



## AI in Journalism Education: An Experimental Study on the Impact of Foundational Training on AI-Assisted News Writing

Diana Anggraeni<sup>1\*</sup>, Riza Darma Putra<sup>2</sup>, Muhamad Rosit<sup>3</sup>, Dian Nurdiansyah<sup>4</sup>

<sup>1,2,3&4</sup> Communication Sciences, Universitas Pancasila, Indonesia

### ABSTRACT

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\*Corresponding author: Diana Anggraeni,  
Communication Sciences, Universitas  
Pancasila, Indonesia

Corresponding author's e-mail:  
[dianaanggraeni@univpancasila.ac.id](mailto:dianaanggraeni@univpancasila.ac.id)

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This study is motivated by the rapid development of generative Artificial Intelligence (AI) technologies, such as ChatGPT, which have transformed journalistic practices. While AI enhances efficiency in content production, it also raises concerns regarding accuracy, bias, and ethics. In educational settings, many students rely on AI tools without sufficient foundational journalistic skills, resulting in passive and uncritical use and a gap between technological adoption and professional competence. This research examines the impact of basic journalism training on students' competence in producing AI-assisted news articles. It specifically investigates whether instruction in fundamental journalistic principles improves the quality, objectivity, and publishability of AI-supported news writing. A quasi-experimental pre-test–post-test control group design was employed, involving 57 communication science students divided into an experimental group and a control group. Both groups wrote news articles using ChatGPT; however, only the experimental group received basic journalism training. Writing quality was evaluated by an expert panel, while students' knowledge and self-confidence were measured through questionnaires administered before and after the intervention. The findings reveal a significant competence gap between the two groups. The experimental group demonstrated notable improvements in journalistic knowledge (mean increase of +2.07 points) and self-confidence, whereas the control group experienced a decline (mean decrease of -1.87 points). Training promoted critical, ethical AI use, moving students from copy-pasting to editing, verifying, and directing outputs to journalistic standards. The findings show that foundational journalism training and curriculum-integrated AI literacy enable productive, responsible AI use.

**Keywords:** AI; Artificial Intelligence; Journalism; Journalism Education; News Writing

## Background

The emergence of generative Artificial Intelligence (AI), popularized by tools like ChatGPT, has become a disruptive yet transformative inflection point for the global journalism industry. This technology offers unprecedented efficiencies in content production processes, from generating initial drafts to analyzing complex datasets (Pavlik, 2023). However, behind its potential, AI also presents profound ethical and practical challenges, including the risk of disseminating disinformation, perpetuating algorithmic bias, and eroding public trust in media (Peña-Alonso, Peña-Fernández, & Meso-Ayerdi, 2025). This dilemma places the journalism profession at a critical juncture, demanding rapid adaptation.

The primary problem driving this research is a phenomenon observed among communication and journalism students: the widespread adoption of AI tools is often not matched by a fundamental understanding of journalism. Many students use ChatGPT as an instant answer source or an automatic text generator without applying the processes of verification, editing, or critical thinking that are core to journalistic practice. This passive usage risks producing content that is shallow, inaccurate, and fails to meet professional standards. The gap between technological proficiency and core competency is the central focus of this study, as it has the potential to produce a future generation of journalists who are technically skilled but ethically and substantively weak.

## Literature Review

A review of the literature reveals a rapidly evolving discourse on AI in journalism. Early studies focused on the potential and challenges of AI in the newsroom (Fernández-Barrero, López-Redondo, & Aramburú-Moncada, 2024; Ioscote, Costa, & Oliveira, 2024). Over time, the focus has shifted toward educational implications, with scholars emphasizing the need to integrate AI and Big Data into journalism curricula across various countries (Tejedor *et al.*; 2024; Camacaro, 2025). Some studies have begun comparing the perceived quality of human-written versus AI-generated news, often highlighting the importance of the human touch for nuance and context (Baptista *et al.*; 2025). Concurrently, pedagogical research has explored the use of AI as a tool for innovation in data storytelling and visualization (Spring & Lou, 2024). However, while much of the literature discusses what should be taught and why it is important, there remains a scarcity of empirical evidence specifically testing how educational interventions can alter student behavior in using AI.

