



PTAS Project Report (for REGULAR PROJECT GRANTS)

Project Title: Physical Activity in Medical Education: A Flipped Classroom Approach

B Innovation Project (introduction and evaluation of an educational innovation, usually taking a practical approach)

Principal Investigator : Jeni Harden and Sam Fawkner
Schools/department : Usher Institute of Population Health Sciences and Medical Informatics and The Institute for Sport, Physical Education and Health Sciences

Team members (including Schools and Departments) : Dr Paul Kelly, The Institute for Sport, Physical Education and Health Sciences; Professor Chris Oliver The Institute for Sport, Physical Education and Health Sciences; Dr Danijela Gasevic, Usher Institute of Population Health Sciences and Medical Informatics

For further details, please contact:

Project teams must submit a report within 4 months of the conclusion of their project. Copies of dissemination material (eg journals/newsletter articles, conference papers, posters should be listed and attached (separate to the word count). The brief report will be published on the IAD web pages.

Report (maximum 1500 words)

What did you do?

This project involved the development, delivery and evaluation of a flipped teaching session for 1st year medical students to facilitate learning in physical activity. The session was delivered as part of an existing module, Health, Ethics and Society on the undergraduate medical degree (MBChB). The project involved six students on the MBChB as pedagogical co-creators. The students were integral to the project team in all stages of the project; developing the materials for prior learning, the content for the class room session, filming and editing of video content and evaluation and dissemination of the project. The materials that were developed were designed so that they could be maintained as a stand-alone learning package for all medical students, and included design of an animation explaining the flipped classroom approach. Evaluation focused on the method of delivery and student learning experience.

What did you find out and what were the benefits to student learning?

1) Medical students are receptive to flipped classrooms and this was a positive learning experience for most students

The flipped classroom was delivered in pilot (Feb 2017) and in full (Feb 2018). Students were surveyed with regard to engagement with prior learning, classroom delivery and learning. The



concept of the flipped classroom was explained in class (pilot), and via a custom made animation for students (2018).

Following the pilot (2017), 82 of 206 students enrolled on the module completed the feedback. Of those, 80 students watched the pre-learning videos, of whom 60 students rated the materials either excellent or very good. 97% of the open response comments (n=60) were positive. 71 of the students responded 'yes' or 'somewhat' to the question that asked if the style of learning encouraged them to reflect on knowledge gained more than a traditional lecture, and 73 responded 'yes' or 'somewhat' to the question that asked if the flipped classroom approach had been a positive learning experience.

202 students were enrolled on the module for 2018 delivery. There were ~800 hits in learn for the prior learning materials in the week prior to the classroom session. Going further resources were developed to allow the students to progress their learning after the classroom session. Hits for the going further resources suggested that students accessed these materials throughout the remainder of the module (figure 1).

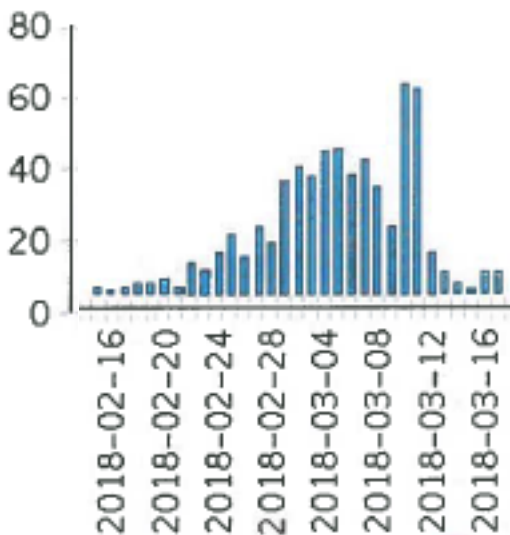


Figure 1. Hits on the going further resources

113 students attended the classroom session. Nearly all students (93-97%) completed the prior learning tasks and rated them as useful and relevant or very useful and very relevant. Responses to the questions in Table 1 were answered by fewer students (completed out of class time).



	Yes	Somewhat	Not really sure	Not really	No
Did you find the discussion in class engaging?	9	12	3	5	0
Did you find the discussion in class encouraged you to think about the role of the doctor in prescribing physical activity?	18	7	1	1	1
Do you think this approach to learning was a positive experience for you?	15	9	2	2	0
Do you think this approach to learning encouraged you to reflect on knowledge you have gained more than using a lecture/workshop model?	14	8	1	3	1

Table 1. Student responses.

