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## Editorial Cognitive AI Literacy for Future Media Professionals in Higher Education

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### HIGHLIGHT — CORE CONTRIBUTION:

1. This study proposes the Editorial Cognitive AI Literacy Model (ECAIL) — an original conceptual framework reconceptualising AI literacy as a recursive editorial cognitive process specifically designed for higher media education.
2. Editorial Judgement is introduced as the central cognitive mechanism integrating technological competence, critical evaluation, ethical reasoning, and professional responsibility throughout AI-supported communication.
3. Unlike existing universal AI literacy frameworks, ECAIL explains not only what competencies media professionals require, but how these competencies continuously interact throughout authentic editorial practice.
4. The model organises AI literacy into six interdependent competency domains — AI Knowledge, AI-Assisted Content Creation, Critical Evaluation, Ethical AI Use, Professional Integration, and Reflective Lifelong Learning — coordinated through Editorial Judgement.

5. Although artificial intelligence increasingly supports communication processes, responsibility for meaning construction, contextual interpretation, ethical evaluation, and public accountability remains exclusively human.

Existing frameworks explain what learners should know about AI, yet provide insufficient understanding of how technological competence, communication expertise, editorial responsibility, ethical reasoning, and critical evaluation should be integrated into professional media education.

### **Abstract**

Artificial intelligence is transforming journalism, advertising, public relations, and strategic communication, creating a need to reconsider the competencies developed within higher media education. Although numerous AI literacy frameworks have been proposed, most conceptualise AI literacy as a set of general technological competencies and provide limited guidance for profession specific editorial practice. This study develops a conceptual framework that explains how AI literacy can be integrated into media education while preserving human responsibility for interpretation, ethical reasoning, and editorial decision making.

The study employs qualitative document analysis and conceptual synthesis of international AI policy documents, educational competency frameworks, and research in journalism, communication studies, cognitive psychology, and AI ethics. Based on this analysis, it proposes the **Editorial Cognitive AI Literacy Model (ECAIL)**, which reconceptualises AI literacy as a recursive editorial cognitive process comprising six interrelated competency domains coordinated through **Editorial Judgement**. Editorial Judgement is introduced as the central cognitive mechanism integrating technological competence, critical evaluation, ethical reasoning, and professional responsibility throughout AI supported communication.

The proposed model extends AI literacy theory by offering a profession specific framework for higher media education and provides a theoretical foundation for curriculum design, competency development, and responsible human AI collaboration while reinforcing editorial autonomy and public trust.

**Keywords:** artificial intelligence; AI literacy; higher education; journalism; media education; communication; competency framework; digital competencies; AI ethics; generative AI.

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## 1. Introduction

The rapid digital transformation of the media environment has fundamentally reshaped the creation, distribution, interpretation, and consumption of information. Artificial intelligence has become one of the principal drivers of these transformations, changing professional practices across journalism, advertising, public relations, and strategic communication. Generative AI is now integrated into virtually every stage of editorial activity, including information retrieval, content generation, multilingual communication, multimedia production, audience analytics, fact checking, and communication management. Consequently, the ability to collaborate critically, ethically, and effectively with artificial intelligence has become an essential component of professional competence for future media specialists.

Recent studies demonstrate that digital transformation extends beyond technological innovation by reshaping communication practices, language use, professional interaction, and editorial workflows. Intelligent technologies increasingly influence linguistic behaviour, transform communication strategies, and redefine the competencies expected from professionals operating in complex digital environments (Terekhova et al., 2026). Comparative analyses further indicate that although generative AI substantially improves the efficiency of media production, AI generated texts continue to require contextual interpretation, systematic verification, editorial supervision, and ethical evaluation before publication (Petrenko et al., 2026). At the same time, AI mediated communication environments influence identity construction, audience behaviour, information circulation, and public discourse, requiring communication professionals to combine technological competence with critical media literacy, ethical responsibility, and reflective professional judgement (Maslova et al., 2026).

The rapid diffusion of artificial intelligence has stimulated the development of an extensive international regulatory and educational framework governing responsible AI adoption. UNESCO established global ethical principles through the *Recommendation on the Ethics of Artificial Intelligence* (2021) and subsequently introduced comprehensive competency frameworks for teachers and students (UNESCO, 2024). The European Commission complemented these initiatives by publishing ethical guidelines for education (2022), while the European Union adopted the AI Act (2024), the first comprehensive legal framework regulating artificial intelligence. In parallel, the Council of Europe adopted the *Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law* (2024), extending AI governance beyond technological regulation toward the protection of democratic values, human rights, and public accountability.

These international developments are accompanied by the formation of a national AI governance framework in Ukraine. The *Concept for the Development of Artificial Intelligence in Ukraine* (Cabinet of Ministers of Ukraine, 2020), the *AI Regulation Roadmap of Ukraine* (Ministry of Digital Transformation of Ukraine, 2023), and the *White Paper on Artificial Intelligence Regulation in Ukraine* (2024) establish strategic priorities for responsible AI implementation while aligning Ukrainian policy with European regulatory standards. Together, these documents recognise AI literacy as an increasingly important educational

objective and emphasise transparency, accountability, ethical responsibility, and human centred approaches to intelligent technologies.

Despite the growing body of research and the emergence of comprehensive policy frameworks, existing AI literacy models remain predominantly interdisciplinary and universal. They successfully define general competencies required for responsible AI use but provide limited guidance for professional domains characterised by continuous interpretation, editorial verification, ethical judgement, and public communication. In media education, artificial intelligence functions not merely as a technological tool but as an active participant in editorial workflows, influencing information selection, content generation, audience engagement, and professional decision making. Consequently, future journalists, public relations specialists, advertising professionals, and strategic communicators require a domain specific model explaining how AI competencies operate throughout the editorial process.

