
Promoting Informed Citizenship in a Connected World:

Advancing Media and Information Literacy

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Abstract

This paper explores the evolving relationship between media, information, and digital literacy in light of rapid technological advancements. Adopting a transdisciplinary lens, it examines the complex intersections of race, gender, AI, geography, and language that shape diverse perspectives and literacies. The paper argues for a progressive approach to media and information literacy that equips individuals with critical thinking skills to evaluate content credibility, recognize biases, and make ethical judgments. It discusses tensions between innovation and ethics, positing that collaboration among educators, policymakers, and technology companies is imperative. Accelerated change cycles also necessitate agility in developing adaptive, forward-looking curricula. Ultimately, the paper advocates fostering empathy, inclusion, and nuanced reasoning to empower informed digital citizenship. The goal is

to transcend siloed literacy models to help diverse learners navigate the digital landscape responsibly.

Keywords

- Media Literacy
- Digital Literacy
- Information Literacy
- Technological Infrastructure
- Digital Divide
- Content Curation
- Interactive Learning Environments
- Ethical Considerations
- Power Dynamics

Paper

Introduction

The digital landscape is constantly changing, and information is more accessible than ever, making media and information literacy essential. Traditional media and information literacy models typically focus on developing fundamental skills such as recognizing trustworthy sources and verifying facts. While these skills remain important, the changing environment necessitates a more expansive and progressive viewpoint, encouraging people to critically assess information, understand its context, and be on the lookout for potential biases. This is particularly important

given recent developments around artificial intelligence (AI), where the uptake of Large Language Models (LLMs) has been on a scale far beyond regular growth curves.

Through an open research project that included experts in theory and practice from these disparate fields, we conducted an empirical study to define and unpack possible future directions in media and information literacy. We wanted to learn more about the connections between media literacy and information literacy, including how they have evolved and how they might be merging. This inquiry was conducted not only to explore possible intersections and futures in media and information literacy but also to identify opportunities for collaborative and open research and dissemination. The authors of this study have long worked in the areas where media, information, and digital literacy intersect (Belshaw, 2011; Hilliger, 2012). In this work, we are more interested in providing a descriptive account of potential future discussions in these areas than a prescriptive accounting of potential next steps. This serves to encourage future discussion while also acknowledging that literacy and education are always about power in all facets of our lives (Foucault, 1977).

Ultimately, this work was guided by two complementary—and occasionally competing—goals. The first of which was a desire to explore possible futures for media and information literacy. The second was to conduct this research in a way that explored and expanded understanding of open research, publication, and dissemination. This means that we conducted focus group interviews, edited them, and used episodes of a pre-existing podcast to reflect on the work being conducted. We also used our blogs and other online publishing opportunities, as well as social networks, to connect and request feedback from others. We were inspired by The Journal of Media Literacy's format, style, and tone and wanted to create a collection of opportunities for open, digital research, publication, and dissemination. We hope

that as you read this publication, you will seek out the podcast episodes, read the blog posts and related materials, and consider how they will affect you in your local context. This publication should be viewed as one voice in a larger conversation that we should all have about the future of media and information literacy.

As the general public's ability to digest large amounts of text-based information declines, educators must work to break down academic silos to make our research more approachable and accessible (O'Byrne, 2018). When sharing openly, it is critical to follow ethical guidelines and protect participants' privacy. Additionally, one should weigh the risks and benefits of open research before conducting it. Open research practices, such as podcasts and blog posts, can extend the reach of findings and connect them to wider audiences. Audio podcasts can make research more accessible to a wider audience, while blog posts can provide further insights and perspectives. Open research also helps build relationships and collaborations. We believe that these objectives not only influenced our work but also helped guide future educators and researchers working in these contexts.

Finally, we believe it is critical to provide everyone with the skills they need to recognize, comprehend, interpret, create, and communicate in an increasingly digital, text-mediated, information-rich, and dynamic world (Koltay, 2011; Leaning, 2019). Although we are aware that technology alters society, we often cannot predict how. Progress will always be uneven and slow, though, due to enduringly inequitable power structures (Gibson, 2003; Chatterton & Newmarch, 2017). In our work, we will frame one of the goals of education as empowering individuals by enabling them to acquire, retain, and exercise power. This means that education should help people develop the knowledge, skills, and abilities they need to be successful in life. It should also help them develop a sense of self-efficacy and self-determination, which are essential for

personal empowerment (Smith et al., 2016). When people have personal power, they are better able to meet their social and psychological needs. They are also more likely to be involved in local and global communities and to have a strong sense of life purpose. As new and novel technologies impact societies, personal agency becomes increasingly important in enabling people to have a positive sense of self-worth, feel in control of their lives, and effectively manage stress.

Theoretical perspectives

As technology alters how we read, write, and communicate with one another, the spaces and practices in which we engage are also fluid and ever-changing (Vygotsky, 1978). In the future, as the internet and other communication technologies change our conceptions of literacy, learning, and pedagogy, it will be crucial to adapt and respond as necessary (Papert, 1980). The underlying practices of sociability, learning, play, and self-expression evolve more slowly than technological change, but this is because they are rooted in resilient social and cultural structures that young people inhabit in a variety of ways in their daily lives (Jenkins, 2006; Ito et al., 2009; boyd, 2014). We should allow for some ambiguity and fluidity in this discussion about future connections between media and information literacy and implications for praxis because we cannot predict exactly what the future and these new modalities will permit (McLuhan, 1964).

