Challenges of Misinformation in Online Learning: A Post-Pandemic Perspective

Subjects: Communication | Education & Educational Research
Contributor: Hedviga Tkácová

This entry examines the critical issue of misinformation within online learning environments following the COVID-19 pandemic, focusing on its types, spread, and consequences. It identifies key drivers of misinformation, such as reliance on unverified sources, limited media literacy, and emotional susceptibility during uncertainty. The entry analyses the effects of misinformation on students, educators, and the broader educational ecosystem, including behavioral disorders, reduced motivation, and misinformation-driven public anxiety. To address these challenges, the entry proposes strategies such as enhancing digital literacy, fostering critical thinking, and encouraging social interaction in virtual learning spaces. Ultimately, this work aims to equip educators, policymakers, and stakeholders with insights to develop a resilient, informed, and equitable post-pandemic educational framework.

misinformation   online learning   post-COVID-19 education   digital literacy   critical thinking

---

The largest pandemic in the past century has raised numerous questions regarding its direct and indirect effects on children and young people. Among student populations, severe dependencies were identified, manifesting as behavioral disorders, a loss of motivation, and even complete disengagement from distance learning [1][2]. Furthermore, the online environment experienced an increase in cyberbullying, the emergence and diagnosis of conditions associated with excessive Internet use, and other adverse outcomes directly linked to the prevalence of false information and misinformation [3][4]. These not only shaped the opinions of young people [5] but also significantly influenced educators, who frequently rely on online resources [6].

Additionally, during the pandemic, most children globally experienced extended interruptions in their regular education, with some being out of school for a year or more. This was largely due to challenges and limited access to alternatives for in-person learning [7][8]. Despite these difficulties, the shift to online education also fostered innovation, leading to the development of new digital learning tools and expanded access to educational resources.

The rapid digitalization of education during the COVID-19 pandemic introduced unprecedented opportunities and challenges within the educational landscape. One notable opportunity was, for example, the accelerated adoption of digital learning tools, which helped expand access to education [9], particularly for learners in remote or underserved areas [10]. Additionally, the shift to online learning fostered greater flexibility in how students could engage with content and allow for more personalized learning experiences [11]. Another key opportunity was the rise of collaborative online platforms, which facilitated peer-to-peer learning and allowed educators to connect with students in new, interactive ways [12]. Furthermore, the pandemic highlighted the potential for educational content to be delivered asynchronously, providing students with greater control over their learning pace [13]. These positive

developments paved the way for innovative approaches to education that continue to evolve. We can see that significant consequences emerged from the time individuals spent online during this period [14].

Similarly, online media has become the primary source of information for a large portion of the population [15][16][17], often shaping educational practices and access to knowledge. However, the sheer volume of available content makes it increasingly difficult to distinguish between credible sources and misinformation. The rapid spread of false or misleading educational materials has significantly influenced student learning outcomes and educators' reliance on digital tools. In many cases, the prevalence of misinformation has led educators to question the reliability of online resources, adversely affecting their trust in digital tools and the educational materials available through these platforms. As a result, online media has undermined the relevance of online sources that were previously trusted for accessing knowledge. Moreover, online media has amplified the risks of misinformation influencing online learning and its outcomes.

For example, one of the less explored repercussions of the pandemic was the rapid normalization of unverified or misleading educational resources, which found fertile ground in the haste to transition to digital learning. Under time pressure and with limited digital literacy skills—the ability to navigate, evaluate, and create information using digital technologies safely and effectively—many teachers and students often turned to online platforms lacking credibility or peer-reviewed content. Studies have shown that this issue is widespread, with many educators selecting educational technologies without fully assessing their credibility or reliability. For example, a report from the University of Chicago and New York University highlights how schools often choose online platforms, which may also lack credibility and peer-reviewed content [18]. Similarly, the U.S. Department of Education provides guidelines that warn against the use of unverified online educational services [19]. Additionally, another research found that the surge in the use of unverified online platforms significantly impacts the quality of education, as educators and students increasingly rely on platforms that do not offer peer-reviewed or credible materials [20]. This proliferation of low-quality information exacerbated existing problems using unreliable educational resources, leaving vulnerable populations at risk. Consequently, the phenomenon of misinformation in online learning not only influenced academic outcomes but also undermined trust in digital tools and pedagogical approaches [21].

