COVID-19 Digital and Education Working Group Briefing paper series

Topic – Digital Innovation in Assessment and Feedback

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The COVID-19 crisis has changed many practices dramatically, with activities that were unthinkable a year ago now becoming routine. In universities, this adaptation has vastly accelerated changes in academic practice that were already in motion which, will presumably result in a very different approach to teaching practices in the post-COVID-19 era. A key area in which such changes are manifested is that of assessment. This paper focuses on assessment practices as well as related issues that include feedback, engagement, and student well-being. Two leading researchers in the field each describe their methodologies and innovative strategies in assessment and feedback in a digital era.

A potential solution to assessment without invigilation: Extended Matching Questions (EMQs)

Professor Robyn Slattery is Professor of Immunology at the Alfred Hospital and Monash University in Melbourne, Australia. Professor Slattery observed how COVID-19 has profoundly impacted the ability to assess students' knowledge under invigilated conditions. To avert the problem of students searching for answers to simple questions online, or sharing answers with other students during online examinations, it has been necessary to pivot away from the use of simple multiple choice questions and implement strategies that assess higher order thinking and problem solving. A compounding impact of COVID-19 has been the fiscal impact on the tertiary sector, with associated staff cuts. As a consequence of the increased demands on teaching staff during the shift to online learning, and the decreased number of staff available to support teaching, Extended Matching Questions (EMQs) were utilized to test higher order thinking and problem solving. EMQs essentially provide the students with several correct statements, from which they have to select the most appropriate responses, rather than selecting the correct answer hidden amongst wrong answers, which may reinforce incorrect knowledge.

Prior to their implementation, EMQs were assessed for their ability to measure student knowledge, higher order thinking and problem solving. The performance of students examined objectively by multiple choice questions (MCQs) was compared to their performance assessed by EMQs; there was a high correlation coefficient between the two methods. EMQs were then introduced and the correlation of student performance between related units was measured as a function of percentage objective assessment. The correlation of student performance between units increased proportionally with objective assessment. Student performance in tasks assessed objectively and subjectively was then compared. The findings indicate marker bias contributes to the poor correlation between marks awarded objectively and subjectively.

As a result of these studies, it was determined that EMQs are a valid method to objectively assess students and their increased inclusion in the assessment process increases the consistency of student marks. The subjective assessment of science communication skills introduces marker bias, indicating a need to identify, validate and implement, more objective methods for their assessment (Slattery R.M., 2017).

Several challenges were encountered during the implementation of the EMQ assessment approach. Firstly, students unfamiliar with the approach were confronted by the immediate feedback of not knowing the answer to a given problem. In written examinations, students often perceive they have performed better than they in fact have. By showing students examples of a poorly answered long question that has been converted to an EMQ question answered by the same student, it becomes clear to the cohort why their perception, but not the reality, is different for their performance by the two approaches. Furthermore, training of students in the writing of long answer questions, and then stepwise training them in the re-writing of those answers into an EMQ style format, assists students to gain confidence with EMQs. This same approach has successfully been used to resolve the second challenge – that educators need to be assisted in learning how to write clear EMQs. By asking them also to write a classic long answer question, then to answer that question with a perfect score according to the rubric, they understand the key points in the answers form the A-J list of answers in the EMQ. The third challenge was to write sufficient alternative questions to each set of answers to be able to create a bank that can be randomized for students answering EMQs in online exams. This takes time and requires several academics to check the integrity of the questions, but once the bank is created, it can be used in an ongoing way because the randomization of questions for each student ensures sufficient difference between each examination.

Dilemmas in implementing online feedback

Dr Edd Pitt is an expert on digital assessment and feedback from the University of Kent, UK. Dr Pitt writes that feedback can be seen as both a source of immense student dissatisfaction, and a key driver for learning. Feedback has been the subject of much educational technology research and development in recent years. COVID-19 and the move to more online forms of learning have expedited our focus upon how feedback can work in the online space. Recent advances in feedback research encourages more dialogic interaction and gives primacy to the role of the student in the process. Audio, video, and screencast feedback offers the potential to encourage students to seek and discuss information (from multiple sources) that enables them to develop their understanding of what constitutes quality and empowers them to act on feedback. However, to facilitate more dialogic feedback interactions, three ‘dilemmas’ that may need to be addressed to facilitate such dialogue seem apparent. In exploring this territory, Dr Pitt draws upon examples from the research literature and how this may inform our developing understanding of feedback dialogue within the digital world.