While the terms "literacy" and "media literacy" are often used interchangeably to refer to the ability to read and write in different mediums, the authors of this paper argue that such simplistic definitions are inadequate. Literacy is a complex concept that encompasses more than the ability to read and write (Belshaw, 2011; Pinto et al., 2010). We disagree with the unitary definition of literacy, which holds that there is a single, universal definition of literacy that applies to all people and contexts. Instead, we take a pluralist approach to literacy in this work,

recognizing that there are numerous literacies, each with its own set of socially constructed practices and beliefs about how reading and writing should be used (Lankshear, 1987, quoted in Hannon, 2000, p. 32). This viewpoint encompasses a wide range of literacies that include both cognitive and social abilities. For example, digital literacy includes the ability to access, evaluate, and use information from digital sources, while financial literacy includes the ability to understand and manage personal finances. The ways in which systems shape personal and regional disparities in literacy education cannot be overlooked.

We must understand the deictic perspective on technology and literacy of these practices as new technologies enable new digital spaces for literacy learning that are constantly new, numerous, and rapidly disseminated (Gee, 2007). Reading, writing, and other forms of literacy have emerged as powerful levers for acquiring, promoting, and maintaining power throughout history. As the internet becomes increasingly the dominant text of our generation, we need to recognize the ways that theories and pedagogies of power in information capitalism are currently being codified (Morrell, 2015). In the following section, we will examine our assumptions and definitions of these shifts as we investigate future landscapes of media and information literacy through the use of a transdisciplinary lens and frame this examination as a wicked problem.

Media and Information Literacy

There are many ways to theorize media and their information literacy research and education, but it generally encompasses three distinct but interrelated areas: information literacy, media literacy, and digital literacy (Limberg et al., 2012; Livingstone et al., 2014). It is the ability to access, analyze, evaluate, and create media in a variety of forms (Hobbs, 2018). Media and information literacy enable people to think critically about information and use digital tools effectively (Diehm & Lupton, 2014). It helps people make informed choices about how they

participate in peacebuilding, equality, freedom of expression, dialogue, access to information, and sustainable development (Mansell & Tremblay, 2013). We used an adaptation of Gilster's model of information (1997) developed by Markless and Streatfield (2007) to help situate this discussion. This model discusses three interlinked elements that describe a focus on information and information resources in literacy education: connecting with information, interacting with information, and making use of information.

Connecting with information

The knowledge, skills, and practices involved as individuals become oriented, explore, focus, and locate information sources and content are defined as connecting with information (Wilson, 1999; Fisher, 2005). Becoming literate in academic disciplines requires more than just applying comprehension strategies to new texts. As they interact with various online and offline content, people must synthesize information from various formats, such as text, images, video, and graphics. Learners must acquire knowledge, skills, and reasoning processes specific to each discipline while remaining flexible as they explore across topics (O'Byrne, 2023). Digital texts and resources can enhance disciplinary thinking and collaboration, while learners can use texts and tools to gain a better understanding of their preferences, knowledge, and comprehension. When students share their work, they enrich their literacy practices by considering the audience, purpose, design, and work process or product. Learners should consider how these factors influence how they think, feel, and comprehend.

Interacting with information

The knowledge, skills, and practices involved in critical thinking about and evaluating information sources and content are defined as information interaction (Rieh et al., 2016). When people search for online texts, they review, select, comment on, archive, and share credible,

relevant materials to gain expertise and credibility on a topic (Wineburg et al., 2022). As the internet provides multilayered meaning beyond print resources, digital literacies such as technological, visual, and media skills can support authentic reading and writing across disciplines (Manderino & Castek, 2016). While students are frequently adept at using technology, they often struggle to critically evaluate a variety of media (James et al., 2019). Students require opportunities to investigate nonlinear texts, consider source validity, and draw conclusions across information formats. Text, context, and learner all play a role in meaning construction, as identity and background influence text interpretation. Citizens can use digital spaces to investigate global issues and advocate beyond local contexts while educating and empowering others (O'Byrne, 2019).

Making use of information

Individuals' knowledge, skills, and practices in applying, transforming, and ultimately communicating information sources and content are defined as making use of information (Coiro, 2021). When students plan, organize, compose, and revise digital content like wikis, websites, videos, and GIFs, they are simulating the writing process (Hobbs, 2021). The social and cultural environment influences a person's literacy practices as they encode and decode meaning by composing using digital texts and tools (Pangrazio et al., 2020). Media and information literacy improve classroom instruction through communication, problem-solving, and collaboration rather than replacing an entirely new curriculum. Learners can ethically share, communicate, and repurpose information using digital technologies (Belshaw et al., 2023). Digital literacy allows learners to engage with authentic, diverse audiences that may not share their interests. Integrating media and information literacy instruction enables collaborative

exploration of disciplines, communities, and the world, as learning occurs authentically through mastering and demonstrating practices in a community.

A Progressive, Transdisciplinary Approach

As the boundaries between disciplines blur and the multifaceted nature of information dissemination becomes clear, a transdisciplinary approach transcends traditional knowledge silos. Transdisciplinarity is a research or educational approach that seeks to push disciplinary boundaries to develop a holistic perspective that incorporates input from both scientific and non-scientific communities (Andersen et al., 2023). A transdisciplinary lens allows for the construction of meaning in more natural contexts where disciplines intersect, combine, and collaborate (Horn et al., 2023). It entails the collaborative integration of insights from a variety of disciplines, including sociology, psychology, technology, cultural studies, and others (Nambisan et al., 2020). This approach goes beyond simply learning skills to comprehend the sociocultural contexts, power dynamics, and ethical dimensions that underpin media and information consumption.

Transdisciplinarity is a research strategy that goes beyond both multidisciplinarity and interdisciplinarity by combining various disciplines and seeking holistic understanding (Radakovic et al., 2022). Whereas multidisciplinarity uses separate disciplines without bridging them and interdisciplinarity combines methods to tackle an issue, transdisciplinarity prioritizes social relevance and the common good, transcending disciplinary boundaries to seek unity of knowledge that can be interrogated and transformed (Crenshaw, 1991; Hall, 1980). We can navigate an increasingly complex digital landscape by adopting a transdisciplinary, progressive approach that fosters critical thinking, empathy, and a holistic understanding of the interconnected world we live in (Gibbs & Beavis, 2020).

