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EDITORIAL

Science Communication in the Age of Artificial Intelligence

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Abstract

Artificial intelligence (AI) is fundamentally transforming science communication. This editorial for the JCOM Special Issue "Science Communication in the Age of AI" explores the implications of AI, especially generative AI, for science communication, its promises and challenges. The articles in this Special Issue can be categorized into four key areas: (1) communication about AI, (2) communication with AI, (3) the impact of AI on science communication ecosystems, and (4) AI's influence on science, theoretical and methodological approaches. This collection of articles advances empirical and theoretical insights into AI's evolving role in science communication, emphasizing interdisciplinary and comparative perspectives.

Keywords

AI tools in science communication; Public engagement with science and technology; Public perception of science and technology

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1 ▪ Introduction

Artificial intelligence (AI), and particularly generative AI (GenAI), is fundamentally transforming science communication, from how science-related content is produced over how it is disseminated all the way to public engagement with science [Biyela et al., 2024]. With large language models like GPT, Gemini, or Mistral, AI now generates text, images, and audiovisual content, disrupting traditional media and communication ecosystems and impacting the communication of science. While GenAI can enhance accessibility, interactivity, and efficiency in explaining complex topics through its dialogical potential, it also raises considerable concerns about transparency, biases, and dis- and misinformation [Gravel et al., 2023; Volk et al., 2024]. As AI becomes a key intermediary for science-related information [Greussing, Guenther, Baram-Tsabari, Dabran-Zivan, Jonas, Klein-Avraham, Taddicken, Agergaard, Beets, Brossard, Chakraborty et al., 2025; Fletcher & Nielsen, 2024], understanding its strengths and limitations is critical for the future of science communication — and for research in this field [Schäfer, 2023].

2 ▪ The origin story

This special issue originates from one of the first research conferences on science communication and AI: the "Science Communication in the Age of AI" conference, held at the University of Zurich in 2024 as the Annual Conference of the "Science Communication" Division of the German Communication Association (DGPuK) and organized by the editors of this special issue. The conference examined the role of AI in science communication, spanning topics from the communication of individual scholars and scientific institutions to science journalists, AI-powered chatbots and avatars, and the involvement of citizens and stakeholders. The response to the conference — 49 submissions, 34 presentations, and 98 authors from seven countries [see Metag, 2024, for a conference review] — underscored the growing interest in the topic. Building on this momentum, we invited 14 contributions from the conference for full paper submissions to this Special Issue of JCOM.

3 ▪ Contributions to this Special Issue

The contributions included in this special issue span four dimensions of research on science communication in the age of AI, covering research on (1) communication *about* AI, (2) communication *with* AI, (3) the impact of AI on science communication ecosystems, and (4) the impact of AI on science, theoretical and methodological approaches. The contributions reflect the state-of-the-art of science communication research [see also the review in Kessler et al., 2025] and extend it by diversifying geographic perspectives and methodological approaches. While previous studies have primarily focused on AI in the United States and the United Kingdom, this issue expands research to Europe, especially Germany, Denmark, and France, and Asia, including China, South Korea, and Taiwan, and other regions. It maintains a focus on both research on communication *about* AI and communication *with* AI, while research on AI's impact on science communication ecosystems or science remains limited. Methodologically, the special issue embraces a mix of quantitative, qualitative, experimental, and ethnographic approaches, contributing to a more comprehensive understanding of AI's evolving role in science communication.

(1) Communication *about* AI. The three contributions in this section examine communication *about* AI, both over time and across different countries. Two studies explore AI portrayals in social media and traditional media in France and Germany, emphasizing the influence of dominant actors and investigating visual representations of AI. The third study offers insights from the United States, China and Germany, shedding light on the dominant imaginaries of AI both across countries and across different stakeholder groups.

Tsimpoukis' [2025] article "Contesting dominant AI narratives on an industry-shaped ground: Public discourse and actors around AI in the French press and social media (2011–2022)" examines how AI discourses have evolved in nine French print media outlets and on two social media platforms — X and Facebook — over time. By analyzing framing strategies and key actors using quantitative content and social network analysis, the study uncovers the influence of digital companies and government narratives on public discourses around AI. The findings further show how divergent discourses contribute to political polarization on AI-related issues, such as facial recognition, in French public discourse.

