A2.1 Research on Emerging Media Literacy Challenges and Innovations

Research report
(based on a Mixed-Methods approach)

University of Maribor

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1 Introduction

1.1 Purpose and objectives of the report

The objectives of this report are to identify emerging challenges in media literacy within higher education, including issues such as deep mediatization, fake news, post-truth dynamics, AI in media, and entrepreneurship. Furthermore, the report aims to explore innovative approaches and teaching methodologies that can effectively address these challenges. By expanding on the initial needs analysis and applying a mixed-methods research approach, the study seeks to assess current gaps and requirements among students, academic staff, and SMEs. Another key objective is to provide evidence-based insights that support the integration of media literacy into higher education curricula and foster collaboration between academia and industry. Ultimately, the report intends to offer practical recommendations for enhancing media literacy skills and adapting to the evolving media landscape.

1.2 Research context and Methodology

To develop this report, we applied a mixed-methods research approach that combined qualitative and quantitative techniques. We began with a comprehensive literature review to establish the theoretical framework and identify research gaps related to emerging media literacy challenges. This was followed by an online survey targeting students to collect quantitative data on their perceptions and experiences. In parallel, we conducted semi-structured interviews with SMEs (small and medium-sized enterprises) and academic staff to gather qualitative insights from both industry and education perspectives. Survey data were analyzed using descriptive statistics to identify trends, while interview transcripts underwent thematic analysis to uncover recurring patterns and key themes. This holistic and triangulated approach provided a robust foundation for identifying critical challenges—such as deep mediatization, fake news, post-truth dynamics, AI in media, and entrepreneurship—and for proposing innovative solutions to strengthen media literacy in higher education.

2 Research on Emerging Media Literacy Challenges and Innovations – Literature Review

2.1 Theoretical framework of Media Literacy

Media literacy is widely recognized as a crucial skill set for navigating today's complex media environment. It encompasses the abilities needed to critically engage with, interpret, and create media messages across various platforms and formats. Media literacy is fundamentally about empowering individuals to critically access, analyze, evaluate, and create media, supporting informed participation in society. Its definitions and educational approaches continue to evolve to meet the challenges of digital and social media (Cho et al., 2022).

2.2 Context of Media Literacy in the digital age

2.2.1 The Digital Context

The digital age is characterized by an overwhelming flow of information, rapid technological change, and the dominance of multimedia platforms - social media, news sites, streaming, and interactive content. Individuals, especially youth, are exposed to a constant stream of messages, visuals, and data, often from unverified or biased sources (Ozel, 2025). The rise of artificial intelligence, algorithm-driven content, and global connectivity has further complicated the media landscape, making it harder to distinguish credible information from misinformation or manipulation (Tiernan et al., 2023).

2.2.2 Significance and Societal Impact

Empowerment and Critical Thinking: Media literacy equips individuals with the skills to access, analyze, evaluate, and create media content, fostering critical thinking and informed decision-making. This is essential for navigating misinformation, fake news, and manipulative content prevalent in digital spaces (Mrisho and Dominic, 2023).

Civic Engagement and Democracy: Media literacy supports active citizenship by enabling people to participate meaningfully in democratic processes, recognize bias, and engage in ethical communication. It is linked to higher civic engagement, especially among youth, by promoting information-seeking, critical analysis, and responsible content creation (Martens and Hobbs, 2015).

Social Inclusion and Equity: Digital and media literacy help bridge generational, socio-economic, and educational divides, ensuring all groups can benefit from digital resources and participate fully in society. Tailored interventions are needed to address disparities in access and skills (Akello, 2024).

Media literacy is a vital life skill in the digital age, empowering individuals to think critically, participate in democracy, and navigate complex media environments. Its significance continues to grow as digital technologies evolve, making it essential for personal empowerment, social inclusion, and the health of democratic societies.

2.2.3 Challenges in the Digital Media Environment

Deep mediatization refers to the advanced stage in which digital media and their infrastructures are deeply integrated into all elements of social life, fundamentally shaping how society is constructed and communicated. This process goes beyond traditional media influence to include datafication, algorithmic systems, and the pervasive presence of digital technologies that transform power structures, social practices, and realities. Addressing the challenges posed by deep mediatization requires critical reflection, interdisciplinary research, and adaptive strategies to promote democratic, diverse, and equitable media environments (Gavra et al., 2024; Reilly and Salojärvi, 2022).

Fake news refers to intentionally false or misleading information presented as news, designed to deceive, manipulate, or influence public opinion. Its rise, especially through digital and social media, has made it a significant challenge for societies worldwide (Tandoc, 2018).

The "post-truth" phenomenon describes a cultural and political context where objective facts are less influential in shaping public opinion than appeals to emotion and personal belief. The post-truth phenomenon in digital media is driven by rapid disinformation, emotional narratives, and weakened trust in institutions. Addressing these challenges requires a combination of media literacy, ethical communication, and technological innovation (Larisu et al, 2025; Łukasik, 2020).

Mob censorship is the collective harassment, intimidation, or silencing of journalists and public voices by ordinary citizens, often amplified through digital platforms. Unlike traditional state or market censorship, it emerges from the bottom up and frequently targets individuals based on gender, minority status, or critical reporting. This phenomenon poses a growing threat to press freedom, journalistic independence, and democratic communication, requiring urgent attention from platforms, policymakers, and news organizations (Henrichsen and Shelton, 2022; Waisbord, 2020).

AI in media: Artificial intelligence (AI) is transforming digital media by enhancing content creation, marketing, and audience engagement. However, it also raises significant challenges such as ethical concerns, misinformation, job displacement, and regulatory gaps. Addressing these issues through strong policies, human oversight, and stakeholder dialogue is essential to ensure AI's responsible and beneficial use (Pitoňáková, et al., 2025).

AI is rapidly reshaping digital entrepreneurship, especially in digital media, by enabling smarter opportunity recognition, operational efficiency, and innovative business models. It transforms how entrepreneurs identify opportunities, engage

customers, and scale ventures in a highly competitive environment. While AI offers substantial benefits, challenges related to ethics, skills, and inclusivity require responsible and adaptive strategies to ensure sustainable growth in this evolving field (Duong, 2024).

2.3 Integration into higher education

2.3.1 Current situation in partner countries

Country	Partner	Findings
Slovenia	University of Maribor and MIITR	Media literacy in Slovenian higher education is still developing, shaped by national strategies and institutional initiatives. The Digital Slovenia 2030 Strategy highlights it as a key digital competence (Government of the Republic of Slovenia, 2023), while the Monitoring Report on the Digital Media Ecosystem points to unstable funding and weak coordination (Ministry for Digital Transformation, 2025). Public institutions support integration: Arnes offers open-access platforms (Arnes, 2025), and RTV Slovenia provides educational content via RTV 365 (RTV Slovenia, 2025). Despite these efforts, reliance on global platforms like YouTube, Facebook, and TikTok reduces visibility of domestic content (Ministry for Digital Transformation, 2025). Implementation in higher education remains fragmented and project-based (Government of the Republic of Slovenia, 2023). In Slovenia, media and information literacy is included in some higher education programs, mainly in media and journalism. Projects show that integrating media literacy into formal education has lasting impact, and Slovenia follows international trends and exchanges best practices. Challenges remain in reaching vulnerable groups and ensuring sustainability, with few initiatives focused solely on higher education. The use of AI tools for fact-checking in higher education is still developing.
Italy	University of Macerata	Italy's media and education systems face structural vulnerabilities amid rapid digital transformation. Deep mediatization has turned media into core infrastructures of social life, reshaping identities and citizenship through pervasive platforms (Boccia Artieri, 2016; Gemini et al., 2020). Networked publics foster transmedia cultures and algorithmic visibility, weakening traditional gatekeeping (Marinelli, 2020). These dynamics intersect with fake news and post-truth, where emotions override facts and "fake news" is weaponized politically, fueling polarization and echo chambers (Solito & Sorrentino, 2019; Roidi, 2024; Barbuzzi, 2025; Etta et al., 2025; Bentivegna et al., 2024). Corrective projects like Pagella Politica and Facta remain niche, underscoring the need for systemic media-literacy education. Meanwhile, mob censorship—threats and coordinated campaigns—affects over 500 journalists annually, creating "social silence" on sensitive issues (Ossigeno per l'informazione, 2024; Padovani et

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		al., 2021; Splendore & Brambilla, 2017; Roidi, 2024), prompting AGCOM (2023) to recommend protection protocols and platform accountability. The integration of AI introduces opportunities and risks: automated reporting projects (ANSA, RAI) raise concerns about transparency, bias, and job precarity (Odg, 2023; Sorrentino, 2025; Splendore, 2021; Monaci, 2023). In entrepreneurship, AI adoption remains low among SMEs—5% in 2023, 8.2% in 2024—due to financial and skill barriers (Labory & Bianchi, 2021; Eurostat, 2024; ISTAT, 2025; European Commission, 2024), despite OECD (2025) noting productivity gains where firms invest in human capital and data infrastructure. Italian research calls for ethical standards, interdisciplinary training, and media literacy to ensure responsible innovation (Ranieri et al., 2024; Tiernan et al., 2023; Biagini et al., 2023; MC-VIEW, 2024; AgID, 2024). Finally, Italy faces persistent gender gaps in STEAM (MIUR, 2022; Tudisca, 2023; Priulla, 2025). Girls outperform boys in information literacy but lack confidence and technical fluency, constrained by stereotypes and structural barriers (Caponera et al., 2021; Bungaro et al., 2025; Cavaletto & Berra, 2020). Transmedia learning and inclusive pedagogies show promise (González-Martínez et al., 2021), yet without sustained institutional support and policy alignment, progress remains uneven (Plan International & Bocconi University, 2020). Structural reforms—focused on self-efficacy, mentorship, and inclusive curricula—are critical to transforming gendered patterns that persist into higher education and the workforce.
Belgium		Belgium demonstrates strong engagement in integrating media literacy and digital education into educational curricula. Universities such as KU Leuven, College Howest and Vrije Universiteit Brussels have incorporated innovative pedagogical methods like flipped learning, developed game-based learning projects or integrated AI literacy courses in their programs. These approaches enhance media literacy skills by fostering critical thinking, improving students with the ability to navigate and evaluate AI-driven content safely, essential competences in an era of algorithmic influence and online disinformation. Belgium is also leveraging strategic collaboration at both national and European levels to improve its current situation in media literacy and digital education. By participating in cross-border initiatives,

		Belgian institutions can exchange expertise, develop innovative tools and implement best practices alongside other countries. Programs such as EDMO BELUX and BENEDMO exemplify how European cooperation can strengthen capacities to tackle disinformation and promote digital media skills. It is, however, important to note that despite these advancements, progress remains uneven across regions, and the country's linguistic diversity can sometimes hinder the smooth sharing and adoption of best practices.

2.3.2 Best practices

Country	Partner	**Findings**
Slovenia	University of Maribor and MIITR	Several Slovenian examples demonstrate effective integration of media literacy within academic and professional settings. The independent investigative newsroom Oštro collaborates with journalism and communication students on fact-checking projects, strengthening practical investigative skills and ethical awareness (Oštro, 2025). The Peace Institute's project "(Od)govor" combined research, teacher training, and advocacy to address hate speech and mob censorship, contributing to improved understanding of digital responsibility in education (Peace Institute, 2020–2021). On the technological side, RTV Slovenia applies artificial intelligence tools for subtitling, transcription, and content search, enabling collaboration between journalism, linguistics, and computer science faculties (RTV Slovenia, 2024). The Ljubljana Technology Park supports AI-based startups through incubation, mentoring, and innovation networks, linking university research and entrepreneurship education to Slovenia's innovation ecosystem (Tehnološki park Ljubljana, 2025). Gender inclusion initiatives also contribute to this field. The Female Engineer of the Year (Inženirka leta) award and WISE Slovenia event (Erratic Engineeress, 2024) raise the visibility of women in STEM professions, inspire young girls to pursue science and technology, and promote gender balance in media representation and academic engagement (Inženirka leta, 2024).

		The best practices of the projects are as follows: expert involvement and multidisciplinarity – projects connect academics, professionals, and the wider public, providing access to practical tools and resources. In one of the projects, research-oriented modules were created, where students learn not only theory but also research methods, publishing, and teaching skills, strengthening the capacities of the next generation of professionals and directly linking to higher education. It was also observed that projects connect to European citizenship and democracy: media literacy is not just a technical skill but also fosters critical thinking and active citizenship. Finally, projects emphasize sustainability and accessibility: the use of digital tools, infographics, and interactive modules ensures long-term use and broader reach. In Slovenia, pedagogical innovations in media literacy education include various workshops focusing on case-based or problem-based learning, flipped learning, fact-checking learning, and game-based learning.
Italy	University of Macerata	In Italy, best practices in the field of digital transformation, media, and education reflect a growing balance between technological innovation, academic research, and social responsibility. Despite persistent institutional and territorial fragmentation, the country has developed a range of significant initiatives that combine media literacy, technological experimentation, and civic participation. The most relevant practices lie at the intersection of media, education, and artificial intelligence. Institutions such as AGCOM, along with independent organizations like Ossigeno per l'Informazione, Pagella Politica, and Facta.News has played a crucial role in countering disinformation and fostering transparency in public communication. Similarly, the use of AI in the editorial processes of RAI and ANSA demonstrates a responsible innovation model grounded in human oversight, ethical awareness, and journalistic accountability. In the educational sphere, Italy has developed an original pedagogical approach that merges digital tools with active learning. The EAS Method (Episodi di Apprendimento Situato) developed by Pier Cesare Rivoltella (2015, 2017), together with the flipped classroom and project-based learning models promoted by INDIRE and Fondazione Mondo Digitale, represents a cornerstone of European media

		education. These experiences foster digital and critical competences among students while promoting inclusion, creativity, and civic engagement. In the field of entrepreneurship and digital innovation, incubators such as PoliHub, Luiss EnLabs, and the MIND – Milano Innovation District have supported the emergence of AI-based startups and sustainable business models. At the same time, initiatives such as Girls Code It Better and STEM by Women have addressed gender imbalance in technological and scientific disciplines through mentoring, networking, and hands-on workshops. Overall, Italian best practices demonstrate a progressively mature ecosystem in which digital competences, critical education, and the ethics of innovation are increasingly intertwined. The main challenge remains to transform this rich constellation of local initiatives into a coherent national strategy—capable of ensuring coordination, equity, and sustainability in the ongoing processes of mediatization, digitalization, and technological innovation.
Greece		European initiatives show diverse strategies for media literacy and AI integration in education, journalism, and entrepreneurship. Projects like the Media Learning Association and Finland's national policy embed algorithmic awareness and platform literacy, while networks such as EDMO, News Literacy Lab, and Erasmus+ FACT vs FAKE develop gamified and critical tools. MOOCs (*Politics, Truth and Media*) and programs like BBC Young Reporter promote verified reporting, and frameworks from UNESCO and EDMO advocate transparency and anti-harassment protocols. AI-focused projects—Reuters Institute AI and News, Deutsche Welle Innovation Lab, and UNESCO guidelines—stress ethical use and labeling, while entrepreneurship programs like EIT Digital AI and the European AI Alliance Forum support responsible ecosystems. Educational innovations include MOOCs (Elements of AI), DigiEduHack, flipped classrooms, and tools like Science Checker and the EDMO Toolbox, alongside gender-focused initiatives such as UNESCO Cracking the Code and Girls Go Circular. Despite progress, challenges persist: fragmented curricula, insufficient teacher training, over-commercialization of AI, lack of algorithmic accountability, and gender initiatives limited to recruitment without systemic integration. Scaling these innovations requires comprehensive teacher training, clear learning outcomes, and robust feedback mechanisms.

