

Media Education in a lower secondary school: a path to Digital Empowerment

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Abstract

The relationship between adolescents and digital technologies is a widely debated topic, often framed in terms of prohibitionist approaches on one hand, and digital empowerment on the other. However, as digital engagement becomes an integral part of everyday life, fostering critical thinking and responsible media use appears more effective than restrictive strategies. This paper presents a Media Education project aimed at empowering adolescents in their use of digital tools. The educational intervention was conducted in a lower secondary school, involving 238 students, and included interactive classroom sessions, debates, and playful activities such as video games and avatar creation. The pedagogical approach prioritised active student participation over traditional top-down instruction. A final questionnaire assessed both student satisfaction and the skills acquired. Results from correlation analysis and MANOVA indicate that interactive and playful activities significantly contributed to overall course satisfaction. These findings support recent theories suggesting that playful, participatory learning environments enhance students' motivation and interest, promoting their immersion in educational contexts.

KEYWORDS: Media Education, Media Literacy, Digital Technologies, Adolescents, School Intervention.

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1. Introduction

In Italy, approximately 90% of the population has internet access, and 70% actively use social networks, spending on average nearly six hours online each day, of which about one hour and forty-eight minutes are devoted to social media platforms (Kemp, 2025). These figures illustrate how digital technologies have become deeply embedded in everyday life to the extent that the boundary between online and offline experiences increasingly loses significance (Arvidsson & Delfanti, 2024; De Abreu et al., 2017; Jenkins, 2006; Vial, 2019). In this context, van Dijck and collaborators (2018) introduced the concept of “platform society” to describe how platforms are nowadays an integral part of society.

Rather than merely reflecting social reality, these platforms actively shape and reproduce it.

Faced with the pervasiveness of the media, over time, researchers have moved from a prohibitionist attitude (Postman, 1979) to an integrated approach (Buckingham, 2019; Chiner et al., 2025; Jenkins, 2006; Livingstone et al., 2011), aimed at developing the competences to navigate the digital world and manage its risks, rather than banning access to it. Media Education (ME), as the “educational discipline focused on critical and conscious engagement with media and their languages” (Todino & Di Tore, 2025, p. 1), aims to support this shift. Three forms of ME curricula can be identified (Felini, 2019; Rivoltella, 2019), namely disciplinary, cross-curricular, and mixed. The disciplinary approach (first applied in Canada in 1987) treats ME as an autonomous discipline (so-called Media Studies) within the school's curriculum (Bazalgette et al., 1992). This approach has the advantage of enjoying institutional recognition but often comes with the disadvantage of not being integrated with other disciplines. In contrast, the cross-curricular approach proposed by Masterman (1985) concerns the totality of the disciplines that participate in media literacy. This approach, supported by many (e.g., Felini, 2019;

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Livingstone et al., 2011), solves the previous disadvantages but might cause teaching discontinuity. The mixed model (Hobbs & Jensen, 2009) is mainly found in the Anglo-Saxon world (Great Britain and Australia) and adopts both approaches, with different educational orientations in primary school (a cross-curricular focus on media) and secondary school (an autonomous subject within the school curriculum).

In the Italian context, coherent and coordinated institutional efforts in media education are largely absent. Consequently, ME initiatives are primarily driven by individual actors rather than by a systematic and comprehensive national media literacy strategy. This condition has led to a highly heterogeneous and fragmented educational landscape (Parola, 2008; Rivoltella, 2019). Furthermore, most existing initiatives tend to focus on risk prevention rather than fostering digital competence across all aspects of daily life (Buckingham, 2003; Gonnet, 1997). These limitations are reflected in the population's overall level of digital skill acquisition. At the European level, Italy ranks among the lowest-performing countries in terms of digital skill acquisition (ISTAT, 2024). Only 59.1% of young people aged 16–24 possess the digital competences identified by the DigComp 2.2 framework, namely information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving. This figure remains well below the European Union target of ensuring that 80% of individuals aged 16–74 attain at least basic digital skills by 2030 (Vuorikari et al., 2022).

To address this issue, the present study aims to evaluate the effectiveness of a ME program designed to foster critical digital skills and promote the responsible use of technology among lower secondary school students.

2. Materials and Methods

The research was conducted during the 2023–2024 school year in a lower secondary school located in a small town in the province of Reggio Emilia, Italy. The intervention was designed and implemented by a team of trained operators within the regular school curriculum, in close collaboration with teachers and school staff.

The intervention aimed to help younger generations use digital tools responsibly by fostering critical thinking and enabling conscious, creative expression through new media. In line with this objective, the study assessed the effectiveness of the media education program in fostering critical digital skills and promoting responsible technological behaviour among participants. Specifically, the research addresses the following questions:

- Question 1. To what extent does a participatory and playful approach enhance students' ME competences and satisfaction?