Moreover, alongside these platforms, sources of disinformation and conspiracy theories proliferated. These sources proved not only unreliable but also dangerous, as they were linked to a heightened potential for influencing users' health-related behaviors and were associated with increased levels of negative effects, for example, public anxiety [22].

This entry focuses on misinformation in online learning, specifically exploring its types, spread, and effects in the post-pandemic period. It is conceptual in nature and does not rely on applied empirical research. Instead, it synthesizes existing theoretical frameworks, scholarly discussions, and documented observations to analyze the challenges posed by misinformation in online learning.

The paper explores how misinformation manifests within digital educational environments, the factors contributing to its spread, and the consequences of misinformation on learning, critical thinking, and the broader educational

ecosystem. The objective is to analyze the effects of misinformation on education in the aftermath of the COVID-19 pandemic and to identify effective strategies for mitigating its impact.

Let us add, in this entry, that the terms "educators" and "learners" are intentionally used to reflect the diverse roles and participants within the educational ecosystem. The term "educators" encompasses not only traditional classroom teachers but also a broader group of professionals involved in the design, facilitation, and support of learning, including lecturers or trainers. This choice highlights the multifaceted nature of education, particularly in the digital age, where roles extend beyond traditional teaching to include mentorship, content creation, and technological facilitation. Similarly, the term "learners" is employed to represent individuals engaged in the process of acquiring knowledge, regardless of age, formal enrollment, or learning environment. By using "learners" rather than "students", the study acknowledges the inclusivity of modern education, which spans formal settings, online platforms, and self-directed learning pathways. We believe these terms collectively emphasize the dynamic and interconnected nature of education, particularly in the context of online learning in the post-pandemic era.

References

1. Española, R.P.; Ouano, J.A. Understanding Motivation Loss and Behavioral Disengagement of Tertiary Students in Flexible Learning: A Self-Determination Theory Perspective. Malays. J. Learn. Instr. 2024, 21, 217–247.

2. Son, C.; Hegde, S.; Smith, A.; Wang, X.; Sasangohar, F. Effects of COVID-19 on College Students' Mental Health in the United States: Interview Survey Study. J. Med. Internet Res. 2020, 22, e21279.

3. Zhao, N.; Zhou, G. COVID-19 Stress and Addictive Social Media Use (SMU): Mediating Role of Active Use and Social Media Flow. Front. Psychiatry 2021, 12, 635546.

4. World Health Organization. Infodemics and Misinformation Negatively Affect People's Health Behaviours, New WHO Review Finds. Available online: https://www.who.int/europe/news-room/01-09-2022-infodemics-and-misinformation-negatively-affect-people-s-health-behaviours--new-who-review-finds (accessed on 1 September 2022).

5. Vokál, D.; Šmahel, D.; Dědková, L. MUNI Interdisciplinary Research Team on Internet and Society: Excessive Use of the Internet by Czech Adolescents: Comparison Before and During the COVID-19 Pandemic; Interdisciplinary Research Team on Internet and Society, Masarykova Univerzita: Brno, Czech Republic, 2021. (In Czech)

6. Goda, J. Main News and Zem i Vek Are Among the Most Trusted Media Outlets Among Teachers, According to a Survey. Available online: https://dennikn.sk/blog/1571691/hlavne-spravy-a-zem-a-vek-patria-podla-prieskumu-focusu-medzi-najdoveryhodnejsie-media-medzi-ucitelmi/ (accessed on 3 September 2019). (In Czech).

7. UNESCO. The Impact of the COVID-19 Pandemic on Education: International Evidence from the Responses to Educational Disruption Survey. 2022. Available online: https://unesdoc.unesco.org/ark:/48223/pf0000380398 (accessed on 24 January 2025).