Belgium		Whether through projects- based for young and elderly residents led by the Flemish community, through curricula programmes on AI or media literacy organized by higher educations or universities, or workshops focusing on hands-on approaches, Belgium shows concrete examples of involvement in media literacy initiatives from various actors. Additionally, national and European collaborations, such as EDMO BELUX and BENEDMO, facilitate cross-border knowledge sharing and capacity-building, complemented by hubs like the Knowledge Centre on Media Literacy and platforms like Veilig Online and Clicksafe, supporting such an approach across regions. AI-assisted tools, whether for fact-checking including FactRank and VISAVIS, or for relevant and checked datasets for journalists such as Wobby.ai, help verify claims and detect disinformation. Moreover, though progress still needs to be made, Belgium is doing quite well on a European level on STEAM initiatives aiming at fostering women participation. Indeed, through projects like Wallonia Wonder Women and events; Girls' ESTEAM Fests, promoting gender inclusion in STEAM fields, initiatives to equip and encourage female students to follow this path keep blooming.

2.3.3 Challenges of implementation

Country	Partner	**Findings**
Slovenia	University of Maribor and MIITR	The main challenges include weak institutional coordination, short-term funding, and lack of structural mechanisms for sustainable implementation (Government of the Republic of Slovenia, 2023; Ministry for Digital Transformation, 2025). Many initiatives remain project-based and lack long-term integration into academic programs. The Slovene Association of Journalists (2023, 2025) warns that many Slovenian media organizations use AI tools without clear guidelines on accountability, verification, or content labeling. This gap undermines public trust and complicates the development of educational frameworks for responsible AI use.

		According to the OECD Trust Survey (2024), only 26% of Slovenians report medium or high trust in the media—well below the OECD average. This highlights the need to integrate media-verification and misinformation-awareness modules into higher education curricula (OECD, 2024). Additionally, the study by Rožman, Tominc, and Crnogaj (2024) shows significant disparities in AI adoption between large and small enterprises. This indicates that higher education must strengthen digital and entrepreneurial skills among students to reduce technological and regional inequalities in Slovenia's innovation landscape. Some of the challenges we identified include limited reach of target groups: media studies students are the primary participants, while vulnerable groups, such as older adults or youth from less privileged backgrounds, are less included. Few projects involve educators, lecturers, or teachers. Project results are rarely integrated into updated materials or broader curricula, which may reduce their effectiveness. It also seems that systematic evaluation is sometimes lacking to determine whether projects truly enhance participants' media literacy and resilience to misinformation. The challenge of innovative pedagogical methods in media literacy lies in their scarcity, typically being implemented only in the form of workshops or for students of media-related programs, rather than for all students. It has also been shown that, for example, with the flipped learning method, discussion, critical evaluation, and interpretation are essential, which are most effective in actual group settings and through interaction. Within the framework of AI tools for fact-checking in higher education in Slovenia, it would be sensible to strengthen interdisciplinary models and develop locally adapted fact-checking tools that could be integrated into educational programs. In relation to STEAM methodology with respect to gender and media literacy, we did not find any examples of good or bad practices, which further highlights the gap in this area that would be worthwhile investigating and implementing in the future.
Italy	University of Macerata	The implementation of policies and practices aimed at tackling phenomena associated with deep mediatization, disinformation, and the use of AI in Italy is hindered by a few structural and cultural challenges. Firstly, the fragility of Italian journalism, characterized by insecurity and dependence on political and economic forces (Monaci, 2023; Sorrentino, 2025), hinders its capacity to combat fake news and post-truth narratives. Secondly, despite local experience and good practices (AGCOM, 2023;

		Bentivegna et al., 2024), the absence of a coherent national strategy for algorithmic literacy and digital education generates significant territorial inequalities. In terms of AI, both in the media and in entrepreneurship, innovative potential remains concentrated in centers of excellence such as Milan and Rome, with little diffusion in the rest of the country and little attention given to ethical issues (Labory & Bianchi, 2021). Similarly, while showing promising results, new pedagogical methodologies and gender balance initiatives in STEAM are struggling to consolidate into systemic and structural policies (Tudisca, 2023; Priulla, 2025). The main challenge is therefore to overcome the fragmentation of initiatives and translate experimental and local practices into coordinated national interventions that integrate sociological, technological, and pedagogical perspectives.
Belgium		Despite strong initiatives to improve media literacy, digital education and AI adoption, Belgium also faces several implementation challenges. Regional fragmentation remains an issue on some matters, with each linguistic community developing its own strategies, making the sharing of best practices difficult and unevenly applied across the country. Additionally, some educational programmes might often treat media literacy as a single course rather than integrating it fully into curricula. Whether in education or journalism, one might encounter both extremes; reluctance in integrating AI tools into teaching and media practices, as well as overreliance on AI systems, without any human judgment. The latter continues to fuel disinformation, spreading rapidly, leading to the perception that AI worsens fake news, while fact-checking alone proves insufficient. In the same field, the absence of concrete legislation and standards for AI use in the media sector, combined with distrust and ambivalence toward AI in newsrooms, leaves both educators and journalists uncertain about responsible AI adoption. Finally, gender disparities persist in STEAM fields, with a lack of female role models, limited hands-on opportunities and structural barriers discouraging women from pursuing STEAM careers.

2.3.4 Conclusions and recommendations

Country	Partner	Findings
Slovenia	University of Maribor and MIITR	Slovenia has a strong foundation for media literacy development in education and entrepreneurship. National strategies like Digital Slovenia 2030 and initiatives by institutions such as RTV Slovenia, Arnes, Oštro, and the Peace Institute reflect growing awareness of critical, digital, and ethical competences. However, efforts remain fragmented and often depend on short-term project funding. To enhance the integration of media literacy into higher education, the following recommendations are proposed: 1. Institutionalize media literacy as a transversal competence in university programs, linking it to ethics, artificial intelligence, and digital communication (Government of the Republic of Slovenia, 2023). 2. Establish sustainable funding mechanisms for research and implementation of media-literacy programs beyond temporary project cycles (Ministry for Digital Transformation, 2025). 3. Strengthen partnerships between universities and public media, such as through cooperation with RTV 365 and Oštro's fact-checking newsroom as experiential learning models (RTV Slovenia, 2025; Oštro, 2025). 4. Introduce ethical AI literacy modules in journalism, communication, and IT curricula to ensure transparency and accountability in media production (RTV Slovenia, 2024; Slovene Association of Journalists, 2023). 5. Link entrepreneurship and innovation ecosystems through collaboration with the Ljubljana Technology Park, enabling students to develop applied digital solutions and startup projects (Tehnološki park Ljubljana, 2025). 6. Promote gender equality and inclusion in STEAM education through initiatives like Female Engineer of the Year and WISE Slovenia (Inženirka leta, 2024; Erratic Engineeress, 2024).

		7. Integrate fact-checking tools such as Razkrinkaj.ai into university courses to strengthen critical evaluation and resilience against misinformation (Inštitut Danes je nov dan, 2024; EU DisinfoLab, 2025). In Slovenia, higher education programs in media and journalism integrate media and information literacy, with evidence showing that systematic inclusion in curricula yields lasting benefits. Interdisciplinary approaches, expert involvement, and practical tools help connect academic knowledge to societal needs while fostering European citizenship and critical thinking. However, challenges remain: limited participation of vulnerable groups, rare integration of project outcomes into broader curricula, and innovative methods confined to workshops or media-focused programs. The use of AI tools for fact-checking is still emerging, highlighting the need for locally adapted, interdisciplinary strategies. To address these gaps, actions should include expanding access for all students, engaging educators in media-literacy initiatives, embedding project results into curricula, and promoting innovative methods such as flipped learning, case-based learning, and gamification. Additionally, developing locally relevant AI fact-checking tools and systematically evaluating outcomes is essential.
Italy	University of Macerata	The Italian context presents a complex set of critical issues and opportunities when it comes to addressing deep mediatization processes, fake news and post-truth phenomena, mob censorship, and the emerging challenges related to the use of artificial intelligence in media, entrepreneurship, and education. These ongoing transformations clearly demonstrate the intertwining of technological and social dimensions, creating a framework in which innovation and fragility coexist. Italian scientific literature emphasizes the importance of considering digital media not merely as tools, but as actual social infrastructures that reconfigure practices, identities, and institutions. This perspective makes it clear that Italy's challenges extend beyond the mere technical implementation of digital tools to encompass the ability to translate local best practices into systemic national policies. The successful initiatives of independent fact-checking organizations such as Pagella Politica and Facta, institutional reports from bodies such as AGCOM and Ossigeno, and university

		laboratories and initiatives promoting gender balance in STEAM demonstrate a significant wealth of practices and skills. However, their fragmentation and discontinuity reduce their overall impact. The Italian case shows that the main issue is not the absence of innovation or good practices, but rather the difficulty of making them structural and widespread, and of integrating them into a coherent national strategy. A coordinated approach that combines sociological, technological, and educational perspectives is needed to strengthen the resilience of the Italian media and education systems and to ensure more informed and inclusive participation in digital society. Considering these considerations, the following recommendations can be made: 1. Journalism should be strengthened as a democratic institution through economic and professional support measures that can counter precariousness and ensure protection against social and digital censorship. 2. Integrate media education and algorithmic literacy into school and university curricula. Move beyond an episodic and local approach, aiming to provide citizens with critical, lifelong education: 3. Define national ethical guidelines for the use of AI in media and start-ups to ensure transparency, accountability, and human supervision in production processes. 4. Support AI entrepreneurship inclusively, promoting the territorial spread of innovative ecosystems and introducing ethical and social criteria into funding programs. 5. Promote the systematization of innovative pedagogical methodologies by investing in teacher training and the stable integration of these methodologies into educational institutions, as well as results assessment. 6. 6. Consolidate gender balance policies in STEAM by acting in terms of both early guidance and academic and professional careers to reduce existing cultural and structural barriers.
Greece		Greece offers a strong theoretical foundation for media literacy within EU policy frameworks, including the 2023 media literacy guidelines, AVMSD, and EDMO. Its approach emphasizes an integrated model of AI literacy that combines technical understanding, practical application, and

		critical evaluation. This holistic perspective positions Greece as a key contributor to linking media literacy with algorithmic awareness and identity empowerment, supporting long-term strategies for equality in STEAM and fostering resilience against disinformation. 1. Policy and Coordination: Align national strategies with EU frameworks (AVMSD, EDMO), reduce fragmentation, and ensure regular exchange of best practices. 2. AI Standards: Establish clear rules for AI use in media and education, including content labeling, explainability, and audit trails. 3. Higher Education: Integrate media and algorithmic literacy into subject curricula, provide continuous teacher training, and develop locally adapted verification tools. 4. Pedagogical Innovation: Embed flipped learning, project-based learning, and microlearning with clear outcomes and feedback. 5. AI Oversight: Mandate human review in AI-driven fact-checking and content production; ensure transparency and method disclosure. 6. Inclusion and Equality: Expand access for vulnerable groups, strengthen STEAM programs with mentorship and role models, and integrate gender perspectives throughout digital competence frameworks. 7. Entrepreneurship: Support SMEs and academic startups with simplified compliance, access to AI resources, and participation in responsible AI ecosystems.
Belgium		Belgium has demonstrated notable initiatives in integrating media literacy, digital education and AI-related skills into both formal and non-formal curricula. Innovative pedagogical approaches, European collaborations and targeted projects to promote gender balance in STEAM have focused on strengthening students' critical thinking, digital skills and AI awareness. However, persistent challenges, including regional fragmentation, reluctance to adopt AI tools and gaps in legislative regulations regarding mostly AI, highlight the need for more concrete and coordinated strategies. To address these issues, Belgium should implement legal frameworks, focusing on the use of AI, harmonize media literacy policies across linguistic communities, ensuring that best practices are shared and adopted nationwide. Expanding support for schools and universities to integrate AI tools

		safely, alongside teacher training, would strengthen digital and media literacy outcomes. Additionally, reinforcing gender-inclusive strategies in STEAM fields and creating accessible hands-on opportunities for students can reduce persistent disparities in those fields. At the European level, Belgium should continue leveraging cross-border collaboration and EU-funded initiatives to enhance capacity, promote innovative teaching methods and develop strategies for responsible AI use. Collectively, these measures would consolidate progress, foster equitable access to digital education and ensure that Belgian students are well-prepared for the challenges of an increasingly digital and media-driven society.

3 Student Survey Results

3.1 Executive Summary

This report examines gender differences in media use, digital literacy, and AI-related competencies among youth. The findings show that while males and females spend similar amounts of time using media, significant gender-based patterns emerge in more complex digital skills and attitudes.

Females consistently demonstrate higher digital and AI literacy, including stronger confidence in evaluating online information, more frequent verification behaviour, greater familiarity with AI in media, and higher awareness of algorithmic influence. They also show stronger concern for AI ethics and greater support for integrating AI governance and fact-checking training into educational programmes. Males, in contrast, report lower confidence, less frequent verification, and fewer opportunities to engage with role models, suggesting potential vulnerabilities in digital readiness.

These findings highlight the need for educational systems to strengthen digital and AI literacy for all students, while addressing gender disparities. Recommendations include integrating fact-checking and AI ethics into curricula, improving teacher training, promoting diverse role models, and implementing practical activities such as verification workshops, algorithm awareness exercises, and AI skill-building projects.

3.2 Research Methodology and Analysis tools

The study employed a quantitative research method using a cross-sectional survey design to examine students' self-assessed digital, media, and AI-related competencies, attitudes, and practices. Data were collected at a single point in time through an online questionnaire, allowing for efficient collection of standardized responses from a relatively large group of participants. This design was appropriate for exploring patterns, tendencies, and self-reported perceptions across multiple competency dimensions without manipulating variables. The use of closed-ended questions enabled systematic comparison and statistical analysis of responses.

