Looking Ahead: Investigation of an ad-hoc Shift to Online Teaching with Students as Co-Inquirers

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ABSTRACT

In this pilot study staff researchers work with a Students-as-Partners team as co-researchers to explore the rapid shift to emergency remote teaching in 2020. The surveying and analysis was conducted with five undergraduate engineering students. The feedback from both the Students-as-Partners team and the surveyed student cohort underlines the significance of integrating students into education practices and training them to become the driver for change by focussing on students as active partners in their own learning. Future work will expand the survey methods where Students-as-Partners lead focus group discussions to obtain more detailed feedback to address and eventually overcome the challenges for online teaching and learning.

Key words: Online Learning Environment, Students as partners, Student perception

INTRODUCTION

The year 2020 saw a significant change in the delivery of classes foreshadowing challenges associated with the (post)-Covid-19-era and new curriculum design (Crawford et al., 2020). In QLD, Australia, the Semester 1 was disrupted in March 2020 and completely moved to online. This continued for S2/2020 and was slightly relaxed in S1/2021 and S2/2021. Nonetheless, since the disruption most of the teaching material remained available online.

Studies have demonstrated that an engaging online learning environment (OLE) has both positive and negative impacts for effectiveness and achievement of outcomes (Franklin et al. 2001). Thus, an efficient OLE must be "thought-through" and conceptualized as an environment that integrates collaboration, communication, and engaging content for students to meet the learning outcomes.

One method of obtaining more authentic insight into students' experiences of this change to their learning environment is to use the Students-as-Partners (SAP) approach (Timmis and Williams, 2013) which offers a means to work with students as co-inquirers in the process of researching their own learning (Groundwater-Smith and Mockler, 2016) rather than being regarded as sources of data. Recent SAP initiatives have shown many benefits, for instance, benefits (for staff) include a renewed interest in the research process particularly in the context of teaching and learning and opportunity to influence policy (Brown and Nurser, 2011). For students involved in partnership projects, the benefits include increased engagement in their learning experience and in shaping learning (Delpish et al., 2010), gaining graduate attributes that maximise students' employability (Bovill et al., 2016; Brown and Nurser, 2011) and developing confidence, leadership, and decision-making skills (Welikala and Atkin 2014). Students also experience greater group cohesion, high levels of self-directed learning, increased confidence and motivation, and improved performance (Bovill et al., 2016).

METHODS

The Student Led Observation for Course Improvement (SLOCI) Team was initiated in 2018 and originally consisted of five student representatives from each of the four engineering Schools (Chemical, Civil, Electrical and Mechanical and Mining (two students). Students are usually in their penultimate or final year of study. Vacant SLOCI student positions are advertised in faculty job postings but also in student platforms and students are selected based on interviews to ensure the right level of engagement and teamwork skills are met. The team actively engaged in the project by taking on leadership tasks such as developing survey material for individual classes (Nielsen, 1994; Young 2014; Gold 1989). The preferred method of gathering data was through the use of "guerrilla interview" technique. This involves approaching small groups of students either at the beginning or end of class and engaging them in conversation or encouraging them to complete the 3-question-interview about their learning experience. Interviews took approximately 3 minutes to complete. An alternative data collection strategy involved conducting short surveys that consisted of the same questions as the interviews. This online version of the survey could be presented to external students unable to attend campus due to COVID-19 restrictions, for instance during Zoom lectures or tutorials or in other online learning contexts. The online survey was also used when there were too

many students to interview in face-to-face settings. This version of the survey was presented using a QR code link to the survey. The short (3 minute) presentation is depicted in Figure 1. Responses presented during the face-to-face interview were directly input using a digital device (laptop, tablet, or mobile phone) by the interviewee (usually) or the SLOCI team (sometimes) so data was available immediately. Using this combined approach allowed a greater diversity of anonymized student feedback to be obtained. All SLOCI team members conducted all surveys/interviews.

The SLOCI team also participated in the data coding process. Responses were coded following an inductive, constant comparative method with the software package NVivo (March 2020 release)

Figure 1.