- Question 2. Is there a grade in which ME is more effective compared to others?
- Question 3. Which variables are more related to students' acquired competences and satisfaction (e.g., trainers' perceived competence, type of activities proposed in the course etc.)?

2.1 Participants

The project involved all classes of the institute: four sixth-grade, three seventh-grade, and three eighth-grade groups, totalling 238 students aged 11–14. While participation in the educational activities was extended to the entire student population, not all students who attended the course completed the final questionnaire. A total of 167 questionnaires were returned, of which 164 were deemed valid following data-cleaning procedures and included in the statistical analyses. Among the valid respondents, 79 students (48.2%) were in sixth grade, 43 (26.2%) in seventh grade, and 42 (25.6%) in eighth grade. From an ethical standpoint, informed consent was obtained from both students and their families before survey participation, ensuring that minors could also express their personal willingness to take part.

2.2 Procedure

The ME course combined traditional lectures with collaborative reflections and practical workshops. It was conducted over four one-hour sessions per class each week, from January to March 2024. The lectures were delivered by external specialists in digital media, specifically, trainees and researchers from the University of Modena and Reggio Emilia. Each classroom was equipped with internet-connected interactive monitors, and all pupils had access to individual tablets to support hands-on learning activities.

The frontal lesson format was primarily employed to introduce the course content; however, technology-mediated open-ended questions and polls were used to prompt pupils to reflect on their everyday use of digital tools and to foster dialogue. Additionally, playful activities such as video games and avatar creation were incorporated to enhance engagement and experiential learning. Each session was structured as follows:

- a short video introducing the topic and discussion;
- interactive polls submitted to the pupils (who answered via tablets) on their online habits;
- a playful workshop activity.

To encourage constructive dialogue, open-ended questions were employed, and active participation was encouraged.

2.3 Course content

The educational program was developed collaboratively by researchers and schoolteachers. An initial list of potential topics was refined into four thematic macro-areas, which served as the framework for classroom activities. Each of the four sessions lasted one hour and

combined theoretical input with a game-based activity designed to consolidate learning and sustain students' engagement during the final 15 minutes of the lesson. The sessions covered the topics described below.

1. Digital relationships. After defining ME, the session explored the concept of self-identity and the dynamics of offline and online relationships. Students discussed the opportunities and risks of digital interactions, with particular attention to phubbing and hikikomori. The practical activity, "The 5 Commandments," involved small-group discussions in which students selected five key principles of responsible online behaviour from a set of options, followed by a plenary reflection.
2. Risks of the net. The second session addressed negative online experiences, such as cyberbullying, hate speech and grooming, and encouraged students to identify reliable sources of support in such cases. The interactive component consisted of playing Google's "Regno Cortese" video game, which fosters reflection on responsible decision-making and the consequences of online actions.
3. Digital communication. This session focused on online communication styles and languages, contrasting positive and harmful behaviours, recognising fake news, and promoting critical thinking. Additional discussion topics included influencers and their hidden logic, as well as the construction and management of online identity (real vs. ideal self). During the interactive segment, students used the "Personas" app to create a digital avatar representing their online identity, stimulating reflection on authenticity and self-presentation.
4. Net addiction. The final session examined the business logic underpinning social networks, the potential abuse of digital tools and strategies for self-regulation and balance in digital life. The importance of parental control and supervision was also discussed. The concluding game-based activity offered students a selection of video games linked to the course topics, allowing them to choose one and apply the concepts learned throughout the program in a playful, self-directed manner.

2.4 Satisfaction survey

At the end of the ME course, an anonymous questionnaire was administered to assess the children's satisfaction with it and verify the skills they acquired. The questionnaire consisted of 26 questions, divided into the following three sections.

- Personal data: age, gender, grade and number of experienced ME sessions.
- Course evaluation: 16 ad-hoc developed items divided into four subscales, namely 1) overall course evaluation (e.g. "To what extent do you think the course contents were interesting?"), 2)

perceived trainers' expertise (e.g. "To what extent do you believe the course contents have been presented clearly and understandably?"), 3) interest in interactive activities (e.g. "To what extent were the proposed group activities interesting?"), and 4) a single satisfaction with the course item ("Express an overall opinion of the course: how satisfied are you in general?"). Answers were provided on a Likert scale ranging from 1 ("Not at all") to 5 ("Very much").

- Evaluation of acquired skills: a 10-question multiple-choice test with four answer choices was developed. One point was awarded for each correct answer, zero for incorrect answers.

3. Results

3.1 Descriptive statistics

Among the 164 valid responses, 92 participants (56.1%) were female and 72 (43.9%) male, with an average age of 12.01 years. Most of the students (139; 84.8%) attended all four sessions of the course.