Data were collected using a structured questionnaire comprising multiple sections. The instrument included consent and ethical compliance items, followed by questions assessing self-perceived competencies, attitudes, and practices related to media literacy, digital skills, critical information evaluation, and understanding of AI, automation, and datafication. Most items were measured using Likert-type scales (e.g., low, medium, high), allowing respondents to rate their own abilities and behaviors consistently. The questionnaire was designed to capture both practical skills (such as fact-checking and learning practices) and

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conceptual understanding (such as ethical risks and societal implications of AI), providing a comprehensive overview of students' self-assessed competencies.

3.3 Sample

The sample consisted of 66 students who voluntarily participated in the study and provided informed consent prior to completing the questionnaire. The gender distribution included 45 female and 21 male respondents.

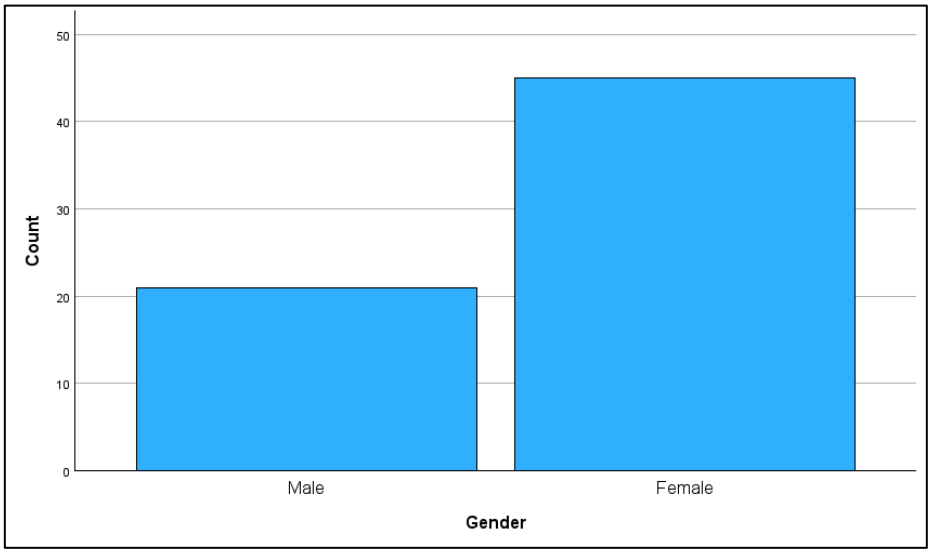

Figure 1: Gender of the participants

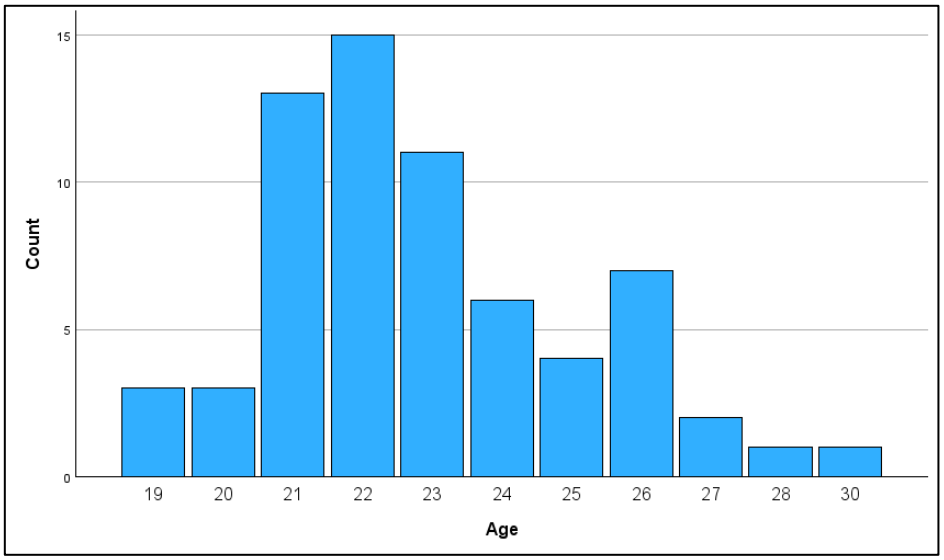

Figure 2: Age of the participants

The age distribution of the respondents indicates that the sample is predominantly composed of young adults in their early twenties. Most participants fall within the 21–23 age range, with a clear peak around ages 22 and 23, suggesting that the

majority are students at a similar stage in their academic trajectory. This concentration reflects a relatively homogeneous age group, which is typical for higher-education-based samples, particularly those drawn from undergraduate and early postgraduate programmes.

A smaller number of respondents are slightly younger (around 18–20 years old) or older (mid to late twenties, with a few respondents up to age 30). The presence of these older respondents may reflect students enrolled in postgraduate studies, delayed entry into higher education, or non-traditional study paths. Overall, the age distribution suggests that the findings primarily represent the perspectives and self-assessed competencies of traditional university-aged students, which should be considered when interpreting the results and their generalizability to broader or more age-diverse populations.

Participants represented various levels of higher education, with the majority enrolled in or having completed a Bachelor's degree (n = 38), followed by Master's-level students (n = 18, including Master's and Master's degree categories), postgraduate studies (n = 8), and a small number of undergraduate students (n = 2).

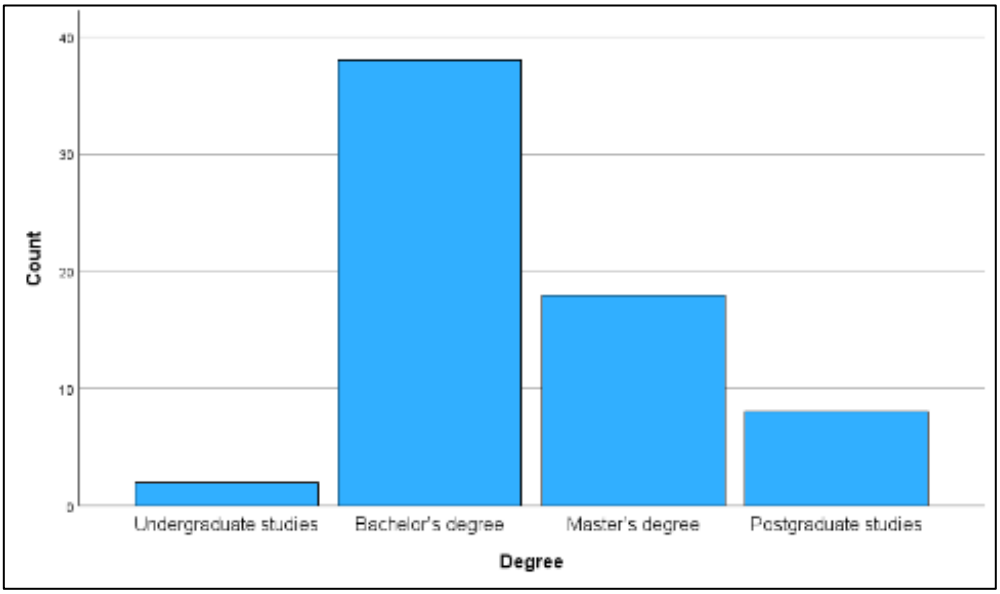

Figure 3: Degree of the participants

Respondents came from six countries, primarily Italy (n = 23) and Slovenia (n = 21), with additional representation from Greece (n = 10) and Belgium (n = 10), and single respondents from Poland and Bolivia. The sample was based on convenience sampling, which limits generalizability but is appropriate for exploratory research in educational contexts.

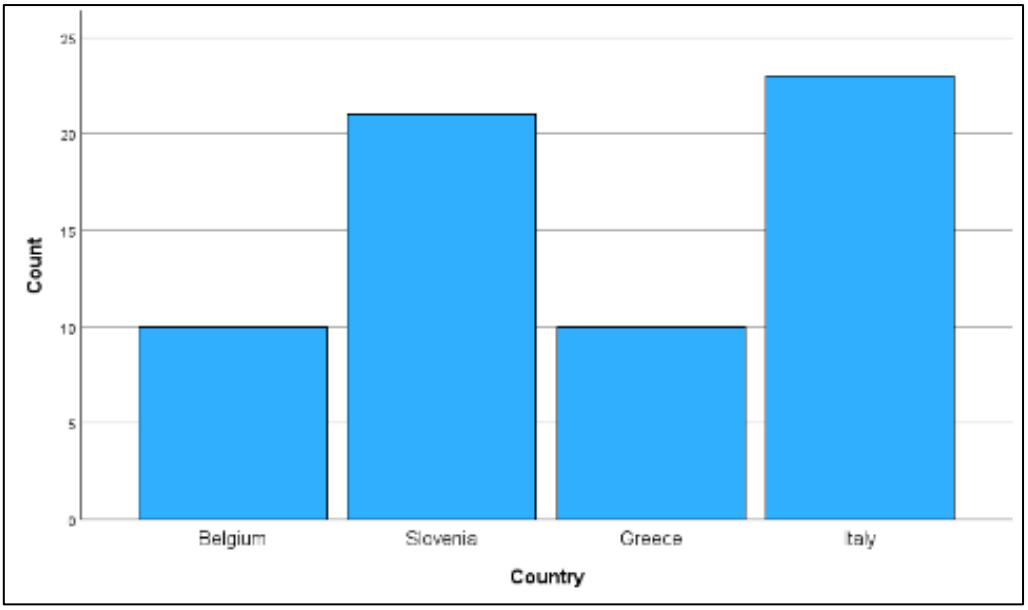

Figure 4: Country of the participants

3.4 Results

3.4.1 Media use and information credibility

3.4.1.1 Media use among youth

Understanding patterns of media use among youth is essential for examining how digital environments shape socialization, learning, and daily routines. As media technologies have become increasingly embedded in young people's lives, researchers have sought to identify whether certain demographic factors, for example gender, contribute to systematic differences in the amount of time youth spend engaging with digital media.

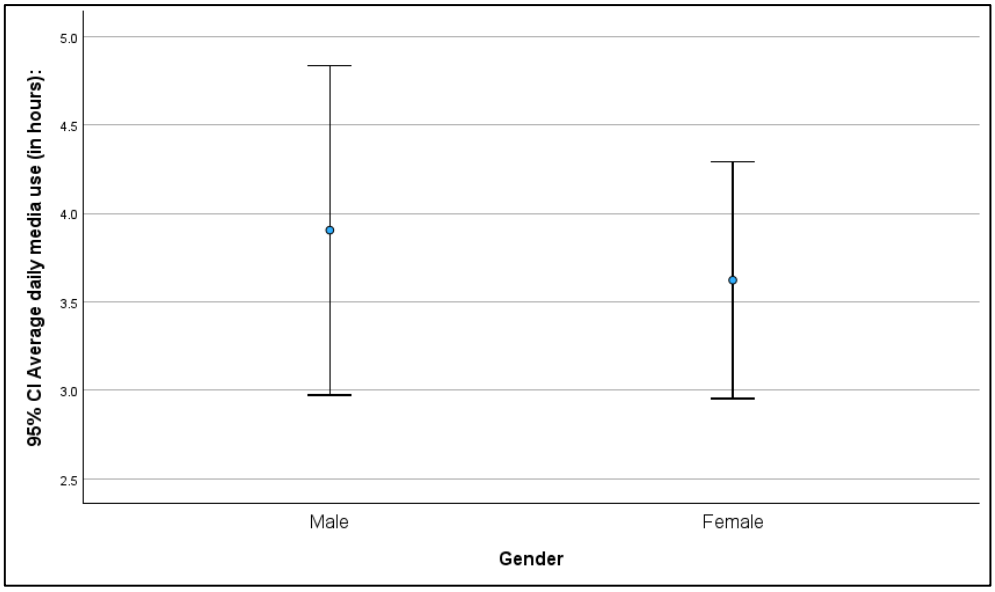

Figure 5: Gender difference between average daily media use

An examination of average daily media use by gender revealed only minimal differences between male and female respondents. Male participants reported a mean daily media use of approximately 3.9 hours, whereas female participants reported a slightly lower mean of about 3.7 hours. Although this difference is in the expected direction based on some prior research on gendered media habits, the magnitude of the difference is small. Taken together, the findings suggest that male and female youth engage with media at broadly comparable levels. Any gender-based distinctions in media engagement appear to be minor and should be interpreted cautiously. These results align with recent literature that highlights the narrowing of gender gaps in digital behaviour among contemporary youth, potentially reflecting increasingly universal access to and integration of media technologies across demographic groups.

3.4.1.2 The credibility of online information and spreading misinformation

The ability to critically assess online information is a key component of digital literacy, particularly among young people who navigate an extensive and often unregulated information environment. Confidence in one's ability to judge the reliability of digital content is considered an important indicator of media competence and may vary across demographic groups, including gender. Analyses suggest that females tend to express greater self-assurance in evaluating the credibility of online content, which may reflect broader trends in digital literacy education, differences in engagement with certain types of content, or variations in self-perception of evaluative skills.

Similar gender-related differences appear in practice verifying news before sharing it. Findings indicate that females are more likely to check the accuracy of

information prior to dissemination, demonstrating slightly higher levels of caution and responsibility in shaping a quality information ecosystem. These patterns align with previous observations of greater confidence and criticality among females, underscoring the importance of considering gender when designing strategies to strengthen young people's critical engagement with digital media.

3.4.1.3 Disseminating information

The frequency with which individuals verify news before sharing it represents a behavioural dimension of digital literacy that can significantly influence the spread of misinformation. Higher frequencies of verification indicate stronger adherence to responsible information-sharing practices, whereas lower frequencies may signal greater vulnerability to circulating unverified or inaccurate content.