Scenario videos were created bespoke for the class, and were considered by nearly all students to be relevant and of value. Open questions following the 2018 delivery provoked mostly positive comments; some specifically indicated that the values of a flipped classroom had been realized and that this was a form of learning that they would value more of.

'I think it was useful to have done the preparation beforehand and test our understanding in the lecture as this is probably easier and less time consuming than learning the material during the lecture and trying to understand it afterwards'

'I think it involved us more, by having us prepare in advance'

'Felt I learnt better with the pre-lecture learning compared to normal lectures'.

'I think the flipped lecture was a more interactive way to learn and because of it I remember the information better

'Would like to have more of this kind of teaching in the future'

With both the pilot and the full delivery, there were some negative comments regards repetitiveness of material in the classroom. Whilst consolidation and self-evaluation of learning were an intended outcome of the classroom session, there was also encouragement of the students to apply previously learnt principles. There is a need to review this going forward.

To enable greater depth in responses we arranged a focus group with students following the classroom session, conducted by three members of the students in the project team. This presented similar findings, primarily that the learning package had achieved its intended outcomes.

A thematic analysis of the focus group identified key themes (Figure 2)

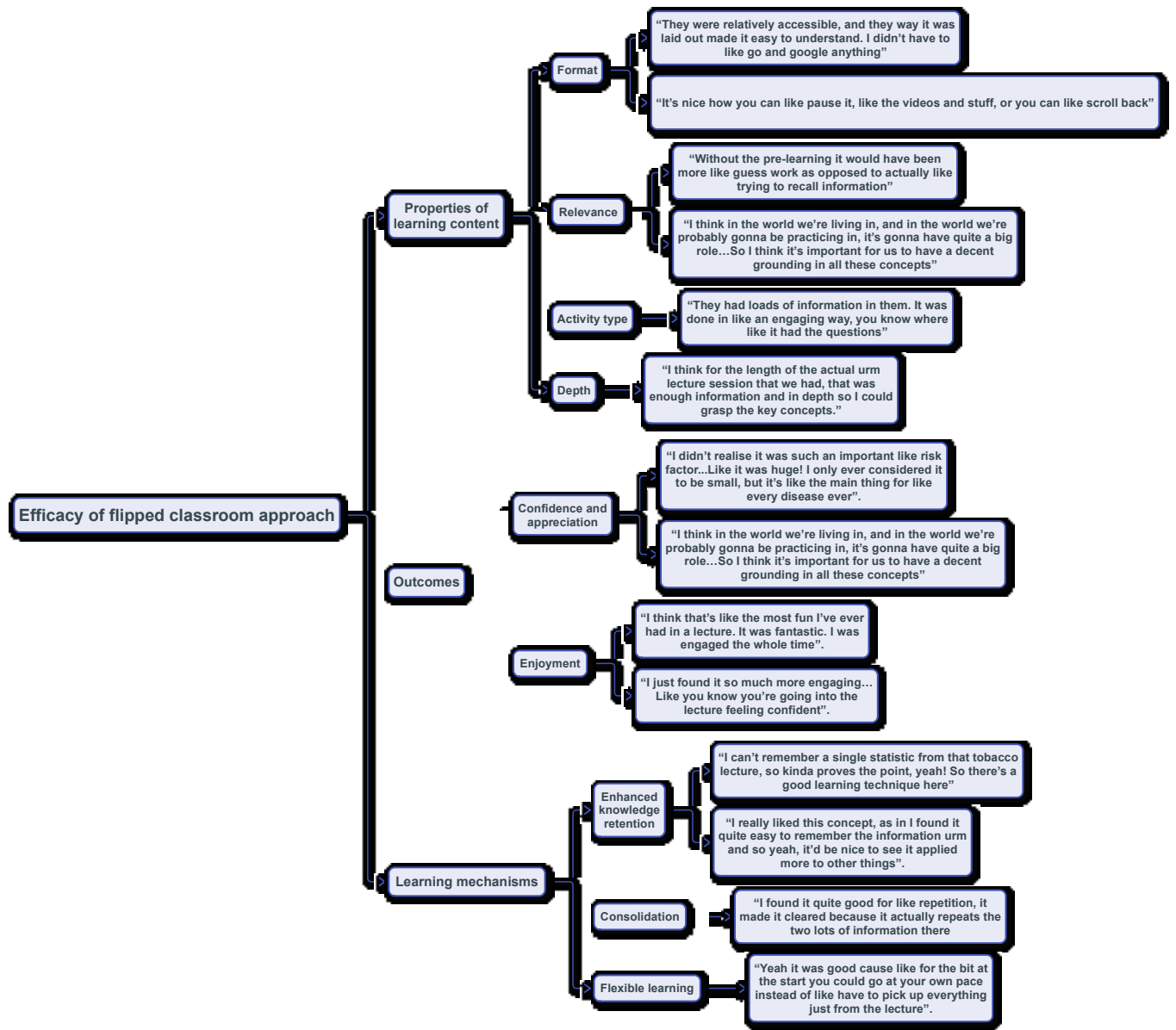


Figure 2. Thematic analysis of the focus group exploring student's experiences of the flipped classroom.



2) Students became more aware of the importance of physical activity in preventing and treating ill health and wanted to learn more on the topic.

Despite the well evidenced importance of PA for health and the need for doctors to be informed about PA, PA is not taught routinely in medical curricula, and to date, PA was not covered in the Edinburgh MBChB.

23 of 26 students indicated that they would like to learn more about the role of physical activity in preventing and treating ill health in patients. Student's responses to open questions in the survey and the focus group provided support that the teaching package had encouraged the students to consider the importance of physical activity in their profession (see also figure 2)

'The statistics surprised me, I did not realise exercise would have such an effect'

'I realised I wasn't actually sufficiently educated on the current guidelines'

'The video motivated me to do more exercise and made me more aware of the importance of being healthy yourself in order to be a good advocate of a healthy physical lifestyle'

