

INFOGRAPHICS—ETHICAL COMMUNICATION FOR INFORMED DECISION-MAKING

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Infographics are one of the most used tools for communicating important messages to the general public, including COVID-19 statistics and United Nations (UN) Sustainable Development Goals (SDGs) summary reports (Kleijnsen, 2021). Ethical errors in infographics can mislead readers, causing them to misinterpret data and impact their decision-making and judgements. Readers may draw false conclusions from the statistics presented in infographics. It is important to educate students who are the future creators and users of infographics to communicate statistical results ethically (e.g., Laflen et al., 2021). To understand students' existing ethical knowledge, we designed a scenario-based study using the awareness, orientation, and intention stages from Rest's-model (Jones, 1991) to create ethical infographic scenarios with ethical dilemmas, pre- and post-questionnaire. We recruited students from our university who were studying/will study data science and business statistics. We first measured awareness of infographics and ethical principles. In the orientation phase, students were sensitised to AI4People's ethical principles: nonmaleficence, beneficence, autonomy, justice, and explicability (Floridi & Cows, 2019), which are widely used and accepted in Artificial Intelligence (AI) ethics, cybersecurity ethics, and related areas of applied ethics (Formosa et al., 2021; Khan et al., 2020). We redeployed the principles in the context of data science ethics to review two infographics from reputable sources aligned with UN SDG Education (infographic-1), and Good Health and Well-Being (infographic-2). Finally, we measure their intention to make ethical choices related to the infographics. Our findings showed participants' ($n = 405$) knowledge of ethics in infographics was average and below. The ethical training showed an increase in participants' ethical awareness from pre- to post-test. However, not all participants could interpret information correctly from infographic-2. This research provides insight on the ethical ramifications of infographics from reputable sources on users by using scenarios, pre-test responses, and post-test responses.

Through our ethical training, we attempted to sensitise students to ethical principles in order to identify ethical issues in infographics from a user's perspective. Providing more intensive training is essential to increase ethical awareness in infographics. The findings can be used by universities to expand their support for increasing students' ethical practice in infographics. If effective, our approach will enable future graduates to apply an ethical lens to infographics design and interpretation. Our innovative mission is to inform future designers to identify potential ethical problems in infographics.

REFERENCES

- Floridi, L., & Cows, J. (2019). A unified framework of five principles for AI in society. *Harvard Data Science Review*, 1(1). <https://doi.org/10.1162/99608f92.8cd550d1>
- Formosa, P., Wilson, M., & Richards, D. (2021). A principlist framework for cybersecurity ethics. *Computers & Security*, 109, Article 102382. <https://doi.org/10.1016/j.cose.2021.102382>
- Jones, T. M. (1991). Ethical decision making by individuals in organizations: An issue-contingent model. *Academy of Management Review*, 16(2), 366–395. <https://doi.org/10.5465/amr.1991.4278958>
- Khan, S. B. N., Richards, D., Formosa, P., & Bankins, S. (2020). The ethical responses of students to university ICT codes of conduct. In *Proceedings of the 9th Conference of the Australian Institute of Computer Ethics (AiCE 2020): Computer ethics in the new normal*. AiCE. <https://auscomputerethics.com/aice-2020-conference-papers/>
- Kleijnsen, H. (2021). *Infographics as a public communication tool in the COVID-19 pandemic* [Unpublished bachelor's thesis]. University of Twente.
- Laflen, A. (2021). Quantitative literacy in the composition classroom: Using infographics assignments to teach ethical and effective data use. In T. Lockhart, B. Glascott, C. Warnick, J. Parrish, & J. Lewis (Eds.), *Literacy and pedagogy in an age of misinformation and disinformation* (pp. 34–58). Parlor Press. <https://cdn.shopify.com/s/files/1/0050/3028/1251/files/quantitative-literacy-lpamd.pdf?v=1615925564>