This situation reveals a significant conceptual gap within current scholarship. Existing frameworks explain what learners should know about artificial intelligence, yet they provide insufficient understanding of how technological competence, communication expertise, editorial responsibility, ethical reasoning, and critical evaluation should be integrated into professional media education. Addressing this gap, the present study proposes the Editorial Cognitive AI Literacy Model (ECAIL), an original conceptual framework conceptualising AI literacy as a recursive editorial cognitive process centred on Editorial Judgement. Rather than treating AI competencies as isolated skills, the model integrates technological knowledge, AI assisted content creation, verification, ethical decision making, professional implementation, and reflective lifelong learning into a unified system specifically designed for higher media education.

Accordingly, the purpose of this study is to develop and theoretically substantiate the Editorial Cognitive AI Literacy Model through the analysis and synthesis of international AI policy documents, contemporary AI literacy frameworks, journalism scholarship, and communication research. The proposed framework is intended to provide a theoretical foundation for curriculum development, competency based media education, and future empirical research supporting responsible AI integration into professional communication.

## **2. Literature Review**

### **2.1. AI literacy as an emerging educational paradigm**

The rapid advancement of artificial intelligence has fundamentally transformed contemporary perspectives on digital competence, higher education, and professional learning. Artificial intelligence is no longer understood solely as a technological innovation but as a transformative socio technical phenomenon that reshapes knowledge production, communication practices, professional decision making, and educational environments. Consequently, AI literacy has emerged as one of the central constructs of contemporary educational research.

One of the most influential conceptualisations of AI literacy was proposed by Long and Magerko (2020), who defined AI literacy as a multidisciplinary competence integrating technological understanding, critical thinking, ethical awareness, and informed decision making. Their framework shifted scholarly attention from technical knowledge towards meaningful human interaction with intelligent systems. Subsequent studies expanded this perspective by emphasising that AI literacy should become a fundamental component of higher education, lifelong learning, and professional competence development (Ng et al., 2021; Kong et al., 2021).

Recent educational research increasingly conceptualises AI literacy as a dynamic competency rather than a static body of technological knowledge. Contemporary frameworks emphasise critical evaluation, ethical reasoning, responsible decision making, human centred interaction, and reflective engagement with intelligent systems, positioning AI literacy as an essential

prerequisite for professional practice in digitally transformed societies (Holmes et al., 2019; OECD, 2021; Miao & Cukurova, 2024).

## **2.2. International policy frameworks for responsible AI integration**

Alongside theoretical developments, international organisations have established a comprehensive normative framework governing the educational use of artificial intelligence. UNESCO adopted the *Recommendation on the Ethics of Artificial Intelligence* (2021), introducing globally recognised principles of transparency, accountability, human agency, fairness, and responsible AI governance. These principles were subsequently operationalised through the *AI Competency Framework for Teachers* and the *AI Competency Framework for Students* (UNESCO, 2024), which define competencies required for responsible AI integration across educational systems.

Similarly, the European Commission (2022) emphasises that AI supported education should promote critical thinking, ethical awareness, transparency, and informed participation in digital environments. This educational perspective has been reinforced by broader regulatory initiatives, including the *Artificial Intelligence Act* adopted by the European Union (2024) and the *Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law* adopted by the Council of Europe (2024). Together, these documents establish human centred AI governance as a strategic priority while recognising education as one of the principal mechanisms for responsible AI implementation.

Ukraine has also initiated the systematic development of a national AI governance framework. The *Concept for the Development of Artificial Intelligence in Ukraine* (Cabinet of Ministers of Ukraine, 2020), followed by the *AI Regulation Roadmap of Ukraine* (Ministry of Digital Transformation of Ukraine, 2023) and the *White Paper on Artificial Intelligence Regulation in Ukraine* (2024), demonstrates the country's strategic orientation toward European regulatory standards and responsible AI implementation. Collectively, these policy documents reinforce the growing importance of AI literacy as a national educational priority.

## **2.3. Artificial intelligence in journalism and media education**

The rapid diffusion of generative artificial intelligence has simultaneously transformed journalism and professional communication. Intelligent systems increasingly participate in information retrieval, automated news production, multilingual communication, audience analytics, verification support, and editorial decision making, fundamentally redefining professional media practice.

Early studies of automated journalism demonstrated that artificial intelligence alters newsroom organisation, journalistic authority, and editorial routines (Graefe, 2016; Carlson, 2015). Later investigations expanded this perspective by analysing the growing integration of AI into newsroom workflows, audience engagement, algorithmic transparency, and editorial accountability (Beckett, 2019; Diakopoulos, 2019; Marconi, 2020). More recent research has focused specifically on generative AI, arguing that collaboration between journalists and intelligent systems requires new professional competencies balancing technological efficiency with editorial autonomy, ethical responsibility, transparency, and public trust (Pavlik, 2023).

These developments indicate that AI literacy within journalism extends beyond understanding technological functionality. Professional media practice increasingly requires specialists capable of evaluating AI generated information critically, verifying algorithmic outputs, recognising communicative risks, preserving editorial independence, and making responsible professional decisions throughout AI supported editorial workflows.

## **2.4. Communication, cognition, and professional transformation**

Recent interdisciplinary research demonstrates that the impact of artificial intelligence extends beyond technological innovation into broader processes of communication, cognition,

and professional interaction. Digital transformation increasingly reshapes linguistic behaviour, communication strategies, identity construction, and media ecosystems, thereby changing the competencies expected from contemporary communication professionals (Terekhova et al., 2026).

Comparative analyses of AI generated and human authored media texts further demonstrate that although artificial intelligence substantially improves production efficiency, editorial responsibility remains fundamentally human. AI generated content continues to require contextual interpretation, systematic verification, ethical evaluation, and professional editorial supervision before publication (Petrenko et al., 2026).