The investigated variables included:

- *age*, expressed in years;
- *overall course evaluation*, computed as the average of five items investigating general interest in the course, its perceived usefulness, and students' perceived learning;
- *perceived trainers' competence*, computed as the average of the three items evaluating the quality of teaching;
- *interest in interactive activities*, the average of two items evaluating the videos and the group activities proposed during the course;
- *general satisfaction*, measured through a single item;
- *test score*, the total of correct answers to the course's final test, assessing the knowledge acquired by the students during the course. One point was granted for each correct answer, for a maximum score of ten.

The descriptive statistics reported in Table 1 show a high level of satisfaction with the course, perceived trainers' competence and general satisfaction, with all scores exceeding 4 (out of a maximum of 5).

Analysis of the interactive group activities indicated a preference among participants for video game-based workshops. Specifically, the activities *Regno Cortese* ($m = 3.951$) and *Set of Video Games* ($m = 3.872$) obtained higher mean ratings compared to *Creation of Your Avatar* ($m = 3.622$) and *The Five Commandments* ($m = 3.340$).

The average test score was 6.652 correct answers out of 10, indicating a moderate level of learning. As shown in Figure 1, the lowest percentages of correct responses were recorded for the topics grooming (30.7%, despite a good average of self-reported perceived learning on the

topic), influencers (42.8%), and phubbing (53.0%), thus suggesting the need for further in-depth coverage in future iterations of the course.

With respect to course duration, 40.4% of participants considered the course too short. In particular, 44.0% reported that the time dedicated to group activities was insufficient.

Before conducting the main analyses, assumptions for the MANOVA and linear regression analyses were checked, including normality, homogeneity, multicollinearity, residual distribution, and influential cases; no severe violations were detected. Subsequently, correlation analyses, MANOVA, and multiple linear regression analyses were conducted to investigate the relationships among the study variables and address the research questions.

Table 1 - Descriptive statistics of investigated variables.

	Min	Max	Mean	Std Dev
a. Age	10.000	15.000	12.010	1.009
b. Overall course evaluation	1.667	5.000	4.057	.704
c. Perceived trainers' competence	2.333	5.000	4.276	.634
d. Interest in interactive activities	1.500	5.000	4.226	.758
e. General satisfaction	1.000	5.000	4.287	.749
f. Test score	1.000	10.000	6.652	2.089
Sample size N =164 (listwise)				

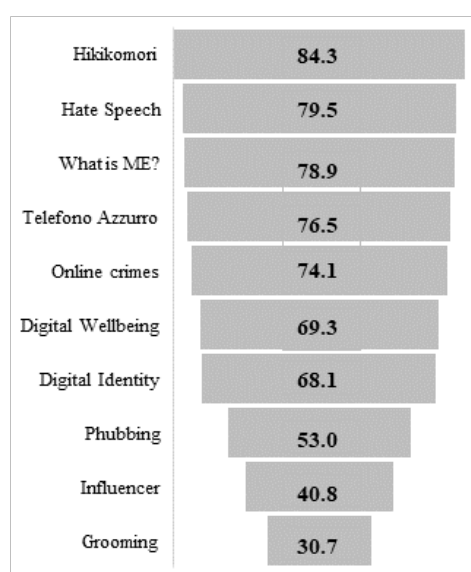


Figure 1 - Correct answers to questions on verifying the acquired skills.

3.2 Correlations between variables

To explore the relationship between variables and answer the first research question, a correlation analysis was performed.

As shown in Table 2, interest in the interactive and playful activities was positively associated with the overall evaluation of the course ($r = .627$; $p < .01$) and with general satisfaction ($r = .555$; $p < .01$).

Interest in interactive activities also showed a positive correlation with the perceived competence of trainers ($r = .521$; $p < .01$), further supporting the relevance of interactive methodologies in teaching contexts.

Lastly, a significant correlation between trainers' perceived competence and test scores was also observed.

3.3 MANOVA

To answer our second research question, a MANOVA was conducted to examine whether the attended grade (independent variable) influenced the variables under investigation, namely overall course evaluation, perceived trainer competence, interest in interactive activities, general satisfaction, and test score.

Results of the MANOVA indicated a marginally significant multivariate effect of the attended grade on the combined set of dependent variables, $F = 1.735$, $p = .072$.

Examination of the marginal means (Table 3) suggested that interest in interactive activities and general satisfaction were the variables most affected by attended grade.

Specifically, for interest in interactive activities, a significant main effect of grade was found, $F(1, 161) = 3.178$, $p < .05$. The marginal means indicated that students in 6th grade ($m = 4.297$) and 7th grade ($m = 4.337$) reported higher levels of interest than those in 8th grade ($m = 3.976$). For general satisfaction, the effect of grade approached significance, $F(1, 161) = 2.535$, $p = .084$, with higher mean scores observed for 6th grade ($m = 4.418$) compared to 7th grade ($m = 4.209$) and 8th grade ($m = 4.119$).

