COMMENT

# Letters to the editor

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## Dental education

### Flipped classroom questions

Sir, we enjoyed reading the well-reported paper by Binnie and Bonsor on flipped classrooms (FC).[1] This approach has been particularly accepted in tertiary education worldwide during the COVID-19 pandemic, and it has been recently introduced within dentistry.[2]

The authors correctly justified using FC for a practical subject such as biomaterials.[1] For instance, Kolb's learning cycle is a theory of experimental learning that supposes that students learn by doing. Moreover, a deeper learning has been intended by adding interactive problem-based learning seminars to the course.[1] The advantage of such a highly collaborative and technology-friendly population as the 'generation Y' is that they provide immediate feedback to case studies and support mentoring/coaching. Nevertheless, the students were forced to attend the sessions since the course description became a 'tutorial'.[1] Consequently, we doubt that the study would have had the same participation rate and engagement if the sessions had been labelled as 'lecture,' which does not require mandatory attendance as it was before.

Prior to the change of the teaching methodology, most students were dissatisfied. However, the FC produced four times more satisfied students than dissatisfied. Similarly, with the teaching time and accessibility, students became collectively satisfied. Despite the material content being the same, more students had significant positive commentaries on the content after the change. As expected, the use of tutorials and hands-on activities improved the learner engagement, satisfaction and interaction. Additionally, the students were satisfied with the FC as they accessed the online material at their own pace, as many times as they wished. We understand the benefit of adopting a teaching method because of better cognitive development[2] or academic attainment. Nevertheless, to what extent shall we pay attention to student dissatisfaction to determine successful teaching methodologies? This might still be a dilemma in clinical education. We recognise the importance of consumer satisfaction in a product.[3] Again, should dental schools opt for a FC format based on higher student satisfaction levels?

Also, FC might not suit all students as it demands completing preparatory work before the live sessions. It was accurately recommended that more quantitative research be conducted to decide if the FC format could positively impact the summative evaluation. This is crucial since the study failed to collect numerical data from the outset. While acknowledging the advantages of FC, we also wait for factual information that could help guide quantifiable improvements over traditional methods besides student satisfaction.

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*R. S. L. Binnie and S. J. Bonsor respond: We would like to thank Drs Afrashtehfar, Maatouk and McCullagh for their interest in our paper on flipped classrooms (FC).[1] These colleagues reiterate many of the benefits of the FC approach but attributed increased student engagement and participation to the 'mandatory tutorial'. A high level of attendance and participation is essential in the undergraduate dental curriculum to ensure that dental graduates are properly equipped with the skills and knowledge to care safely for their patients, not to mention fulfilling the demands of external stakeholders such as a Regulator. The ability to timetable mandatory sessions makes the FC technique so appropriate in undergraduate dental teaching.*

*Course evaluation is essential following any course and we agree with our colleagues that it needs to be much broader than assessing student satisfaction. However, student feedback has been found to be an effective tool in teaching evaluation[4] and is an essential process in the quality assurance of university courses. Information regarding the student experience is actively sought and is expected to be acted upon. If FC offers higher student satisfaction levels not to mention increased engagement, then surely its adoption should be considered if not implemented?*

*For reasons discussed in the paper[1] we were unfortunately unable to collect numerical data. Additionally, we accept that we were only able to evaluate the reaction, the lowest level of Kirkpatrick's hierarchy of evaluation[5] within our paper as is consistent with, unfortunately, most medical educational evaluations. We acknowledged that future research in this area will be most valuable to provide quantifiable data which is currently largely lacking in the literature. We share our colleagues' aspirations to see further work in this interesting area.*

### References

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