

The role of web broadcasts to develop online learning communities in STEM: a multiple case study

Promotional abstract

The challenges of not being co-located on-site can affect the student learning experience. To address this, The Open University uses interactive web broadcasts to engage students in practical demonstrations, experiments and field investigations. The approach embeds a live video-stream alongside text-chat and question-and-answer widgets to enable bi-directional communication between students and lecturers. This research is evaluating how the broadcasts are being used to support learning and enhance a sense of community. Findings will be presented on the attitudes, motivations and types of interactions between students and lecturers and discuss how such live events can deliver an alternative to on-campus events.

Session Outline

This session will discuss how The Open University uses web broadcasting technology across STEM modules to engage and motivate distance learning students through mass participation in practical scientific experiments and field investigations. The Open University has been a pioneer in re-thinking practice-based education. While interactive screen experiments, virtual and remote laboratories can provide practical activities at a distance, there is a need to bring spatially separated students and lecturers together to mitigate isolation, collaborate and experience science in action. Web broadcasts combine live video-streaming with interactive question-and-answer widgets that enable the presenting lecturer to interact with their students. In these live events, large cohorts of students interact through instant chat messaging and widgets. The collated responses to the widgets are used by the lecturer to check the students understanding and make decisions regarding the next step of an experiment. The aim is to give the remote audience a virtual front seat where they can experience the look, feel and overall presence of a live lab session.

This research is adopting a mixed-methods research approach to evaluate how web broadcasts are being used to enhance community building across the STEM disciplines. A pilot study investigated the extent to which the web broadcasts supported learning and influenced students' sense of community. Student questionnaires were administered across two schools, and two staff members involved in the production and presentation of labcasts interviewed. Findings indicate that most students perceived the web broadcasts as useful to their learning and that the real-time chat and widgets provided an opportunity for student engagement. Open-ended survey responses revealed students found the broadcasts enhanced a sense of community and removed the remoteness of solitary study. Staff interviews revealed lecturers used the broadcasts for different pedagogical purposes; to involve students in an experimental process or to explore module progression routes and career pathways.

Multiple case-studies are being conducted for several modules and is further exploring the motivations, online interactions and perspectives of the audio-visual production team, lecturers and students. Descriptions of the planning and production phases draw upon observational notes and comments from the production team and lecturers. Interaction analysis of the broadcasts and text-chat transcripts is used to classify lecturer and student behaviours. A thematic analysis of the text-chat identifies the ways students and lecturers interact with each other. Interaction data (i.e. the widgets, system data logs and text-chat transcripts) examine student participation. Students' perceptions of the broadcasts and

perceived sense of community are collected through questionnaires. Data will be triangulated with the findings from staff and student focus groups.

The session will present the findings and will add to the research community's understanding of the use of web broadcasting technology and how the medium may support learning and foster student engagement, interaction and a sense of community online. The session will be of interest to delegates that teach science at a distance or online and to practitioners who are interested in broadcasting technologies.