Table 1. Thematic analysis of student feedback. Statistics are shown in column 3 (Total answers) and columns 4–6 (percentages) of positive, negative and indifferent.

| Category		No of answers [N]	Positive [%]	Negative [%]	Indifferent [%]
Assessment	Student attitudes to and opinions of changes to assessment practices, such as Tests, Exams, Quizzes etc.	38	34.2	28.9	36.8
Laboratories / Practicals	Students' perception of online compared to face to face mode, quality of delivery and learning experience	12	0.0	91.7	8.3
Learning	Ability to learn with online material, especially compared to the face to face experience	51	39.2	49.0	11.8
Lectures & Tutorials	Students' perception of online learning modes, e.g. quality, flexibility, delivery, structure and accessibility of resources	159	69.2	25.2	5.7
Miscellaneous	General statements about the learning experience	14	85.7	0.0	14.3
Self-directed Learning	Motivation to learn/engage with online resources, less accountability/engagement	135	60.0	38.5	1.5
Staff Communication	Perceptions of change mode to interaction with staff, e.g. delays in answers to questions, contact with tutors/staff, lack of informal communication	32	34.4	65.6	0.0
Technology	Use of technology to support student learning, e.g. Zoom, Blackboard, LMS etc	72	37.5	62.5	0.0
Work and contact with Peers	Pros/Cons to work and communicate in online mode	36	30.6	66.7	2.8
Total		**549**			

and categorized into positive, negative or indifferent responses. The overarching themes that were extracted from the answers are shown in Table 1. The coding of answers was cross-calibrated by two different researchers (the Educational Researcher and a member of the SLOCI Team). Inter-coder reliability scores were calculated using Krippendorff's α (Kripendorff, 2004; Hayes & Krippendorff, 2007). Reliability scores were between 0.734 (fair) and 1 (excellent).

Discussion with the SLOCI team on the progress, analysis and their own perception of the efficacy of the survey methods were held on a biweekly basis both in-person and via zoom and other media platforms (Slack messenger, Emails etc.). During these meetings, issues with access to classes, better approaches to engaging with fellow students, and any other issues with the research process were discussed by students and staff which led to greater response rates and increased diversity in the student feedback to be obtained.

PRELIMINARY RESULTS

The project contributed to a better understanding of the design of teaching and learning material as well as a deeper appreciation of the University's (academic and administrative) perspective around decision making for teaching and learning intervention. Over 200 interviews and surveys led to a total of 549 answers that could be categorised. The response rate in all courses varied between 11–30%. During SLOCI team meetings, members reported that peer-to-peer interviews were likely to result in more honest feedback, since students are more able to be more open with their peers than with staff. Several interviewed undergraduate students appreciated the initiative as a form of peer learning through being informed of the Faculty's interest in their learning experience. This initiative has engaged the SLOCI team as co-producers of research rather than passive recipients of research.

The survey delivered valuable feedback by actively engaging students in reporting about positive and negative aspects of the online learning environment installed abruptly due to 2020 COVID policies (Figure 2). Here, we only focus on some of the outcomes as this survey was followed by a deeper analysis continuing in semester 2/2021: The thematic analysis revealed that students enjoyed the flexibility of online lectures (~70%) stating that they appreciated the