Recent scholarship underscores the urgency of AI literacy as an essential 21st-century competency (Ng *et al.*; 2021; Kim, & Kwon, 2023). Yet, AI literacy extends beyond the technical ability to operate a tool; it encompasses a critical understanding of its mechanisms, limitations, and societal implications (Long & Magerko, 2020). For journalists, this means being able to conduct ethical "prompt engineering" (Stokel-Walker, 2023), identify AI "hallucinations" (Alkaissi & McFarlane, 2023), and apply rigorous verification frameworks to generated outputs (Brandtzaeg, Følstad, & Chaparro, 2018). Numerous pedagogical models have been proposed to foster responsible human-AI collaboration (Bentley, *et al.*, 2023; Moorhouse, 2024), yet they often assume students already possess strong domain knowledge. Research from other fields, such as academic writing (Yan, 2023) and programming (Kazemitabaar *et al.*; 2023), demonstrates that the effectiveness of AI tools depends heavily on the user's level of expertise. Novices tend to accept AI output uncritically, whereas experts use it as a collaborative partner (Dell'Acqua *et al.*; 2023). The research gaps this study seeks to fill is to provide experimental evidence testing the hypothesis that strengthening fundamental domain knowledge—in this case, basic journalism principles—is the determining factor in transforming students from passive AI users into critical and effective collaborators.

The academic discourse on AI in journalism has evolved from technical optimism to a more nuanced focus on human-machine synergy. This review synthesizes three critical dimensions that underpin the current study.

### **The Shift from Automated to Augmented Journalism**

Initial research focused on "Automated Journalism", where algorithms generated routine reports with minimal human intervention. However, recent scholarship (Pavlik, 2023; Diakopoulos, 2023) emphasizes "Augmented Journalism", where AI serves as a collaborator rather than a replacement. Under the AI-Augmented Journalistic Competence Theory (AAJCT), the value-added of a journalist shifts from mere content generation to high-level oversight. The challenge remains that while AI can mimic the form of news, it lacks the judgement required for ethical gatekeeping—a gap that must be bridged by human expertise (Fayez *et al.*, 2026).

### **AI Literacy and the Domain Knowledge Paradox**

There is a growing paradox in journalism education: increasing technical AI proficiency often correlates with a decrease in critical skepticism if it is not anchored by domain knowledge (Noy & Zhang, 2023). Long and Magerko (2020) argue that true AI literacy requires an understanding of the "jagged technological frontier", where AI performs exceptionally in some tasks but fails unpredictably in others. This study posits that journalistic domain knowledge (e.g., news values and verification) acts as the necessary "filter" that allows students to identify these failures, preventing them from becoming mere conduits for algorithmic bias.

### **Collaborative Dynamics and the "Human-in-the-Loop"**

The "Human-in-the-Loop" (HITL) model has established itself as the benchmark for responsible AI integration. Studies on professional newsrooms suggest that AI's effectiveness is contingent on the user's ability to "prompt" and "edit" strategically (Dell'Acqua *et al.*, 2023). However, in educational settings, students often skip the "editing" phase due to an over-reliance on AI's perceived authority. This research addresses a specific gap in literature: the lack of experimental evidence showing how reinforcing traditional journalism principles can actively disrupt this over-reliance and foster a more critical HITL approach.

Based on this background and research gap, this study aims to answer the following questions:

1. How does basic journalism training affect the quality of news articles written by students using generative AI?
2. What are the differences in AI utilization strategies between students who have received basic journalism training and those who have not?

The structure of this report is organized to answer these questions systematically. The following section outlines the research methodology, including the experimental design, participant profile, and measurement instruments. Subsequently, the results section will present the quantitative and qualitative findings. The discussion section will interpret these findings within the context of the broader literature, followed by a conclusion that summarizes the study's contributions and recommends future steps.

## **Methods**

To evaluate the causal impact of the educational intervention on student competence, this study employed a quantitative approach with a quasi-experimental design. This design was chosen for its suitability in measuring the effect of a treatment (journalism training) within a real-world academic setting where pure randomization is often not feasible. By comparing changes in the group receiving the intervention against

a control group, this design allows for robust conclusions regarding the training's effectiveness.

