

Optimising student engagement with blended learning

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Introduction

The arrival of COVID-19 in the UK in early 2020 necessitated a switch from traditional in-person teaching methods to predominantly online delivery. Teaching in the following academic year (2021/22) was characterized by a blended approach, which systematically combined in-person and online teaching using both synchronous and asynchronous methods (Rasheed et al, 2020; Megahed and Hassan 2021; Bliuc et al 2007). A blended strategy offered clear advantages over an immediate return to in-person teaching, including the opportunity to make use of newly developed online resources and flexibility in the event of further national lockdowns. By moving the didactic and expository components of teaching online, timetabled in-person teaching slots were freed up for more interactive teaching (e.g., flipped learning and small group tutorials). However, not all students appreciate the blended learning approach and studies have reported that some students struggle with the associated increase in time management demands (Tahir et al, 2022), which may manifest as reduced engagement.

Some modules within the Neuroscience, Physiology and Pharmacology (NPP) department of University College London (UCL) reported a decrease in student participation, performance, and satisfaction (relative to both 2021/22 and the preceding “normal” years). Therefore, it is incumbent upon both students and teaching staff to reflect upon the aspects of blended learning that were effective, as well as those that were not.

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We opted to pursue a case study focusing on the Physiology/Neuroscience module 'Systems Neuroscience', which in 2021/22 consisted of pre-recorded lectures, post-lecture Q&A tutorials, workshops, lab visits and an optional practical class. This module was an appropriate point of focus as it implemented a wide array of blended learning strategies yet suffered from a decrease in student participation and performance in 2021/22.

ChangeMakers project funding allowed the implementation of a staff-student collaboration, through which student researchers were recruited to design and conduct a series of interviews to assess student attitudes to the individual components of the module and blended learning in general, and to ascertain how to best proceed given the recommendation by UCL to return to pre-pandemic in-person teaching in 2022/2023. We aimed to investigate the reasons underlying the decrease in engagement and performance, and explore opportunities for collaborative redesign of module content.

Methods

All module participants were invited via the virtual learning environment and at in-person sessions to participate in a module review. Of the respondents, two were selected based on merit and availability to serve as student researchers (SRs). The SRs met with the Module Organiser (MO) to discuss the objectives of the evaluation but took the lead in designing the survey and framing the questions. Mentimeter was employed to enable anonymous student participation. Module participants were invited to attend surveys via Moodle and WhatsApp with the SRs, and offered refreshments. The SRs led two semi-structured hybrid interviews (joinable in person or via Zoom) without the MO present. Both interviews were comprised of a combination of multiple choice and open questions. The first interview took place toward the end of the module and the second took place after the module's final exam. 10 out of 55 students attended the first interview. In an attempt to broaden participation for the second meeting, students were offered the chance to give their input via an online survey over a two-week period as an alternative to attending live. 4 people attended the second meeting in person and a further 4 completed the online survey. All participating students belonged either to the Biomedical Sciences or Neuroscience degree programmes.

Analysis

The SRs analysed the data from the interviews and online Moodle surveys, summarised their findings and shared them with the module organisers.

Results

Systems Neuroscience students were invited to participate in two SR-led interviews. The first interview was concerned with ascertaining students' views on the balance between in-person and online activities and four components of the module - online lectures, post-lecture Q&A sessions, workshops and laboratory visits. The second interview sought student views on assessment and proposals for improving student engagement (based on feedback received in Interview 1) and their perspectives on the assessment.

Interview 1 outcomes

10 out of 55 students (18.1%) attended the first interview.

A. The balance between in-person and online activities

50% of respondents (4 out of 8) considered the balance between in-person and online activities to be appropriate, 25% of students wanted a greater proportion of in-person activities and 25% would have preferred to have everything in-person (Figure 1A). When asked how the digital aspect of their learning experience could be improved, the 5 students who responded said that they would appreciate more online resources, such as mini-formative assessments, and summary notes associated with each lecture topic.