Artificial intelligence also increasingly mediates communication within digital platforms by influencing audience behaviour, information circulation, identity formation, and public discourse. Consequently, media professionals must combine technological competence with communication expertise, ethical responsibility, critical thinking, and reflective editorial judgement when interacting with intelligent systems (Maslova et al., 2026).

## **2.5. Research gap**

Despite the rapid expansion of AI literacy research, existing conceptual frameworks remain predominantly interdisciplinary and universally applicable across educational contexts. Current models successfully identify general AI related competencies and establish important ethical principles for responsible AI use. However, they provide limited explanation of how these competencies operate within professional media education, where communication, interpretation, verification, editorial accountability, and public responsibility constitute the core of professional activity.

Likewise, contemporary journalism studies thoroughly describe the technological transformation of editorial practice but rarely conceptualise the cognitive mechanisms through which media professionals integrate artificial intelligence into editorial reasoning and professional decision making. Existing scholarship therefore lacks a specialised theoretical framework explaining how technological knowledge, communication expertise, AI assisted content creation, verification, ethical reasoning, and editorial judgement function as a unified professional competency.

To address this conceptual gap, the present study proposes the **Editorial Cognitive AI Literacy Model (ECAIL)**. Unlike existing AI literacy frameworks, the proposed model conceptualises AI literacy as a recursive editorial cognitive process centred on **Editorial Judgement**, integrating technological competence, editorial verification, ethical responsibility, professional communication, and reflective lifelong learning into a coherent theoretical framework specifically designed for higher media education.

## **3. Materials and Methods**

This study adopts a qualitative conceptual research design grounded in document analysis and conceptual modelling. The research does not seek to measure AI literacy empirically but rather to identify, critically synthesise, and theoretically conceptualise the competencies required for future media professionals operating within AI supported communication environments. Accordingly, the study follows an interpretive methodological paradigm aimed at constructing a domain specific theoretical framework rather than testing predefined hypotheses.

The empirical basis of the study consists of three complementary groups of sources. The first group includes international regulatory and policy documents establishing contemporary principles for the ethical and responsible integration of artificial intelligence into education and society, including the UNESCO *Recommendation on the Ethics of Artificial Intelligence* (2021), UNESCO *AI Competency Frameworks for Teachers and Students* (2024), the European Commission's *Ethical Guidelines on the Use of Artificial Intelligence and Data in Teaching and Learning for Educators* (2022), the European Union *Artificial Intelligence Act*

(2024), and the Council of Europe *Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law* (2024). These documents establish the normative foundation for understanding AI literacy within educational and professional contexts.

The second group comprises national strategic documents regulating the development and implementation of artificial intelligence in Ukraine, including the *Concept for the Development of Artificial Intelligence in Ukraine* (Cabinet of Ministers of Ukraine, 2020), the *AI Regulation Roadmap of Ukraine* (Ministry of Digital Transformation of Ukraine, 2023), and the *White Paper on Artificial Intelligence Regulation in Ukraine* (2024). These documents were incorporated to contextualise the proposed framework within contemporary Ukrainian educational policy while maintaining compatibility with European approaches to AI governance.

The third group consists of contemporary scholarly publications addressing AI literacy, digital competence, journalism, media education, communication studies, cognitive approaches to professional decision making, and AI supported editorial practice. Particular attention was devoted to studies conceptualising AI literacy (Long & Magerko, 2020; Ng et al., 2021; Kong et al., 2021), responsible AI integration in education (Holmes et al., 2019; Miao & Cukurova, 2024), AI assisted journalism (Carlson, 2015; Graefe, 2016; Beckett, 2019; Diakopoulos, 2019; Marconi, 2020; Pavlik, 2023), and recent interdisciplinary investigations of digital communication environments (Maslova et al., 2026; Petrenko et al., 2026; Terekhova et al., 2026).

Document analysis served as the principal research method. The collected materials were systematically examined to identify recurring competency domains, educational objectives, ethical principles, regulatory requirements, editorial functions, and cognitive processes associated with professional interaction with artificial intelligence. Comparative analysis was subsequently employed to identify convergences and divergences among international competency frameworks, regulatory documents, and contemporary scholarly conceptualisations of AI literacy. This analytical procedure enabled the identification of competencies that are universally recognised across educational contexts as well as those specific to journalism, advertising, public relations, and strategic communication.

The analytical stage was followed by conceptual synthesis and model construction. Rather than adapting an existing AI literacy framework, the study integrated the identified theoretical constructs into an original conceptual model specifically designed for higher media education. The resulting Editorial Cognitive AI Literacy Model (ECAIL) conceptualises AI literacy as a recursive editorial cognitive process centred on **Editorial Judgement**, which functions as the principal integrative mechanism connecting AI knowledge, AI assisted content creation, critical evaluation and verification, ethical and responsible AI use, professional AI integration, and reflective lifelong learning.

Methodologically, the research combines document analysis, comparative analysis, analysis and synthesis, classification, systematisation, abstraction, and conceptual modelling. The integration of these complementary methods provides a coherent theoretical foundation for constructing an authorial AI literacy framework applicable to journalism, advertising, public relations, strategic communication, and other media related educational programmes.

## 4. Results

### 4.1. AI Literacy as a Professional Competence for Future Media Professionals

The comparative analysis of international policy documents, AI competency frameworks, regulatory initiatives, and contemporary scholarly literature reveals a high degree of consensus regarding the fundamental components of AI literacy. Across educational and policy contexts, responsible interaction with artificial intelligence is consistently associated with technological understanding, critical thinking, ethical awareness, transparency, human

centred decision making, and lifelong learning. These competencies are systematically reflected in the UNESCO AI competency frameworks, the European Commission's educational guidelines, the European Union Artificial Intelligence Act, the Council of Europe Framework Convention, and contemporary AI literacy research.