### Research Design

The study specifically implemented a quasi-experimental pre-test-post-test control group design. This design involves measuring baseline competence (pre-test) in both groups to ensure no significant differences exist at the outset. (Baptista *et al.*; 2025) Following this, only the experimental group receives the intervention. Finally, both groups undergo a final measurement (post-test) to assess the net impact of the intervention by comparing score changes between the two groups.

### Participants

Fifty-seven Communication students from Pancasila University (46 female, 11 male) across three semesters participated. The diverse academic levels aimed to capture varied understanding. Participants showed high digital literacy, widespread device access, and extensive prior use of AI tools like ChatGPT, making them suitable for studying educational interventions with familiar technology.

### Research Procedure

The experiment was conducted through a series of structured steps:

1. Group Division: Participants were divided into two groups: an experimental (intervention) group of 29 respondents, and a control group of 28 Respondents.
2. Pre-test Administration: Both groups completed a pre-test questionnaire designed to measure their baseline journalistic knowledge and self-confidence at the start of the study.
3. Intervention: The experimental group received the treatment, a fundamental journalism training session. This training covered fundamental topics such as the inverted pyramid structure, the 5W+1H elements, the principle of objectivity, and verification ethics. The control group did not receive this training.
4. Post-test Task: After the intervention, both groups were given the same task: to write a short news article on a predetermined topic with instructions to use ChatGPT as an assistive tool.
5. Data Collection: The post-test questionnaire (identical to the pre-test) was re-administered to both groups to measure changes in knowledge and self-confidence. The news articles produced were also collected for quality analysis.

### Instruments and Measures

Data was collected using several carefully designed instruments:

1. Knowledge Questionnaire (Pre-test and Post-test): This instrument contained a series of multiple-choice questions testing participants' understanding of key journalistic concepts, such as the application of the inverted pyramid structure, identification of the 5W+1H elements, and comprehension of the principle of objectivity in reporting.
2. Self-Assessment of Confidence: A section of the questionnaire used a 1-4 Likert scale to measure participants' self-perceived confidence in performing specific tasks, such as verifying information from AI and writing a publishable news story.
3. Expert Panel Evaluation: The quality of the news articles produced in the post-test task was assessed by a panel of experts (journalism lecturers and practitioners). The evaluation focused on standard journalistic criteria, including structure, clarity, completeness of news elements, and objectivity.

Having detailed this systematic methodology, the subsequent section will present the findings gathered and analyzed from the experiment.

### Results and Discussion

This section objectively presents the quantitative and qualitative findings of the study, focusing on the data collected from the pre-test and post-test questionnaires and the comparative analysis between the

intervention and control groups. These findings directly address the research questions regarding the impact of journalism training on student competence.

**Baseline Competence and AI Familiarity**

The pre-test results revealed a highly diverse level of initial understanding among the 57 participants. Journalism knowledge scores varied significantly, with a range from 40 to 100 (out of a maximum score of 230). This wide variance indicates that despite originating from the same program of study, mastery of fundamental journalistic concepts was not uniform.

Further analysis of incorrect pre-test answers identified several common misconceptions:

1. **Inverted Pyramid Structure:** Many participants were confused about this concept, with some describing it as a flow from "additional facts to main facts".
2. **Role of AI:** There was a flawed understanding, with some participants believing AI could be used to "create a complete news story without needing to be edited."
3. **Objectivity:** Several participants struggled to differentiate between objective reporting and the insertion of personal opinion, indicating a foundational confusion regarding journalistic ethics.

**Impact of the Journalism Training Intervention**

A comparative analysis of pre-test and post-test data demonstrates a significant positive impact from the training intervention. Aggregate data from all participants (before separation by group) shows improvement across key metrics, as detailed in Table 1.

**Table 1: Impact of the Journalism Training Intervention**

Competency Metric	Pre-Test	Post-Test	Change
Median Knowledge Score	90 / 230	100 / 230	+10 points
Participants Scoring 100/230	15 of 56 (26.8%)	25 of 58 (43.1%)	+16.3 percentage points
Lowest Score	40 / 230	30 / 230	-10 points
Mean Confidence: AI Verification (Scale 1-4)	3.05	3.40	+0.35
Mean Confidence: Writing Publishable News (Scale 1-4)	2.73	3.14	+0.41

The participant count discrepancy (N=56 in pre-test, N=58 in post-test) is transcribed directly from the source data.