Figure 2.
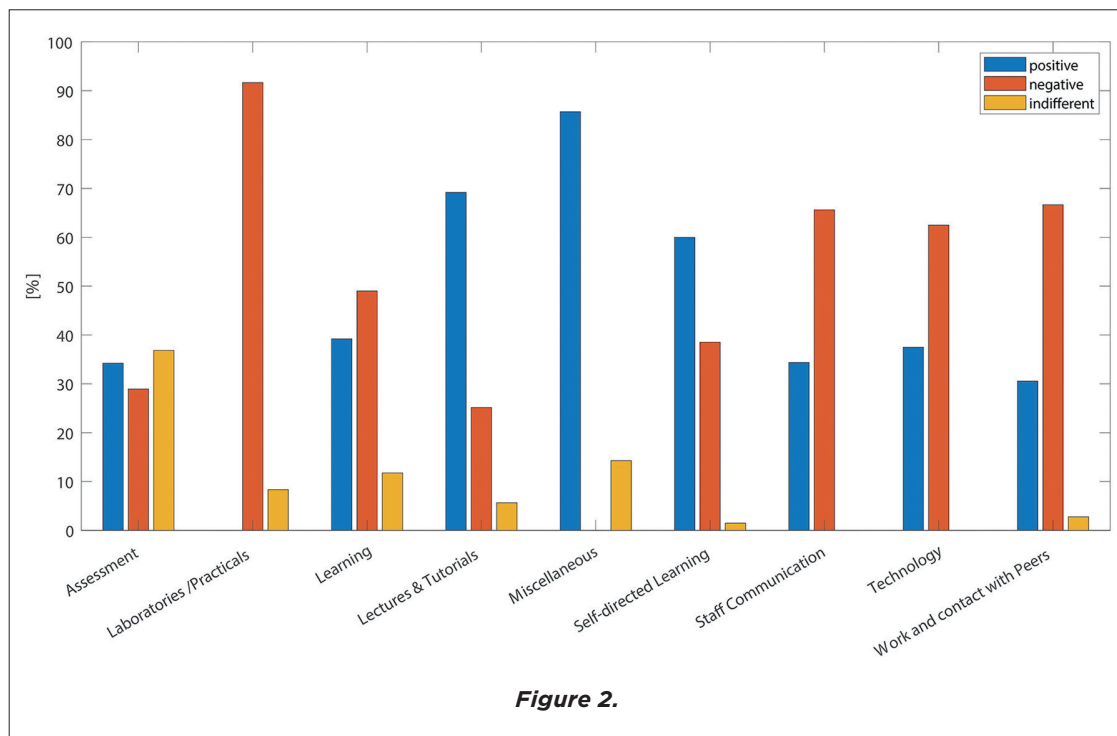
increased flexibility to access data and being able to rewatch, pause or tailor their learning experiences. In contrast, the online group work and practical/laboratory work received negative reviews underpinned by >90% dissatisfaction. Working and staying in contact with peers online was considered challenging with the main criticism being related to group work and the lack of communication therein. This is an important outcome for engineering subjects that are based on teamwork and laboratory assignments. Most responses asked to have more in-person inter-action and that learning online is not perceived as effective compared to face-to-face delivery. Some aspects raise concerns as motivation was found to be lower and mental health issues were reported. The use of technology received also mainly critical responses, for instance due to internet connection issues. Zoom was regarded negatively due to tutors not managing breakout rooms effectively, due to communication and collaboration with team members being difficult, or due to chat sessions becoming unmanageable and overwhelming for instance. Some students described delays in getting questions answered when using piazza as a method to communicate with tutors or other staff.

NEXT STEPS

The main goal of this work is to highlight the use of the SAP team for co-inquirers and explaining the work on a practical level, which might be of use to those aiming to carry out similar kinds of activities. Collecting data from diverse classes within a relatively short amount of time with limited campus access, demonstrates that SAP surveys are a powerful tool, for both the students as well as the Teaching & Learning designer. The current survey analysis demonstrates that online group work and teamwork in engineering classes is problematic and that the delivery of face-to-face labo-ratories and assessments cannot be adequately replaced. However, these preliminary results need to be verified and analysed more deeply by further interviews and surveys in Semester 2 in 2021. The following SAP project work will also include focus group discussions led by the SLOCI Team in the second semester in 2021. All current team members of the SLOCI Team will aim to synthesize the findings of current issues around online teamwork and improve the learning experience around laboratory classes in a final report expected in the first quarter of 2022.

Although many Australian universities moved back to face-to-face teaching (where possible) the vast majority of classes were still offered online and it is still unsure how 2022 will be managed despite the effort to offer as many in-person lectures as possible. Thus, authentic and constructive feedback from students is essential and using SAP projects as co-inquirers could be one critical element of it in the future.

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