B. Online lectures and post-lecture Q&A tutorials

Lectures were delivered online and followed up with a Q&A tutorial, typically one week after lecture release. The purpose of these sessions was to allow the lecturer to summarise key content, work through any complex topics/ideas, and to create a forum for the discussion between lecturer and students. However, student attendance in these sessions was poor, which may have been due to the perception that these sessions offered little value beyond the pre-recorded lecture. Indeed, students reported that the follow up sessions "contained

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non-essential content” and were of “mixed” quality. When students were asked why they missed Q&A sessions, reasons given included the “early start” (9am) or having “fallen behind with lecture material”. Other factors affecting attendance likely included COVID-19 infections, or risk thereof. When asked about how to improve attendance, student suggestions included reducing the number of post-lecture Q&A sessions and incorporating activities with more relevance to the assessment (e.g. working through practice exam questions as a group).

C. Workshops

Two in-person workshops comprised of interactive discussion were included in the module to formatively assess and develop students’ subject knowledge and ability to apply it in a dynamic fashion. The students were asked to choose from four answers to express their views on the workshops. The selection consisted of “I loved them”, “Ok but unnecessary”, “Ok but could be improved” and “I did not like them”. 56% of the students (5 out of 9) felt they were “OK but unnecessary”, and 33% of students (3 out of 9) stated that they are “OK but could be improved” (Figure 1B). Despite this, 60% of students (6 out of 10) said they would like to increase the number of workshops, 30% thought two workshops were enough and only one student favoured eliminating the workshops (Figure 1C). Due to the somewhat contradictory nature of these results, students were asked follow-up open questions. One issue raised by multiple students was that some students arrived at the workshops without having adequately prepared and this lack of preparation affected the pace of the workshop and put a burden on those who came prepared (forcing them to undertake most of the discussion).

D. Laboratory visits

The lab visit component of the module comprised a video introduction to the lab followed by an in-person tour/demonstration. Unlike other aspects of the course, which were assessed through the end of module exam, this aspect of the course was assessed through a group presentation, and a critical summary of one of the lab’s papers. The lab visits were popular with the surveyed students. 78% (7 out of 9) of respondents said they enjoyed the visit (Figure 1D). In further discussion, students stated that they liked being able to choose labs in accordance with their interests and would like to do more lab visits. Several students stated that they found the associated assessment challenging. Some students did not like working

in groups for the presentation and complained of unequal contribution, though others found the groupwork element enjoyable.

Interview 2 outcomes

4 out of 55 students (7.3%) attended the second interview live and 4 out of 55 (7.3%) completed an online Moodle survey version of the second interview. The SRs proposed a reduction in the number of Q&A sessions to alleviate workload. 3 out of 3 respondents were in favour of the idea and further suggested that the remaining session could be modified to incorporate activities more relevant to the module assessment, such as working through example exam questions. It was also proposed that workshops could be modified or replaced to provide more direct preparation for the assessment.

The SRs proposed the introduction of a journal club to help to develop students' comprehension of scientific literature and critical analytical skills, better preparing them for the critical summary assessment associated with the lab visit. 3 out of 3 respondents said they would favour this. Like the teaching, the assessments for PHOL0004 occurred in a blended fashion. The final exam and the critical summary took place online, whilst students had to prepare a live group presentation on a technique demonstrated during their lab visit. All students described the workload associated with the assessments as manageable relative to other modules. When discussing individual components of the assessment, students reported that the difficulty of the final exam was manageable and the time limit for the assessment was appropriate. Additionally, they described the criteria and instructions of the exam as clear. Despite this, exam performance in 2022 was down for the online essay-based exam in comparison with the previous two pandemic years: (mean mark 55.3% in 2022 [2 hours allocated as for the pre-pandemic in-person exam] compared with 61.5% in 2020 [28 days allocated] and 63.2% in 2021 [24 hours allocated]).