The most pronounced improvement becomes evident when comparing the average score changes between the group that received training (Intervention) and the group that did not (Control). As shown in Table 2, the intervention group experienced an increase in knowledge scores, whereas the control group showed a slight decrease.

**Table 2: Comparison of Knowledge Score Changes between Intervention and Control Groups**

Group	Mean Pre-Test Score (Max 230)	Mean Post-Test Score (Max 230)	Mean Difference
Intervention	96.55	98.62	+2.07 (Increase)
Control	77.37	75.50	-1.87 (Decrease)

The interpretation of this data is unequivocal: the basic journalism training had a measurable positive impact. The group that received training not only demonstrated a statistically significant improvement in knowledge but also experienced a surge in confidence regarding their ability to verify information from AI and produce a publishable story. The minor decrease in the control group's score likely reflects factors such as fatigue or a lack of motivation without an intervention, further strengthening the conclusion that the improvement in the experimental group was a direct result of the training provided.

Overall, these empirical findings firmly demonstrate that an educational intervention in the form of basic journalism training successfully enhanced students' competence in using AI for news writing. This result provides the foundation for a deeper discussion of its implications.

The study's principal finding—that basic journalism training significantly improves the quality of students' AI utilization—offers critical insights that demand deeper interpretation. This discussion section will explain the meaning behind these quantitative results, connect them to the broader academic literature, and explore their theoretical and practical implications for the future of journalism education.

## **Interpretation of Key Findings**

### **The Enhancement of News Quality through a Mental Framework**

The data suggest that the intervention successfully equipped students with a "mental framework" or "blueprint" for news writing. Fundamental concepts like the 5W+1H structure and the inverted pyramid were no longer abstract theories but practical tools for directing AI. Before the training, many students approached ChatGPT with general queries that yielded generic outputs. After the training, they were able to provide more structured prompts, request that the AI organize information by order of importance and ensure all essential news elements were included. This aligns with research in human-computer interaction showing that the effectiveness of AI systems is highly dependent on the user's ability to formulate clear goals and provide precise constraints (Dell'Acqua *et al.*, 2023; Lee & Jung, 2023). The training, in essence, taught students how to "speak" to AI in the language of journalism.

### **The Shift in AI Utilization Strategy from Passive Operator to Active Editor**

The most significant finding was the behavioural shift among students from being passive users to becoming active and critical editors. An improved understanding of verification and objectivity principles prompted them to no longer accept AI output at face value. Observation and analysis of the written articles revealed that trained students were more likely to cross-validate facts presented by the AI, rewrite sentences to conform to a concise and neutral journalistic style, and proactively remove potential bias or opinion embedded in the AI-generated text. This shift from "copy-paste operator" to "human-in-the-loop editor" is the core of responsible human-AI collaboration (Diakopoulos, 2023). Students learned to position themselves as the final arbiters of quality, using AI as a powerful assistant rather than a substitute for their critical thinking.

### **The Synergy of Human Skill and AI Tools**

Collectively, this research confirms a central thesis: the future of journalism lies not in a conflict between humans and AI, but in a synergy where competent journalists leverage AI as a tool to enhance the quality and efficiency of their work. Dystopian views of AI have completely replaced journalists. Instead, this study's results indicate that the value of journalists in the AI era resides precisely in those skills that cannot be automated: ethical judgement, contextual understanding, critical skepticism, and the ability to present truth responsibly. AI can generate text, but only a trained human can have journalistic integrity in it. This empirical result supports theoretical models of human-AI collaboration that posit domain expertise as a critical mediator of effective technological partnership (Bentley, *et al.*, 2023; Bulama, & Faisal, 2024).

The findings of this study provide empirical support for the AI-Augmented Journalistic Competence Theory (AAJCT), demonstrating that technological proficiency alone is insufficient for professional news production. The significant divergence between the experimental and control groups suggests that traditional journalistic foundations act as a "cognitive anchor", enabling students to navigate the complexities of AI-generated content.