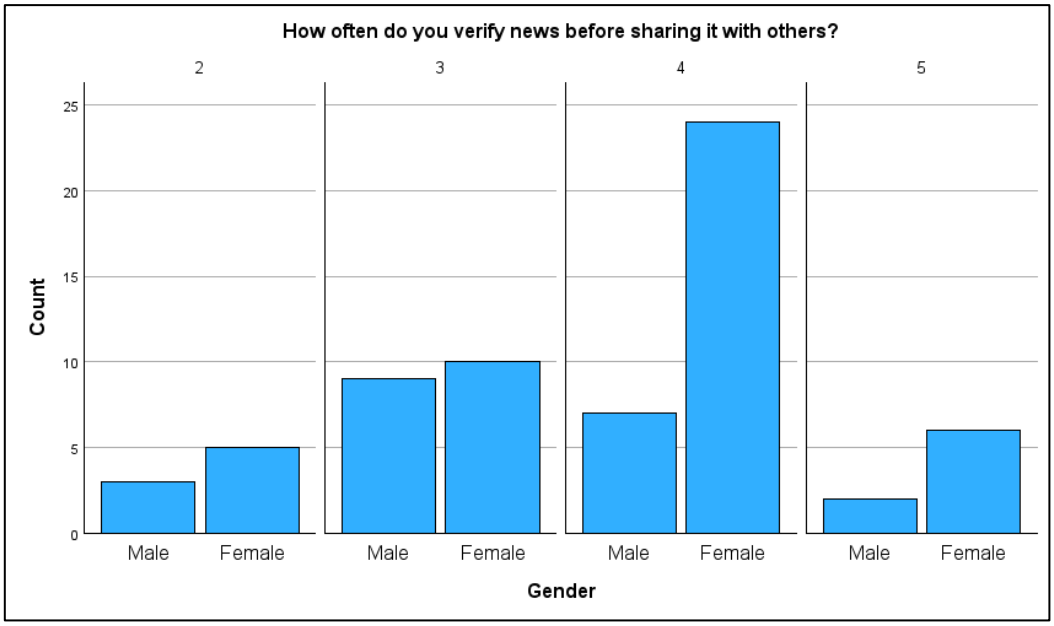

Figure 6: Verifying news by gender

The distribution of responses shows clear gender differences in how frequently young people verify news before sharing it with others. The most notable gender difference appears in the often category (4). Here, the number of female respondents is substantially higher than the number of males. This indicates that females are far more likely to verify news regularly before sharing it. This pattern continues in the always category (5). While fewer respondents overall fall into this group, females are clearly more represented than males, suggesting that females are more likely to consistently verify information before sharing it. Taken together, these results indicate that female respondents tend to verify news more frequently, with many reporting that they verify often or always. In contrast, male respondents are more evenly spread across the seldom and sometimes categories, with relatively few appearing in the highest-frequency group.

3.4.1.4 Trust in information sources

Trust in information sources is an important indicator of how individuals navigate today's complex digital environments. Different sources, such as academic websites, social media platforms, online news portals, and testimonial-based content, vary considerably in reliability, authority, and accuracy.

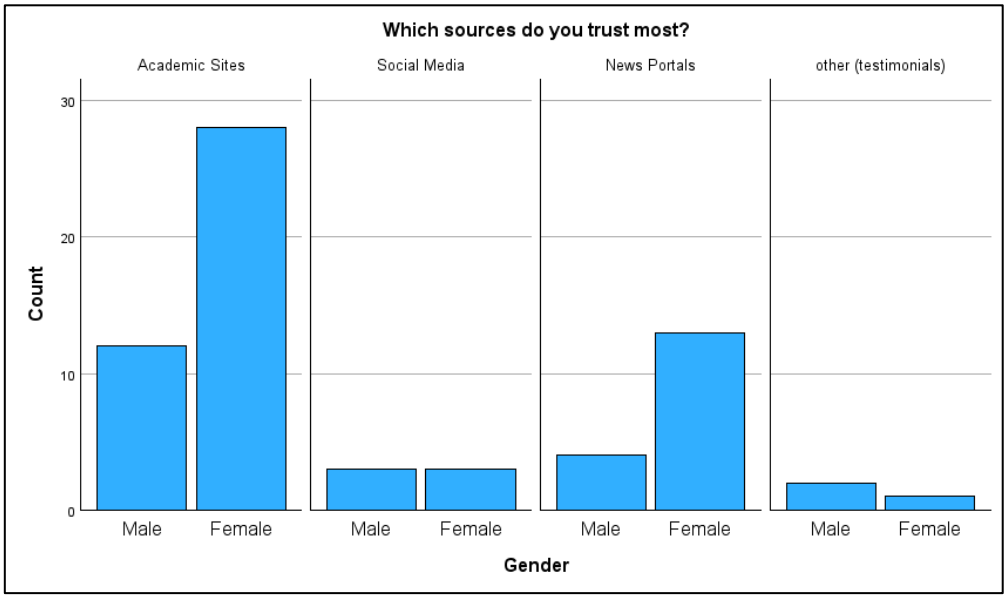

Figure 7: Trust in sources by gender

The distribution of trusted information sources reveals notable gender differences, with females showing higher trust across most categories compared to males. In the academic sites category, which represents the most trusted source overall, females are strongly represented, with a considerably higher count than males. This indicates a clear female preference for academically vetted sources, suggesting greater trust in authoritative and research-based content. Males also show trust in academic sites, but at a substantially lower frequency.

We observe that social media is generally not perceived as credible by either group, a finding consistent with broader concerns about misinformation on social platforms. In the news portals category, females again appear more frequently than males, indicating that females are more likely to trust mainstream digital news outlets.

Overall, the results suggest that females tend to express higher trust in formal, structured, and institutional information sources, such as academic sites and news portals. Males show trust in these sources as well, but to a lesser degree, and neither gender places substantial trust in social media nor testimonial-based information.

3.4.1.5 Familiarity with "post-truth" by gender

Familiarity with key media literacy concepts, such as "post-truth", is an important indicator of how well individuals understand contemporary challenges related to misinformation, emotional persuasion, and the erosion of shared factual standards. Awareness of such concepts can inform more critical engagement with digital content and support informed decision-making.

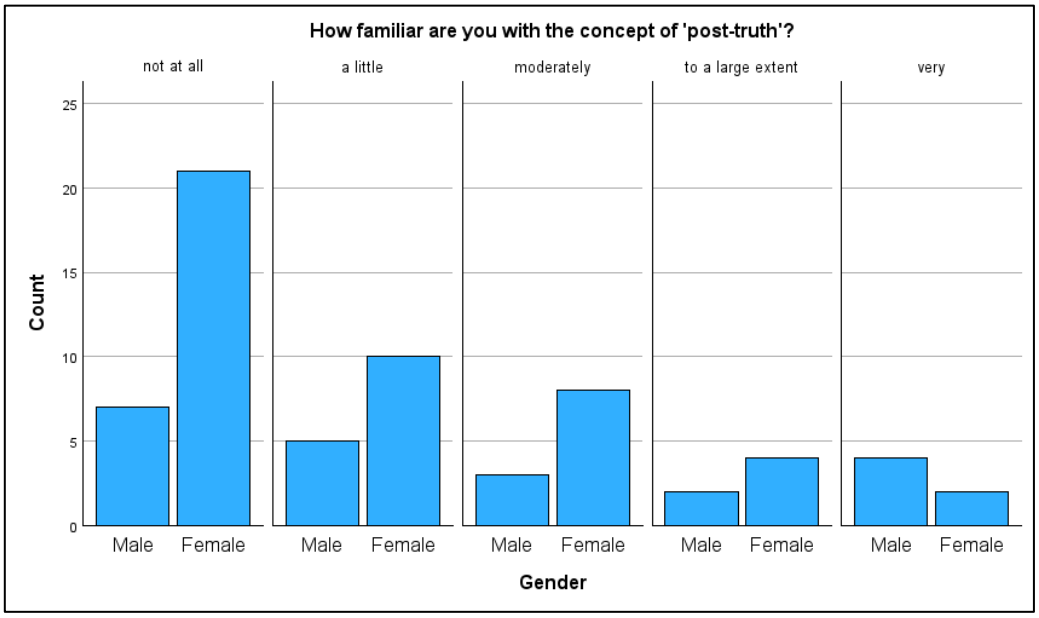

Figure 8: Familiarity with "post-truth" by gender

The distribution of responses indicates that both males and females vary considerably in their familiarity with the concept of "post-truth," with the majority reporting low or moderate familiarity. However, several gender-related patterns emerge. In the "not at all" category, female respondents are more represented than males, with females showing the highest count in this category. This suggests that a substantial proportion of females' report having no familiarity with the term, more so than males. Overall, the results suggest that females are more widely distributed across all levels of familiarity, appearing heavily in both the "not at all" and "moderately" categories, as well as in the higher familiarity categories. Males, by contrast, appear in fewer categories and show a slight advantage only at the highest level of familiarity ("very"). The general pattern indicates that familiarity with the term "post-truth" is uneven across genders, with females more frequently reporting both no familiarity and moderate familiarity, whereas males are somewhat more likely to report very strong familiarity but do so in small numbers. These findings suggest that while awareness of the concept is limited overall, females display a broader range of familiarity levels, whereas males are more concentrated at the extremes. This pattern may reflect differences in exposure to the term or varying levels of engagement with discussions related to media theory and misinformation.

3.4.2 Fact-checking practices

3.4.2.1 The use of dedicated fact-checking tools

The use of dedicated fact-checking tools, such as Snopes, Faktograf, or similar platforms, represents an important aspect of advanced digital literacy. Unlike general strategies for evaluating online content, these tools provide structured and externally verified assessments of information accuracy. Findings indicate that both male and female respondents report relatively infrequent use of formal fact-checking resources overall, yet females appear slightly more likely than males to engage with such tools. This suggests a modest gender-related difference in the adoption of advanced verification practices.

Confidence in evaluating the credibility of online information offers valuable insight into young people's self-perceived digital literacy competencies. Confidence plays a central role in navigating complex digital environments where misinformation and unverified claims are widespread. The distribution of responses shows that females consistently report higher levels of confidence, with their answers clustering in the moderate-to-high range, while males are more evenly spread across lower and mid-range categories. These findings reinforce earlier analyses, suggesting that females in the sample feel more capable and self-assured when assessing the reliability of online content.

3.4.2.2 Use of fact-checking tools

Training in the use of fact-checking tools is a crucial component of media and digital literacy education, equipping students with practical skills to critically evaluate information and detect misinformation. Such training can strengthen students' confidence in navigating digital environments and contribute to more responsible information-sharing practices.

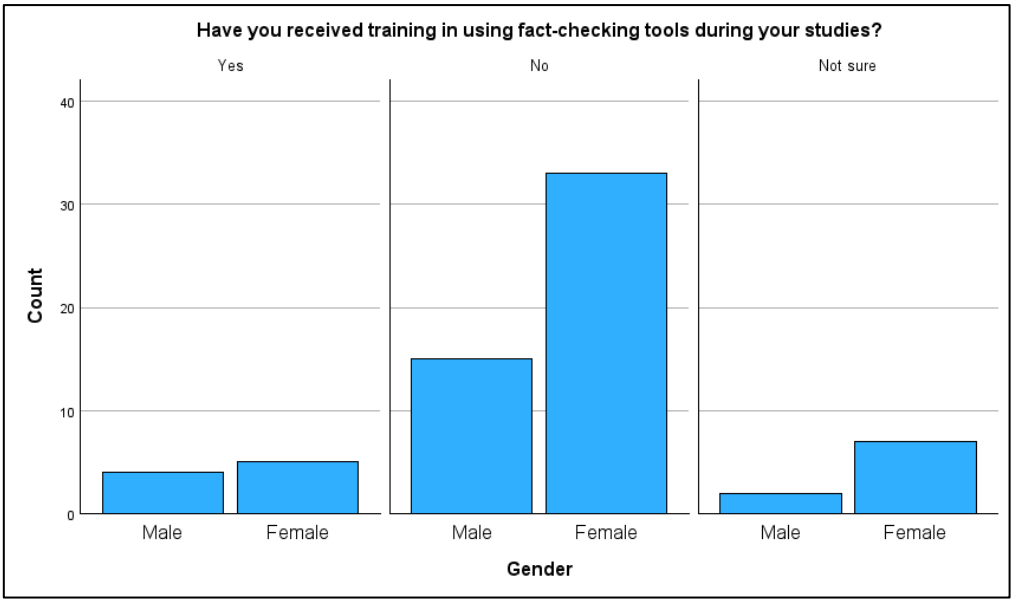

Figure 9: Gendered training for fact-checking tools

The distribution of responses reveals clear gender differences in exposure to fact-checking training, with both groups reporting limited but unequal access. In the "No" category, the gender difference becomes more pronounced. Female respondents appear in much higher numbers than males, indicating that a large share of females report *not* receiving such training. This suggests that females may face greater gaps in educational exposure to fact-checking tools or that they are more critically aware of not having received such training. These findings align with other patterns in our dataset, where female respondents often displayed stronger concern for misinformation and more engagement with critical evaluation practices, yet here they appear to receive fewer structured opportunities to develop fact-checking skills through formal instruction.

3.4.2.3 Practical fact-checking exercises

Practical fact-checking exercises are an essential component of media and digital literacy education, providing students with hands-on experience in evaluating information credibility and combating misinformation. Understanding how important students perceive these exercises to be can help educators design programmes that better align with learners' needs and expectations.

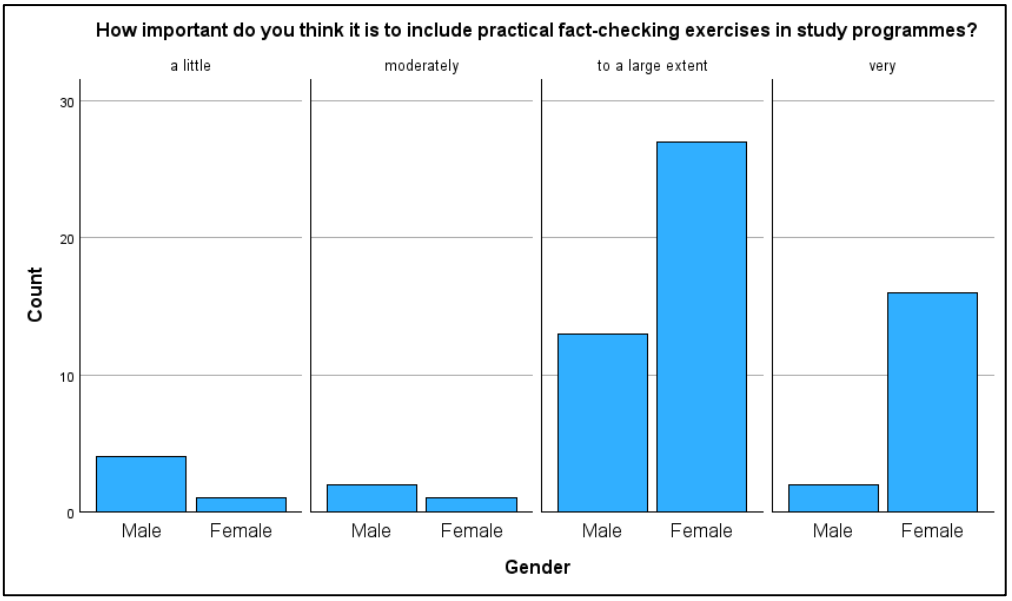

Figure 10: Gendered perception of importance of practical fact checking education

The results show a pronounced gender difference in the perceived importance of practical fact-checking exercises, with females consistently rating them as more important than males. A marked gender difference emerges in the “to a large extent” category. Here, female respondents far outnumber males, indicating that a substantial portion of females consider practical fact-checking exercises highly important. Males also frequently select this category, but to a lesser extent, suggesting that males express less emphasis than females. These findings align with broader patterns observed in our dataset, where females routinely demonstrated greater concern about misinformation, stronger engagement with evaluative practices, and higher endorsement of digital literacy initiatives.

