app’s dialogic prompts as tools for inquiry and self-explanation, even when they perceived the chatbot’s tone as overly neutral. Such neutrality, while sometimes limiting engagement, also exposed users to a reflective stance in which meaning was negotiated rather than delivered.

In this sense, the workshop validated the idea – already implicit in studies on scaffolding and metacognition – that AI can act as a metacognitive partner, prompting learners to articulate reasoning and confront uncertainty rather than automating solutions. The Socratic mode thus emerges as a viable pedagogical model for AI-assisted learning, provided that technical reliability and conversational depth continue to evolve.

Transmedia learning and transferability

The transmedia dimension of the approach also proved decisive. The production of StoryMaps demon-

strated how digital storytelling can transform exploration into communication and reflection. This finding resonates with previous work on media education and transmedia learning (Tombleson, 2024; Hobbs & Jensen, 2009; Lousberg et al., 2019), which emphasises the educational value of creating artefacts that bridge situated inquiry and classroom discussion.

Participants' recognition of StoryMaps as the most easily transferable component suggests that transmedia practices can serve as an operational bridge between innovation and continuity: they are technologically simple, pedagogically rich and culturally familiar to teachers.

In this regard, the T-PLACE model shows how dialogic AI and transmedia storytelling can coexist within a single framework. AI fosters reflection in action while transmedia artefacts ensure reflection on action reinforcing continuity between design, experience and restitution.

Implications for research and practice

The pilot confirms that the integration of Socratic AI and transmedia storytelling can enhance **inquiry-based and place-based education** by supporting processes of interpretation and participation. For practitioners, the approach offers a scalable method for connecting local exploration with reflective and communicative tasks. For researchers, it provides a field-tested model for studying the interaction between generative AI and media-education pedagogies. In a broader sense, the experiment suggests that AI can become an instrument of cultural mediation rather than automation, reshaping how educators and learners engage with the territory as a shared cognitive and civic space.

5. LIMITATIONS AND FURTHER PERSPECTIVES

Several limitations emerged during the pilot. First, the sample size was small and composed mainly of users already competent with digital technologies. While this ensured a critical evaluation of the tools, it reduced the possibility of observing how less digitally confident users might respond. Second, the prototype nature of the app exposed vulnerabilities: connectivity issues, occasional slow loading and the absence of certain features not yet implemented (e.g., quizzes, geolocation, or voice interaction) were repeatedly mentioned as barriers. Such shortcomings did not invalidate the experience but constrained its fluidity and sometimes shifted attention from the educational task to the technical environment.

On the qualitative side, participants appreciated the potential of AI dialogue to sustain engagement and

stimulate reflection, yet some noted that the style of the chatbot felt too neutral or insufficiently tailored to the context. This indicates that the quality of interaction is as crucial as the structural design of the tool. Moreover, while the production of transmedia artefacts was valued as a moment of synthesis and reflection, participants suggested the need for clearer scaffolding in certain parts of the design template, especially when dealing with assessment elements or complex objectives.

Future developments should therefore focus on three directions. First, broader testing with heterogeneous groups of teachers, educators and learners, to validate replicability across different educational settings. Second, technical refinement to guarantee stability and to incorporate missing functionalities that users consider essential for everyday practice. Third, enhancement of the transmedia dimension, ensuring that AI dialogue consistently feeds into outputs that can be discussed, compared and reused in ordinary teaching. Future iterations could integrate focus groups or structured interviews to deepen the understanding of users' reflective processes.

The workshop confirmed that a Socratic use of AI, combined with transmedia storytelling, can enrich place-based and media education. Within the limits of a pilot, the T-PLACE app showed its potential to foster inquiry, reflection and collaborative meaning-making, while StoryMaps provided concrete outputs that transformed exploration into resources for dialogue and teaching. Beyond technical refinements, the experience points to a broader lesson: when technology is framed as a companion rather than a provider, it can support educators in cultivating practices of participation, interpretation and shared learning.

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