Wicked Problems

When considering possible futures and outcomes at future intersections of media and information literacy, we must account for complex social or cultural issues that arise as a result of recognizing the power and irregularity of evolving systems. These complex and multifaceted issues are frequently difficult to define, comprehend, and solve, and they are frequently referred to as wicked problems (Zellner & Campbell, 2015). A wicked problem is defined as a social or cultural challenge that involves multiple social systems and groups, has unpredictable outcomes, and defies traditional problem-solving techniques (Rittel & Webber, 1973). To address a real-world, wicked problem, a transdisciplinary lens is required to support educators and students as they engage with this content in ways that go beyond traditional academic boundaries (Alford & Head, 2017).

When we address wicked problems, we need to recognize the power and irregularity of evolving systems (Lönngren & Van Poeck, 2021). This necessitates greater adaptability on the part of the person interacting with information and media. Given the lack of structure and issues with the validity, reliability, and accessibility of open digital information, we must be more flexible and tolerant of the learning process (Earle & Leyva-de la Hiz, 2021). It can be difficult not to divide difficult problems into silos or to simplify solutions by ignoring them or believing in conspiracy theories. Web-literate citizens need to have an appreciation for the complexities, pitfalls, challenges, and opportunities that exist when using open, digital information (Tieu et al., 2023).

Methods and Positionality

As indicated earlier, this work was informed by our desire to explore possible futures for media and information literacy as well as test novel methodologies for open research, publication, and dissemination. We used a method known as 'engaged scholarship' (Fitzgerald et al., 2020), in which researchers collaborate, negotiate, develop trust, and coproduce knowledge with members of the organizations on issues that are important to them (Corbera et al., 2020). We worked to develop a collaborative form of inquiry (Black, 2021), in which knowledge about complex real-world problems is coproduced collaboratively by scholars and practitioners (Wagle, 2022). Collaborative inquiry is a research methodology that entails a cyclical process of investigation, reflection, and action (Vaughn & Jacquez, 2020). Collaboration, care ethics, risk-taking, multiple ways of knowing, open dialog, and the lived experiences of those who participate in the methodology are all incorporated into the methodology (Jopling, 2023). The emphasis is on addressing research questions grounded in reality and developing knowledge for advancing both understanding in the discipline and performance in practice (Simon, 1976; Hodgkinson et al., 2001).

Following Van de Ven's (2007) guidelines, we created an engaged research project. According to this, knowledge coproduction occurs when the research project is designed to include four interconnected activities:

- *Problem formulation*. Scholars collaborate with practitioners who are dealing with real-world issues to better understand, appreciate, and situate the complex phenomenon, as well as to develop research questions that address that problem.
- *Theory building*. Scholars develop, extend, choose, and justify a body of theory relevant to a real-world problem. Concepts, models, and frameworks that capture

the key elements of a real-world problem and serve as a foundation for new theories to address research questions can be developed.

- *Research conduct and design*. The research is conducted within a collaborative learning community of scholars and practitioners, and appropriate research methods are used to collect empirical evidence of the concepts and models for exploring the research question.
- *Problem solving*. Findings are presented in a way that addresses the research question and thus develops theory for the academic community and practice for the practitioner community.

Participants were selected through purposive sampling, which involves intentionally seeking out individuals who meet certain criteria and will provide information-rich cases for an in-depth study (Patton, 2015). The purposive sampling technique is a nonprobability sampling approach whereby the participants are selected who have the greatest amount of information and experience about the topic and who are relevant to the research topic or question (Bryman, 2016). Sampling is based on the researcher's knowledge of the target population and the study's purpose (Walter, 2006). Purposive sampling, as opposed to probabilistic sampling methods, allows for the selection of participants who offer useful perspectives on the phenomenon being studied. Purposive sampling, given the exploratory qualitative nature of this study, allows for deep insider insights from information-rich cases.

This study conducted interviews with individuals as well as focus groups to collect data. The decision to conduct an individual interview rather than a focus group was influenced primarily by the availability and schedule of the participants. Focus groups allow researchers to gather multiple perspectives in an interactive discussion (Morgan, 1996). The focus group

method was preferred because it was thought to allow the researchers to explore their thoughts and reflections while also interacting with each other's experiences, allowing them to take an interpretive approach that prioritized their meanings and experiences (Merton et al., 1987; Morgan, 2019).

The data consisted of results from a review of the literature, interviews, and researcher notes. We shared as much of these data sources in blog posts and recordings of the interviews as possible and linked them as citations and support materials in this document. Analysis was conducted in a multi-step process to inductively analyze (Patton, 2002) and ultimately develop themes (Merriam, 2002) from the data. To strengthen the validity of our analysis, we shared these findings with several interpretative communities (Maxwell, 2005). The first interpretative community consisted of six colleagues who provided perspectives on the theoretical framework, analysis, and interpretation. The second interpretative community provided feedback on the identified areas of consideration and the items used in our inquiry.

Our Positionality

This publication and its accompanying materials are ultimately shaped by our positionality, and the reader must be aware of these cultural backgrounds and value systems (Muhammad et al., 2015). Ian is a white, cisgender male who lives in the United States and serves as an Assistant Professor of Literacy Education at an institution of higher education. He has been involved in initiatives focusing on the intersections between literacy and technology for over twenty years. Doug is also a white, cisgender male who considers himself European while residing in post-Brexit Britain. He is a founding member of We Are Open Co-operative, wrote his doctoral thesis on digital literacies, and considers himself an educator, technologist, and

community facilitator. Laura is a white, female-presenting person somewhere on the gender spectrum. She holds a Masters of Media and Education, is a co-founder of We Are Open Cooperative, and has had a varied career in the realms of education, activism, recognition, literacy, and storytelling.