3.4 Regression analyses

Two multiple linear regression analyses were performed, with overall course satisfaction and test score as dependent variables, respectively. The predictors included perceived trainers' competence, interest in interactive activities, and age (Table 4).

The model for overall course satisfaction explained 51.7% of the variance (Adjusted $R^2 = .517$). In line with the correlation results, both perceived trainers' competence ($\beta = .415$; $t = 6.504$; $p < .001$) and interest in interactive activities ($\beta = .424$; $t = 6.628$; $p < .001$) emerged as significant predictors, while age did not ($\beta = .104$; $t = 1.883$; $p = .060$).

Table 2 - Correlations between variables [** $p < 0,01$ level (one-tailed) * $p < 0,05$ level (one-tailed)].

		(1)	(2)	(3)	(4)	(5)
Overall course evaluation (1)	<i>Pearson Correlation</i>	1.000	.624**	.627**	.698**	-.088
	<i>Sig. (one-tailed)</i>		.000	.000	.000	.131
	<i>N</i>	164	164	164	164	164
Perceived trainers' competence (2)	<i>Pearson Correlation</i>	.624**	1.000	.521**	.586**	.155*
	<i>Sig. (one-tailed)</i>	.000		.000	.000	.024
	<i>N</i>	164	164	164	164	164
Interest in interactive activities (3)	<i>Pearson Correlation</i>	.627**	.521**	1.000	.555**	-.115
	<i>Sig. (one-tailed)</i>	.000	.000		.000	.072
	<i>N</i>	164	164	164	164	164
General satisfaction (4)	<i>Pearson Correlation</i>	.698**	.586**	.555**	1.000	-.057
	<i>Sig. (one-tailed)</i>	.000	.000	.000		.232
	<i>N</i>	164	164	164	164	164
Test score (5)	<i>Pearson Correlation</i>	-.088	.155*	-.115	-.057	1.000
	<i>Sig. (one-tailed)</i>	.131	.024	.072	.232	
	<i>N</i>	164	164	164	164	164

Table 3 - Estimate marginal means (attended class).

Dependent variable	Grade	Mean	Std. Error	95% Confidence interval	
				Lower	Upper
Overall course evaluation	6th	4.101	.079	3.945	4.258
	7th	4.116	.107	3.904	4.328
	8th	3.913	.109	3.698	4.127
Perceived trainers' competence	6th	4.342	.071	4.201	4.483
	7th	4.264	.097	4.073	4.454
	8th	4.167	.098	3.974	4.360
Interest in interactive activities	6th	4.297	.084	4.131	4.464
	7th	4.337	.114	4.112	4.562
	8th	3.976	.115	3.748	4.204
General satisfaction	6th	4.418	.084	4.253	4.583
	7th	4.209	.113	3.986	4.433
	8th	4.119	.115	3.893	4.345
Test score	6th	6.291	.233	5.831	6.751
	7th	6.953	.316	6.330	7.577
	8th	7.024	.320	6.392	7.655

Table 4 - Multiple linear regression results.

	Dependent variable					
	Overall course satisfaction			Test score		
	β	t	p	β	t	p
Perceived trainers' Competence	.415	6.504	< .001	.301	3.439	.001
Interest in interactive activities	.424	6.628	< .001	-.259	-2.920	.004
Age	.104	1.883	.060	.093	1.222	.223
Adjusted R ²	.517			.068		

Note: Standardised regression coefficients are reported.

For test score, the model explained 6.8% of the variance (Adjusted $R^2 = .068$). Again, competence ($\beta = .301$; $t = 3.439$; $p = .001$) was a positive predictor of the dependent variable, while interest in interactive activities was a negative predictor ($\beta = -.259$; $t = -2.920$; $p = .004$). Age was not significant ($\beta = .093$; $t = 1.222$; $p = .223$).

4. Discussion and Conclusions

The present study examined the impact of a ME program designed to promote youngsters' effective and critical use of digital tools. It sought to understand how participatory and playful strategies are associated with the development of students' ME competences and with their satisfaction with the learning experience. The analysis also considered potential grade-level differences in program outcomes, with the aim of identifying whether the intervention was more effective for certain age groups. Additionally, attention was given to the role of contextual factors, such as trainers' perceived competence and the nature of the proposed activities, in promoting the students' learning outcomes and overall satisfaction.

