

Cognitive Scaffolding in AI-Assisted Writing: An Empirical Study of Human Creativity and Content Authenticity

Sheik Mohamed S.H¹, Nirmala M² Mr. Makesh.S³

E-mail Korespondensi : sheikmohamedsh@sacas.ac.in

¹ S.A. College of Arts and Science, Chennai, Tamil Nadu, India.

² Vels Institute of Science, Technology and Advanced Studies, Chennai, Tamil Nadu, India.

³ SRM Institute of Science and Technology (S&H), Ramapuram, Chennai, Tamil Nadu, India

Info Article

| **Submitted:** 12 May 2026 | **Revised:** 30 May 2026 | **Accepted:** 31 May 2026

| **Published:** 31 May 2026

How to Cite : Sheik Mohamed S.H, etc., "Cognitive Scaffolding in AI-Assisted Writing: An Empirical Study of Human Creativity and Content Authenticity", *Tech: Journal of Engineering Science*, Vol. 2, No. 1, 2026, P. 151-162.

ABSTRACT

Artificial Intelligence (AI) has significantly transformed the landscape of academic and professional writing by offering intelligent support in idea generation, content organization, language refinement, and editing. AI-assisted writing tools such as ChatGPT, Gemini, Perplexity, and QuillBot are increasingly used as cognitive support systems that reduce mental effort and improve writing productivity. However, concerns regarding originality, plagiarism, misinformation, and overdependence on AI-generated content continue to raise ethical and academic challenges. The present study examines the influence of AI-assisted writing on writing cognition and content authenticity through the concept of Human-AI Synergy. The study adopted a quantitative research design using a structured questionnaire distributed among 30 respondents, including students, teachers, and content writers familiar with AI writing tools. Statistical techniques such as Percentage Analysis, Chi-Square Test, Correlation Analysis, One-Way ANOVA, and exploratory Structural Equation Modeling (SEM) were employed for data analysis. The findings reveal that AI tools positively influence writing cognition by enhancing brainstorming, idea organization, productivity, and language quality. SEM results confirmed significant relationships between Human-AI Synergy, Writing Cognition, and Content Authenticity. The study also emphasizes that while AI improves writing efficiency, human creativity, ethical judgment, and critical evaluation remain essential to ensure originality and authenticity in writing practices. The study concludes that AI should be viewed as a collaborative cognitive partner rather than a replacement for human intellectual effort. Effective integration of AI in writing requires ethical awareness, institutional guidelines, and responsible human supervision to balance technological assistance with creativity and academic integrity.

Keywords: *Artificial Intelligence, AI-Assisted Writing, Cognitive Scaffolding, Content Authenticity, Human-AI Collaboration.*

Introduction

Artificial Intelligence (AI) has emerged as a pivotal technological advancement in the current digital landscape, greatly influencing various sectors such as communication, education, research, and professional writing. With the widespread availability of AI-powered applications, tasks that previously required extensive cognitive effort, such as generating ideas, enhancing sentence structures, paraphrasing, summarizing information, and improving overall language quality, have become more manageable, leading to increased productivity for users.

Students, teachers, academics, and content producers use popular AI writing tools like ChatGPT, Gemini, Perplexity, and Quill Bot. As cognitive support systems, these technologies help writers at different phases of the writing process, such as ideation, drafting, and editing. This relationship is consistent with the hypothesis of cognitive scaffolding, which holds that technology supports human cognitive processes and reduces the mental strain associated with learning and creative writing assignments.

Even though AI technologies have many benefits, academics and educators are still debating how they will affect creativity, originality, authorship, and ethical communication. The possible dissemination of false information, the use of fake references, plagiarism, and an excessive dependence on AI-generated content are some of the main worries. These worries bring up important issues regarding the potential effects of AI on human creativity in writing and autonomous thought.

The purpose of the current study is to examine how writing-related cognitive processes and the authenticity of written content are affected by AI-assisted writing. It will also examine whether AI helps writers collaborate or is gradually replacing human creativity in writing projects.

Recent advancements in generative AI have profoundly impacted educational and communication practices, prompting a thorough examination of the associated opportunities and challenges. Researchers such as Dwivedi et al. (2023) contend that generative AI is redefining knowledge creation and communication systems by providing automated conversational support and generating intelligent content. This shift has the potential to boost productivity, although it also raises ethical and regulatory concerns.