Despite this broad consensus, the analysis also demonstrates an important limitation shared by existing frameworks. Current conceptualisations primarily define AI literacy as a universal educational competence applicable across multiple disciplines. While this interdisciplinary perspective provides a valuable foundation for responsible AI adoption, it does not sufficiently account for the distinctive characteristics of media professions, where communication, interpretation, editorial accountability, information verification, and public responsibility constitute the core of professional activity.

The comparative synthesis further demonstrates that journalism, advertising, public relations, and strategic communication differ fundamentally from many other professional domains because artificial intelligence participates directly in the production, interpretation, dissemination, and evaluation of communication. AI supported editorial environments integrate intelligent systems into information retrieval, content generation, multilingual communication, audience analytics, verification processes, and editorial support. Consequently, media professionals interact with AI not as occasional users of digital technologies but as continuous participants in hybrid human AI editorial processes.

These transformations substantially redefine the professional role of communication specialists. Rather than reducing the importance of human expertise, increasing reliance on generative artificial intelligence reinforces the necessity of professional editorial judgement. As AI systems become increasingly capable of producing coherent, persuasive, and contextually appropriate content, responsibility for evaluating factual reliability, interpreting communicative context, identifying algorithmic limitations, recognising ethical risks, ensuring transparency, and maintaining professional accountability remains exclusively human. Editorial responsibility therefore becomes progressively more important as technological capabilities continue to expand.

The analysis also indicates that the competencies identified across international frameworks cannot function effectively as isolated educational outcomes. Technological knowledge alone does not guarantee responsible AI use, while ethical awareness without communication expertise cannot ensure reliable media production. Similarly, critical evaluation, information verification, and professional decision making become meaningful only through their continuous interaction during editorial practice. These findings suggest that AI literacy in higher media education should be understood as an integrated cognitive system rather than a collection of independent competencies.

This conclusion represents the principal conceptual outcome of the document analysis. AI literacy for future media professionals should be conceptualised as a recursive editorial cognitive competence that integrates technological understanding, communication expertise, critical reasoning, ethical responsibility, and professional decision making throughout the entire editorial process. Within this perspective, **Editorial Judgement** functions as the central cognitive mechanism coordinating the interaction between human expertise and artificial intelligence, ensuring that editorial decisions remain transparent, accountable, contextually appropriate, and professionally justified.

Building upon these findings, the present study proposes the **Editorial Cognitive AI Literacy Model (ECAIL)** as an original conceptual framework specifically designed for higher media education. Unlike existing AI literacy models, ECAIL conceptualises AI literacy not as a linear sequence of competencies but as a recursive professional process in which six interdependent competency domains continuously interact through **Editorial Judgement**. This approach extends existing AI literacy frameworks by integrating educational theory,

journalism studies, communication research, international AI governance principles, and professional editorial practice into a unified conceptual model applicable to journalism, advertising, public relations, and strategic communication programmes.

#### 4.2. From AI Literacy to Editorial Cognitive AI Literacy

The comparative synthesis presented in the previous section demonstrates that existing AI literacy frameworks successfully define the fundamental competencies required for responsible interaction with artificial intelligence. Technological understanding, ethical awareness, critical thinking, transparency, and lifelong learning consistently emerge as core dimensions across international educational policies and scholarly literature. Nevertheless, these competencies remain predominantly generic and are not explicitly conceptualised within the professional realities of media communication.

The analysis indicates that journalism, advertising, public relations, and strategic communication represent a distinctive professional context in which artificial intelligence participates directly in the production, interpretation, dissemination, and evaluation of communication. Unlike many other professions, media specialists interact with AI throughout the entire editorial workflow, beginning with information retrieval and continuing through idea generation, content production, multilingual communication, audience analysis, verification, publication, and post publication evaluation. Consequently, professional performance depends not simply on the ability to operate AI systems but on the capacity to regulate continuous interaction between human cognition and algorithmic intelligence.

This distinction requires a broader conceptualisation of AI literacy. Within media education, artificial intelligence cannot be understood exclusively as a digital tool supporting isolated professional tasks. Instead, it functions as an active cognitive participant influencing editorial reasoning, communication strategies, and professional decision making. The educational objective therefore extends beyond technological competence toward the development of cognitive mechanisms capable of coordinating human expertise with AI assisted editorial processes.

The analysis further demonstrates that no existing AI literacy framework explicitly conceptualises the cognitive mechanism through which media professionals transform AI generated information into professionally validated communication. Although contemporary models acknowledge critical evaluation and ethical reasoning, they generally treat these competencies as parallel components rather than as elements integrated through a central editorial decision making process. Consequently, insufficient attention has been devoted to the recursive interaction between technological knowledge, communication expertise, contextual interpretation, verification, ethical evaluation, and editorial accountability.

Building upon these observations, the present study introduces the concept of **Editorial Cognitive AI Literacy**, which conceptualises AI literacy as a domain specific professional competence for higher media education. Within this perspective, AI literacy is defined as the ability to organise, regulate, and critically evaluate collaboration between human cognition and artificial intelligence throughout the editorial process while preserving communicative quality, ethical responsibility, editorial autonomy, and public accountability.

The defining characteristic of this conceptualisation is **Editorial Judgement**, understood as the principal cognitive mechanism through which media professionals evaluate AI generated outputs, interpret communicative contexts, verify factual reliability, recognise ethical risks, justify editorial decisions, and assume responsibility for published content. Rather than representing an additional competency, Editorial Judgement functions as the integrative cognitive process coordinating all other dimensions of AI literacy during professional media practice.