3.4.3 Artificial intelligence and algorithms

3.4.3.1 An artificial intelligence

As artificial intelligence becomes more deeply embedded in academic environments, the development of clear institutional rules and standards for its responsible use has become a critical issue. Such guidelines help ensure ethical application, prevent misuse, and support students and staff in navigating emerging challenges related to transparency, data protection, and academic integrity.

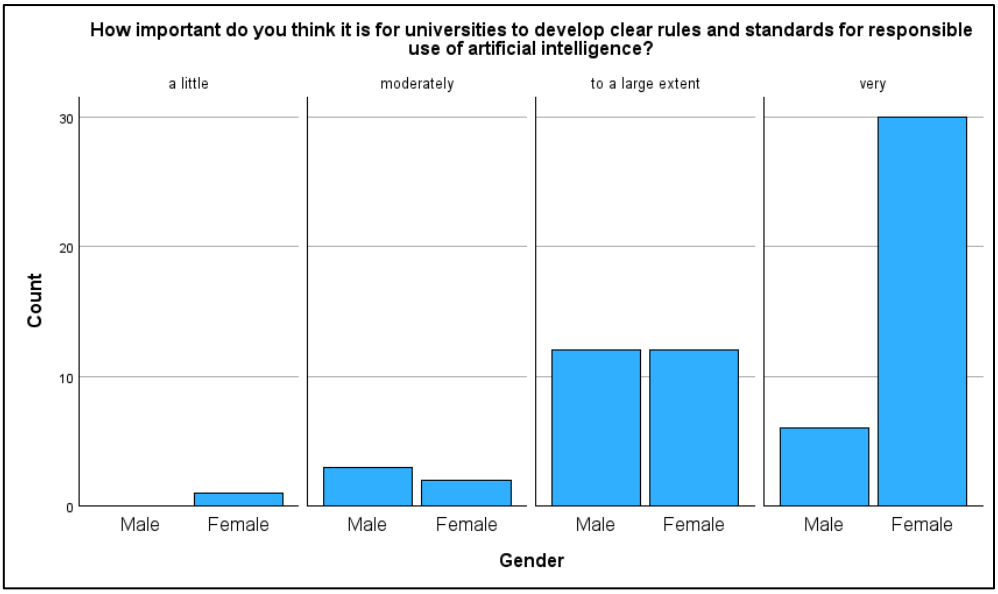

Figure 11: Gendered perception of importance of standards regarding AI

The distribution of responses indicates strong support across genders for universities to develop clear AI-use standards, with females expressing particularly high levels of importance. The most pronounced gender difference is found in the "very" important category. Here, female respondents appear in exceptionally high numbers, far surpassing male respondents. This indicates that females are significantly more likely to view the development of clear AI rules and standards as extremely important for universities. Overall, the data suggest that students overwhelmingly support the establishment of clear institutional rules for responsible AI use, but females express stronger support at the highest levels of importance. Males show substantial support as well, particularly in the "to a large extent" category but are far fewer in the "very important" category. These findings align with other patterns in our dataset, where females consistently demonstrated heightened ethical awareness, greater concern about AI-related risks, and stronger endorsement of educational and institutional measures to promote responsible AI practices.

3.4.3.2 Levels of algorithmic awareness

Understanding how algorithms shape online experiences is a central component of digital literacy. Algorithms used by social media platforms and recommendation systems determine which content users encounter, influencing information exposure, personalization, and potential echo chambers. Assessing how well individuals understand these mechanisms provides insight into their awareness of the structural forces shaping their digital environments.

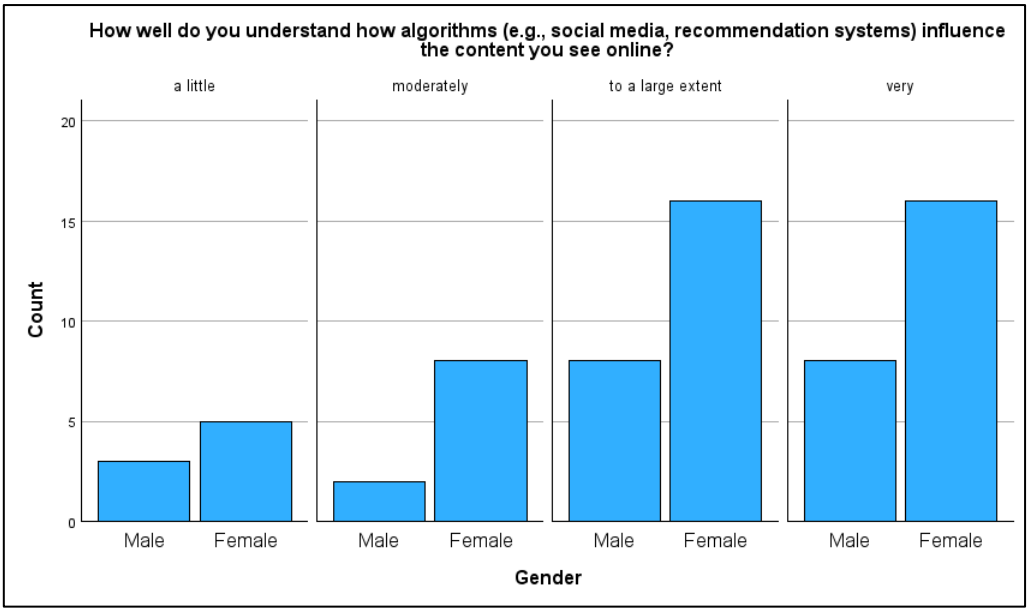

Figure 12: Self-assessment of understanding algorithms by gender

The distribution of responses reveals meaningful gender differences in self-reported understanding of algorithmic influence. In all categories pattern continues and becomes more pronounced in the "to a large extent" category. Here, female respondents are strongly represented, whereas males appear in substantially smaller numbers. This suggests that females are more likely than males to believe they have a good understanding of how algorithms influence their online experiences. The same trend appears in the "very" category, which represents the highest level of perceived understanding. Female respondents again exceed males by a wide margin, indicating that females are far more likely to rate their algorithmic understanding as very high.

Taken together, the results show a consistent pattern:

1.) female respondents report higher levels of understanding across all categories above the lowest one.

2.) Males are represented in each category but remain in significantly lower numbers in the moderate, high, and very high understanding groups.

These findings suggest that females in the sample perceive themselves as having stronger or more developed awareness of how algorithms shape online content. This pattern aligns with results from other variables in our dataset, where females tended to show higher confidence and more proactive evaluative behaviours. It may reflect differences in digital literacy exposure, engagement with platform settings, or interest in understanding online systems.

3.4.3.3 *Privacy personalization*

Adjusting privacy or personalization settings is a practical indicator of users' awareness and management of algorithmic influence. Such actions, such as limiting data tracking, modifying ad preferences, or disabling personalized recommendations, reflect a more advanced level of digital literacy, as they require both awareness of algorithmic processes and the motivation to intervene.

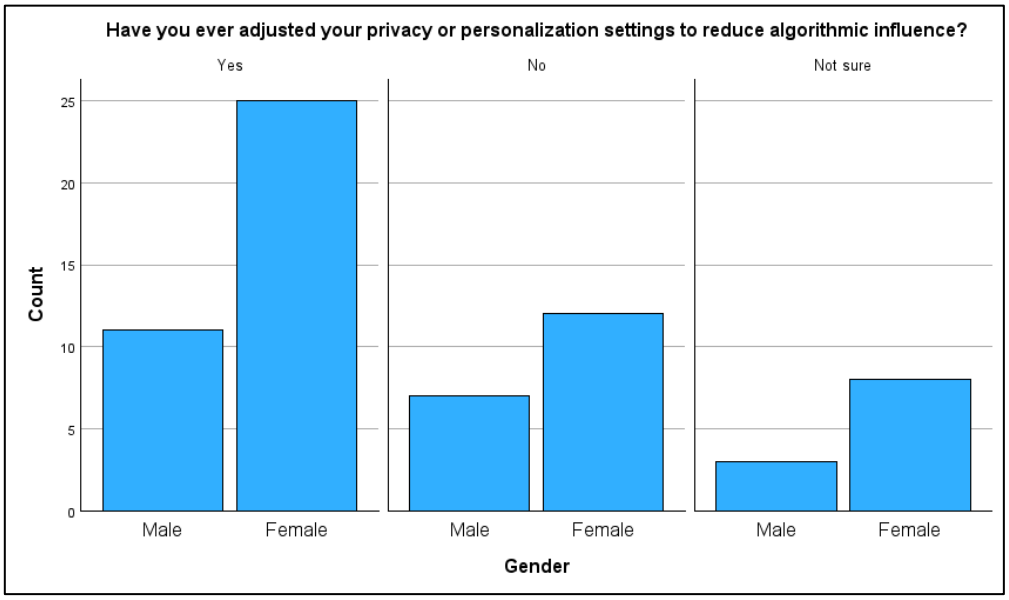

Figure 13: Privacy personalization by gender

The distribution of responses reveals clear gender-related differences in privacy and personalization management. In the "Yes" category, indicating respondents who have adjusted their settings, females are substantially more represented than males. A relatively large number of female respondent's report taking active steps to reduce algorithmic influence, whereas a noticeably smaller group of males do the same. Overall, the results indicate that female respondents are more likely than males to report adjusting their privacy or personalization settings, or at least to recognize the importance of such actions. This pattern aligns with earlier findings showing higher levels of algorithmic understanding and more frequent information-verification behaviours among female respondents, suggesting that females in this sample engage more actively with digital literacy practices related to personal data and algorithmic influence.

3.4.3.4 *Importance of understanding algorithms*

Perceptions of the importance of understanding how algorithms and data systems operate provide insight into individuals' recognition of the structural forces shaping online experiences. As algorithms increasingly determine what

information users encounter, awareness of these processes has become a key component of digital literacy.

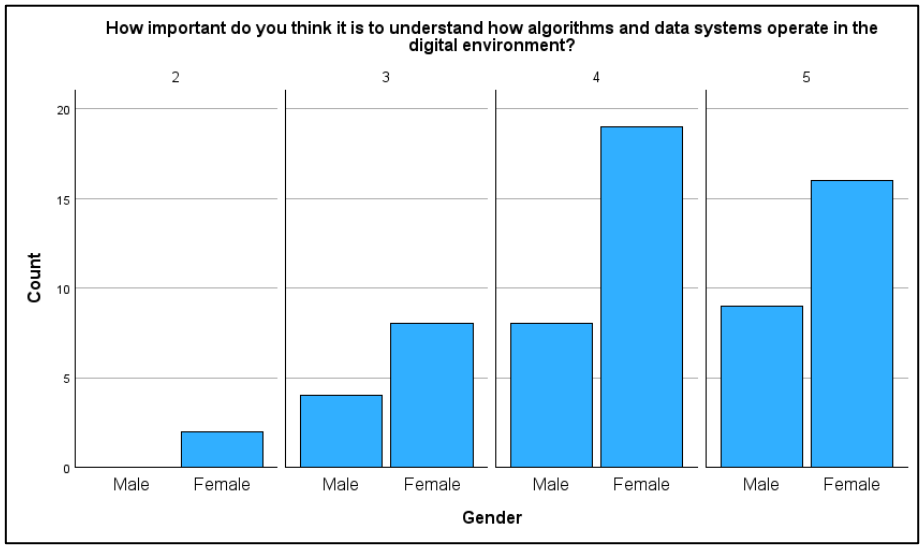

Figure 14: Importance of understanding algorithms by gender

The distribution of responses reveals consistent gender differences across most categories, with female respondents generally placing greater importance on understanding algorithms and data systems.

The most pronounced gender difference emerges in the “important” category. Here, female respondents are represented in very high numbers, far exceeding the number of males. This suggests that a significant portion of females view algorithmic knowledge as an important component of digital literacy, much more so than their male counterparts. A similar pattern appears in the “very important” category. Females once again exceed males in frequency, indicating that females are more likely to consider a strong understanding of algorithms to be essential in today’s digital environment. Overall, the results show that female respondents consistently place greater value on understanding algorithmic and data-driven systems. Males are present in all categories but appear in lower numbers, particularly in the high-importance categories. This pattern aligns with previous findings from our dataset, where females demonstrated stronger engagement with digital literacy behaviours and a more proactive stance toward managing algorithmic influence.

3.4.3.5 Familiarity of AI in media production

Familiarity with the use of artificial intelligence (AI) in media production, such as AI-generated news, images, and videos is increasingly important as AI technologies become more integrated into everyday digital content creation. Understanding how AI influences media environments can help individuals

critically assess the credibility, authenticity, and potential biases of the content they encounter.

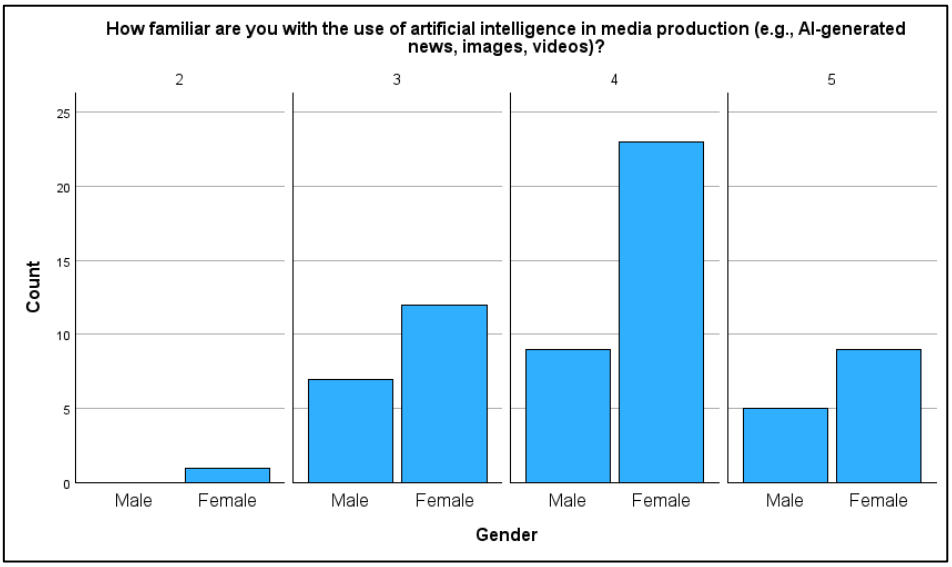

Figure 16: Familiarity of AI in media production by gender

The distribution of responses indicates a consistent gender difference, with females reporting higher familiarity across all levels except the lowest. The largest gender difference occurs in the "familiar" category. Here, female respondents are strongly represented, far exceeding the number of males. This indicates that familiarity with AI-generated media practices is considerably more common among females. This pattern continues into the "very familiar" category, where females again appear in greater numbers than males. Although fewer respondents overall fall into this highest-familiarity group, the gender difference remains notable, suggesting that females are more likely to perceive themselves as having substantial understanding of AI's role in media production. Taken together, the results show that female respondents consistently report higher levels of familiarity with AI in media production, especially in the "familiar" and "very familiar" categories. Males appear more often in the unfamiliar category and are much less represented at higher familiarity levels. This pattern aligns with earlier findings across our dataset, where females tended to report higher awareness of digital processes and higher confidence in evaluative and algorithmic literacy.