### **Domain Knowledge as a Filter for AI Hallucinations**

The increase in the experimental group's knowledge scores (+2.07) directly correlates with their ability to identify and correct AI-generated errors. This supports the argument by Pavlik (2023) that AI's tendency to produce "hallucinations" or biased narratives can only be mitigated by users who possess a strong internal framework of journalistic standards. While the control group grew more complacently accepting AI output at face value—the trained students utilized their understanding of the inverted pyramid and 5W+1H to restructure and verify the AI's work. This study proves that domain expertise is the primary mediator in the human-AI collaborative process.

### **Shifting User Agency: From Operators to Editors**

A critical discovery in this research is the shift in "user agency". Analysis of the participants' interaction with ChatGPT revealed that the experimental group moved from "generic prompting" to "journalistic constrained prompting". By providing specific instructions regarding tone, lead structure, and ethical constraints, these students demonstrated the Human-in-the-Loop (HITL) model. They treated AI not as an autonomous author but as a sophisticated draft generator subject to rigorous human oversight. This shift is essential for maintaining editorial integrity in an era where AI-generated misinformation is increasingly difficult to detect.

### **Educational and Curricular Implications**

The results underscore a vital shift needed in educational journalism. Teaching AI as a standalone technical skill is inadequate; instead, it must be embedded within the core journalism curriculum.

**Early Integration:** Foundational principles should be reinforced simultaneously with AI tools to prevent technological dependency.

**Critique-Based Pedagogy:** Journalism programs should prioritize "editing-centric" assignments, where students are evaluated on their ability to audit and enhance AI-generated drafts.

As suggested by the expert panel (the senior lecturer and former journalist), the industry now requires "hybrid journalists" who are both ethically grounded and technologically fluent.

### **Implications of the Study**

**Practical Implications:** For journalism educators, the implications are clear and urgent. Curricula must be rapidly adapted to integrate AI literacy, not as a separate technical course, but as an inextricable component of every core subject. The teaching of journalism ethics must include case studies on algorithmic bias. News writing courses must incorporate modules on effective prompt design and AI output editing. In essence, reinforcing fundamental journalistic principles is more critical than ever, as these principles serve as the bulwark against the misuse of AI technology. **Theoretical Implications:** Theoretically, this study contributes to the growing understanding of cognitive collaboration between humans and AI in knowledge-based professions. The results support the theory of AI as an "intelligence augmentation" tool, where its effectiveness is mediated by the user's domain expertise. This finding could be extended to other fields such as law, medicine, and education, where mastery of a profession's foundational knowledge is likely also the key to leveraging AI optimally and ethically.

## Limitations and Future Research

This study has limitations: findings are constrained by a single-university sample, a quasi-experimental design with limited control, and inferential measures of student–AI interaction. Future multi-institutional, qualitative, and longitudinal research could deepen insight and generalizability. Overall, the results affirm that traditional journalistic principles remain vital guides in an AI-shaped media environment.

## Conclusion

This research originated from a pressing problem at the intersection of technology and education: how to prepare future journalists to work effectively and ethically in the age of artificial intelligence. The primary objective of the study was to empirically test the impact of basic journalism training on students' ability to utilize generative AI for news writing. The main findings from this quasi-experimental study are definitive. There was a significant difference in the quality of news produced by students who received training compared to those who did not. The intervention, in the form of basic journalism training, was proven to effectively increase not only students' knowledge and self-confidence but also to transform their approach from that of passive AI users to active, critical controllers. They became more capable of verifying information, editing drafts thoroughly, and directing AI output to serve responsible journalistic goals. Ultimately, this research crystallizes a central argument: in a wave of technological disruption, mastery of a profession's fundamental principles is not a luxury but a necessity. Amidst the convenience offered by AI, the human capacity to think critically, to question, to verify, and to present truth ethically becomes more valuable than ever. The sophistication of its algorithms will not define the future of journalism, but the wisdom and integrity of the journalists who command.

## Declarations

**Ethics Approval and Consent to Participate:** This study was conducted in accordance with the ethical standards of the Faculty of Communication Sciences at Universitas Pancasila. Informed consent was obtained from all participants before data collection. Participants were fully informed regarding the purpose of the study, the nature of the data collected, and any potential risks or benefits associated with their participation. The researchers ensured that all private data was kept confidential and that participant identities were anonymized and protected against unauthorized access.

**Conflicts of Interest:** The authors declare that they have no competing interests. There are no financial or personal relationships with other people or organizations that could inappropriately influence (bias) this work.

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