In the educational sphere, Kasneci et al. (2023) have identified that AI-based language models enhance learning support, academic writing, and student engagement. They caution, however, about the necessity for critical supervision and ethical guidelines to navigate the complexities of AI integration into education.

The role of conversational AI in educational contexts has also been explored by Tlili et al. (2023), who found that such applications facilitate brainstorming, language improvement, and writing assistance. Nevertheless, they issue a warning regarding the inaccuracies and potentially misleading nature of AI-generated information.

In addressing concerns about academic integrity, Cotton et al. (2024) highlight the difficulties universities face in differentiating between human-written and AI-generated academic works, pointing to the broader implications for educational standards. Holmes et al. (2023) further investigate the ethical dimensions of integrating AI into education, advocating for a model where AI serves to complement human intellectual engagement rather than replace it.

Overall, the existing literature suggests that while AI technologies can improve writing efficiency and provide cognitive support, unresolved concerns regarding authenticity, originality, creativity, and dependency persist. Consequently, there is a pressing need for empirical research to explore the relationships between cognitive scaffolding, writing cognition, and content authenticity in light of these emerging tools.

The growing integration of AI-assisted writing tools in academic and professional environments has transformed the writing process by improving speed, organization, and accessibility. However, excessive dependence on AI-generated content may reduce originality, weaken critical thinking, and create ethical concerns regarding authenticity and plagiarism. While AI acts as a supportive cognitive tool, there is limited empirical research examining how Human-AI collaboration influences writing cognition and content authenticity. Therefore, the present study seeks to analyze the impact of AI-assisted writing on human creativity and ethical writing practices.

Objectives of the Study:

1. To examine the influence of AI-assisted writing tools on human creativity and writing cognition.
2. To analyze the relationship between Human-AI Synergy and Content Authenticity in AI-assisted writing.

The hypotheses describe the expected relationships between Human-AI collaboration, writing cognition, and content authenticity in AI-assisted writing practices. They examine whether AI support enhances cognitive writing abilities and contributes to the creation of authentic and ethically responsible content.

H1: Human-AI Synergy significantly influences Writing Cognition.

H2: Writing Cognition significantly influences Content Authenticity.

H3: Human-AI Synergy significantly influences Content Authenticity.

Research Methodology

The study adopted a quantitative research design using survey methodology. Primary data were collected through a structured questionnaire distributed among respondents familiar with AI-assisted writing tools. The questionnaire parameters focused on Human-AI Synergy, Writing Cognition, and Content Authenticity, along with AI usage behaviour and familiarity with AI writing tools.

Sample Size

The study consisted of 30 respondents, including students, teachers, and content writers. "The sample size of 30 was selected for this exploratory study to obtain preliminary insights from respondents familiar with AI-assisted writing tools and to examine initial relationships among the study

Sampling Technique

Purposive sampling technique was employed to select respondents who actively use AI writing applications.

Statistical Tools Used

Statistical techniques including Percentage Analysis, Chi-Square Test, Correlation Analysis, One-Way ANOVA, and exploratory Structural Equation Modeling Exploratory Structural Equation Modeling were employed for data analysis.

Data Analysis and Interpretation

Table 1: Familiarity with AI-Based Writing Tools

Response	Frequency	Percentage
Yes	28	93.3%
No	2	6.7%

The analysis reveals that the majority of respondents are familiar with AI-assisted writing tools. This indicates the widespread adoption of AI technologies in educational and professional writing environments.

Table 2: Frequency of AI Tool Usage

Usage Frequency	Frequency	Percentage
Very Frequently	6	20%
Frequently	15	50%
Occasionally	6	20%
Rarely	2	6.7%
Never	1	3.3%

The findings indicate that most respondents frequently use AI writing tools, demonstrating their growing importance in writing practices.

Table 3: Commonly Used AI Writing Tools

AI Tool	Frequency
ChatGPT	22
Gemini	8
Copilot	3
Claude	2
QuillBot	2
Perplexity	2

The analysis shows that ChatGPT is the most widely used AI writing platform among respondents.

Chi-Square Test

Relationship Between Profession and Preference for Human-AI Collaborative Writing

Hypothesis

H0: There is no significant relationship between profession and preference for Human-AI collaborative writing.