3.4.3.6 Importance of human involvement in AI

As AI-generated content becomes more prevalent, the question of whether humans should remain involved in verifying such content has gained increasing importance. Human oversight is widely considered a safeguard against errors, biases, and misinformation that automated systems may produce or fail to detect. Understanding public attitudes toward human involvement in AI verification

provides insight into levels of trust in AI systems and expectations for accountability in digital content production.

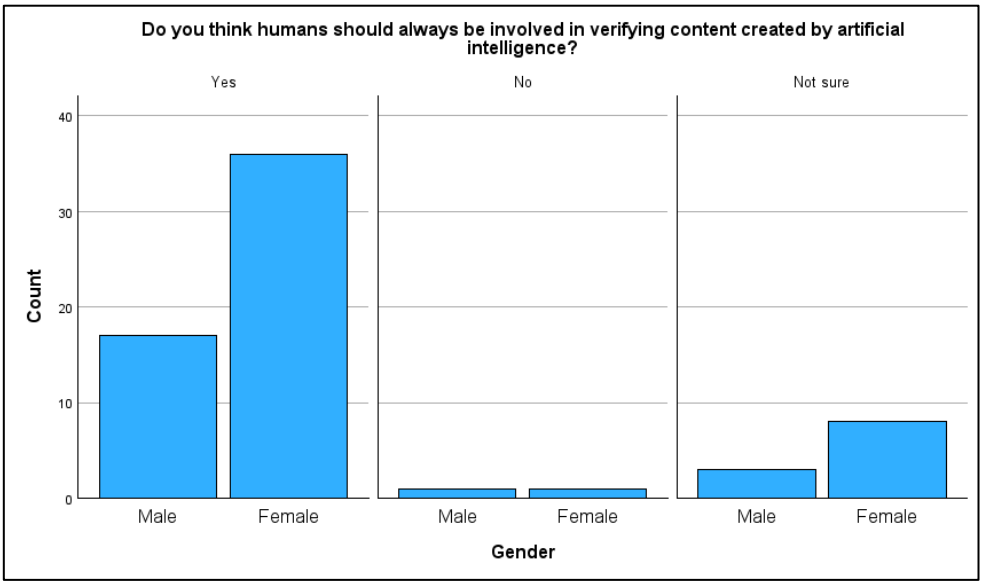

Figure 15: Importance of human involvement in AI by gender

The distribution of responses reveals a strong and consistent gender pattern, with females overwhelmingly supporting the need for continuous human involvement in verifying AI-generated content. In the "Yes" category, which indicates agreement that human oversight should always be present, female respondents clearly dominate. A large number of females support this position, while males also show substantial support, though at a much lower frequency. This suggests a broad consensus across genders, but one that is significantly stronger among females. Overall, the results show that both genders largely favour maintaining human involvement, but females demonstrate significantly stronger support for this stance. The very small number of respondents rejecting the need for human oversight highlights a generally cautious attitude toward relying solely on AI for content verification. These findings align with earlier results in our dataset, where females consistently reported higher awareness of digital processes, greater engagement with verification practices, and more cautious or thoughtful approaches to AI-generated content. Together, they suggest that females may perceive greater risks associated with fully automated systems and therefore advocate more strongly for human oversight.

3.4.3.7 Ethical concerns about AI

As artificial intelligence becomes increasingly embedded in digital communication, media production, and decision-making systems, ethical concerns such as bias, manipulation, and misinformation have gained prominence. Public concern about these issues reflects not only awareness of AI's

potential risks but also expectations regarding accountability, transparency, and responsible development. Exploring gender differences in levels of concern provides insight into how different groups perceive AI's societal implications and potential harms.

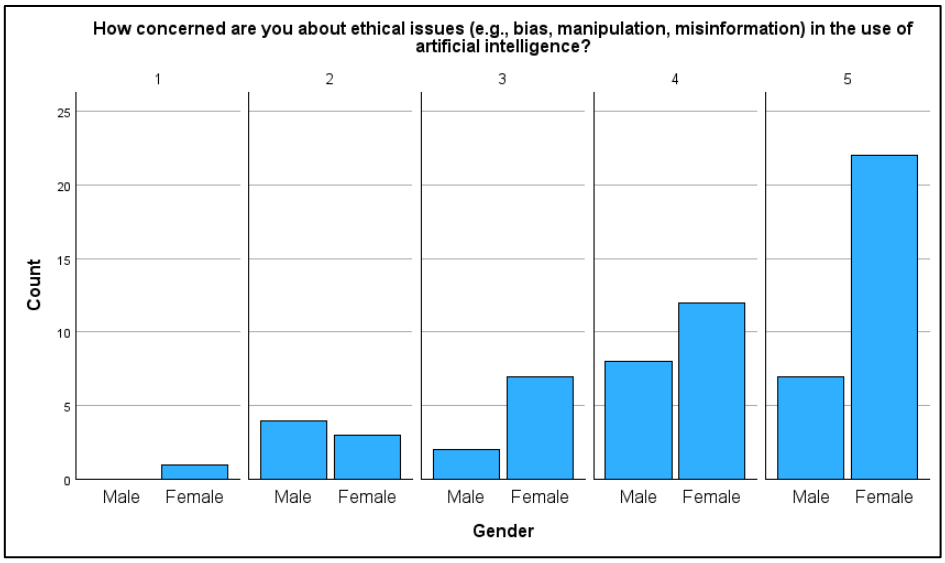

Figure 16: Ethical concerns about AI by gender

The distribution of responses reveals consistent gender differences across the levels of concern, with female respondents expressing higher concern than males at nearly every level.

The largest difference occurs in the "very concerned" category. Female respondents are represented in high numbers, far exceeding the number of males. This indicates that females are significantly more likely to express the highest level of concern regarding AI ethics. Overall, the results show that female respondents consistently express stronger concern about ethical issues in the use of artificial intelligence, particularly at the higher levels of concern. Males are present across all categories but are much less represented in the "concerned" and "very concerned" groups. This pattern aligns with earlier findings across our dataset, where females demonstrated heightened awareness of risks associated with AI, stronger preferences for human oversight, and more cautious evaluative behaviour.

3.4.4 Education and competences

3.4.4.1 Inclusion of ethics and transparency at the level of universities

As artificial intelligence becomes increasingly integrated into academic, professional, and societal contexts, debates have emerged regarding the need for formal education on AI ethics and transparency. Integrating these topics into university curricula can equip students with the knowledge to navigate ethical

challenges, understand algorithmic decision-making, and critically evaluate AI-driven systems. Investigating gender differences in support for such curricular changes provides insight into whether males and females prioritize AI literacy and ethical preparedness to the same extent.

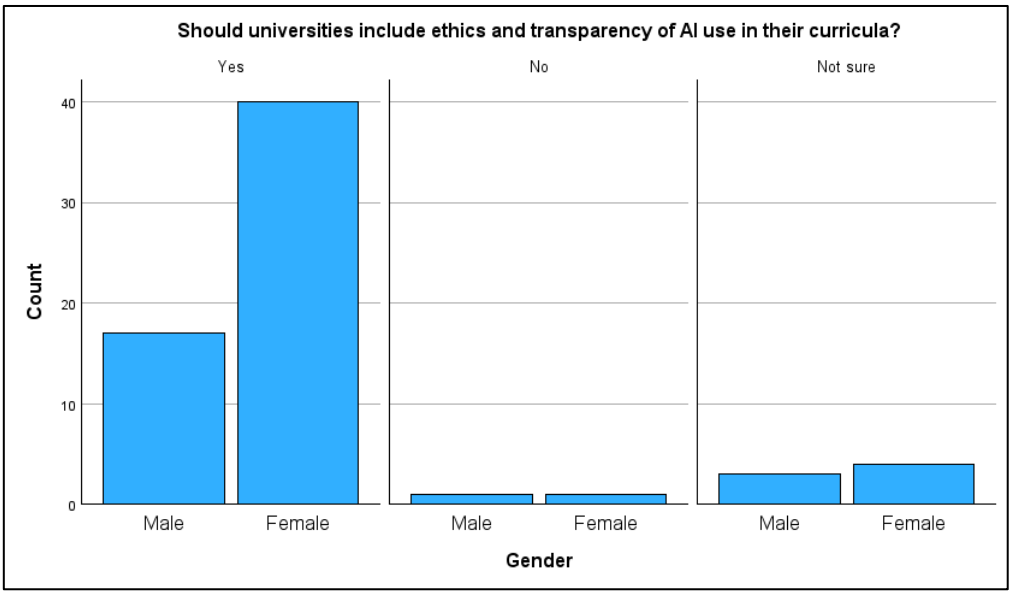

Figure 17: Inclusion of ethics and transparency at the level of universities by gender

The distribution of responses shows overwhelming support for including AI ethics and transparency in university curricula, with notable gender differences in the level of endorsement. In the "Yes" category, female respondents appear in very high numbers, far exceeding the number of males. This indicates that females demonstrate exceptionally strong support for integrating AI ethics and transparency topics into higher education. Males also show substantial support, but at a significantly lower frequency, suggesting that while the majority of males agree with the proposal, females endorse it even more strongly. Overall, the results reveal that both genders strongly support integrating AI ethics and transparency into university curricula, with females showing particularly strong endorsement. The minimal presence of respondents in the "No" category underscores a broad consensus that such educational initiatives are valuable. These findings align with earlier patterns in our dataset in which females consistently expressed higher concern about AI's ethical implications and stronger preferences for human oversight and digital literacy education.

3.4.4.2 Assessment of teacher's competences regarding AI teaching methods

Students' perceptions of their teachers' competence in using digital and AI-supported teaching methods offer valuable insight into the readiness of educational institutions to integrate emerging technologies into classroom

practice. As digital tools and AI-assisted platforms become increasingly common in education, teachers' ability to effectively employ these methods can influence student engagement, learning outcomes, and overall trust in technologically mediated instruction.

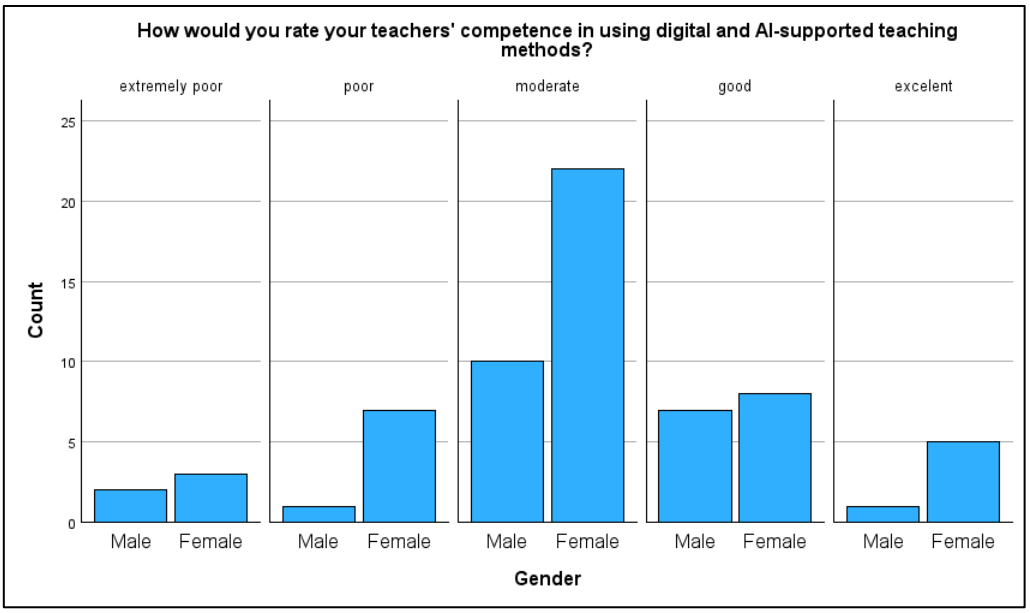

Figure 18: Assessment of teacher's competences regarding AI teaching methods by gender

The distribution of responses suggests that both genders generally view their teachers' competence in digital and AI-supported teaching methods as moderate to good, with some gender differences in the strength of these evaluations.
The largest gender difference is observed in the "moderate" category. Both genders show high representation here, but females are significantly more numerous than males. This indicates that many female respondents view their teachers as having acceptable but not advanced competence in using digital and AI-based teaching methods. Males also commonly select this category, though to a lesser extent. Overall, the results indicate that female respondents tend to be more widely distributed across all competence categories, appearing more often than males in the poor, moderate, and excellent evaluations. Male respondents are more concentrated in the moderate and good categories, suggesting a narrower range of assessments.

3.4.4.3 Education programmes and inclusion

Evaluating whether current media and digital literacy programmes are inclusive for all students is essential for understanding how well educational systems address diverse needs and backgrounds. Inclusivity in digital literacy education ensures that students, regardless of gender, socioeconomic status, or prior experience, are equally supported in developing the skills required for participating effectively in contemporary digital environments.

