Biomedical science education: COVID and beyond

Much has been written on the impact that the COVID-19 pandemic has had on society as a whole and even more on its impact on staff and students in higher education (HE). I do not intend to add much to what has already been written. Rather, I want to draw on the long history of biomedical science education as an innovative and evolving programme and profession.

It has been 43 years since the first biomedical scientists graduated from UK universities. The early years saw major transformations in courses delivered by universities and polytechnics, moving beyond traditional technical education to innovative courses and the development of a new academic discipline, biomedical science. Since then, it has seen constant improvements, keeping abreast of new emerging technologies in diagnosis, screening and monitoring of disease.

In 1985 the first masters programme in medical laboratory sciences/biomedical science was introduced at Ulster University, focusing on interdisciplinary subjects including genetics, molecular biology, and immunology. The profession has also seen changes in regulation and professional recognition since the early days; the HCPC, the statutory regulator, and the professional body, IBMS, have worked tirelessly to improve the professional standards and the voice of biomedical scientists across the UK.

At Ulster University we had a long history of successfully delivering online education with our master's in biomedical science, which has been running since 2001. This was an essential component of our successful transition from face-to-face teaching to online. Given the pedagogical principles and knowledge required to design and facilitate online education, which is quite different to those required for successful face-to-face teaching, we were in an excellent position as so many of our academic staff already had extensive experience. However, under normal circumstances we had nine to 12 months to design an online module, and now we had 24 hours!

This timeline coupled with the challenges of delivering and designing classes from home, often without technical support and varying broadband width, added to the stress of employing new tools both for staff and students. These challenges were worsened for students who had limited access to appropriate technology and poor broadband connection.

it is vital to remember that delivering a successful BSc (Hons) Biomedical Science degree is a joint effort. Without clinical colleagues training students in their placement year and delivering essential components of the academic content on campus, the degree would not be possible. Our clinical colleagues were faced with an even greater demand on their time, increasing patients in hospital, additional test to be performed and, not to forget, the COVID testing in many laboratories, they had their hands full. Even in the face of this additional burden, they continued to take students on placement. It may not have been as streamlined as before COVID, but with their support all students were able to complete the placement and the IBMS Registration Portfolio. This is just another example of the commitment and dedication of all biomedical staff and well applaud them.

Now that we are back to on-campus teaching I want to focus on what we have learned and what we will continue to employ in the post-COVID teaching at Ulster University. We, and numerous other universities, have engaged with the student body to identify their experience of teaching during COVID. From our own research, conducted by Dr Maria Mulhern and Dr Declan McKenna in the School of Biomedical Science, we have identified some positives from the student's perspective.

- BBlearn: students enjoyed class tests, ease of use and having everything well organised: "live lectures where you could see the lecturers made the experience more personal".
- Recorded Panopto lectures were useful ("speed can be adjusted"; "it allows for better explanations"; "useful to have for later use" and "can go at own pace").
- Nearpod was noted to be "an excellent engaging resource for live lectures and quizzes to complement recorded lectures".
- Online examinations were well organised and easy to follow, delivered on time and didn't suffer technical issues.

Of course, there were also many negatives, related to practical classes, as you would expect. Dr McKenna's research focused on final-year students and their views on 'Dry Lab project experiences'. Many students recognised that they had developed many useful employability skills (57%), although lack of practical laboratory experience was still perceived as a drawback. 47% of students agreed that choice of dry-lab projects was a suitable replacement for wet-lab projects.

This semester some colleagues have continued with synchronous lectures, while they are teaching face-to-face in class; the lectures are live to students off campus and recorded. Student feedback identified that this type of recorded material is an excellent revision resource, and we are keen to maintain this. Online examinations will continue this semester, as this worked well for most students – especially those who have health concerns, as it seemed to lift the additional burden of attending examinations on campus.

Dry lab projects will continue this year, given the continued restrictions on laboratory space and need for ethical permission. We will continue to review and engage with our students to monitor the situation. As always, we continue to innovate and develop our courses.

In 2022, the QAA will revise its benchmark statements in biomedical science. It is early days but there will be a renewed focus on equality, diversity and inclusion in HE, which was again highlighted as an issue in socioeconomic deprived areas during COVID. In addition, adopting an Inclusive Curriculum Framework, which promotes a universal approach to course design, to improve the experience, skills and attainment of all students, will be included.

While COVID may have had a negative impact on all of us, there is no doubt that we have learned a lot about work-life balance and how technology can assist, when used appropriately, to enhance the learning experience. We cannot go back; the only way is forward and we in biomedical science will be happy to lead the way.

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About Mary Hannon-Fletcher

Mary Hannon-Fletcher is a Professor of Biomedical Science at Ulster University, a Fellow of the IBMS, a Principal Fellow of the HEA, a registered biomedical scientist and a chartered scientist. Mary has over 20 years of clinical practice in the UK and Switzerland both in NHS and private laboratories, and a further 18 years as an academic.