

IMPACTS OF VIRTUAL TEAM TEACHING VS SOLO LECTURING ON THE FIRST YEAR STUDENT EXPERIENCE IN EARTH SYSTEMS SCIENCE

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Team teaching is a well-established approach used by educational institutions worldwide despite ongoing debate about its effectiveness in enhancing student learning outcomes. Since 2020, there has been particular emphasis on the role of virtual teaching due to the widespread transition to online formats. This transition to virtual teaching has created new engagement challenges and catalysed the development of technological approaches to improve teaching effectiveness, student experience, and equitable classes. One development has been adapting team teaching for virtual spaces. In this study, we explore how solo vs team-teaching virtual lectures impacts student learning and experience.

We present a preliminary evaluation of learning experiences in two first-year university Earth systems science units run in spring 2024 and autumn 2025 at a large Australian university. Each semester includes a week about the rock cycle using a flipped classroom approach. In 2024, the asynchronous content was delivered by an academic while the 2025 material was team taught. In both instances, students then attended a two-hour practical session co-taught by both academics. Our dataset includes the pre-recorded lectures, observations during the two-hour practical sessions, learning management system data, student assignments, academic reflections and a demographics survey. We conducted thematic and content analyses of the lecture videos supplemented by number of video views and length of viewing time. The practical observations and demographics have been analysed quantitatively. Content analysis of student work allowed for assessing student understanding.

Relative to solo lecturing, co-lecturing resulted in more positive lecturer emotions during content delivery; this is also supported by the academics' reflections. In practical sessions, students asked significantly more questions following the team taught content delivery relative to solo delivery. Although the volume of questions increased, the questions asked shifted significantly away from extension questions towards confusion questions. This suggests that further work is needed to address the possibilities that virtual team teaching may positively influence student comfort and confidence interacting with academics. This work should consider how student experience is balanced with teaching effectiveness since team teaching resulted in greater content confusion amongst students.

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