8. OECD. Education and COVID-19: Focusing on the Long-Term Impact of School Closures. Available online: https://www.oecd.org/en/publications/education-and-covid-19-focusing-on-the-long-term-impact-of-school-closures_2cea926e-en.html (accessed on 29 June 2020).

9. World Economic Forum. The COVID-19 Pandemic Has Changed Education Forever. This Is How. Available online: https://www.weforum.org/stories/2020/04/coronavirus-education-global-covid19-online-digital-learning/ (accessed on 29 April 2020).

10. Tosto, S.A.; Alyahya, J.; Espinoza, V.; McCarthy, K.; Tcherni-Buzzeo, M. Online Learning in the Wake of the COVID-19 Pandemic: Mixed Methods Analysis of Student Views by Demographic Group. Soc. Sci. Humanit. Open 2023, 8, 100598.

11. Caroline; Oroh, O.; Pada, D. Enhancing Online Learning Experiences through Personalization Utilizing Recommendation Algorithms. Int. J. Softw. Eng. Comput. Sci. 2023, 3, 398–407.

12. Farrah, M.A.A.; Itkaidek, M.; Dandis, A. Online Collaborative Activities during COVID-19: Students' Perception. Randwick Int. Educ. Linguist. Sci. J. 2023, 4, 35–47.

13. Shlomo, A.; Rosenberg-Kima, R.B. F2F, zoom, or asynchronous learning? Higher education students' preferences and perceived benefits and pitfalls. Int. J. Sci. Educ. 2024, in print, 1–26.

14. WARC. Millenials and Generation Z Try New Brands During COVID Crises. Available online: https://www.warc.com/newsandopinion/news/millennials-and-gen-z-try-new-brandsduring-covid-crisis/43992?fbclid=IwAR1TIg5_IHk1STHmFbYFHHQyGcE_f55XePWKBexN9y79lbOMWt7YTrFC2Q (accessed on 19 August 2020).

15. Ho, H.-Y.; Chen, Y.-L.; Yen, C.-F. Different impacts of COVID-19-related information sources on public worry: An online survey through social media. Internet Interv. 2020, 22, 100350.

16. Blandi, L.; Sabbatucci, M.; Dallagiacoma, G.; Alberti, F.; Bertuccio, P.; Odone, A. Digital Information Approach through Social Media among Gen Z and Millennials: The Global Scenario during the COVID-19 Pandemic. Vaccines 2022, 10, 1822.

17. Leppert, R.; Matsa, K.E. More Americans—Especially Young Adults—Are Regularly Getting News on TikTok. Available online: https://www.pewresearch.org/short-reads/2024/09/17/more-americans-regularly-get-news-on-tiktok-especially-young-adults/ (accessed on 17 September 2024).

18. University of Chicago; New York University. UChicago, NYU Team Find Online Education Tools Pose Privacy Risks. Available online: https://news.uchicago.edu/story/uchicago-nyu-team-find-online-education-tools-pose-privacy-risks (accessed on 10 March 2023).

19. U.S. Department of Education. Protecting Student Privacy While Using Online Educational Services: Requirements and Best Practices: Requirements and Best Practices. 2014. Available online: https://studentprivacy.ed.gov/resources/protecting-student-privacy-while-using-online-educational-services-requirements-and-best (accessed on 24 January 2025).

20. Witherspoon, E.B.; Pardo, M.; Walters, K.; Garrett, R.; Hilbert, M.; Ford, J.; Hsin, L.B.; Rodgers, M.A.; Garcia Piriz, D.; Burr, L.; et al. Teacher Use of an Online Platform to Support Independent Practice in Middle School Mathematics During COVID-19 Disruptions. AERA Open 2024, 2024, 10.

21. Shi, W. Efficacy of Educational Misinformation Games. Available online: https://www.researchgate.net/publication/370814958_Efficacy_of_Educational_Misinformation_Games (accessed on 16 May 2023).

22. New York University. Sources of Information Influence COVID-19 Knowledge, Protective Behaviors. Available online: https://www.nyu.edu/about/news-publications/news/2021/november/sources-of-information-influence-covid-19-knowledge-behaviors.html (accessed on 30 November 2021).