We engaged in a reflexivity process to understand how our positionality impacts the research process and the production of knowledge from this work and to acknowledge the bias and privilege that we bring to the research and dissemination processes (Gerber et al., 2016). This reflexivity includes self-disclosure and transparency, as well as a critical examination of one's motivations, interests, roles, and assumptions in this work (Probst & Berenson, 2014). Reflexivity also entails explaining the power structures at work in the social situations under consideration (Roberts & Sanders, 2005). It should be noted that reflexivity is a process of self-scrutiny in which the researcher is constantly in a "mode of self-analysis" (Callaway, 1992, p. 33). This reflexivity process included several steps to establish trust, collaboration, corroboration, and, eventually, trustworthiness with research participants (Attia & Edge, 2017). These included regularly sharing researcher notes in open blog posts, as well as using social networking tools for outreach, dissemination, and canvassing experts. These efforts identified gaps in our thinking and perspectives and recommended reading materials and research to fill them.

Setting the Stage for Dialogue

The research team first convened in the summer of 2023 to identify and comprehend the field of study and delineate prospective frameworks or constructs that could orient the investigation. The group discussed key topics, themes, and theories that would undergird the research and inform the development of research questions and hypotheses. Based on these

initial dialogues, a preliminary abstract was composed that laid out the intended focus, scope, and direction of the project. This draft abstract served as an early guidepost to steer the first phase of the research, providing a provisional structure for beginning the literature review, selecting methodologies, collecting data, and analyzing results. While the frameworks evolved throughout the study, this early alignment around core issues and constructs established a shared vision and purpose that enabled the research to progress in a focused, productive manner.

The first interpretative community reviewed this initial framework, which included research into a wide range of perspectives, technologies, and platforms. Individuals must not only access and evaluate data but also account for the impacts of race, gender, AI, location, and language. The framework for this initial series of questions is listed below.

Race: Challenging Biases and Cultivating Cultural Sensitivity. Race has been a longstanding issue in media and information representation. A progressive approach to interacting with media and information literacy involves teaching individuals to recognize and challenge stereotypes, implicit biases, and systemic inequalities embedded in media content. This includes understanding the impact of racial bias on news reporting, representation in entertainment media, and the portrayal of marginalized communities (hooks, 1992). By embracing diverse narratives and perspectives, individuals can develop a more holistic understanding of the world and counter the perpetuation of harmful stereotypes.

Gender: Deconstructing Stereotypes and Promoting Inclusivity. Gender representation and inclusivity are crucial aspects of MIL. A progressive approach entails dissecting the gender stereotypes prevalent in media and information, from advertising to news coverage. It also

involves recognizing the underrepresentation and misrepresentation of gender identities beyond the binary spectrum. By encouraging critical analysis of gender narratives, a focus on media and information literacy can empower individuals to challenge societal norms, promote inclusivity, and support gender equality.

AI: Navigating the Intersection of Technology and Information. Artificial Intelligence (AI) is reshaping the way information is generated, curated, and disseminated. In a progressive MIL framework, individuals must not only understand how AI algorithms influence content distribution but also grasp the ethical implications of biased algorithms. This involves equipping individuals with the tools to recognize AI-generated content, discern deepfakes from genuine information, and comprehend the broader societal implications of AI-driven media manipulation.

Geographic Location & Language/Localization: Bridging Global Divides. Media and information are often tailored to specific geographic regions and languages, leading to the digital divide between different parts of the world. A progressive media and information literacy approach seeks to bridge this gap by fostering an understanding of local media landscapes and the challenges faced by non-English speakers. This includes promoting multilingual literacy, encouraging cross-cultural understanding, and critiquing the media's impact on local communities.

Findings

As detailed earlier, this publication shares findings from a larger study in which we canvassed the field to understand possible future intersections of media and information literacy. Data were collected and analyzed over two phases. Phase one included data collection consisting

of the literature review, identification of the proposed constructs, and development of items for each area. Phase two included an analysis of the results of the initial set of interviews, a review of researcher notes, and the development of a new set of constructs, definitions, and items for use in examining these perspectives and affordances of each space.

Phase One

The initial literature review, discussions with the interpretative community, and sharing of researcher notes openly online allowed for insight into the evolving technological landscape as it impacts MIL in the current and future milieus. The use of a transdisciplinary lens in an open research project presented enormous challenges, but also opportunities as we engaged with the content and our communities. Phase one of the analysis identified ten areas that call for more discussion and inquiry as we seek to empower individuals with the awareness, critical faculties, and skills to navigate the digital world responsibly.

- **Evaluating Information Credibility in the Era of Misinformation**. With the proliferation of misinformation and disinformation online, information and media literacy education must equip individuals to carefully evaluate sources, corroborate facts, and engage in critical thinking when assessing content credibility. Educators can play a vital role in developing skills to recognize manipulated or biased information and empowering learners to make informed judgments.
- **Privacy, Security, and Personal Data Stewardship.** In a data-driven digital ecosystem, safeguarding personal information is an urgent ethical priority. Media and information literacy should encompass data privacy protections, secure personal data management,

understanding terms of service agreements, and weighing the risks and benefits of sharing personal data online.

