

Can cooperative board games help cultivate eco-agency and systems thinking? An empirical study in an undergraduate climate change course

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Youth around the world increasingly report feeling overwhelmed by the climate emergency: they experience eco-grief, eco-guilt, and eco-anxiety when faced with the enormity of tackling the wicked problems of climate change, equity, and justice (Hickman et al. 2021). While most universities now offer a variety of courses on sustainability and climate change, there is a need to integrate learning from various disciplines and use novel educational methods to gain a big picture perspective for solving the climate crisis. An innovative active learning approach is the use of game-based learning to provide a medium for visual and tangible representation of risks and trade-offs, inculcate a sense of agency and promote systems thinking.

This research project will evaluate the effects of playing Daybreak (Figure 1), a cooperative board game about climate change to study climate emotions and foster systems thinking competence in students. Approximately 200 undergraduates enrolled in a course on visualizing climate change at the University of British Columbia will be invited to participate in this study in the fall of 2024. The impact of the game will be assessed through various pre- and post- measures for two randomly assigned groups – the treatment group (made up of students that will play the game Daybreak) and the control group (made up of students that will play a cooperative board game not related to climate change). The measures will include concept maps (Eggert et al., 2017; Gray et al., 2019), performance on two systems-thinking inventory tasks (Serman & Sweeney, 2002) and a climate change emotions instrument (Hickman et al., 2021; Galway and Field, 2023). With this poster session, we hope to get feedback from the conference audience on our research design and data collection methods. The outcomes of this research will contribute to existing empirical evidence on the effectiveness of using interactive tabletop games for a more effective and action-oriented climate education, and it may encourage other educators to use games and other innovative educational strategies to advance climate goals.



Figure. 1: Daybreak setup. Image credit: [CMYK](#).

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