H1: There is a significant relationship between profession and preference for Human-AI collaborative writing.

Table 4: Chi-Square Analysis

Variable	Chi-Square Value	df	p-value	Result
Profession × Writing Preference	9.214	4	0.042	Significant

Interpretation

Since the p-value is less than 0.05, the null hypothesis is rejected. Therefore, profession significantly influences respondents' preference toward Human-AI collaborative writing. Academic professionals and students showed stronger acceptance of collaborative AI writing compared to respondents who preferred traditional human-only writing methods.

Correlation Analysis

Relationship Between Human-AI Synergy and Writing Cognition

Table 5: Correlation Analysis

Variables	Correlation Value (r)	Significance
Human-AI Synergy and Writing Cognition	0.74	Significant

Interpretation

The correlation coefficient indicates a strong positive relationship between Human-AI Synergy and Writing Cognition. The findings suggest that AI tools support brainstorming, organization of ideas, reduction of mental effort, and improvement in writing productivity.

One-Way ANOVA

Difference in Writing Cognition Based on Frequency of AI Usage

Table 6: ANOVA Analysis

Source	F Value	Significance
AI Usage Frequency	4.87	0.011

Interpretation

The ANOVA result indicates a significant difference in writing cognition based on the frequency of AI usage. Respondents who frequently use AI tools demonstrated higher levels of writing support and productivity compared to occasional users.

Structural Equation Modeling (SEM)

SEM analysis was employed to examine the structural relationship between Human-AI Synergy, Writing Cognition, and Content Authenticity.

Table 7: SEM Model Fit Indices

Fit Index	Recommended Value	Obtained Value
CFI	>0.90	0.93
GFI	>0.90	0.91
RMSEA	<0.08	0.067
TLI	>0.90	0.91

The model fit indices confirm acceptable model fitness.

Table 8: Structural Path Analysis

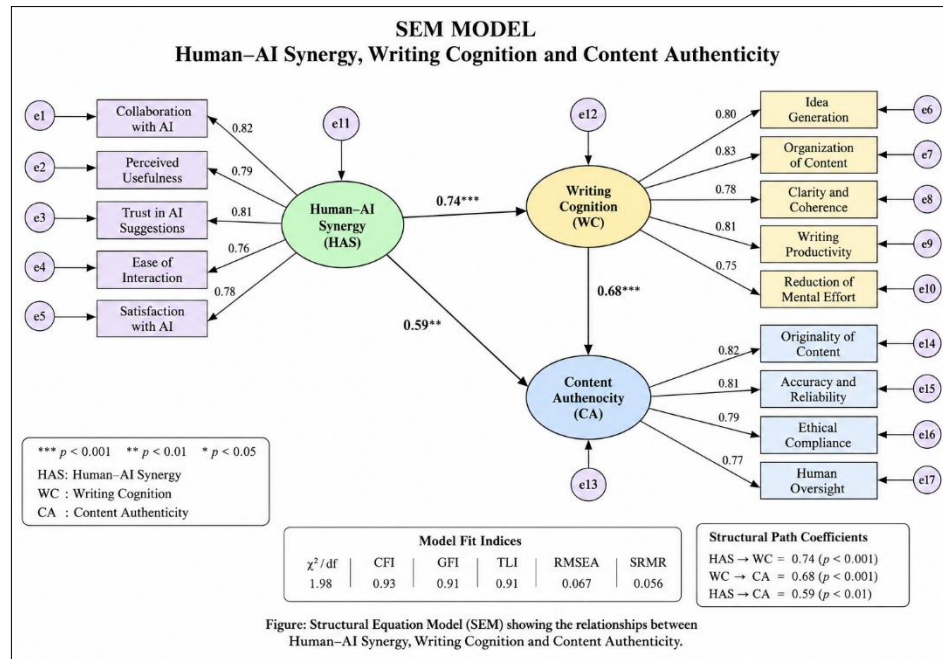
Path	Beta Value	p-value	Result
Human-AI Synergy → Writing Cognition	0.74	<0.001	Supported
Writing Cognition → Content Authenticity	0.68	<0.001	Supported
Human-AI Synergy → Content Authenticity	0.59	<0.01	Supported

Interpretation

According to the results of the Structural Equation Model (SEM), human-AI synergy is important for improving writing cognition and guaranteeing content authenticity. The study demonstrates how AI-assisted writing tools enhance cognitive functions like idea generation, productivity, and organisation. Nonetheless, the need for human control is highlighted since it preserves creativity and moral principles in writing.