- **Recognizing and Mitigating Algorithmic Bias**. Algorithms that personalize and filter content shape how people encounter information online. However, algorithmic systems can perpetuate biases, misinformation, and polarized perspectives. Education must address these issues, equipping individuals to identify algorithmic bias and evaluate media content more objectively.
- **Bridging Digital Divides through Equitable Access**. While technology facilitates information access, the digital divide still excludes many from online resources. Providing equitable access to education, infrastructure, and technology is crucial for democratic participation. Media and information literacy should consider how to support inclusion and access for all.
- **Fostering Ethical Digital Citizenship**. Online environments introduce new contexts for citizenship, requiring norms for respectful discourse, inclusion, and ethical behavior. Education should promote positive digital citizenship, countering harmful practices like online harassment, misinformation, and unethical uses of technology.
- **Navigating Authenticity in a World of Synthetic Media**. Emerging technologies enable manipulated videos, images, and text that blur the line between real and fabricated content. Media and information literacy must incorporate navigating authenticity, verifying sources, recognizing manipulated media, and promoting transparency.
- **Encouraging Nuanced Perspectives over Rhetoric**. Media platforms can incentivize inflated rhetoric over nuance. Education should foster thoughtful evaluation of biased or

exaggerated stances, consideration of diverse viewpoints, fact-based reasoning, and measured communication.

- **Promoting Transparency, Accountability, and Credibility**. With the ease of sharing information comes responsibility. Media and information literacy should instill values like honesty, transparency, accountability, and commitment to credibility. This helps stem misinformation and build public trust.
- **Balancing Innovation and Well-being with Ethical Technology Use**. While technologies enable interconnectivity and knowledge, overuse risks well-being. Education should incorporate ethical technology use, digital self-care, evaluating real vs. virtual interactions, and understanding technology's societal impacts.
- **Ensuring Ethics and Equity Guide Technological Innovation**. AI, automation, and emerging technologies raise new ethical dilemmas regarding security, bias, transparency, and automation's effects on society. Education and policies must center ethics, inclusion, human dignity, and collaborative oversight around technology's trajectory.

The themes identified in phase one of the study were used to inform the development and revision of future discussions and inquiries that need to occur to answer the research questions. While useful, phase one analysis was critical to better understanding potential intersections between MIL and the more in-depth phase two data analysis.

Stage Two

During the second phase of data collection and analysis, several themes and their associated dimensions emerged. These patterns were further distilled as successive passes through the data were made to refine the initial structure of the themes and definitions. The second phase of the study focused not only on the themes identified in the first stage but also on

what this means for MIL and who is responsible for or has the power to make changes in these areas. This investigation of power theories and pedagogies in information capitalism was used to conduct a deeper, richer analysis of phase one findings and to ensure that themes were interpretative of the research questions.

De-Siloing Discussions

Our initial conceptual framework compartmentalized media and information literacy into distinct categories of race, gender, AI, and global contexts. However, focus group participants resisted examining these dimensions in silos, as many felt they were inextricably interconnected. This feedback is consistent with intersectionality tenets, which hold that different identities and social categorizations intersect to shape complex lived experiences (Nair & Vollhardt, 2020). An intersectional lens contends that the whole of an individual's multidimensional identity is greater than the sum of its parts, and these facets cannot be separated into discrete units of analysis meaningfully (Collins & Bilge, 2016). De-siloing is the act of removing barriers between people or groups in an organization. It can involve integrating data from different sources or breaking down communication barriers.

Applying an intersectional perspective to our research reveals the shortcomings of parsing out race, gender, technology, and culture as isolated variables. These categories intersect in manifold ways to create diverse perspectives, challenges, and opportunities related to media and information literacy education. For example, the experiences of a woman of color navigating digital spaces will differ greatly from those of a white man due to intersecting systems of oppression and privilege, among other factors. An intersectional approach centers on the complexity of individuals' standpoints and rejects siloed generalizations.

Our experience exposes the limitations of examining race, gender, AI, and global issues separately when exploring the futures of media and information literacy. To capture a fuller, more nuanced picture, we must adopt an integrative conceptual framework that is attuned to intersections. This finding reinforces the value of flexible inquiry that uplifts participants' holistic vantage points rather than shoehorning perspectives into discrete categories. Focusing on areas of intersection will yield more meaningful insights to advance progressive, ethical media literacy education.

Tensions Between Innovation and Ethics

Collaboration between educators, policymakers, and technology companies is required to implement progressive media and information literacy. Schools should incorporate media and information curricula to foster critical thinking and nuanced perspectives. Community organizations can increase awareness of these pedagogies and techniques through workshops and campaigns. Governments must encourage technology companies to prioritize transparency, combat misinformation, and reduce algorithmic bias. The technology industry is often overlooked when it comes to discussions of responsibility, particularly in terms of education and ethical infrastructure. This is despite the fact that technology is rapidly changing our world and has the potential to create both great benefits and great harm. There is a need for more education about the ethical implications of technology, as well as for more ethical guidelines and regulations in the technology industry. The technology industry has a responsibility to develop and use technology in a way that benefits all of humanity. We need to ensure that technology is used for good and not for harm. Platforms should create algorithms that encourage diverse points of view and sincerely authenticate information.

Furthermore, the rush for tech companies to gain first-mover advantage and market dominance incentivizes them to prioritize technology scalability and economic efficiency over pedagogical ethics and student welfare. The massive compute cycles and data sets required for AI algorithm development also consolidate power among big technology companies, allowing wealth to dictate innovation agendas. Learning could become a transactional exchange rather than a public good as a result of knowledge commodification, limiting accessibility. More funding and infrastructure are needed, particularly in open-source initiatives, to democratize access to advanced uses of technology in learning spaces. Overall, capitalism's incentives can cause advancements and the use of learning technologies to be misaligned with educational values. Stakeholders must strengthen governance to uphold ethics by ensuring that there are clear and concise policies in place that outline the ethical standards that all employees must adhere to.