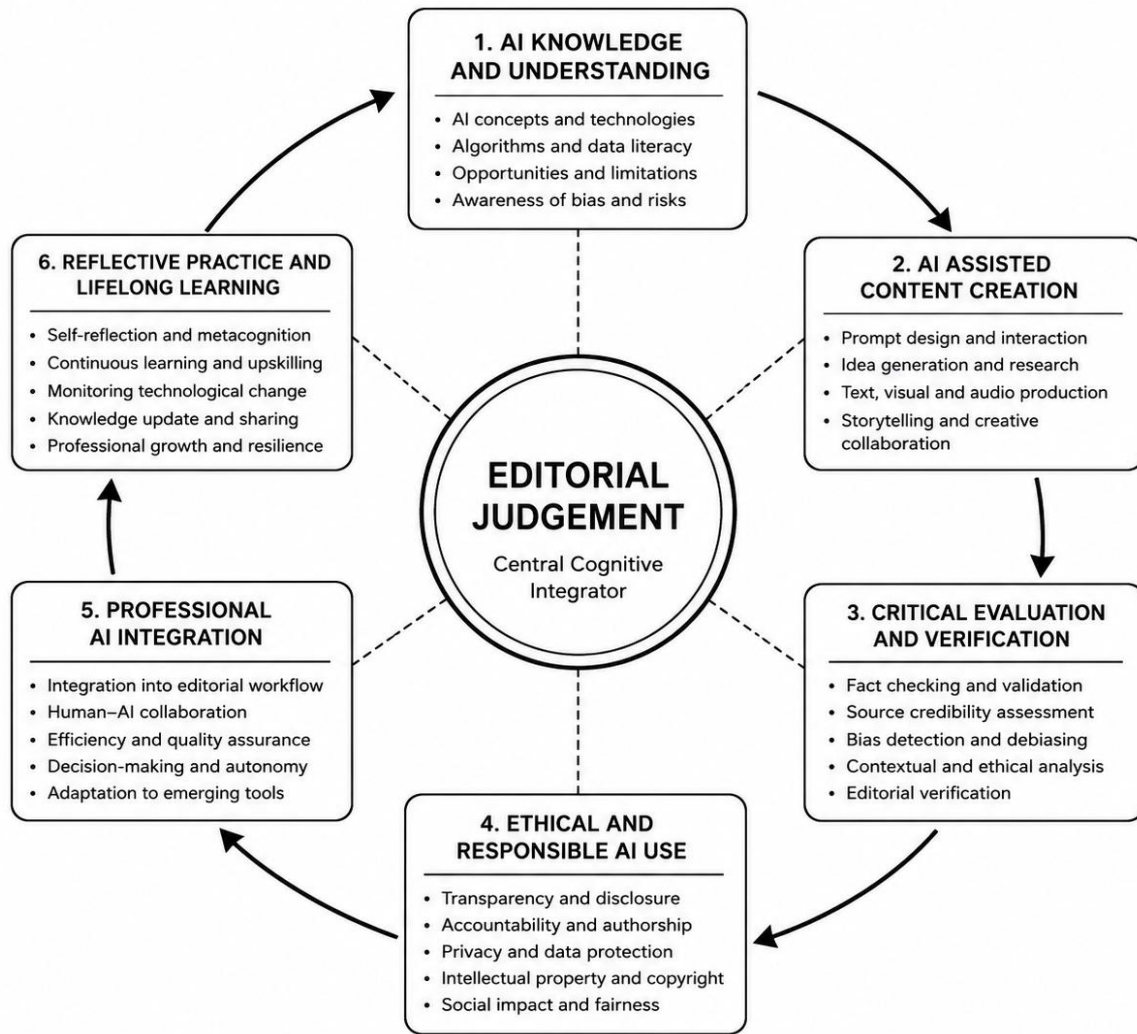
To operationalise this theoretical perspective, the following section presents the **Editorial Cognitive AI Literacy Model (ECAIL)**.

#### **4.3. Editorial Cognitive AI Literacy Model (ECAIL)**

Based on the comparative analysis of international AI policy documents, competency frameworks, regulatory initiatives, and contemporary research, this study proposes the **Editorial Cognitive AI Literacy Model (ECAIL)**, an original conceptual framework specifically developed for higher media education (Figure 1). Unlike existing AI literacy models, which primarily conceptualise AI literacy as a set of technological or educational competencies, ECAIL reconceptualises AI literacy as a recursive editorial cognitive system that integrates technological competence, communication expertise, critical evaluation, ethical responsibility, and reflective professional development within a unified theoretical framework. The model is grounded in the assumption that artificial intelligence should be understood not as an autonomous producer of media content but as a cognitive partner supporting human editorial activity. Throughout the editorial workflow, AI contributes to information retrieval, idea generation, language production, multilingual communication, audience analytics, content optimisation, and routine editorial assistance. However, responsibility for contextual interpretation, factual verification, ethical evaluation, editorial reasoning, and final publication decisions remains exclusively human. Accordingly, AI literacy is conceptualised as the professional capacity to organise productive collaboration between human cognition and artificial intelligence while preserving editorial autonomy, transparency, public accountability, and communicative credibility.

The proposed model further assumes that professional editorial activity constitutes a recursive rather than a linear cognitive process. Editorial decisions are continuously refined through verification, reflection, audience feedback, and professional experience, creating dynamic interactions among the constituent competencies of AI literacy. Consequently, the ECAIL framework is organised as six interdependent competency domains connected through continuous reciprocal relationships rather than sequential stages.

At the centre of this recursive system is **Editorial Judgement**, which functions as the principal cognitive integrator of the model. Editorial Judgement coordinates technological knowledge, communication expertise, critical reasoning, ethical reflection, contextual interpretation, and professional responsibility throughout the entire editorial process. Instead of representing an independent competency, it serves as the cognitive mechanism through which all components of AI literacy are transformed into professionally justified editorial decisions. In this way, Editorial Judgement distinguishes ECAIL from existing AI literacy frameworks by positioning human cognitive responsibility, rather than technological capability, as the organising principle of AI supported media communication.



**Figure 1. Editorial Cognitive AI Literacy Model (ECAIL) for Higher Media Education.**  
Source: Developed by the author.