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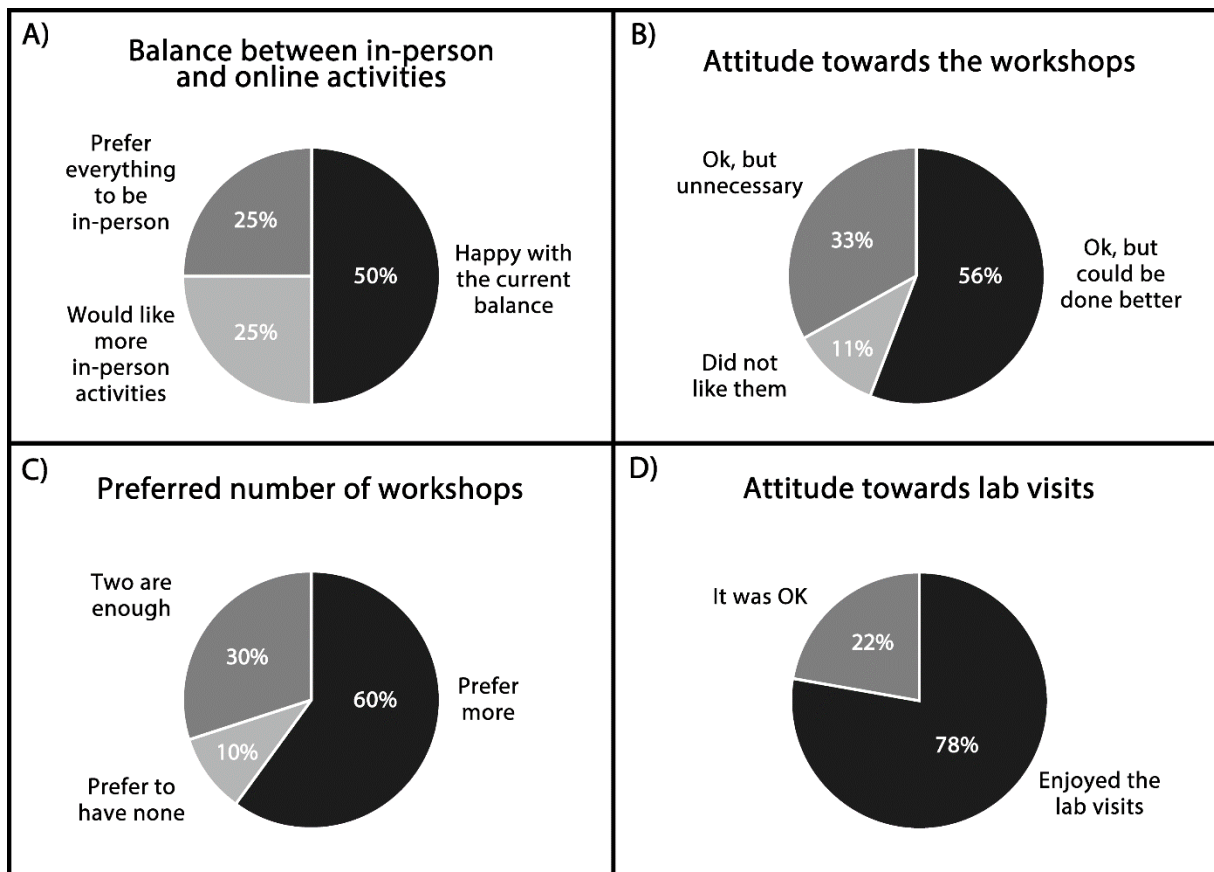


Figure 1A-D. Students' views on aspects of the Systems Neuroscience module. A) Respondents' views on the balance between online and in-person teaching (N=8). B) Respondents' rating of workshops (N=9). C) Respondents' views on the frequency of workshops (N=10). D) Respondents' attitudes to lab visits (N=9).

Discussion

Student views on blended learning

Among the limited number of students interviewed, opinions on blended learning were mixed: half of the students questioned expressed a desire for more, or entirely, in-person teaching (Figure 1A) and no student expressed a desire for a reduction in the proportion of in-person teaching. An increase in in-person teaching might improve satisfaction among some students and could help to foster peer communication networks which can contribute to satisfaction motivation and learning (Stassen 2003).