Dilemma one - *Are these forms of online feedback really about enabling feedback dialogues, or are they largely about replicating existing one-way feedback practice?* The most common uses of technology involve digital delivery of feedback information, using audio, video, and screencast technology. Audio feedback can be beneficial because more detailed comments can be provided than might be possible through the more traditional written medium (Merry & Orsmond, 2008). Students may perceive audio feedback as more personalised than written feedback (Gould and Day, 2013), easier to comprehend (Merry Orsmond, 2008), and more supportive in tone (Ice et al., 2007). Students often interpret audio feedback as a form of dialogue as non-verbal cues such as prosody, emphasis, and tone can all be communicated in ways that are simply not possible with written feedback (Mahoney et al., 2018). Video feedback affords greater individualisation and personalisation than written feedback (Henderson & Phillips, 2015), and screencast feedback (where the markers verbal comments are accompanied by an annotated visual display of the student’s work) has the further benefit of markers being able to pinpoint the locus of their comments (Mayhew, 2017). Although technology-enhanced feedback methods give precedence to the spoken rather than the written word, this does not automatically make them dialogic. For technology enhanced feedback to facilitate dialogic interaction, the practice needs to be used in ways that move beyond the transmission of feedback comments, towards student uptake of feedback.

Dilemma two - *Is this technologizing of feedback driven by pedagogy, or practical and logistical realities?* Discussion of the pragmatic elements of technology-enhanced feedback practices are a ubiquitous feature of the literature (cost, time-efficiency). Lunt and Curran (2010) argue that audio feedback is more time-effective for the lecturer, as it is possible to speak in one minute that which would take six minutes to write. Whilst practical issues are important in affording effective educator use, a more fundamental concern should be the impact on learning and student uptake of feedback. Within the literature, evidence of students adopting a transmission-focused mind-set in response to technology-enhanced feedback is apparent. For example, screencast feedback was viewed as facilitating engagement and removing the need for students to go and see their lecturer (where further dialogue potentially could take place). Dr Pitt argues that moving towards dialogic use of technology-enhanced feedback requires a stronger focus on the students' volition to engage with and utilise the feedback information in subsequent work and not the implied convenience of creation or access.

Dilemma three - *Can these new feedback modalities really lead to improvements in student learning or are they largely just a way to improve student satisfaction?* The adoption of any learning technology should be driven by a sound rationale, but what should the focus of this rationale be? The literature appears to contain many instances whereby the efficacy of technology-enhanced feedback is related to students liking or preferring it. There is some evidence that audio feedback makes lecturers appear more approachable (Jackson, 2012), or more supportive through the medium of video feedback (Henderson and Phillips, 2015). Whilst important, student satisfaction should not be the primary motive for practitioners to adopt technology-enhanced feedback; rather, emphasis should be placed upon the effect that feedback medium has upon student uptake of the feedback. If technology-enhanced feedback is to operate within a new paradigm model, then the design of the module or programme needs to create opportunities for the students to use feedback in subsequent assessments. There is greater dialogic potential in assessment designs where feedback is provided prior to submission, and where the student has the opportunity to resubmit work following enactment of such feedback. The pedagogic potential should be an important part of the decision to adopt technology-enhanced feedback. If it is used in a way that replicates the transmission of written comments, just through a different medium, then the rationale for its use appears to be questionable.

Synthesis of Issues

Assessment and feedback are intricately linked, and are often constrained by various factors, such as large class sizes, diminishing education budgets, and increasing student expectations. It can often be difficult to satisfy the various constraints whilst still providing appropriate levels of quality. The use of EMQs offers more than just the convenience of automated marking, they add to the quality of the educational instrument. Feedback processes need to be carefully considered, not just to be mindful of the constraints, but also to ensure that feedback is fulfilling its intended purpose rather than being an end in itself.

Questions for further consideration include:

- What quality assurance processes do we have in place for assessment tasks? What evidence do we have that assessment tasks, such as tests, serve their intended purpose?
- Feedback is a fundamental part of education. But how do we measure the effectiveness of feedback? How can technology better facilitate feedback-triggered dialogues with students?

Conclusions

Rethinking assessment and feedback processes are vital in the post-COVID world. EMQs are a simple but powerful tool to assess higher order thinking and problem solving, and once developed for a unit, they remain a valuable and reusable resource for many years. In addition to this, teaching students how to write their own EMQs also serves as an excellent teaching tool.

Students learn how to group related processes and how to understand ways to subtly differentiate between them. Technology can certainly enhance feedback, but we need to ensure that this is done in such a way that it generates a dialogue with students to aid their learning and does not merely increase efficiency of feedback processes. This means that feedback needs to focus on producing educationally appropriate responses in the students, rather than being merely a one-way justification of a grade. It may well be that further technological developments are needed to provide greater functionality for this purpose. At the very least, we need to understand the behavioural and cognitive effects such approaches to online feedback have upon both educators and students.

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