The impact of capitalism on educational technologies raises ethical concerns. Economic inequality exacerbates digital divides in access to high-quality education and technology. Market-driven demands shape curricula, which may jeopardize broader learning objectives. Profit motives may dictate educational quality if the private sector is involved through public-private partnerships. We must also develop and enforce ethical guidelines for technological development and use in global educational spaces. These policies should be founded on principles such as human rights, privacy, and security. Productive discourse requires nuance in analyzing complex systemic issues at the intersection of education, technology, ethics, and economics. The goal should be to bring context and humanity into decisions so that learning serves individuals and society, not just markets. With ethical oversight and innovation guided by equity, capitalism's fruits could be harnessed to democratize access to transformative educational technologies.

Agility in accelerating change cycles

As we navigate the rapidly changing media and information landscape, it is critical to reflect on the past. Analyzing historical precedents and patterns can provide us with valuable insights into the potential trajectories of media literacy. This allows us to identify trends and develop strategies to address potential challenges. While the current digital era contains many unprecedented complexities, previous societal shifts around communication and information technologies offer important lessons. For instance, examining the impacts of the printing press spread across Europe reveals how increased access to printed materials fundamentally transformed power structures by decentralizing knowledge (Croteau & Hoynes, 2013). Studying the rise of television and associated changes in advertising and politics sheds light on how new media forms can alter social discourse and civic engagement (Hodkinson, 2016). By understanding the evolution and consequences of past information revolutions, we can make more informed predictions about emerging media. This information can be used to develop effective programs that will help people develop the skills they need to be informed and engaged citizens in the digital age.

The rapid pace of technological advancement has emerged as a pivotal factor contributing to the prospect of digital disruption or dislocation in the context of the evolving landscape of media and information literacy. The accelerated growth of digital media, the sheer volume of information available, and the accessibility of digital tools are driving this paradigm shift. As a result, educational institutions and policymakers are faced with the challenge of providing individuals with the necessary skills to navigate this dynamic digital environment effectively. Innovative strategies and emerging digital platforms are challenging traditional pedagogical

approaches and models of media and information literacy education. Looking ahead, it is clear that understanding the mechanisms by which technological progress influences digital disruption will be critical. This knowledge will enable educators and policymakers to create more agile and adaptive curricula that will prepare students to engage with media and information critically and responsibly in the coming years.

However, drawing parallels to history becomes increasingly challenging given the accelerated pace of change in the digital age. Technology adoption cycles continue to shorten, with new innovations spreading at an unprecedented rate around the world. This acceleration is being supported by ongoing advances in computing power and connectivity. Because of this compression, whereas previous information revolutions took centuries, comparable upheavals now take years or decades. The faster pace allows for less time to adapt, which poses risks if technological advances outpace ethical and regulatory safeguards. As a result, while historical analyses provide valuable context, intervention windows are closing. To guide media literacy futures in the face of exponential change, stakeholders must quickly identify momentous shifts and respond nimbly.

Discussion

While emerging technologies facilitate learning in many ways, ethical considerations around biases, polarization, and cognitive load are critical. Access to technology is fundamental for participation, yet disparities in access persist, requiring educators to address the digital divide. Interactive and personalized systems can increase engagement but also filter content. Developing multimodal literacy and critical thinking helps learners navigate these challenges. Porosity between online spaces allows the valuable exchange of diverse ideas but may also limit

exposure. Media platforms shape communication; affordances provide accessibility but also embed biases. Educators must build skills for ethical, critical engagement across modes and environments. Students need sustained focus, self-regulation, and evaluation skills to discern credibility amidst overload. Educators play a key role in developing practices and skills for balanced, inclusive digital engagement.

As we prepare for the unknown, the fields of practice and research are constantly changing, and any examination of this work must allow for some ambiguity. Educators, policymakers, and industry leaders should thoughtfully assess how treating education as a market commodity could undermine core educational values. Constructive critiques should acknowledge capitalism's role in technological innovation while addressing its potential influence on learning. Emphasizing solutions that mitigate socioeconomic disparities while upholding educational quality and ethics will enrich these complex discussions. A collaborative, ethical approach to navigating the intersection of education, technology, and capitalism is needed to ensure learning serves individuals and society rather than solely markets. By learning from the past and anticipating the future, we can ensure that media literacy education remains relevant and effective in the digital age. This framing acknowledges the value of learning from the past while also emphasizing the need for agility in the face of exponentially accelerating change cycles.

The accelerating pace of change in the digital age has several implications for media literacy education and practice. First, it is essential to adopt a forward-looking approach that anticipates emerging trends and technologies. This requires educators and practitioners to stay informed about the latest developments and to develop innovative curricula and resources that prepare students and learners for the future. Second, it is important to focus on developing critical thinking and problem-solving skills. In a world where information is constantly changing,

it is more important than ever to be able to evaluate information critically and make informed decisions. Media literacy education can help learners develop these essential skills. Third, it is necessary to build partnerships and collaboration across sectors. Media literacy education is a complex and multifaceted problem that cannot be solved by a single organization. Educators, practitioners, policymakers, and other stakeholders must work together to develop and implement effective solutions. The concept of *information* can be used as a point of departure to make sense of the challenges and opportunities for classroom practice. These practices inform the ethics that citizens should follow when interacting and connecting with others online.

The future of media and information literacy requires a paradigm shift towards a progressive approach that addresses the complexities of our modern world. We can empower individuals to navigate the digital landscape with discernment, empathy, and a commitment to fostering a more informed and inclusive society by focusing on race, gender, AI, geographic location, and language localization. We have a general idea of the knowledge, skills, practices, and dispositions that learners will need in the future. However, examining the components that organically and intrinsically occur in these interstices requires a transdisciplinary lens. We must constantly re-envision what it means to be educated, and what it means to be literate as technology advances. There is an opportunity to effectively achieve Friere's goal of teachers being learners and learners being teachers (Rule, 2011) through the careful use of texts, tools, and pedagogy.