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Live Q&A tutorials provided as supplemental to pre-recorded lectures in Systems Neuroscience were poorly attended and described as “non-essential” and of “mixed” quality. This perceived redundancy may stem in part from an overlap in content with the pre-recorded lectures. Pre-pandemic, lectures alone were considered sufficient to meet students’ educational needs, additional tutorials may have served to overload some students with semi-redundant material. Indeed, blended learning approaches have been associated with increased perception of workload among some students (Tahir et al, 2022). The quality of Q&A sessions was said to vary depending on the staff members providing them. It may be that some staff were ill-equipped to design and conduct these more interactive sessions. Additional training or guidelines may help raise and standardise quality where such sessions are used in the future (Ma’arop and Embi, 2016).

It is tempting to speculate that the poor exam performance in 2022 (mean mark 55.3% vs 63.2% in 2021 and 61.5% in 2020) may be linked to the implementation of a blended learning approach. However, it may also be due to changes in the exam format and/or a lack of experience with timed exams among the 2022 cohort.

Students would appear to value supplementary teaching that provides training directly linked to the assessment rather than further discussion of taught concepts. Indeed, it was suggested that both Q&A sessions and workshops could be adapted to include activities more closely tied to the assessment. This may reflect a fixation on exam performance over learning. However, if we hope for students to be able to discuss concepts in exam questions rather than simply regurgitate taught material, then it is logical to provide direct training in this process (Biggs, 1996). Indeed, adoption of blended learning strategies has been associated with improved learning outcomes (Boyle, 2007).

Motivation and time management in a blended learning context

One reason provided for poor tutorial attendance was having “fallen behind” and not yet viewed the corresponding lectures. Inadequate preparation also negatively impacted on workshop sessions. Perceptions of increased workload and difficulty managing self-regulated

learning have been identified in other studies of the student relationship with blended learning (Tahir et al 2022). Providing additional instruction on how best to engage with blended learning and support with time management may help to circumvent this issue (Ma'arop and Embi, 2016).

Student-Staff Partnership

Encouraging active student participation in the development of higher education can promote quality teaching and increase student satisfaction (Martens et al, 2020). Student-staff partnerships, such as those promoted by UCL ChangeMakers, have facilitated collaboration on multiple levels. Partnership with SRs in this project allowed for interview sessions in which students could interact with their peers in a semi-formal manner. Having interviews led by SRs may have encouraged students to express more honest opinions (whether these were negative or positive). Interviewees may also have felt more understood because the meetings were organised by students participating in the module themselves.

The authors had hoped that having student-led interviews would encourage wide participation, however, a relatively small number of students engaged with the interviews. It can be challenging to engage students in providing feedback due to competing priorities, and the perception that their feedback will not be acted on in time to benefit them. Increased participation may be achievable by emphasising to the current cohort the advantages of the changes suggested by their predecessors or through inducements (e.g. rewards) or punitive measures (e.g. refusal to release coursework results in response to non-engagement).

The SRs had the opportunity to interact closely with academic staff in planning, interpretation of results and in writing up this case study. The SRs indicated that they found their experience on the project valuable, as it provided insight into the higher education system, and because they felt that they were contributing to the development of teaching in their home department and the academic community in general (Cook-Sather et al, 2014). The Staff-SR partnership also provided an opportunity for the MOs to reflect on their own teaching practice and to gain more insight into the students' experience of the module (Cook-Sather

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et al 2014). This collaboration thus helped to bring new perspectives to the lecturers and contributed to the process of improvement of the module, for example, through implementation of journal clubs and exam training.

Limitations

Despite the offer of refreshments, interview sessions were not well attended. Therefore, the results and discussion are based on a very limited number of responses. Further, as engagement was open and voluntary, there may be some bias in the selection of participants (in favour of motivated students). Nonetheless the data and opinions presented correspond to real students' views and we feel that the points raised are worthy of consideration and discussion.

Conclusions

Some students favour in-person teaching over a blended learning approach. Where a blended approach is pursued, it is essential to ensure that in-person sessions offer something that the students value, for example, constructively aligned teaching in a format that will better prepare students for assessment (Biggs, 1996), or novel experiences (such as those offered by the lab visits). We aim to repeat this review at an earlier timepoint in the module in order to engage more students and gain a more representative perspective. However, the findings of this ChangeMakers-funded review have already served as the basis for changes to the content and delivery of Systems Neuroscience, and recommendations for the delivery of other modules within NPP.

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