4.1 Media Education: a participatory approach

Delving into the effectiveness of the ME approach, the results indicated a high level of overall course satisfaction among students. More specifically, the correlation analysis highlighted a significant association between the course's overall evaluation and participants' interest in interactive activities. These findings align with existing theoretical frameworks (Gee, 2003; McLuhan, 1970; Plass et al., 2015; Rivoltella, 2019) and are consistent with recent evidence indicating that participatory approaches represent effective strategies for promoting digital media literacy and student engagement (Eyal & Te'eni-Harari, 2024). Specifically, Rivoltella and Ferrari (2010) argue that ME practices should mirror how media are used in everyday life, that is, playfully and seeking enjoyment. Integrating this engaging dimension into ME teaching practices appears as an effective strategy to increase adolescents' motivation and promote meaningful learning experiences (McLuhan, 1970).

One example of this approach within the course was the activity involving the creation of digital avatars. This exercise not only encouraged engagement but also provided insights into students' processes of identity construction in digital contexts. Interestingly, while some adolescents sought to design avatars that closely resembled their physical appearance, such as an Indian teenager who searched for a keffiyeh among the available headdresses, others used the task to explore alternative representations of themselves. As noted by many scholars (Arvidsson & Delfanti, 2024; boyd, 2007), online behaviours often mirror those enacted offline, yet digital environments can also serve as spaces

in which adolescents explore different aspects of the self. This tendency resonates with Turkle's (2011) perspective, which views adolescence as a critical period of identity negotiation, during which young people negotiate their system of values and beliefs. The avatar-building activity exemplified how playful digital practices can become meaningful opportunities for identity exploration.

4.2 Age-related differences in media engagement

The MANOVA results suggested a marginal effect of students' grade level on both interest in interactive activities and overall course satisfaction. Examination of the estimated marginal means indicated that younger students tended to report higher levels of interest in interactive activities and slightly greater overall satisfaction than older students. This difference may be related to patterns of digital media use across age groups. Data collected through classroom discussions indicated that students aged 13–14 years (eighth graders) generally owned a personal smartphone and reported frequent and prolonged use, often remaining connected throughout the afternoon and, in some cases, into the evening. Conversely, students aged 11–12 years (grades 6 and 7) tended to access digital media through their parents' devices and social media accounts, indicating a more limited and supervised use. Consequently, the video game-based activities may have been more novel and engaging for the younger students. It is worth noting that the substantial overlap of confidence intervals suggests interpreting these patterns cautiously. Further research with larger samples would be valuable to clarify whether age-related differences in familiarity with digital media contribute to students' engagement with video game-based activities.

A similar pattern emerged for overall course satisfaction. It is plausible that the older students, unlike their 11–12-year-old schoolmates, were already familiar with some of the course content, which may have reduced their perceived novelty and engagement with the interactive components. In this sense, it is no coincidence that the discussions in the classroom saw a greater involvement of students in the lower grades. In addition, sixth-grade students also exhibited the highest rate of questionnaire completion (48.2%), compared with seventh- (26.2%) and eighth-grade students (25.6%). This higher response rate may have also reflected their stronger engagement and involvement during the course.

Taken together, these findings suggest that the effectiveness of ME interventions may depend, at least in part, on their alignment with students' developmental stage and everyday media experiences. As media use becomes increasingly autonomous and integrated into social and identity-related processes during adolescence, students may respond differently to the same intervention depending on their age and prior exposure to digital media. This interpretation is consistent with recent evidence showing that digital media literacy develops in relation to students' educational and social

contexts, highlighting the importance of age-appropriate and context-sensitive interventions (Sun et al., 2024).

4.3 The determinants of students' acquired competences and satisfaction

Regression analysis indicated that interactive activities and trainers' teaching competence were positively associated with overall course satisfaction and appeared to contribute to its prediction.

On the other hand, the model predicting test scores accounted for only a small proportion of the observed variance (about 7%). As such, these results should be interpreted cautiously, as additional unmeasured factors may also be important in explaining variation in students' learning outcomes. Nevertheless, a negative association emerged between test scores and interest in interactive activities, suggesting that lower-performing students tended to find the interactive components of the Media Education course more engaging. Although this finding should be interpreted as exploratory rather than conclusive, it aligns with theoretical perspectives such as self-determination theory (Ryan & Deci, 2000), experiential learning theory (Dewey, 1938), and multiple intelligences theory (Gardner, 2011). These frameworks propose that playful and collaborative learning experiences can enhance motivation, participation, and social engagement, even when these effects are not immediately reflected in conventional measures of academic performance. Recent reviews of digital media literacy interventions similarly highlight the complexity of assessing educational impact solely through performance metrics, suggesting that interactive learning environments may foster engagement, motivation, and critical reflection even when gains in achievement are modest (Chaplinska et al., 2026). From this perspective, interactive media-based activities may support cognitive and social processes that enhance students' engagement with learning. However, given the limited explanatory power of the regression model, further research is needed to examine motivational, relational, and contextual factors that may account for differences in students' learning outcomes and clarify the relationship between engagement and performance.