References

Andersen, A. S., Hauggaard-Nielsen, H., Christensen, T. B., & Hulgaard, L. (2023). Interdisciplinary research and knowledge creation. In *Interdisciplinary Perspectives on Socioecological Challenges* (pp. 320-353). Routledge.

Belshaw, D. (2011). What is ‘digital literacy’? Doctoral thesis. Durham University. http://etheses.dur.ac.uk/3446/

Belshaw, D., Hilliger, A., & Hilliger, L. (2023, March). Integrating open recognition into program and course designs. Open Education Talks 2023. https://oetalks.opened.ca/.

Black, F. V. (2019). Collaborative inquiry as an authentic form of professional development for preschool practitioners. *Educational Action Research*, *27*(2), 227-247.

boyd, d. (2014). It's Complicated: The Social Lives of Networked Teens. Yale University Press.

Benkler, Y. (2006). The Wealth of Networks: How Social Production Transforms Markets and Freedom. Yale University Press.

Carr, N. (2010). The Shallows: What the Internet Is Doing to Our Brains. W. W. Norton & Company.

Chatterton, T., & Newmarch, G. (2017). The future is already here: it's just not very evenly distributed. *Interactions*, *24*(2), 42-45.

Coiro, J. (2021). Toward a multifaceted heuristic of digital reading to inform assessment, research, practice, and policy. *Reading Research Quarterly*, *56*(1), 9-31.

Corbera, E., Anguelovski, I., Honey-Rosés, J., & Ruiz-Mallén, I. (2020). Academia in the Time of COVID-19: Towards an Ethics of Care. *Planning Theory & Practice*, *21*(2), 191-199.

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. Stanford Law Review, 43(6), 1241-1299.

Croteau, D., & Hoynes, W. (2013). *Media/society: Industries, images, and audiences*. Sage Publications.

Diehm, R. A., & Lupton, M. (2014). Learning information literacy. *Information Research*, *19*(1), 1-15.

Earle, A. G., & Leyva-de la Hiz, D. I. (2021). The wicked problem of teaching about wicked problems: Design thinking and emerging technologies in sustainability education. *Management Learning*, *52*(5), 581-603.

Fisher, K. E., Erdelez, S., & McKechnie, L. (Eds.). (2005). Theories of information behavior: A researcher's guide. Information Today, Inc.

Fitzgerald, H. E., Karen, B., Sonka, S. T., Furco, A., & Swanson, L. (2020). The centrality of engagement in higher education. In *Building the Field of Higher Education Engagement* (pp. 201-219). Routledge.

Foucault, M. (1977). Discipline and Punish: The Birth of the Prison. Pantheon.

Gee, J. P. (2007). What Video Games Have to Teach Us About Learning and Literacy. Palgrave Macmillan.

Gerber, H. R., Abrams, S. S., Curwood, J. S., & Magnifico, A. M. (2016). *Conducting qualitative research of learning in online spaces*. Sage Publications.

Gibbs, P., & Beavis, A. (2020). *Contemporary thinking on transdisciplinary knowledge: What those who know, know*. Springer Nature.

Gibson, W. (2003). The future is already here–it's just not evenly distributed'. *The Economist*, *4*(2), 152.

Hall, S. (1980). Encoding and decoding in the television discourse. Centre for Contemporary Cultural Studies, University of Birmingham.

Hannon, P. (2000) Reflecting on Literacy in Education London: Routledge Falmer

Hilliger, L. (2012). Web Literacy in Adults: An Educational Approach using Game Mechanics in Curriculum to Teach Web Literacy in Adults. University of Rostock.

Hobbs, R. (2018). Expanding the concept of literacy. In *Media literacy around the world* (pp.

163-183). Routledge.

Hobbs, R. (2021). *Media literacy in action: Questioning the media*. Rowman & Littlefield Publishers.

Hodkinson, P. (2016). Media, culture and society: An introduction. *Media, Culture and Society*, 1-344.

hooks, b. (1992). *Black Looks: Race and Representation*. South End Press.

Horn, A., Scheffelaar, A., Urias, E., & Zweekhorst, M. B. (2023). Training students for complex sustainability issues: a literature review on the design of inter-and transdisciplinary higher education. *International Journal of Sustainability in Higher Education*, *24*(1), 1-27.

Ito, M., Horst, H., Bittanti, M., Boyd, D., Herr-Stephenson, B., Lange, P. G., ... & Robinson, L. (2009). Living and Learning with New Media: Summary of Findings from the Digital Youth Project. MIT Press.

James, C., Weinstein, E., & Mendoza, K. (2019). Teaching digital citizens in today's world: Research and insights behind the Common Sense K–12 Digital Citizenship Curriculum. *Common Sense Media*, 2021-08.

Jenkins, H. (2006). Convergence Culture: Where Old and New Media Collide. NYU Press.

Jopling, M. (2023). Postdigital Research in Education: Towards Vulnerable Method and Praxis. In *Postdigital Research: Genealogies, Challenges, and Future Perspectives* (pp. 155-171). Cham: Springer Nature Switzerland.

Koltay, T. (2011). The media and the literacies: Media literacy, information literacy, digital literacy. *Media, culture & society*, *33*(2), 211-221.

Kress, G. (2010). Multimodality: A Social Semiotic Approach to Contemporary Communication. Routledge.

Leaning, M. (2019). An approach to digital literacy through the integration of media and information literacy. *Media and Communication*, *7*(2), 4-13.

Limberg, L., Sundin, O., & Talja, S. (2012). Three theoretical perspectives on information literacy. *Human IT: Journal for Information Technology Studies as a Human Science*, *11*(2).