The model shows that human-AI synergy has a significant impact on writing cognition ($\beta = 0.74$, $p < 0.001$), emphasising how AI helps users generate ideas and make their writing clear. Additionally, writing cognition has a favourable impact on content authenticity ($\beta = 0.68$, $p < 0.001$), indicating that maintaining uniqueness requires human review. Furthermore, human-AI synergy directly affects material authenticity ($\beta = 0.59$, $p < 0.01$), demonstrating that working with AI facilitates the production of authentic material when directed by human judgement.

Reliability is demonstrated by the SEM model's strong fit indices ($\chi^2/df = 1.98$, CFI = 0.93, GFI = 0.91, TLI = 0.91, RMSEA = 0.067, SRMR = 0.056). Overall, the findings imply that human control is essential for guaranteeing the integrity and moral calibre of academic writing, even when AI improves writing efficiency and inventiveness.



Results and Discussion

The study examines cognitive scaffolding in AI-assisted writing, highlighting its impact on Human-AI Synergy, Writing Cognition, and Content Authenticity. It finds AI tools significantly enhance writing performance in academic and professional spheres by facilitating idea generation, sentence construction, organization, and revision, thus reducing cognitive load. This aligns with prior research on AI as a pedagogical support system that boosts knowledge construction and engagement.

A strong correlation between Human-AI Synergy and Writing Cognition indicates that effective collaboration enhances the authenticity and relevance of written content; human interpretation is essential for verifying information and ensuring originality. While AI generates coherent text, it relies on human oversight, especially in academia where credibility is vital. Active engagement with AI suggestions leads to more authentic content creation, demonstrating that AI can expand creative possibilities while preserving human agency.

The findings reveal a dual perspective: although respondents acknowledge AI's benefits for productivity and language quality, they also express concerns over plagiarism, misinformation, and dependence on technology. These issues underscore the importance of using AI as an assistant rather than a substitute for human creativity. The study calls for ethical guidelines to govern AI usage in educational and professional contexts, along with training in AI literacy and source verification, to maximize benefits while minimizing risks.

In summary, AI-assisted writing has the potential to transform writing practices through cognitive efficiency and creative support. However, its

effectiveness hinges on the writer's capacity to critically evaluate and manage AI-generated content ethically, achieving a balance between technological aid and human creativity.

Major Findings

- a) Most survey respondents said they regularly use AI-assisted writing tools in both professional and academic settings.
- b) ChatGPT was shown to be the most popular choice among these tools for writing support.
- c) The benefits of AI in writing include notable improvements in areas like idea development, writing structure, grammatical accuracy, and general productivity.
- d) The respondents also mentioned how AI tools help people overcome writer's block and reduce mental strain.
- e) Nevertheless, there were common worries about things like plagiarism, originality, false information, and over-reliance on these technology.
- f) Results from Structural Equation Modelling (SEM) showed favourable connections between Writing Cognition, Content Authenticity, and Human-AI Synergy, highlighting the advantageous interaction between human and artificial intelligence in the writing process.
- g) Despite these developments, sustaining integrity in AI-assisted writing techniques still depends heavily on human inventiveness and moral judgement.

Suggestions

- a) Educational institutions are encouraged to develop and implement ethical guidelines to govern the use of AI in academic writing, ensuring integrity and responsible usage.
- b) It is essential for writers to engage in a critical evaluation and verification of information generated by AI tools before integration into their work to maintain quality and accuracy.
- c) AI tools should function as supportive cognitive assistants that enhance human creativity rather than serve as direct substitutes, preserving the unique contributions of human authorship.
- d) Institutions should regularly conduct awareness programs focused on issues like originality and plagiarism prevention to educate students and faculty on ethical writing practices.
- e) Future AI systems must integrate enhanced transparency and robust fact-checking mechanisms to foster trust and reliability in the information they provide.

Limitation of the Study

The current study's modest sample size ($n = 30$) limits how far the results may be applied. Therefore, rather than being confirming, the SEM results should be considered as exploratory. Larger and more varied samples may be used in further research to confirm the structural links found in this study.