4.4 Applicational suggestions

Looking ahead, future implementations of ME programs should differentiate content and workshop activities based on grade. Indeed, during the transition from childhood to adolescence, digital media acquire special relevance, as extensively documented in prior research (Arvidsson & Delfanti, 2024; boyd, 2007; Gabbiadini & Andrighetto, 2021; McKenna & Bargh, 2000; Pacilli et al., 2021; Walther, 2015). Ideally, such interventions should be co-constructed with students themselves, involving them in defining the themes and issues to be addressed in class. As Riva (2017) notes, students primarily seek to be listened to, which includes caring for their interests. Educational practices should therefore start from learners' everyday digital experiences and

extend these into the classroom. This also implies rethinking the traditional role of the teacher, moving away from a vertical transmission of knowledge toward a co-constructive process that values students' inputs (Buckingham, 2003).

Although students were not directly involved in the design phase of this course, a strength of the program was its emphasis on exploring students' online habits through multiple forms of interaction aimed at stimulating dialogue.

Another noteworthy aspect concerned the trainers' relational approach during the sessions. By sharing common interests in digital games like *Fortnite* and *Roblox*, the trainers established a sense of shared identity with the students, which visibly enhanced classroom attention and engagement. It is plausible that students no longer perceived the trainer as a distant authority figure, but rather as a relatable "peer" who shared similar interests. On this basis, future developments of the ME program could explore peer-based educational models that leverage perceived similarity and social influence (Frau-Meigs et al., 2020; Hoechsmann & Poyntz, 2012; Kotilainen & Arnolds-Granlund, 2010; Pellai et al., 2012).

Findings from the Italian branch of *EU Kids Online* (Mascheroni & Ólafsson, 2018) further support this suggestion, showing that peers are adolescents' primary point of reference when facing online difficulties: 47% of teens turn to friends, compared with 38% who turn to parents and only 2% who seek help from teachers. Similar patterns emerged among participants in this project.

A final consideration concerns the role of the families in fostering conscious and responsible media use among adolescents. Numerous studies (Atwood et al., 2017; Chang-Hoan & Cheon, 2005; Davidson et al., 2009; Livingstone & Helsper, 2008; Pacilli et al., 2021; Volpi, 2017) have shown how parental mediation influences children's online behaviour, leading to a lower likelihood of incurring potential risks. Future iterations of this project should therefore include active parental engagement, following the model of local initiatives such as the *smartphone patent* in Verbania (Iadecola et al., 2020) and the *Trool Project* in Firenze (Di Bari & Mariani, 2018), which have successfully involved families in fostering responsible digital citizenship.

4.5 Limitations and future directions

Despite its merits, this study has limitations that should be acknowledged. First, the absence of a control group limits the ability to attribute observed improvements in students' satisfaction and engagement solely to the intervention. Second, the sample was drawn from a single school located in a specific geographic area, which may affect the generalizability of the findings. Future research should aim to broaden the sample, include schools from diverse contexts, employ longitudinal designs with control groups, and examine additional motivational, relational, and contextual

variables that may influence learning outcomes (d'Haenens et al., 2025).

Another limitation concerns the data collection process. Due to time constraints, students were asked to complete the questionnaire outside school hours. This condition likely influenced the response rate, which, although satisfactory, might have been higher if the survey had been administered directly during class sessions.

Despite these limitations, this study provides valuable insights into the potential of participatory, playful, and developmentally sensitive approaches within ME programs. Although several significant associations emerged, effect sizes were generally modest, and the predictive models explained a limited proportion of variance, which is expected in complex educational and psychosocial contexts. Therefore, these findings should be viewed as indicative patterns rather than definitive causal evidence, providing a basis for further confirmatory research.

Overall, these findings support a shift from risk-based prevention models toward competency-based, student-centred interventions, reinforcing the need for integrated educational strategies involving schools, peers, and families.

Datasets and reproducibility

The anonymized dataset supporting the conclusions of this study is available in the Supplementary Materials.