Figure 1 illustrates the Editorial Cognitive AI Literacy Model (ECAIL), developed through the comparative synthesis of international AI policy documents, contemporary AI literacy frameworks, journalism research, and communication studies. The model conceptualises AI literacy as a recursive editorial cognitive system rather than a collection of independent digital competencies. Its architecture reflects the convergence of six competency domains consistently identified across international educational frameworks while simultaneously incorporating profession specific requirements characteristic of journalism, advertising, public relations, and strategic communication.

Unlike existing AI literacy models, which generally organise competencies as parallel educational dimensions, ECAIL introduces **Editorial Judgement** as the principal cognitive integrator coordinating the interaction between technological competence, communication expertise, critical evaluation, ethical reasoning, professional implementation, and reflective learning. Consequently, the model explains not only **what** competencies media professionals require but also **how** these competencies continuously interact throughout AI supported editorial practice.

#### **4.3.1. Conceptual Architecture of the ECAIL Model**

The proposed Editorial Cognitive AI Literacy Model is organised as a recursive cognitive system rather than a linear competency framework. This architectural decision emerged

directly from the comparative analysis of international AI competency frameworks, educational policy documents, and contemporary scholarship on journalism, communication, and AI literacy. Although these sources consistently identify similar competency domains, they largely conceptualise them as parallel educational outcomes without explaining how they interact during authentic professional practice.

The present study argues that editorial work does not proceed through isolated or sequential competencies. Professional communication is characterised by continuous interaction between information gathering, content production, verification, ethical reflection, audience considerations, technological adaptation, and editorial decision making. Each editorial action influences subsequent decisions while simultaneously requiring reassessment of previous stages. Consequently, AI literacy within media education should be understood as a recursive cognitive process in which competencies are continuously revisited, refined, and integrated throughout editorial activity.

The six competency domains included in the ECAIL framework were derived through conceptual synthesis rather than arbitrary selection. Each domain represents a recurring competency area identified across international educational frameworks while simultaneously addressing professional requirements specific to journalism, advertising, public relations, and strategic communication. Collectively, these domains encompass the complete cycle of AI supported editorial practice, beginning with foundational technological understanding and progressing through AI assisted production, critical evaluation, ethical reasoning, professional implementation, and reflective lifelong learning.

Unlike existing AI literacy frameworks, the proposed model does not assign equal structural status to all competencies. Instead, the recursive interaction among competency domains is coordinated through **Editorial Judgement**, which occupies the conceptual centre of the framework. Editorial Judgement functions as the cognitive mechanism through which technological knowledge, communication expertise, contextual interpretation, verification, ethical reasoning, and professional responsibility are synthesised into coherent editorial decisions. This central positioning reflects the fundamental assumption that although artificial intelligence increasingly supports editorial activities, responsibility for meaning making, public accountability, and communicative integrity remains exclusively human.

Accordingly, the architecture of the ECAIL model reflects a shift from technology centred AI literacy towards human centred editorial cognition. Rather than preparing students simply to use artificial intelligence effectively, the model aims to develop professionals capable of critically managing collaboration between human cognition and intelligent systems while maintaining editorial autonomy, ethical responsibility, and public trust.

#### **4.3.2. AI Knowledge and Understanding**

The comparative analysis of international AI competency frameworks consistently identifies foundational AI knowledge as the prerequisite for responsible interaction with intelligent systems. Within higher media education, however, this competency extends beyond technical familiarity with artificial intelligence. Future communication professionals require a comprehensive understanding of how AI influences information production, editorial decision making, audience engagement, and public communication.

Accordingly, the first competency domain establishes the cognitive foundation of the ECAIL model. Students develop conceptual knowledge of artificial intelligence, generative models, algorithms, data literacy, and machine learning while simultaneously recognising technological limitations, algorithmic bias, hallucinations, and potential ethical risks associated with AI generated content. Rather than encouraging technological dependence, this competency promotes informed, critical, and professionally responsible interaction with intelligent systems. As the initial stage of the recursive cycle, it provides the knowledge base upon which all subsequent editorial competencies are constructed.

#### **4.3.3. AI Assisted Content Creation**

The growing integration of generative artificial intelligence into professional media practice has transformed content creation into a collaborative process between human editors and intelligent systems. Contemporary communication professionals increasingly employ AI during idea generation, information retrieval, language production, visual design, multilingual communication, and audience adaptation. Consequently, AI assisted content creation represents one of the defining competencies of modern editorial practice.

Within the ECAIL framework, this competency domain focuses on the effective integration of AI into authentic communication workflows. Students develop practical abilities in prompt engineering, information retrieval, textual, visual, and multimedia content production, storytelling, and creative collaboration with AI technologies. However, the model explicitly assumes that communicative intention, narrative coherence, editorial quality, and professional responsibility remain under human control. Artificial intelligence therefore functions as a cognitive partner supporting creativity and productivity rather than replacing professional editorial expertise.

#### **4.3.4. Critical Evaluation and Verification**

The comparative analysis identifies critical evaluation as one of the most consistently recognised competencies across AI literacy frameworks. Nevertheless, within journalism and professional communication this competency acquires particular significance because AI generated content cannot be considered inherently reliable, regardless of its linguistic quality or persuasive character.

Accordingly, the third competency domain constitutes the epistemological core of the ECAIL model. AI generated outputs undergo systematic editorial verification through fact checking, source evaluation, contextual interpretation, bias identification, and communicative validation. Students learn to distinguish verified information from plausible algorithmic generation while applying analytical reasoning and editorial reflection to every stage of AI supported communication. This competency safeguards the credibility, accuracy, and professional integrity of media content before publication.

#### **4.3.5. Ethical and Responsible AI Use**

Responsible AI implementation extends beyond technical compliance with ethical principles and requires continuous consideration of the societal consequences of editorial communication. International AI governance documents consistently emphasise transparency, accountability, fairness, and human oversight as fundamental principles guiding AI supported decision making.