The mixed-methods study "More than humanoid robots and cyborgs? How German print media visualize articles on artificial intelligence" by Leidecker-Sandmann et al. [2025] investigates how AI is visually represented and framed. Combining qualitative and quantitative approaches, it examines images published in six German media outlets in 2019 and 2022/23. Findings reveal that the types of visualizations of AI in news coverage are diverse and that human figures, rather than robots or cyborgs, dominate AI-related visuals. The study further suggests that German print media frames AI from a balanced perspective, acknowledging both opportunities and risks.

The qualitative study by Richter et al. [2025], "Negotiating AI(s) futures: Competing imaginaries of AI by stakeholders in the U.S., China, and Germany," explores how AI imaginaries are constructed and perceived across national contexts. Drawing on expert interviews with different stakeholder groups, including industry, government, academia, media and NGOs, the study shows heterogeneous discursive processes that challenge the notion of monolithic national AI perceptions. The analysis identifies cross-country and stakeholder-specific imaginaries, shedding light on the socio-political dynamics that influence AI's evolving role in society and its public communication.

(2) Communication *with* AI. The five articles in this section focus on science communication *with* AI, analyzing how different actors — including university communicators, science journalists, and audiences — communicate or engage with AI. Two of the contributions shed light on the communicator and intermediary perspectives, focusing on how AI is adopted and used in German universities and newsrooms. The latter three studies explore the adoption of AI from an audience perspective, examining use patterns across seven countries and analyzing Germans' trust in AI-generated health information and AI avatars.

Henke [2025] "The new normal: The increasing adoption of generative AI in university communication" investigates how German university communication departments use AI tools. Comparing quantitative survey data from university communicators from 2023 and 2024, the study shows an increase in AI adoption, particularly for text generation. While efficiency gains through AI tools are evident, concerns about factual accuracy and data privacy persist. The findings highlight the shift from cautious experimentation to mainstream

integration, with ongoing challenges related to quality, individuality, and ethical considerations.

The qualitative study "Away from this duty of chronicler and towards the unicorn: How German science journalists assess their future with (generative) Artificial Intelligence" by Guenther et al. [2025] examines the impact of AI on science news desks. Through semi-structured interviews with 30 German science journalists, the study explores how AI affects the processes of news selection, production, and distribution. While some journalists are optimistic about AI's impact and see benefits, others are skeptical and express concerns about job losses and ethical challenges, indicating that AI's role in journalism remains contested.

The cross-nationally comparative survey by Greussing, Guenther, Baram-Tsabari, Dabran-Zivan, Jonas, Klein-Avraham, Taddicken, Agergaard, Beets, Brossard, Anwesha Chakraborty et al. [2025], "Exploring temporal and cross-national patterns: The use of generative AI in science-related information retrieval across seven countries," analyzes how audiences use ChatGPT for science-related information searches. The study, based on survey data from Australia, Denmark, Germany, Israel, South Korea, Taiwan, and the United States and comparing data from 2023 and 2024, finds that AI adoption is widespread and growing. However, regional differences in usage patterns exist, with respondents from Taiwan, Israel, and South Korea reporting more use compared to the other countries included in the study. Moreover, science-information seekers tend to trust AI more than non-users and demonstrate a better understanding of the epistemic limitations of AI's role as an information source.

The two quantitative studies reported by Beckmann et al. [2025] in "ChatGPT, is the influenza vaccination useful? Comparing perceived argument strength and correctness of pro-vaccination arguments from AI and medical experts" explore public trust in AI-generated health information. Through an online survey, the first study finds that expert-generated pro-vaccination arguments receive higher quality ratings than AI-generated ones when authorship is undisclosed. The follow-up experiment reveals that, when disclosing authorship and labeling arguments as human- or AI-generated, Germans give human-generated arguments higher quality assessments. Trust in science plays a significant role in shaping these assessments, while trust in AI did not moderate the effect.

Baake et al.'s [2025] "Balancing realism and trustworthiness: AI Avatars in science communication" investigates the role of AI-generated avatars in science communication. An experiment examines how the avatar's realism and gender impact trustworthiness. The study finds that highly realistic avatars are perceived as more trustworthy, contradicting the Uncanny Valley effect, and male avatars are rated higher in expertise. Familiarity with AI-generated content and trust in science shape trustworthiness perceptions of AI avatars.

