
USING A GAME-BASED LEARNING APPROACH TO HELP STUDENTS UNDERSTAND THE IMPORTANCE OF ETHICS IN SCIENCE

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SUBTHEME: Modes of learning

BACKGROUND

Teaching science students about ethics is important given how technology has the potential to provide social and political power. However, providing science students with meaningful ethical experiences is difficult to do at scale.

AIMS

Our primary goal is to explore whether using a game-based learning approach coupled with student-led real-time data analysis affects student ethical perspectives. Our secondary goal is to understand how students felt about using a game-based approach in learning about ethics.

DESCRIPTION OF INTERVENTION

We used *Ethos 2514* in a digital game-based learning approach to provide first year science students with an understanding of ethics. In this game, students are tasked with becoming the commander of a new space colony that must make various decisions for the survival of the colony. After gameplay, students can visualise how their peers answered the game questions.

DESIGN AND METHODS

Each participant completed a digital worksheet that contained a pre- and post-game *EPQ-5* questionnaire and an *Importance of Ethics in Science Survey*. Students then individually played the game *Ethos 2514*. Participants were a total of 551 first year university students from five different cohorts between 2023 and 2024

RESULTS

We found that students' responses to the first set of questions of the *EPQ-5* questionnaire (idealism) decreased after playing *Ethos 2514*. In contrast, students' responses for the second set of questions of the *EPQ-5* questionnaire (measuring relativism) increased after playing *Ethos 2514*. We found that students' mean answers on the *Importance of Ethics in Science Survey* decreased after playing.

CONCLUSIONS

Our results thus highlight that engaging students in a way that allows them to experience new perspectives that challenge their own views can lead to a successful shift in ethical understanding. We thus argue that technology that connects students and provides them with experiences they could not normally engage in is where technology will have the most value in education.