Within the ECAIL model, ethical responsibility is embedded throughout the editorial workflow rather than treated as an external professional obligation. Students develop competencies related to transparency, authorship, intellectual property, privacy protection, accountability, fairness, and the responsible disclosure of AI assisted content. Ethical reasoning accompanies every editorial decision, reinforcing the principle that public trust in media depends upon the responsible integration of artificial intelligence into professional communication.

#### **4.3.6. Professional AI Integration**

The transition from educational competence to professional practice requires the effective incorporation of artificial intelligence into sustainable editorial workflows. Rather than viewing AI as an isolated technological application, contemporary communication professionals increasingly operate within hybrid human AI environments where intelligent systems support multiple stages of editorial activity.

Accordingly, this competency domain focuses on the strategic integration of AI into professional communication processes. Students develop competencies related to

collaborative human AI interaction, workflow management, communication quality, adaptive technology use, innovation, and professional autonomy. Artificial intelligence enhances efficiency, decision support, and creative performance while preserving human responsibility for editorial judgement, communication quality, and professional independence.

#### **4.3.7. Reflective Practice and Lifelong Learning**

Because artificial intelligence evolves continuously, AI literacy cannot be achieved through the one time acquisition of technological knowledge. Professional competence requires ongoing adaptation to emerging technologies, changing communication practices, and evolving ethical standards.

The final competency domain therefore transforms AI literacy into a continuously developing professional capability. Reflection, metacognitive awareness, technological monitoring, lifelong learning, and continuous professional development enable communication specialists to respond effectively to rapidly changing AI environments. By reconnecting with the initial competency of AI Knowledge and Understanding, this domain completes the recursive structure of the ECAIL framework, demonstrating that professional AI literacy develops through continuous editorial learning rather than through static technological training.

#### **4.3.8. Editorial Judgement as the Central Cognitive Integrator**

The principal theoretical innovation of the Editorial Cognitive AI Literacy Model lies in the introduction of **Editorial Judgement** as its central cognitive construct. The comparative analysis undertaken in this study demonstrates that existing AI literacy frameworks consistently recognise critical thinking, ethical reasoning, and responsible decision making as essential competencies. However, none explicitly conceptualises the cognitive mechanism through which these competencies are integrated during authentic editorial practice.

To address this conceptual gap, ECAIL positions Editorial Judgement at the centre of the recursive competency system. Editorial Judgement is defined as the professional cognitive capacity to interpret, contextualise, verify, evaluate, and ethically justify editorial decisions throughout AI supported communication processes. Rather than representing an additional competency, it coordinates the continuous interaction among all six domains of the model, transforming technological knowledge, AI assisted production, critical evaluation, ethical reasoning, professional implementation, and reflective learning into coherent editorial decision making.

The central position of Editorial Judgement reflects a fundamental assumption of the proposed framework: although artificial intelligence increasingly supports communication processes, responsibility for meaning construction, contextual interpretation, ethical evaluation, and public accountability remains exclusively human. Editorial Judgement therefore functions as the principal cognitive mechanism preserving editorial autonomy, journalistic integrity, and public trust within increasingly AI mediated communication environments.

### **5. Discussion**

The rapid integration of artificial intelligence into journalism, advertising, public relations, and strategic communication has fundamentally transformed expectations regarding the competencies required of future communication professionals. While contemporary AI literacy frameworks have established an important foundation for responsible AI use in education, the present study demonstrates that these approaches remain predominantly interdisciplinary and technology oriented. The comparative analysis conducted in this research indicates that existing models insufficiently address the distinctive characteristics of media professions, where communication, interpretation, editorial accountability, and public responsibility constitute the core of professional activity. This finding supports the argument that AI literacy within higher media education requires a profession specific conceptualisation that extends beyond general digital competence.

The proposed Editorial Cognitive AI Literacy Model contributes to this discussion by reconceptualising AI literacy as a recursive editorial cognitive process rather than a collection of independent technological competencies. Unlike previous frameworks, which primarily define what learners should know or be able to do, ECAIL explains how these competencies interact during authentic editorial practice. The recursive structure of the model reflects the dynamic nature of professional communication, in which information retrieval, AI supported content creation, verification, ethical reflection, publication, audience response, and subsequent editorial decisions continuously influence one another. In this respect, the proposed framework shifts the focus of AI literacy from technology centred instruction towards the cognitive organisation of professional editorial reasoning.

The findings also contribute to the growing body of scholarship advocating domain specific interpretations of AI literacy. Long and Magerko (2020) established AI literacy as a multidisciplinary educational construct, while subsequent studies by Ng et al. (2021) and Kong et al. (2021) further expanded its pedagogical dimensions. UNESCO competency frameworks and the European Commission guidelines similarly emphasise ethical responsibility, critical thinking, transparency, and responsible human oversight. However, these influential approaches remain intentionally universal, enabling application across multiple educational disciplines. The present study argues that such generality, although valuable, does not fully capture the complexity of professional communication environments, where editorial decisions simultaneously involve technological, communicative, ethical, legal, and societal considerations. ECAIL therefore complements rather than replaces existing AI literacy frameworks by translating their general principles into a coherent conceptual framework specifically designed for journalism, advertising, public relations, and strategic communication.

A central theoretical contribution of the proposed model is the introduction of **Editorial Judgement** as the organising cognitive mechanism of AI literacy. Existing frameworks recognise critical thinking, ethical reasoning, and responsible decision making as essential competencies, yet they rarely explain how these dimensions become integrated during authentic editorial practice. The present model addresses this conceptual limitation by positioning Editorial Judgement as the cognitive process through which AI generated information is interpreted, contextualised, verified, ethically evaluated, and transformed into professionally accountable communication. This reconceptualisation shifts the theoretical emphasis from technological capability towards human cognitive responsibility, thereby reinforcing the principle that editorial autonomy remains fundamental within increasingly AI mediated communication environments.