Livingstone, S., Van Couvering, E., & Thumim, N. (2014). Converging traditions of research on media and information literacies: Disciplinary, critical, and methodological issues. In *Handbook of research on new literacies* (pp. 103-132). Routledge.

Lönngren, J., & Van Poeck, K. (2021). Wicked problems: A mapping review of the literature. *International Journal of Sustainable Development & World Ecology*, *28*(6), 481-502.

McLuhan, M. (1964). Media hot and cold. *Understanding media: the extensions of man*, 22-32.

Manderino, M., & Castek, J. (2016). Digital literacies for disciplinary learning: A call to action. *Journal of Adolescent & Adult Literacy*, *60*(1), 79-81.

Mansell, R., & Tremblay, G. (2013). *Renewing the knowledge societies vision for peace and sustainable development*. Unesco.

Morrell, E. (2015). *Critical literacy and urban youth: Pedagogies of access, dissent, and liberation*. Routledge.

Muhammad, M., Wallerstein, N., Sussman, A. L., Avila, M., Belone, L., & Duran, B. (2015). Reflections on researcher identity and power: The impact of positionality on community based participatory research (CBPR) processes and outcomes. *Critical sociology*, *41*(7-8), 1045-1063.

Nair, R., & Vollhardt, J. R. (2020). Intersectionality and relations between oppressed groups:

Intergroup implications of beliefs about intersectional differences and commonalities. *Journal of Social Issues*, *76*(4), 993-1013.

Nambisan, S., Lyytinen, K., & Yoo, Y. (2020). Digital innovation: towards a transdisciplinary perspective. *Handbook of digital innovation*, 2-12.

O'Byrne, W. I. (2018). Empowering students as critical readers and writers in online spaces. In *Best practices in teaching digital literacies* (pp. 233-250). Emerald Publishing Limited.

O'Byrne, W. I. (2019). Educate, empower, advocate: Amplifying marginalized voices in a digital society. *Contemporary Issues in Technology and Teacher Education*, *19*(4), 640-669.

O'Byrne, W. I. (2023). Transcending Disciplinary Literacy in a Digital World. In *Disciplinary Literacies: Unpacking Research, Theory, & Practice* (pp. 248-268). The Guilford Press, New York.

Ong, W. J. (1982). Orality and Literacy: The Technologizing of the Word. Routledge.

Pangrazio, L., Godhe, A. L., & Ledesma, A. G. L. (2020). What is digital literacy? A comparative review of publications across three language contexts. *E-learning and Digital Media*, *17*(6), 442-459.

Papert, S. (1980). Mindstorms: Children, Computers, and Powerful Ideas. Basic Books.

Pariser, E. (2011). The Filter Bubble: What the Internet Is Hiding from You. Penguin.

Pinto, M., Cordon, J. A., & Gomez Diaz, R. (2010). Thirty years of information literacy (1977–2007): A terminological, conceptual and statistical analysis. Journal of *Librarianship and Information Science, 42*(1), 3–19. doi:10.1177/0961000609345091

Postman, N. (1985). Amusing Ourselves to Death: Public Discourse in the Age of Show Business. Viking.

Probst, B., & Berenson, L. (2014). The double arrow: How qualitative social work researchers

use reflexivity. *Qualitative social work*, *13*(6), 813-827.

Radakovic, N., O'Byrne, W. I., Negreiros, M., Hunter-Doniger, T., Pears, E., & Littlejohn, C. (2022). Toward Transdisciplinarity: Constructing Meaning Where Disciplines Intersect, Combine, and Shift. *Literacy Research: Theory, Method, and Practice*, *71*(1), 398-417.

Rheingold, H. (2012). Net Smart: How to Thrive Online. MIT Press.

Rieh, S. Y., Collins-Thompson, K., Hansen, P., & Lee, H. J. (2016). Towards searching as a learning process: A review of current perspectives and future directions. *Journal of Information Science*, *42*(1), 19-34.

Roberts, J. M., & Sanders, T. (2005). Before, during and after: realism, reflexivity and ethnography. *The sociological review*, *53*(2), 294-313.

Rule, P. (2011). Bakhtin and Freire: Dialogue, dialectic and boundary learning. *Educational philosophy and theory*, *43*(9), 924-942.

Smith, K., Gamlem, S. M., Sandal, A. K., & Engelsen, K. S. (2016). Educating for the future: A conceptual framework of responsive pedagogy. *Cogent Education*, *3*(1), 1227021.

Tieu, M., Lawless, M., Hunter, S. C., Pinero de Plaza, M. A., Darko, F., Mudd, A., ... & Kitson, A. (2023). Wicked problems in a post-truth political economy: a dilemma for knowledge translation. *Humanities and Social Sciences Communications*, *10*(1), 1-11

Van de Ven, A. H. (2007). *Engaged scholarship: A guide for organizational and social research*. Oxford University Press, USA.

Vaughn, L. M., & Jacquez, F. (2020). Participatory research methods–Choice points in the research process. *Journal of Participatory Research Methods*, *1*(1).

Vygotsky, L. S. (1978). Mind in Society: The Development of Higher Psychological Processes. Harvard University Press.

Wagle, S. K. (2022). Towards Participatory Worldview in Education and Research: A Philosophical Inquiry on the Question-Why Participatory?. *Journal of Transformative Praxis*, *3*(1), 9-24.

Wilson, T. D. (1999). Models in information behavior research. Journal of Documentation, 55(3), 249-270.

Wineburg, S., Breakstone, J., McGrew, S., Smith, M. D., & Ortega, T. (2022). Lateral reading on the open Internet: A district-wide field study in high school government classes. *Journal of Educational Psychology*, *114*(5), 893.

Zellner, M., & S.D. Campbell. (2015). Planning for deep-rooted problems: what can we learn from aligning complex systems and wicked problems? *Planning Theory & Practice* 16: 457–478.