References

- Arvidsson, A., & Delfanti, A. (2024). *Introduzione ai media digitali* (3rd ed.). Il Mulino.
- Atwood, R. M., Beckert, T. E., & Rhodes, M. R. (2017). Adolescent problematic digital behaviors associated with mobile devices. *North American Journal of Psychology*, 19(3), 659–684. <https://psycnet.apa.org/record/2017-54123-010>
- Bazalgette, C., Bevort, E., & Savino, J. (1992). *New directions: Media education worldwide*. BFI.
- boyd, d. (2007). Why youth ♥ social network sites: The role of networked publics in teenage social life. In D. Buckingham (Ed.), *Youth, identity, and digital media* (pp. 119–142). The MIT Press. <https://doi.org/10.31219/osf.io/22hq2>
- Buckingham, D. (2003). *Media education: Literacy, learning and contemporary culture*. Polity.
- Buckingham, D. (2019). *The media education manifesto*. John Wiley & Sons.
- Chang-Hoan, C., & Cheon, H. J. (2005). Children's exposure to negative internet content: Effects of family context. *Journal of Broadcasting & Electronic Media*, 49(4), 488–509. https://doi.org/10.1207/s15506878jobem4904_8
- Chaplinka, I., Nikken, P., Brons, H., Smixioti, E., Jertberg, R. M., Koning, I., Mary, S. M., Edelaar-Peeters, Y. & Schuengel, C. (2026). Scoping review of research on evidence-based digital media interventions for youth. *Social Sciences & Humanities Open*, 13, Article 102924. <https://doi.org/10.1016/j.ssaho.2026.102924>
- Chiner, E., Gómez-Puerta, M., Mengual-Andrés, S., & Merma-Molina, G. (2025). Teacher and school mediation for online risk prevention and management: Fostering sustainable education in the digital age. *Sustainability*, 17(8), Article 3711. <https://doi.org/10.3390/su17083711>
- Davidson, J., Martellozzo, E., & Lorenz, M. (2009). *Evaluation of CEOP ThinkUKnow internet safety programme and exploration of young people's internet safety knowledge*. Centre for Abuse & Trauma Studies and Kingston University. <https://uel-repository.worktribe.com/output/479646>
- De Abreu, B. S., Mihailidis, P., Lee, A. Y. L., Melki, J., & McDougall, J. (Eds.). (2017). *International handbook of media literacy education*. Routledge. <https://doi.org/10.4324/9781315628110>
- Dewey, J. (1938). *Experience and education*. Macmillan.
- Di Bari, C., & Mariani, A. (2018). *Media education 0-6: Le tecnologie digitali nella prima infanzia tra critica e creatività*. Anicia.
- d'Haenens, L., Vissenberg, J., Puusepp, M., Edisherashvili, N., Martinez-Castro, D., Helsper, E. J., Tomczyk, Ł., Azadi, T., Opozda-Suder, S., Maksniemi, E., Spurava, G., Salmela-Aro, K., Sormanen, N., Tiihonen, S., Wilska, T., Hietajärvi, L., Martínez, G., Larrañaga, N., Garmendia, M., ... Sepielak, D. (2025). Fostering media literacy: A systematic evidence review of intervention effectiveness for diverse target groups. *Media and Communication*, 13, Article 8901. <https://doi.org/10.17645/mac.8901>
- Eyal, K., & Te'eni-Harari, T. (2024). Systematic review: Characteristics and outcomes of in-school digital media literacy interventions, 2010-2021. *Journal of Children and Media*, 18(1), 8–28. <https://doi.org/10.1080/17482798.2023.2265510>
- Felini, D. (2019). *Pedagogia dei media: Questioni, percorsi e sviluppi*. Scholé.
- Frau-Meigs, D., Kotilainen, S., Pathak-Shelat, F., Hoechsmann, M., & Poyntz, S. R. (Eds.). (2020). *The handbook of media education research*. Wiley-Blackwell. <https://doi.org/10.1002/9781119166900>
- Gabbiadini, A., & Andrighetto, L. (2021). Sé e identità nei media digitali. In M. G. Pacilli, I. Giovanenelli,