The study also contributes to competency based educational theory by proposing a recursive rather than linear understanding of professional competence. Contemporary educational research increasingly emphasises authentic performance, complex problem solving, metacognitive reflection, and lifelong learning as defining characteristics of professional expertise. The recursive architecture of ECAIL aligns with these perspectives by conceptualising AI literacy as a continuously evolving cognitive system in which knowledge acquisition, practical implementation, critical evaluation, ethical reasoning, and reflective learning repeatedly inform one another throughout professional practice. Consequently, AI literacy becomes an integral component of editorial thinking rather than an isolated technological subject within the curriculum.

Beyond its theoretical significance, the proposed model offers practical implications for curriculum design in higher media education. The six competency domains provide a structured framework for formulating learning outcomes, designing instructional activities, developing authentic assessment strategies, and integrating artificial intelligence across journalism, advertising, public relations, and strategic communication programmes. Rather

than introducing AI as a separate technological discipline, ECAIL supports its systematic integration throughout editorial education while maintaining communication quality, professional responsibility, and public accountability as the principal educational objectives. The conceptualisation of artificial intelligence as a cognitive partner also contributes to ongoing discussions regarding human AI collaboration in professional communication. Current public discourse frequently oscillates between two opposing narratives: AI as a replacement for human professionals or AI as merely a productivity tool. The proposed framework offers a third perspective by conceptualising AI as a collaborative cognitive system that enhances editorial creativity, analytical capacity, and communicative efficiency while preserving human authority over interpretation, ethical evaluation, and final editorial decision making. This human centred perspective aligns with contemporary international AI governance principles advocating meaningful human oversight and responsible AI implementation.

Despite these contributions, several limitations should be acknowledged. The present study adopts a qualitative conceptual design based on document analysis and theoretical synthesis rather than empirical validation. Accordingly, the proposed framework represents a theoretically grounded conceptual model whose practical effectiveness remains to be evaluated within authentic educational settings. Future research should examine the implementation of ECAIL in journalism and communication curricula, investigate the development of Editorial Judgement among students, and evaluate relationships among the six competency domains through empirical studies employing qualitative, quantitative, and mixed methodological approaches. Comparative investigations across educational systems, cultural contexts, and professional media environments would further contribute to validating and refining the proposed framework.

Overall, the findings suggest that AI literacy within higher media education should no longer be understood solely as technological preparedness for the use of intelligent systems. Instead, it should be conceptualised as the development of professional editorial cognition capable of coordinating technological competence, communication expertise, ethical responsibility, and critical reasoning within increasingly AI supported communication ecosystems.

## 6. Conclusions

The accelerating integration of artificial intelligence into journalism, advertising, public relations, and strategic communication requires a fundamental reconsideration of the competencies that higher media education should cultivate. Although existing AI literacy frameworks have significantly advanced understanding of responsible AI use, the present study demonstrates that these models remain predominantly interdisciplinary and technology oriented. They provide limited explanation of how AI related competencies operate within professional editorial environments characterised by continuous interaction between human cognition and intelligent systems.

To address this conceptual gap, the study proposed the **Editorial Cognitive AI Literacy Model (ECAIL)**, an original framework that reconceptualises AI literacy as a recursive editorial cognitive process specifically designed for higher media education. Drawing upon the comparative analysis of international AI policy documents, educational competency frameworks, journalism scholarship, and communication research, the proposed model organises AI literacy into six interdependent competency domains coordinated through **Editorial Judgement**, the central cognitive mechanism responsible for integrating technological knowledge, AI assisted content creation, critical evaluation, ethical reasoning, professional implementation, and reflective lifelong learning into coherent editorial decision making.

The principal theoretical contribution of the study lies in extending AI literacy theory beyond universal technological competencies towards a profession specific model centred on editorial

cognition. By introducing Editorial Judgement as the organising principle of AI supported communication, the framework provides a new perspective on the relationship between human expertise and artificial intelligence. Rather than viewing AI primarily as a technological capability, ECAIL conceptualises it as a collaborative cognitive environment in which human interpretation, contextual understanding, ethical responsibility, and public accountability remain the defining characteristics of professional media practice.

The proposed framework also offers practical implications for curriculum development, instructional design, competency assessment, and educational policy within journalism, advertising, public relations, and strategic communication programmes. The recursive organisation of the model supports the integration of AI across professional media education while preserving the central role of editorial autonomy, communication quality, and public trust.

Because the present investigation is conceptual in nature, empirical validation constitutes the next stage of the research programme. Future studies should examine the implementation of the ECAIL framework within higher education, evaluate the development of Editorial Judgement as a measurable educational outcome, and explore the applicability of the model across different institutional, cultural, and professional contexts. Such investigations will contribute to refining the framework and further advancing theoretical understanding of AI literacy in media education.

Ultimately, the Editorial Cognitive AI Literacy Model positions AI literacy not as the mastery of intelligent technologies themselves, but as the cultivation of human editorial cognition capable of ensuring that artificial intelligence serves professional communication without diminishing editorial autonomy, ethical responsibility, or public trust. This perspective reframes AI literacy as a fundamentally human centred competence and establishes a conceptual foundation for preparing future media professionals to navigate increasingly AI mediated communication environments.

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#### Abbreviations

|              |           |
|--------------|-----------|
| Abbreviation | Full Term |
|--------------|-----------|

|    |                         |
|----|-------------------------|
| AI | Artificial Intelligence |
|----|-------------------------|

ECAI Editorial Cognitive AI Literacy Model

EU European Union

OECD Organisation for Economic Co-operation and Development

PR Public Relations

UNESCO United Nations Educational, Scientific and Cultural Organization

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