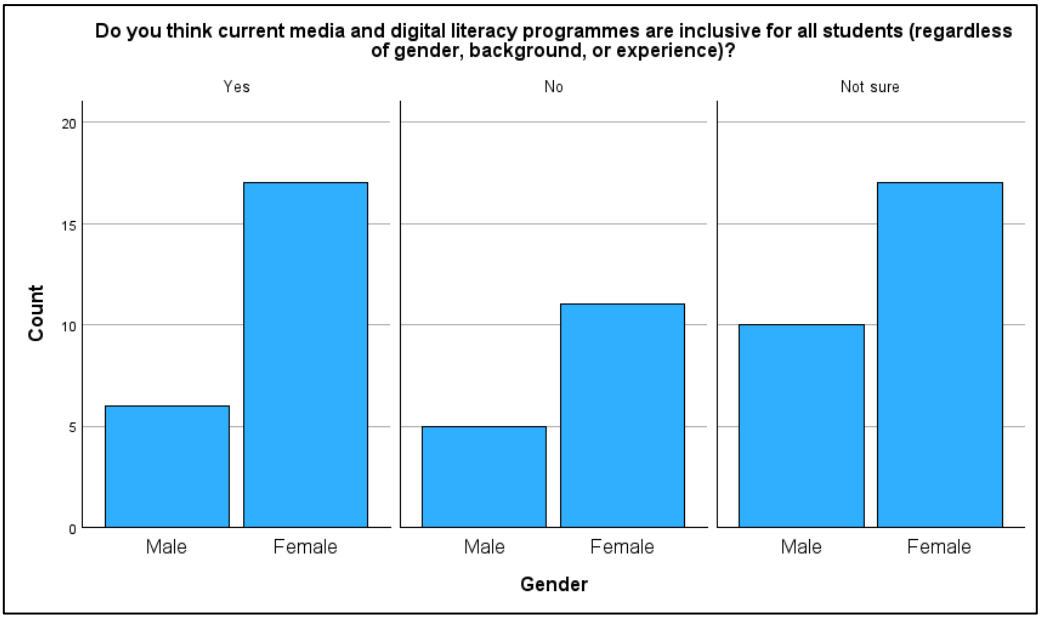

Figure 19: Education programmes and inclusion by gender

The chart reveals notable gender differences in perceptions of inclusivity, with female respondents demonstrating stronger overall engagement with the question and broader distribution across response categories. In the "Yes" category, indicating that respondents believe current programmes are inclusive, female respondents appear in considerably higher numbers than males. This suggests that females are more likely to view existing media and digital literacy programmes as inclusive for all students.

Overall, the results suggest that female respondents engage more critically and actively with the question of inclusivity, as evidenced by their higher representation across all response categories. Male respondents, while present across categories, appear in lower overall numbers and show a narrower distribution of perspectives. Together, these findings imply that females may be more attuned to the inclusiveness of digital literacy initiatives, either through personal experiences or through heightened awareness of equity issues, whereas males exhibit less variation in their responses. This aligns with broader patterns observed in our dataset, where female respondents frequently demonstrated stronger engagement with digital literacy topics and more evaluative awareness of educational and technological systems.

3.4.5 Careers and role models

3.4.5.1 Apply to innovation-driven careers

As media and artificial intelligence skills become increasingly relevant in entrepreneurial and business contexts, students' sense of preparedness to apply these competencies offers insight into the effectiveness of their educational

experiences and their readiness for innovation-driven careers. Understanding how confident students feel in using media or AI skills outside the academic environment can help identify areas where curricula may need strengthening.

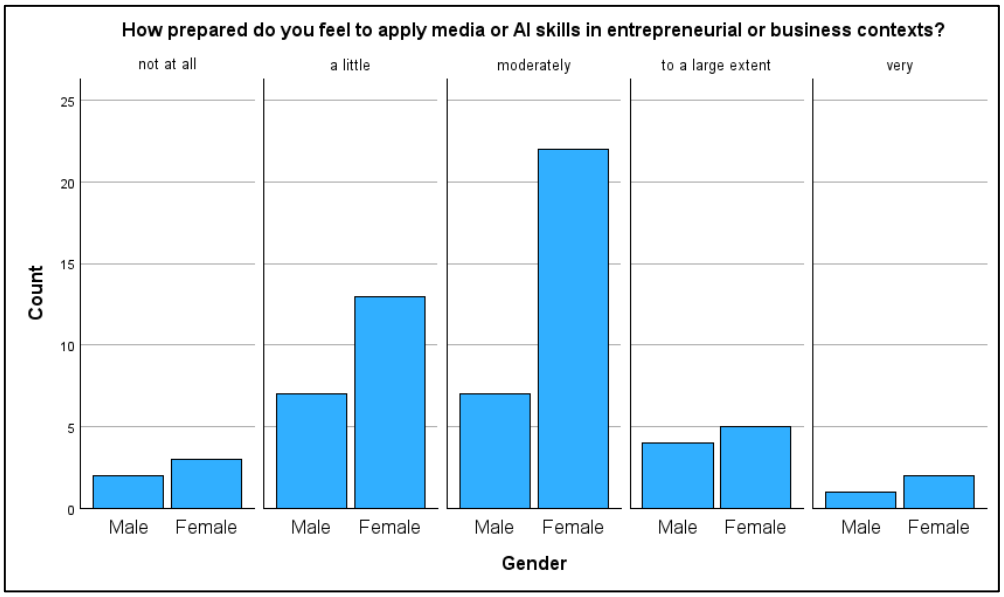

Figure 20: Self-assessment of AI skills

The distribution of responses shows notable gender differences in perceived preparedness, with female respondents tending to report higher levels of readiness across most categories. The strongest gender difference appears in the "moderately prepared" category. Female respondents dominate this group, with their numbers far exceeding those of males. This suggests that the majority of females feel moderately confident in applying their media or AI skills in business or entrepreneurial contexts. Males also report moderate preparedness, but at a substantially lower frequency. Overall, the results indicate that female respondents generally feel more prepared than males to apply media or AI skills in business or entrepreneurial contexts. The particularly high female representation in the "moderately prepared" category suggests that females hold a solid baseline level of confidence, whereas males are more widely dispersed across lower preparedness levels. These findings complement earlier trends in our dataset, where females consistently reported higher engagement, awareness, and confidence in digital and AI-related competencies.

3.4.5.2 Role model engagement opportunities

Exposure to role models and mentors can significantly influence students' interest, confidence, and career aspirations, particularly in fields such as technology and media, where representation remains uneven. Opportunities to engage with female role models are especially important for fostering gender diversity,

challenging stereotypes, and supporting young women's participation in these sectors.

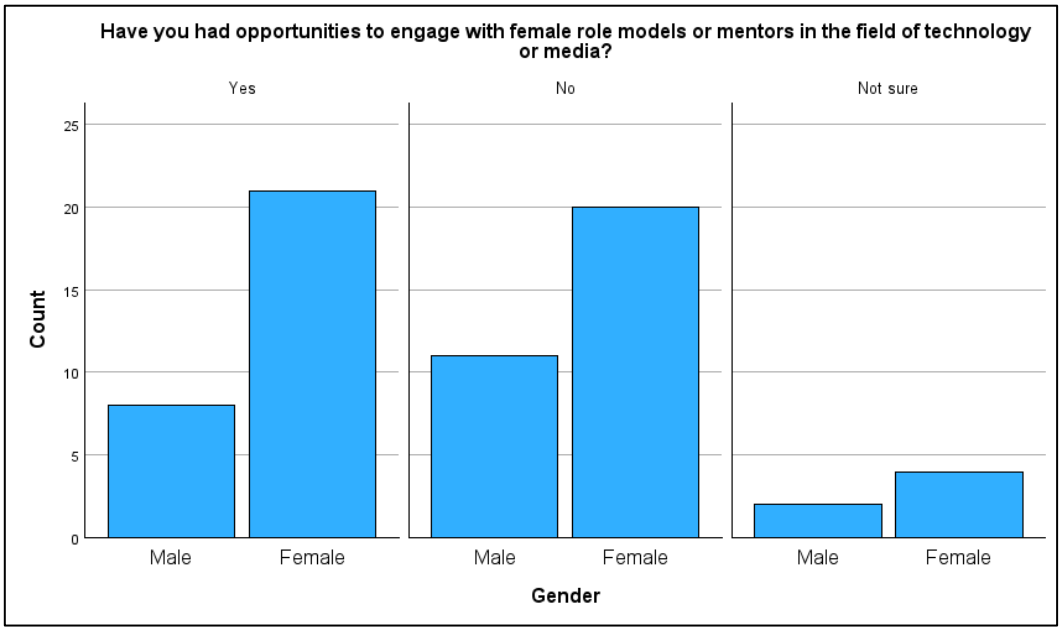

Figure 21: Role model engagement opportunities by gender

The distribution of responses reveals clear and meaningful gender differences regarding exposure to female role models in technology or media.
In the "Yes" category, female respondents appear in much higher numbers than males. This suggests that females report more opportunities to engage with female role models, which may reflect targeted initiatives, greater visibility of female professionals in contexts relevant to female students, or stronger personal identification with such figures. Males also report some exposure, though at a substantially lower frequency. In the "No" category, both genders are represented, but again females appear more frequently than males. This indicates that while many females have had engagement with female role models, a considerable number have not, highlighting a mixed experience within the female group. Overall, the results show that females report more opportunities than males to engage with female role models, but also more reports of lacking such opportunities, indicating a wider range of experiences among female respondents. These findings underscore the continued importance of enhancing visibility and mentorship opportunities, especially female-led for all students, but particularly for males, who appear to have noticeably fewer encounters with female role models. This pattern aligns with broader gender-related trends in our dataset, where female respondents repeatedly showed stronger engagement with issues of digital literacy, ethical awareness, and educational inclusivity.

3.5 Key findings

Across all examined dimensions of media use, digital literacy, AI awareness, and educational experiences, several consistent patterns emerged:

1. **Media use:** Males and females reported similar average daily media use, with no meaningful gender gaps.

2. **Credibility evaluation:** Females reported higher confidence in evaluating online information and more consistent verification behaviour.

3. **Fact-checking practices:** Females used fact-checking tools slightly more often and expressed significantly stronger support for including practical fact-checking exercises in study programmes.

4. **AI-related views:** Females demonstrated higher familiarity with AI in media production, trusted AI-generated content slightly more while remaining cautious, expressed significantly higher concern about AI ethics such as bias, manipulation, and misuse, and overwhelmingly supported integrating AI ethics and transparency into university curricula. Both genders supported human oversight of AI-generated content, with females showing stronger endorsement.

5. **Algorithmic understanding:** Females reported stronger understanding of how algorithms shape content and were more likely to adjust privacy/personalization settings.

6. **Digital and AI skills in education:**
   - Females evaluated teachers' digital competence more critically but also more variably.
   - Females felt more prepared to apply media/AI skills in business and entrepreneurial contexts.

7. **Inclusivity of media literacy programmes:** Females engaged more critically with inclusivity issues and showed greater variation in perceptions.

8. **Access to role models:** Females reported more exposure to female role models in tech/media but also more instances of *lacking* such exposure, indicating uneven opportunities.

Findings reveal a consistent pattern, namely that female respondents appear more engaged, aware, and critically involved in nearly all dimensions of digital literacy, AI evaluation, and educational experiences.

3.5.1 Key gender dynamics

The results indicate several overarching gender dynamics:

1. **Digital literacy and evaluative competence**

Females consistently demonstrated higher confidence in key digital literacy skills, including evaluating credibility, verifying news, and understanding algorithmic influence. This suggests that females may be more reflective, cautious, or actively responsible in digital environments.

2. **Engagement with AI ethics and governance**

Female respondents showed stronger concern about AI ethics, greater support for human oversight, and stronger endorsement of incorporating AI ethics in educational curricula. This may reflect differences in ethical sensitivity, perceived vulnerability to technological risks, or higher awareness of social implications.

3. **Behavioural indicators of digital competence**

Females more frequently adjusted privacy/personalization settings and demonstrated higher readiness to apply digital and AI skills in real-world contexts. Such actions may signal higher practical engagement with digital tools.

4. **Educational inclusivity and role models**

Females reported stronger engagement with questions of programme inclusivity and more (though uneven) exposure to female role models. These differences point to a heightened sensitivity to equity issues and visibility within technology-related fields.

5. **Male patterns**

Male respondents tended to express lower confidence across key digital literacy domains and verified information less frequently. They reported lower familiarity with AI in media and showed more skepticism toward AI-generated content. In addition, they engaged less often with privacy management and appeared less connected to role models in technology and media fields.

Taken together, the results suggest that males may be more vulnerable to gaps in digital literacy, whereas females demonstrate stronger engagement and evaluative habits.

3.5.2 Suggestions for policymakers, teachers and universities

1. **For Policymakers**
   - Mandate the inclusion of digital literacy and AI ethics in national curricula, with guidelines for age-appropriate instruction.

- Support teacher training programmes focused on algorithmic literacy, fact-checking, and responsible AI use.
- Provide funding for digital literacy infrastructure, including access to fact-checking tools and verified sources.
- Promote national awareness campaigns around AI ethics, misinformation resilience, and safe digital behaviour.

2. **For Schools and Universities**
   - Integrate practical fact-checking exercises into coursework across disciplines, not only in media-related subjects.
   - Establish clear institutional policies governing the ethical use of AI tools in teaching, learning, and assessment.
   - Embed algorithmic literacy modules into digital citizenship programmes.
   - Ensure inclusive access to digital literacy programmes, with particular attention to addressing gendered perceptions and experiences.
   - Increase visibility of diverse role models, especially women in technology and media fields.

3. **For Teachers**
   - Engage in continuous professional development focused on AI-supported teaching methods and digital pedagogy.
   - Actively teach credibility assessment strategies, including the use of fact-checking tools.
   - Model responsible AI use in classroom activities.
   - Create learning environments that encourage critical questioning, ethical reflection, and informed scepticism.
   - Use gender-sensitive approaches to ensure balanced participation and support for students of all backgrounds.

3.5.3 Suggested activities to improve the situation

1. **Improving Digital Literacy**
   - Classroom fact-checking labs: Students collaboratively verify online claims using real tools.
   - Credibility assessment workshops: Practice identifying bias, misinformation, and deepfakes.
   - Algorithm exploration activities: Students compare personalized vs. non-personalized search results.

2. **Strengthening AI Literacy**
   - AI sandbox sessions: Hands-on experimentation with AI tools followed by ethical reflection.

- Ethics debates and scenario-based exercises on AI misuse, algorithmic bias, and automated decision-making.
- Student-led research projects on current AI applications in media.

3. **Supporting Inclusivity and Representation**
- Mentorship programmes pairing students with female professionals in digital and tech fields.
- Guest lectures and career panels featuring diverse role models.
- Peer-to-peer digital skill-sharing programmes designed to reduce confidence gaps.

4. **Enhancing Preparedness for Professional Contexts**
- Entrepreneurial simulations using media and AI tools to solve real-world challenges.
- Portfolio development workshops where students apply AI-supported tools.
- Collaborative digital innovation challenges encouraging mixed-gender teamwork.