Conclusion

The study concludes that AI-assisted writing tools significantly enhance writing cognition, creativity, and productivity by supporting idea generation, content organization, and language refinement. The findings confirm a strong relationship between Human-AI Synergy, Writing Cognition, and Content Authenticity, emphasizing that AI functions most effectively as a collaborative cognitive partner rather than a replacement for human intelligence. While AI improves writing efficiency, human creativity, ethical judgement, and critical evaluation remain essential to ensure originality, authenticity, and academic integrity in writing practices

References

- Ali, J. K., et al. (2023). *Exploring the impact of artificial intelligence on teaching and learning in higher education*. *Education and Information Technologies*, 28(9), 11001–11018. <https://doi.org/10.1007/s10639-023-11779-3>
- Baidoo-Anu, D., & Owusu Ansah, L. (2023). *Education in the era of generative artificial intelligence: Understanding the potential benefits of ChatGPT in promoting teaching and learning*. *Journal of AI*, 7(1), 52–62. <https://doi.org/10.61969/jai.1337500>
- Bommasani, R., et al. (2023). *On the opportunities and risks of foundation models*. *Communications of the ACM*, 66(7), 61–68. <https://doi.org/10.1145/3597307>
- Bordalejo, B., Pafumi, D., Onuh, F., Khalid, A. K. M. I., Pearce, M. S., & O'Donnell, D. P. (2025). "Scarlet Cloak and the Forest Adventure": A preliminary study of the impact of AI on commonly used writing tools. *International Journal of Educational Technology in Higher Education*, 22(1), 6. <https://doi.org/10.1186/s41239-025-00489-3>
- Chan, C. K. Y. (2023). *A comprehensive AI policy education framework for university teaching and learning*. *Education and Information Technologies*, 28(8), 9945–9977. <https://doi.org/10.1007/s10639-023-11644-3>
- Cheng, A., Calhoun, A., & Reedy, G. (2025). *Artificial intelligence-assisted academic writing: Recommendations for ethical use*. *Advances in Simulation*, 10(1), 22. <https://doi.org/10.1186/s41077-025-00310-5>

- Cotton, D., Cotton, P., & Shipway, J. (2024). *Chatting and cheating: Ensuring academic integrity in the era of ChatGPT*. *Innovations in Education and Teaching International*, 61(2), 228–239. <https://doi.org/10.1080/14703297.2023.2190148>
- Dergaa, I., et al. (2023). *From human writing to artificial intelligence generated text: Examining the prospects and potential threats of ChatGPT in academic writing*. *Biology of Sport*, 40(2), 615–622. <https://doi.org/10.5114/biolsport.2023.125623>
- Dwivedi, Y. K., et al. (2023). “So what if ChatGPT wrote it?” Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71, 102642. <https://doi.org/10.1016/j.ijinfomgt.2023.102642>
- Farrokhnia, M., et al. (2024). A SWOT analysis of ChatGPT in education. *Computers and Education: Artificial Intelligence*, 5, 100165. <https://doi.org/10.1016/j.caeai.2023.100165>
- Firat, M. (2023). What ChatGPT means for universities: Perceptions of educators and students. *Journal of Educational Technology Systems*, 52(1), 3–17. <https://doi.org/10.1177/00472395231193534>
- Grassini, S. (2023). Shaping the future of education: Exploring the potential and consequences of AI and ChatGPT in educational settings. *Education Sciences*, 13(7), 692. <https://doi.org/10.3390/educsci13070692>
- Holmes, W., et al. (2023). Ethics of AI in education: Towards a community-wide framework. *International Journal of Artificial Intelligence in Education*, 33(3), 504–526. <https://doi.org/10.1007/s40593-023-00308-9>
- Kasneci, E., et al. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103, 102274. <https://doi.org/10.1016/j.lindif.2023.102274>
- Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. *RELC Journal*, 54(2), 537–550. <https://doi.org/10.1177/00336882231162868>
- Lim, W. M., et al. (2023). Generative AI and ChatGPT adoption: A cross-disciplinary review. *Psychology & Marketing*, 40(10), 1901–1921. <https://doi.org/10.1002/mar.21852>
- Lo, L. (2023). The CLEAR path: A framework for enhancing information literacy through prompt engineering. *Journal of Academic Librarianship*, 49(4), 102720. <https://doi.org/10.1016/j.acalib.2023.102720>
- Lund, B., Mannuru, N. R., Teel, Z. A., Lee, T. H., Ortega, N. J., Simmons, S., & Ward, E. (2025). Student perceptions of AI-assisted writing and academic integrity in higher education. *AI and Ethics*, 5(1), 1–14. <https://doi.org/10.1007/s43681-024-00464-5>