- & F. Spaccatini (Eds.), *Psicologia sociale dei media digitali* (pp. 37–72). Maggioli Editore.
- Gardner, H. (2011). *Frames of mind: The theory of multiple intelligences* (3rd ed.). Basic Books.
- Gee, J. P. (2003). *What video games have to teach us about learning and literacy*. Palgrave Macmillan.
- Gonnet, J. (1997). *Éducation et médias*. Presses Universitaires de France.
- Hobbs, R., & Jensen, A. (2009). The past, present, and future of media literacy education. *Journal of Media Literacy Education*, 1(1). <https://doi.org/10.23860/jmle-1-1-1>
- Hoechsmann, M., & Poyntz, S. R. (2012). *Media literacies: A critical introduction*. Wiley-Blackwell. <https://doi.org/10.1002/9781444344158>
- Iaderosa, A., Rubatto, S., Tantardini, N., Croce, M., & Gabutti, E. (2020). La patente per l'uso consapevole dello smartphone. Progetto interistituzionale per la prevenzione e il contrasto al fenomeno del cyberbullismo In G. Di Ioia (Ed.), *Prevenire, valutare e contrastare bullismo e cyberbullismo* (pp. 121–130). Erickson.
- ISTAT. (2024). *Le competenze digitali dei cittadini – Anno 2023*. <https://www.istat.it/comunicato-stampa/le-competenze-digitali-dei-cittadini-anno-2023>
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. NYU Press.
- Kemp, S. (2025). *Digital report 2025. We Are Social & Meltwater*. <https://datareportal.com/library>
- Kotilainen, S., & Arnolds-Granlund, S.-B. (Eds.). (2010). *Media literacy education: Nordic perspectives*. Nordicom.
- Livingstone, S., & Helsper, E. J. (2008). Parental mediation of children's internet use. *Journal of Broadcasting & Electronic Media*, 52(4), 581–599. <https://doi.org/10.1080/08838150802437396>
- Livingstone, S., Haddon, L., Görzig, A., & Ólafsson, K. (2011). *Risks and safety on the internet: The perspective of European children: full findings and policy implications from the EU Kids Online survey of 9-16 year olds and their parents in 25 countries*. EU Kids Online. <https://eprints.lse.ac.uk/33731/>
- Mascheroni, G., & Ólafsson, K. (2018). *Accesso, usi, rischi e opportunità di internet per i ragazzi italiani: I primi risultati di EU Kids Online 2017*. EU Kids Online. <https://mim.gov.it/documents/20182/0/La+ricerca.pdf/>
- Masterman, L. (1985). *Teaching the media*. Routledge.
- McKenna, K. Y. A., & Bargh, J. A. (2000). Plan 9 from cyberspace: The implications of the internet for personality and social psychology. *Personality and Social Psychology Review*, 4(1), 57–75. https://doi.org/10.1207/S15327957PSPR0401_6
- McLuhan, M. (1970). Education in the electronic age. *Interchange*, 1, 1–12. <https://doi.org/10.1007/BF02214876>
- Pacilli, M. G., Giovannelli, I., & Spaccatini, F. (Eds.). (2021). *Psicologia sociale dei media digitali*. Maggioli Editore.
- Parola, A. (Ed.). (2008). *Territori mediaeducativi: Scenari, sperimentazioni e progetti nella scuola e nell'extrascuola*. Erickson.
- Pellai, A., Rinaldin, V., & Tamborini, B. (2012). *Educazione tra pari: Manuale teorico-pratico di empowered peer education*. Erickson.
- Plass, J. L., Homer, B. D., & Kinzer, C. K. (2015). Foundations of game-based learning. *Educational Psychologist*, 50(4), 258–283. <https://doi.org/10.1080/00461520.2015.1122533>
- Postman, N. (1979). *Teaching as a conserving activity*. Delacorte Press.
- Riva, C. (2017). Giovani e competenze digitali. In C. Pattaro, C. Riva, & C. Tosolini (Eds.), *Sguardi digitali: Studenti, docenti e nuovi media* (pp. 71–83). FrancoAngeli.
- Rivoltella, P. C. (2019). *Media education: Idea, metodo, ricerca*. Scholé.
- Rivoltella, P. C., & Ferrari, S. (Eds.). (2010). *A scuola con i media digitali: Problemi, didattiche, strumenti*. Vita e Pensiero.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Sun, J., Yang, Z., Chen, S., & Deng, R. (2024). Exploring the disparity in digital media literacy between urban and rural primary school students: Insights from an empirical study in China. *Frontiers of Digital Education*, 1(2), 178–197. <https://doi.org/10.1007/s44366-024-0003-1>
- Todino, M. D., & Di Tore, S. (2025). Media education. *Encyclopedia*, 5(1), Article 12. <https://doi.org/10.3390/encyclopedia5010012>
- Turkle, S. (2011). *Life on the Screen: Identity in the age of the internet*. Simon & Schuster.
- van Dijck, J., Poell, T., & de Waal, M. (2018). *The platform society: Public values in a connective world*. Oxford University Press. <https://doi.org/10.1093/oso/9780190889760.001.0001>

- Vial, S. (2019). *Being and the screen: How the digital changes perception*. MIT Press.
<https://doi.org/10.7551/mitpress/10305.001.0001>
- Volpi, B. (2017). *Genitori digitali: Crescere i propri figli nell'era di internet*. Il Mulino.
- Vuorikari, R., Kluzer, S., & Punie, Y. (2022). DigComp 2.2: *The digital competence framework for citizens – With new examples of knowledge, skills and attitudes*. Publications Office of the European Union.
<https://data.europa.eu/doi/10.2760/115376>
- Walther, J. B. (2015). Social information processing theory: Impressions and relationship development online. In L. A. Baxter & D. O. Braithwaite (Eds.), *Engaging theories in interpersonal communication: Multiple perspectives* (pp. 417–428). SAGE Publications.