5. **Encouraging Responsible Digital Behaviour**
- "Pause before sharing" campaigns promoting verification habits.
- Privacy control walkthrough sessions teaching students how to manage settings across major platforms.
- Critical reflection journals on daily digital encounters and algorithmic influence.

Overall, the findings from this report show that gender plays a meaningful role in shaping digital literacy, AI awareness, ethical concern, and preparedness for digital futures. Females consistently demonstrated stronger engagement across key domains, while males exhibited lower confidence and less frequent critical engagement. These insights highlight the need for targeted educational strategies that promote equitable digital literacy development, strengthen critical thinking, and prepare all students, regardless of gender to navigate increasingly complex digital and AI-driven environments.

4 Analysis of Interviews with SMEs

4.1 Method and Sample

This analysis draws from five semi-structured interviews conducted with small and medium-sized enterprises (SMEs) across partner countries. Each project partner contributed one interview with a relevant industry representative from media, digital marketing, or technology sectors, ensuring geographic diversity and practical insights into graduate competencies.

4.2 Digital and Media Competences in the Labour Market

4.2.1 Key Digital Skills

- Solid understanding of IT structures (databases, SQL, programming, system architecture).
- Proficiency in CMS, visual design, video editing for social media, and campaign analytics.
- Critical interpretation of data and AI-generated content.
- Ability to learn new tools quickly and adapt.
- Information and data literacy, source verification.
- Ethical and responsible use of digital tools.

4.2.2 Media Literacy

- Understanding context, algorithms, and media influence society.
- Critical distance from information, recognizing manipulation and fake content.
- Professional brand communication without sensationalism.
- Awareness of mental health implications and societal impact.

4.2.3 Quotes from interviews

- *"Young people must be able to identify the essential in the flood of data, understand it, and present it in a way that adds value."* (Press Clipping)
- *"Media literacy is the ability to distinguish between noise and value."* (Fabrika – YET-AMKE)
- *"McLuhan's 'the medium is the message' is even more true today than years ago."* (UNIMC)

4.3 Competence Profile and Alignment with Education

4.3.1 What Companies Expect from Graduates

- Combination of technical skills and soft skills (communication, critical thinking, psychology).
- Initiative, curiosity, and ability for self-directed learning.
- Interdisciplinary approach (IT + communication + ethics + business thinking).
- "T-shaped" profile: depth in one area + breadth in AI, SEO, analytics.

4.3.2 Gaps Among Graduates

- Lack of hands-on experience with real systems.
- Weak critical judgment and contextual understanding of information.
- Insufficient knowledge of ethical AI use and media literacy.
- Missing business acumen.

4.3.3 Recommendations for Universities

- More modular, flexible, and online learning formats.
- Increase project-based work and longer internships (6–12 months).
- Simulate real-world projects with tight deadlines and changing requirements.
- Strengthen soft skills, ethics, and interdisciplinary learning.
- Integrate AI into curricula as a practical tool.

4.3.4 Quotes from interviews

- *"Education focuses mostly on hard skills—and sometimes not even the hard skills people need. There is way too little focus on soft skills and personal development."* (Connect)
- *"Teach resilience and adaptability. Teach students how to learn, not just what to learn."* (YET-AMKE)
- *"We should increasingly focus on humanistic skills... much more humanistic culture than technical culture is needed."* (UNIMC)

4.4 Collaboration Between Academia and Industry

4.4.1 Effective Forms of Collaboration

- Joint projects with clear goals.
- Internships and mentoring, if well-structured.
- Programs like CISCO Academy as early talent identification channels.
- Involvement of industry professionals in teaching.

4.4.2 Barriers

- Different operational speeds of academia and business.
- Bureaucratized internships lack educational value.
- Insufficient curriculum flexibility.

4.4.3 Quotes from interviews

- *"MEDIA could be a bridge between universities and companies – a place where theory and reality meet."* (Press Clipping)
- *"The most productive thing is a project between university and company—with a beginning, an end, and a goal."* (UNIMC)

4.5 Future Trends and Competences

4.5.1 Transformations

- AI will automate routine tasks; the human role will focus on strategy and emotional connection.
- Increased cybersecurity risks and digital fraud.
- Centralization of digital power in large corporations.
- Epistemological crisis due to indistinguishable AI-generated content.

4.5.2 Emerging Competences and Roles

- "AI Prompt Engineer," "Brand Authenticity Auditor," "Digital Narrative Architect".
- Digital Media Ethics Specialist.
- Critical data use and understanding algorithms.
- Interdisciplinary skills and ethical responsibility.

4.5.3 Quotes from interviews

- *"AI will not replace people—it will replace those who do not know how to use AI."* (MIITR)
- *"Artificial intelligence without ethics is like a compass without north – it quickly takes you far."* (UM)
- *"Good communication cannot do without profoundly human dynamics."* (UNIMC)

All interviews emphasize the need to shift from a narrow, tool-based approach to a foundational understanding of digital knowledge, critical thinking, ethics, humanistic culture, and adaptability. University–industry collaboration must become more strategic, incorporating practical experiences and integrating AI and media literacy into curricula. Projects like MEDIA have strong potential to bridge the gap between education and labour market needs.

5 Analysis of Interviews with Academics

5.1 Method and Sample

This analysis is based on five semi-structured interviews with academic staff from partner institutions. Each project partner conducted one interview with faculty members actively involved in media literacy, digital education, or related fields, providing diverse institutional perspectives on teaching practices and curriculum challenges.

5.2 Introduction and Context

The five interviewed professors represent diverse fields—media communications, journalism and media production, environmental engineering and circular economy, business/marketing education, and general & social pedagogy. Despite disciplinary differences, all share concerns about the rapid evolution of digital technologies, the impact of AI on education, and the need for critical media literacy. They actively use digital tools and, to varying degrees, integrate AI applications (ChatGPT, DALL·E, Grammarly, Quillbot, Groq, AI detectors) into teaching and research. Their perspectives reveal enthusiasm for innovation but also caution regarding ethics, authorship, and pedagogical depth.

5.3 Current Challenges in Media Literacy

5.3.1 Technical familiarity vs. critical depth

Students demonstrate operational fluency but lack epistemic awareness and evaluative skills.

- *"They do not know the ownership structures of media, the financiers, or the founders."* (Slovenia)
- *"Most are familiar with basic digital tools and social media platforms, but their understanding of deeper concepts—such as critical evaluation of media content, ethical use of digital resources, and advanced production techniques—is still developing."* (Greece)
- *"They have a very limited level of depth and critical thinking."* (Italy)

5.3.2 Awareness without action

Students often recognize misinformation but fail to act on that awareness.

- *"They know, but they don't act."* (Belgium)

5.3.3 Over-reliance on AI and responsibility gaps

Generative AI is widely used, sometimes excessively and without critical evaluation. Risks include plagiarism, unclear authorship, and blind trust in AI outputs.

- *"Students rely too much on generative AI... adopt answers without critical evaluation and incorporate them into academic work."* (Slovenia)
- *"Over-reliance on AI might reduce critical thinking because students could trust AI outputs without questioning them."* (Greece)

5.3.4 Institutional barriers

Slow curriculum updates, limited faculty training, and resistance to change hinder integration.

- *"One of the biggest barriers is the lack of dedicated media literacy courses... It is often treated as a secondary skill rather than a core competency."* (Greece)
- Generational gaps among faculty and lack of structured approaches exacerbate the problem. (Italy)

5.4 Innovative Teaching Methods

5.4.1 Methods used

Micro-learning, problem-based learning, flipped classrooms, gamification, and blended learning appear across interviews.

- *"Microlearning is very suitable for younger generations... short videos on fake news and responsible sharing would be more natural for them."* (Slovenia)
- *"Gamification is pure gamification, but also very effective."* (Belgium)
- Micro-learning is seen as an adaptive response to fragmented attention but risks loss of depth. (Italy)

5.4.2 Effectiveness for media literacy

Opinions diverge some see engagement gains, others argue these methods alone do not foster critical thinking.

- *"These methods are not very effective for developing media literacy... which requires critical thinking and source evaluation."* (Greece)

5.4.3 AI Tools, Training, and Support Needs

5.4.4 Current AI use

Interviewees use ChatGPT, DALL·E, Grammarly, Quillbot, Groq, and AI detectors for visualization, language support, and automating tasks.

5.4.5 Opportunities and risks

AI can enhance efficiency but introduces plagiarism, authorship opacity, bias, and privacy risks.

- *"Removing stigmatization, so students stop hiding their use of AI, is essential."* (Slovenia)
- *"Teach me the red flags to see whether someone has used ChatGPT—that would be really helpful."* (Belgium)
- AI shifts meaning-making away from learners, weakening interpretation and responsibility. (Italy)

5.5 Future Perspectives and Recommendations

5.5.1 Graduate Competency

Critical analysis, algorithmic awareness, credibility verification, and ethical AI use are essential.

- *"Graduates should know how to responsibly use digital tools and artificial intelligence in line with standards."* (Slovenia)
- Digital soft skills—communication, collaboration, negotiation in virtual environments—are increasingly vital. (Italy)

5.5.2 Curriculum models

Two feasible tracks:

- Dedicated course (ideal but hard to implement).
- Modular integration: short units, TikTok-style videos, interactive quizzes embedded across courses.

5.5.3 Collaboration

Recommendations include inter-university alliances and cross-sector ecosystems connecting academia, industry, and NGOs.

- Some predict radical changes in HE that challenge traditional collaboration. (Greece)

5.5.4 Role of MEDIA project

- Provide concise, ready-to-use modules (videos, quizzes, case-based activities).
- Offer faculty training on AI detection, privacy, and ethical use.
- Frame AI as an object of critical inquiry, not just a tool.

5.5.5 Overall Insights

- Students need structured guidance to move from tool usage to critical evaluation and ethical responsibility.
- Faculty training is crucial for responsible AI integration.
- Innovative methods enhance engagement but must be paired with strategies that foster critical thinking.
- MEDIA can add value through modular resources, faculty training, and collaborative ecosystems.

6 Discussion

The Discussion synthesizes all research sources around five major interconnections:

- Gender as a Structural Lens - How female students' higher digital literacy engagement reflects not inherent differences but differential institutional support, mentorship, and role models
- The Critical Thinking Paradox - Why awareness of misinformation doesn't automatically translate to verification practices; the gap between knowing and acting
- AI as Convergent Site of Anxiety and Opportunity - How all stakeholders recognize AI's importance but debate its governance, ethics, and role in education
- Implementation Gap - Why innovative media literacy practices remain scattered rather than systematically embedded across institutions
- Theory-Practice Tensions - Including discussions of individual vs. structural factors, and AI governance challenges

The section also addresses research limitations across:

- Methodological constraints (sample characteristics, interview size, temporal boundaries)
- Scope limitations (geographic, sectoral, topical)
- Analytical limitations (causality, normative assumptions, contextual variation)

7 Conclusion and Recommendations

7.1 Summary of Key Findings

7.1.1 Gender as a Structural Factor in Digital Engagement

Female students consistently demonstrate higher engagement with digital literacy practices, including more frequent information verification, stronger algorithmic awareness, and greater ethical concern regarding artificial intelligence. This pattern reflects differential access to mentoring, role models, and institutional support rather than inherent ability differences. The literature confirms the persistent underrepresentation of women in technology and media fields despite policy initiatives. Gender functions as a structural dimension shaping access to educational pathways, epistemic authority, and career trajectories. Addressing disparities requires systemic institutional changes beyond recruitment initiatives.

The Critical Thinking Paradox: Awareness Without Action

While students recognize misinformation and understand post-truth dynamics, many report limited fact-checking practices and inconsistent verification behavior. Graduates often possess technical tool fluency but lack contextual understanding and evaluative judgment. Academics observe students adopting AI-generated content uncritically, and businesses report that graduates struggle with problems requiring critical reasoning beyond tool operation. This gap reveals that media literacy education cannot rely on awareness-raising alone; it requires addressing motivational, structural, and institutional factors enabling sustained critical practice.

Artificial Intelligence as Convergent Concern and Emerging Necessity

Students, particularly females, express strong ethical concern about AI (bias, manipulation, misinformation) and overwhelmingly support integrating AI ethics into curricula. Academics use AI tools but worry about uncritical adoption. SMEs see AI reshaping labour markets, creating new roles while automating others. Across stakeholders, AI literacy must encompass ethical reasoning and institutional governance, not merely technical understanding.

The Implementation Gap: From Innovation to Systemic Integration

Innovative media literacy practices exist across partner countries but remain fragmented, project-dependent, and unsustainably funded. The gap between pedagogical innovation and institutional embedding reflects barriers including insufficient teacher training, bureaucratic inflexibility, short-term funding, and a lack of national coordination. Scaling requires structural reforms in university funding, curriculum design, and inter-institutional collaboration.

Industry-Education Misalignment

Businesses need graduates combining technical skills with soft skills (communication, critical thinking, ethics, adaptability), yet graduates often lack contextual understanding and ethical frameworks. Companies value extended internships and interdisciplinary learning; universities treat media literacy as peripheral. Strengthening structured, sustained partnerships for genuine curriculum co-design is essential.

Persistent Inclusion Challenges Despite Initiatives

Gender balance initiatives remain limited and recruitment-focused without systemic structural change. Students' access to diverse role models remains uneven. Girls' underrepresentation reflects socialization, stereotype threat, and unwelcoming workplace cultures rather than ability. Genuine inclusion requires transforming curricula, learning environments, mentorship systems, and career pathways.

Strategic Recommendations for our stakeholder groups:

1. **For Universities:**
   - Integrate media literacy as transversal competence (modular approach)
   - Strengthen faculty development on AI and pedagogy
   - Expand authentic learning partnerships (6+ month internships)
   - Address gender/inclusion systematically (not just recruitment)
   - Establish clear AI governance frameworks

2. **For Businesses:**
   - Invest in structured educational partnerships (not transactional hiring)
   - Prioritize diverse hiring and leadership development
   - Establish transparent, ethical AI and media standards
   - Support media literacy and digital citizenship initiatives

3. **For Policymakers:**
   - Develop comprehensive, coordinated national strategies (not fragmented projects)
   - Invest substantially in teacher/faculty development
   - Strengthen regulatory and governance frameworks for technology
   - Support quality journalism as public infrastructure
   - Foster inter-sectoral collaboration through councils and forums

4. **For Future Research:**
   - Longitudinal and intervention studies to establish causality
   - Implementation and scaling case studies
   - Global and cross-cultural comparison

- Equity-focused research on underrepresented groups
- Research on emerging technologies (deepfakes, generative AI)

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