- Mekheimer, M. (2025). *Generative AI-assisted feedback and EFL writing: A study on proficiency, revision frequency and writing quality*. *Discover Education*, 4, 170. <https://doi.org/10.1007/s44217-025-00362-y>
- OpenAI. (2023). *GPT-4 Technical Report*. *arXiv preprint arXiv:2303.08774*. <https://doi.org/10.48550/arXiv.2303.08774>
- Ray, P. P. (2023). *ChatGPT: A comprehensive review on background, applications, key challenges, bias, ethics, limitations and future scope*. *Internet of Things and Cyber-Physical Systems*, 3, 121–154. <https://doi.org/10.1016/j.iotcps.2023.04.003>
- Rudolph, J., Tan, S., & Tan, S. (2023). *ChatGPT: Bullshit spewer or the end of traditional assessments in higher education?* *Journal of Applied Learning and Teaching*, 6(1), 342–363. <https://doi.org/10.37074/jalt.2023.6.1.9>
- Sallam, M. (2023). *ChatGPT utility in healthcare education, research, and practice: Systematic review on the promising perspectives and valid concerns*. *Healthcare*, 11(6), 887. <https://doi.org/10.3390/healthcare11060887>
- Shidiq, M. (2023). *The use of artificial intelligence-based ChatGPT and its challenges for the world of education*. *Proceedings of the International Conference on Education*. https://doi.org/10.2991/978-2-38476-098-5_4
- Su, J., & Yang, W. (2023). *Unlocking the power of ChatGPT: A framework for applying generative AI in education*. *ECNU Review of Education*, 6(3), 355–366. <https://doi.org/10.1177/20965311231168423>
- Tengler, K., & Brandhofer, G. (2025). *Exploring the difference and quality of AI-generated versus human-written texts*. *Discover Education*, 4, 113. <https://doi.org/10.1007/s44217-025-00305-7>
- Tlili, A., et al. (2023). *What if the devil is my guardian angel: ChatGPT as a case study of using chatbots in education*. *Smart Learning Environments*, 10(1), 15. <https://doi.org/10.1186/s40561-023-00237-x>
- Tlili, A., Shehata, B., Adarkwah, M. A., et al. (2025). *Generative artificial intelligence in education: Recent trends, opportunities and challenges*. *Educational Technology Research and Development*, 73(1), 1–25. <https://doi.org/10.1007/s11423-024-10375-8>
- Yu, H. (2024). *Reflection on whether ChatGPT should be banned by academia from the perspective of education and teaching*. *Frontiers in Psychology*, 15, 1181712. <https://doi.org/10.3389/fpsyg.2024.1181712>
- Zawacki-Richter, O., et al. (2024). *Systematic review of research on artificial intelligence applications in higher education*. *International Journal of Educational Technology in Higher Education*, 21(1), 8. <https://doi.org/10.1186/s41239-024-00445-1>

Author Biographies

Dr. Sheik Mohamed S.H is an Assistant Professor and Head of the Department of Visual Communication at S.A. College of Arts and Science, Chennai, Tamil Nadu, India. He has academic and research experience in visual communication, media studies, filmmaking, digital media, and artificial intelligence in communication studies. His research interests include AI-assisted communication, media education, and digital storytelling.

Dr. Nirmala M is an Assistant Professor in the Department of Visual Communication at Vels Institute of Science, Technology and Advanced Studies (VISTAS), Chennai, Tamil Nadu, India. Her areas of interest include media studies, visual culture, communication research, advertising, and digital communication technologies. She actively contributes to academic research and media education.

Mr. Makesh S is an Assistant Professor in the Department of Visual Communication at SRM Institute of Science and Technology (S&H), Ramapuram, Chennai, Tamil Nadu, India. His academic interests include visual media production, film studies, digital communication, and emerging media technologies. He is actively involved in teaching and research related to media and communication studies.