(3) Impact of AI on science communication ecosystems. This section explores how AI transforms traditional *science communication ecosystems* and consists of one ethnographic study, which examines changes in content creation and dissemination in the age of AI. While the abovementioned contributions by Richter et al. [2025], Guenther et al. [2025] and Henke [2025] also touch upon the perceived impacts of AI on key stakeholders, university communicators and science journalists, Walter and Friesike [2025] investigate how the imaginaries of recommendation algorithms on YouTube influence the production of science content. In their study "Behind the screens: How algorithmic imaginaries shape science

content on social media" the authors illuminate how science content for YouTube is created and identify three intermediary steps in which AI-based algorithms shape the content creation process. Based on a two-year ethnography in a German public service broadcaster, the study reveals what algorithmic imaginaries content creators hold and how these impact the development of content strategies and the production practices to increase content visibility. The findings offer a nuanced perspective on the indirect role of algorithms in shaping science communication content production and visibility.

(4) Impact of AI on science, theoretical and methodological approaches. This section addresses AI's impact on scientific research, focusing on how AI transforms theories and methodologies in science communication research. It consists of one methodological contribution addressing AI's potential to enhance content analysis research and one literature review revealing publication trends in science communication research in the age of AI.

Hohenwalde et al.'s [2025] contribution "ChatGPT's potential for quantitative content analysis: Categorizing actors in German news articles" examines the feasibility of using ChatGPT for replacing human coders in content analysis, identifying challenges related to automation and accuracy. Through three experiments, the study evaluates various prompting strategies and compares three GPT models by OpenAI (gpt-3.5-turbo, gpt-4o, gpt-4-turbo) for classifying actors in German-language news articles about science-related topics. The findings suggest that AI-assisted content analysis holds potential in automating actor classification by integrating gpt-4-turbo into a Named Entity Recognition Classification (NERC) pipeline. However, challenges remain in distinguishing actor categories and require careful methodological adjustments and validation of prompting strategies.

The essay "All eyez on AI: A roadmap for science communication research in the age of artificial intelligence" by Kessler et al. [2025], which concludes this JCOM Special Issue, reflects on the transformative role of AI in science communication research by mapping prior research and proposing a research agenda. It shows that while AI is increasingly shaping both scientific discourse and public engagement, research on its implications remains in an early stage, with a strong emphasis on public perceptions of AI rather than on AI's deeper systemic impact. The essay highlights existing research gaps and outlines key areas for future exploration, urging scholars to move beyond traditional conceptual and methodological approaches and considering AI not just as a subject of communication but as an active participant in shaping science communication ecosystems.

4 ▪ Outlook

The contributions in this Special Issue illustrate AI's transformative potential in reshaping science communication. They open new avenues for interdisciplinary and comparative research, while also identifying critical gaps and challenges that warrant further exploration. The articles expand our understanding of both communication about and with AI, of the impact of AI on science communication ecosystems, and of the impact of AI on science, theoretical and methodological approaches. By bringing together diverse perspectives, methodological approaches, and geographic contexts, these contributions offer a foundation for continued interdisciplinary research and dialogue. As AI continues to evolve, so too must our understanding of its impact on science communication — both in terms of its

opportunities and its limitations. We hope this collection serves as a catalyst for future studies that will deepen our knowledge of AI's role in shaping the ways science is communicated, understood, and engaged with across societies.

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References

Baake, J., Schmitt, J. B., & Metag, J. (2025). Balancing realism and trust: AI avatars in science communication. *JCOM*, *24*, A03. https://doi.org/10.22323/2.24020203

Beckmann, S. A., Link, E., & Bachl, M. (2025). "ChatGPT, is the influenza vaccination useful?" Comparing perceived argument strength and correctness of pro-vaccination-arguments from AI and medical experts. *JCOM*, *24*, A04. https://doi.org/10.22323/2.24020204

Biyela, S., Dihal, K., Gero, K. I., Ippolito, D., Menczer, F., Schäfer, M. S., & Yokoyama, H. M. (2024). Generative AI and science communication in the physical sciences. *Nature Reviews Physics*, *6*, 162–165. https://doi.org/10.1038/s42254-024-00691-7

