



The development of novel hyflex technologies to enhance classroom student engagement

Dr. Sinéad Hurley, Mr. Thomas Buckley, Ms. Delfina Mancebo Guinea Arquez,
and Prof Debbi Stanistreet

RCSI University of Medicine and Health Sciences

The COVID-19 pandemic exposed medical educators at RCSI to the extensive use of online and blended Hyflex methods that we are continuing to adapt in our in-classroom teaching. The methods and tools used in Hyflex blended teaching, can be utilised to create an interactive student learning environment and better student outcomes. This project evolved as a result of seeking to develop better engagement technologies for students, particularly in a hyflex environment and in light of improving medical education teaching during the pandemic.

Introduction and Context

The project aim was to explore student perspectives on the strengths and the potential barriers to utilising online polling tools, and to measure the impact that polling tools had on medical student engagement in public health teaching.

The focus of the project was on the element of student engagement. Students have the potential to develop unique and meaningful approaches to learning and both students and teachers can co-create more engaging methods for students. Despite the research on virtual tools, very few studies assessed the use of online tools and teaching methods within in-person lectures to facilitate student engagement.

In this study, we used a mixed methods approach and **worked in partnership with students** to examine student perspectives on the strengths and the potential barriers of utilising online polling tools, in order to make policy and practice recommendations for teaching practices.

Project Objectives

- To deliver lectures to medical students with and without polling and compare whether the sessions are more or less engaging through feedback from students through; workshop discussions (objective 2) and a live feedback poll at the end of subsequent lectures (objective 3).
- To explore the perspectives of medical students on the strengths and limitations of various online polling tools through an online workshop with students, using nominal group technique.
- To utilise live feedback polls at the end of public health lectures to determine medical student views on class polling as a tool for student engagement and to analyse response rates to polls.
- To use the findings from the study to inform policy and planning for future teaching delivery, staff teaching practices, and teacher / student combined approaches to teaching evaluation.

Project Outline

The proposal built trust between staff and students as we collaborated together to enhance the student learning environment. In this sense we were creating a community within teaching and learning that is inclusive of all student and staff viewpoints and cultural inclusivity at RCSI. Staff have professional responsibilities to our students to deliver a level of care and standard of practice and students have responsibilities to engage and reciprocate. This proposal built many bridges between staff and students and we were excited to design and perform it together and present the findings.

The polling and workshops were carried out with direct entry medicine (DEM) and graduate entry medicine (GEM) students to elucidate students' perspectives on the value of polling and the strengths and challenges associated with it and values on integrating digital platforms into lectures. Our results demonstrated that polls were advantageous throughout lectures and should be included in all future lectures. Perspectives regarding the strengths and limitations of polls were similar among both groups of DEM and GEM students but differed when it came to choosing a top strength and limitation. Alternative technology was the same, with both groups encouraging the use of Kahoot! in lectures. Regarding polling structure, DEM students encouraged both open-ended and exam-style questions to further test knowledge and consolidate information at a deeper level. In addition, GEM students mentioned that an incentive to participate in polls could be a strategy to monitor attendance and increase engagement during lectures.

Initial polling questions asked during EBH/PHE lectures provided the groundwork for the DEM and GEM workshops. Students were involved in analysing the polling questions, designing the structure of the workshop and in student participation in the workshop following the student breakout room discussion. The aim was to encourage participants to share their views regarding their experiences with polling, as well as what they felt was lacking in lectures and the digital components they would like to see incorporated. The workshops were based on nominal group technique, 75 minutes in length and were ran on Blackboard Collaborate. The investigators (including the staff lead and student research team), gave a brief overview and background to the research project and explained the structure of the workshop session. The session was introduced by the staff lead and the students in this project setup the breakout rooms and answered any questions that came up. Students were placed into breakout rooms with approx. 6-7 other students. Silent brainstorming took place where students wrote down or typed their views on the polling technology they experienced from the classroom. After this each group came together to discuss the options and vote for their top choices for polling; the strengths, limitations, polling structure and technology platforms.

Following the breakout group session, students returned to the main room for a group discussion and each group ranked their shared findings. Nominal Group Technique is very structured and maximises both individual response and interaction through open-ended questions while a focus group does not enable individual responses to be explored first. Thus a more individual perspective is attained which is what we wanted in terms of obtaining student responses and viewpoints on class polling. The full group discussion was led by the student workshop leaders involved in the StEP project. Having the students run the workshop was beneficial, as they better understood the current learning techniques and were able to tailor questions to encourage perspectives on the benefit of novel hyflex technology.

Find out more about RCSI StEP [here](#).

