Online vs. in-person: The student experience of tutorials in engineering

Abstract

What can we learn from the great experiment of converting to online learning during lockdown? What is the student experience of online vs. in-person? What can we learn about each mode, and what does this perspective help us to see more generally? To answer these questions, I focussed on 'tutorials' — small, unstructured lessons — in undergraduate engineering. Preliminary research with a survey (n=1610) and focus groups found a strong preference for in-person tutorials but without a clear explanation. Through arts-based focus groups, where eight students expressed their experience through drawing, painting, and sculpture, I gained deeper in sight. I found similar overall preferences but by identifying 'achievement emotions' I found a more nuanced picture of the experience. Students valued social support in-person but could get distracted. They valued the flexibility online but were often frustrated. Overall preferences depended on the personal weighting of these pros and cons, emphasising the importance of diversity and inclusion in our teaching. Some students were struggling in both modes. Using a reflexive thematic analysis, I identified deeper themes that transcend the online vs. in-person dichotomy. Students perceived engineering knowledge as objective, without a personal or tacit component in the sense of Polanyi. This epistemic view, and the lack of feedback they receive, contributed to students' constant sense of not being 'up-to-date'. They were therefore often averse to incongruity and confusion. This aversion is a key barrier to developing an engineering 'mindset'. I conclude with recommendations on monitoring the emotional experience of students, providing more feedback, and re-balancing our culture. Knowledge is essential; but ways of thinking are the hallmark of an engineer.