Fletcher, R., & Nielsen, R. K. (2024). *What does the public in six countries think of generative AI in news?* Reuters Institute for the Study of Journalism. https://doi.org/10.60625/risj-4zb8-cg87

Gravel, J., D'Amours-Gravel, M., & Osmanlliu, E. (2023). Learning to fake it: limited responses and fabricated references provided by ChatGPT for medical questions. *Mayo Clinic Proceedings: Digital Health*, *1*, 226–234. https://doi.org/10.1016/j.mcpdig.2023.05.004

Greussing, E., Guenther, L., Baram-Tsabari, A., Dabran-Zivan, S., Jonas, E., Klein-Avraham, I., Taddicken, M., Agergaard, T. E., Beets, B., Brossard, D., Anwesha Chakraborty, A. F.-B., Huang, C.-J., Kankaria, S., Lo, Y.-Y., Middleton, L., Nielsen, K. H., Riedlinger, M., & Song, H. (2025). Exploring temporal and cross-national patterns: the use of generative AI in science-related information retrieval across seven countries. *JCOM*, *24*, A05. https://doi.org/10.22323/2.24020205

Greussing, E., Guenther, L., Baram-Tsabari, A., Dabran-Zivan, S., Jonas, E., Klein-Avraham, I., Taddicken, M., Agergaard, T. E., Beets, B., Brossard, D., Chakraborty, A., Fage-Butler, A., Huang, C.-J., Kankaria, S., Lo, Y.-Y., Nielsen, K. H., Riedlinger, M., & Song, H. (2025). The perception and use of generative AI for science-related information search: insights from a cross-national study. *Public Understanding of Science*. https://doi.org/10.1177/09636625241308493

Guenther, L., Kunert, J., & Goodwin, B. (2025). "Away from this duty of chronicler and towards the unicorn": how German science journalists assess their future with (generative) Artificial Intelligence. *JCOM*, *24*, A06. https://doi.org/10.22323/2.24020206

Henke, J. (2025). The new normal: the increasing adoption of generative AI in university communication. *JCOM*, *24*, A07. https://doi.org/10.22323/2.24020207

Hohenwalde, C. E., Leidecker-Sandmann, M., Promies, N., & Lehmkuhl, M. (2025). ChatGPT's potential for quantitative content analysis: categorizing actors in German news articles. *JCOM*, *24*, A01. https://doi.org/10.22323/2.24020201

Kessler, S. H., Mahl, D., Schäfer, M. S., & Volk, S. C. (2025). All eyez on AI: a roadmap for science communication research in the age of artificial intelligence. *JCOM*, *24*, Y01. https://doi.org/10.22323/2.24020401

Leidecker-Sandmann, M., Lüders, T., Moser, C., R. Boger, V., & Lehmkuhl, M. (2025). More than humanoid robots and cyborgs? How German print media visualize articles on artificial intelligence. *JCOM*, *24*, A09. https://doi.org/10.22323/2.24020209

Metag, J. (2024). #AISCICOMM24. Discussing the role of (generative) AI for science communication research and science communication practice. *JCOM*, *23*, R02. https://doi.org/10.22323/2.23050602

Richter, V., Katzenbach, C., & Zeng, J. (2025). Negotiating AI(s) futures: competing imaginaries of AI by stakeholders in the U.S., China and Germany. *JCOM*, *24*, A08. https://doi.org/10.22323/2.24020208

Schäfer, M. S. (2023). The notorious GPT: science communication in the age of artificial intelligence. *JCOM*, *22*, Y02. https://doi.org/10.22323/2.22020402

Tsimpoukis, P. (2025). Contesting dominant AI narratives on an industry-shaped ground: public discourse and actors around AI in the French press and social media (2012–2022). *JCOM*, *24*, A10. https://doi.org/10.22323/2.24020210

Volk, S. C., Schäfer, M. S., Lombardi, D., Mahl, D., & Yan, X. (2024). How generative artificial intelligence portrays science: interviewing ChatGPT from the perspective of different audience segments. *Public Understanding of Science*, *34*, 132–153. https://doi.org/10.1177/09636625241268910

Walter, C. E., & Friesike, S. (2025). Behind the screens: how algorithmic imaginaries shape science content on social media. *JCOM*, *24*, A02. https://doi.org/10.22323/2.24020202

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