The workshops highlighted the need for lecture integration of polled styled platforms across the departments. Student engagement was greatly increased. Students noted how polls “aid in retaining information” for a longer period and “offered an anonymous platform” for live feedback.

Both student groups provided views regarding their personal experiences with polling, as well as what students felt was lacking in lectures and the digital components they would like to see incorporated. The polling questions and workshops highlighted the need for lecture integration of poll styled platforms across the departments. With this addition to the RCSI public health curriculum we found that student engagement was greatly increased in these settings. Thus polling technology offered an impactful technology that should be incorporated into delivery of lectures.

Student perspectives on the strengths and barriers of utilising online polling tools and alternatives to polling will help guide future planning of curriculum changes. The findings on preferred polling structures and overall views on how to create more engaging lecture environments will aid policy recommendations for future teaching practices.

Project Actions	Brief Description
Collaboration between students and staff	<p>The proposal built trust between staff and students as we collaborated together, designed the research protocols, successfully received ethical approval, ran workshops and disseminated findings. Staff delivered the lectures and ran the polls including the live feedback poll after the lectures and the students in this project analysed student response rates and interpreted the data. Both student and staff members of the research team were involved in running the workshops and analysing and presenting the polling findings.</p> <p>A two way partnership was established between both students and staff throughout this project which ultimately led to a more engaging, enhanced and dynamic learning environment for the medical students involved.</p> <p>This application for this project was co-written with students as was the final report summarising the project at the end.</p>
Dissemination of results	<p>Project outputs were shared campus wide. We wanted all staff to have access to these virtual tools to reinforce lecture material and enhance student interaction. Our plan is also to submit an article to publish in the SMJ and a peer-reviewed journal such as the all-Ireland Journal of Higher Education to share our results.</p>
Benefits to students	<p>Students have responsibilities to engage and reciprocate the efforts staff display. Student feedback from this project will help inform recommendations about the best methods to promote engaged teaching and learning at RCSI. All insights and opinions collected following the workshop will help enhance the curriculum of RCSI to create environments for student needs. Furthermore, students can share their perspectives in an active manner during lectures with the polling technology, rather than passively participating in lectures. These findings can inform teaching in all subject areas across RCSI.</p>

Benefits to staff	Staff have professional responsibilities to students to deliver high standard of practice. This research informs academic staff about student views on the most engaging, efficient teaching practices and gives recommendations on how to best integrate these tools into the student learning environment. Staff will be provided with recommendations on how to adapt lecture content in a way that leads to mutual engagement within the classroom. Further, with the integration of polling or alternative digital platforms, a cohesive learning structure will be seen across all departments where applicable, not just within the Department of Public Health and Epidemiology.
Project Impact	Student groups provided us with viewpoints regarding their personal experiences with polling, as well as what students felt was lacking in lectures and the digital components they would like to see incorporated. The polling questions and workshops highlighted the need for lecture integration of poll styled platforms across the departments. With this addition to the RCSI public health curriculum we found that student success and engagement was greatly increased.

Reflections

Students learned the importance of integrating and building a staff and student partnership. The students learned how to develop skills to manage research work independently and take active roles in the project. Both students and staff wrote the proposal together, designed the timeline, the methodologies and met weekly to discuss the project updates. Staff performed the polling during lectures and the students worked together with the staff on analysing the results. The final report was written by both students and staff. There was ease of communication between the research members and expectations of project outputs were met through weekly updates and meetings. Both students and staff were equally involved in the success of the project, hence a foundation of trust was required between both groups to efficiently collect information that generated reliable results. A strong student-staff relationship was very important throughout this project. A collaborative partnership was required to understand what teaching methods work best for students, and strong student engagement was required to assist staff.

This study allowed for inclusive collaboration such as different perspectives on the use of sample and lecture questions, consistent analysis to retrieve data regarding student engagement and experience. Furthermore, a sense of community was built with all members of this project through comparing the different experiences between student experience and staff teaching.

For improvement we could have ran previous practice student workshops sessions with the research team and the technology team at RCSI to ensure a flawless workshop delivery. We discovered that our workshops ran longer than expected, which was not ideal as we appreciated students giving their time to participate in the workshop. We could also have updated the timeline we set out as the changes occurred. In addition, we could have sought ethical approval sooner as this was a time limitation to our project. However we were proud of the accomplishments in such a short period of time and the dynamics worked well between both staff and student members of this project.

Student engagement has carried on beyond the scope of this project and influenced other activities in your institution. We are continuing our work with other technologies and more recently received funding to add to this initial body of work. Ultimately, the aim is for the scope of this project to reach a role in policy and decision-making at RCSI.