It was intended that questions relating to PA for health would be included in the end of semester year exam. Due to review of the end of year exam this did not take place, but applying the knowledge of PA formed part of a broader piece of coursework on health promotion.

In 2015/16 we collected data pertaining to undergraduate student's knowledge of the adult physical activity guideline (150 minutes a day), where we reported that only 14.9 % of 1-3rd year medical students knew this guideline. As a crude indication of knowledge, in the class session using Top Hat, 98% (n=98) students correctly identified the guideline. We will repeat the survey with the students at the same time of year as in 2015/16 to provide additional indication of the extent to which the students have achieved this specific learning outcome.

3) Involving students as pedagogical co-creators is valuable but poses some challenges.

Both staff and students working on the project found the staff-student team approach to be a valuable way of working. From the staff perspective, this enhanced the development of resources by engaging directly with students and so improving the likelihood of pitching them correctly. Time commitment in supporting the students to develop resources suitable for use was greater than anticipated. Informal conversations with the students indicate that they enjoyed it felt that it had enabled them to develop new skills. We plan to conduct a fuller evaluation after the summer break.

How did you disseminate your findings?

The findings from the pilot were presented the Scottish Physical Activity Research Connections (Edinburgh, 2017), and to the Physical Activity for Health Research Centre. The findings from the 2018 delivery will be presented at the Sport and Exercise Medicine Conference (2018) and The Association for the Study of Medical Education Conference (2019). The project is used as an illustrative case of involving students as pedagogical co-creators in a workshop at the Usher Education Forum (Edinburgh, June 2018)



Harper, A; Wasag, N; Lynch, L; Wang, C; Sharland, E; Mckinnon, S; Harden, J; Kelly, P; Gasevic, D; Oliver, C and Fawkner, S. Physical Activity in Medical Education: A Flipped Classroom Approach. Presented at the Scottish Physical Activity Research Connections, Edinburgh 2017.

How could these benefits be extended to other parts of the university?

-
- The materials developed for the pre learning will be used for preparing a similar flipped classroom for physical education students.
 - The animation created that explains the flipped classroom approach is available on Media Hopper, and is appropriate for generic use.
 - The team's experience of working co-creators (staff and students) can feed into the university-wide range of projects working in this way.
-



Financial statement (please delete as appropriate):

This project has utilised the funding awarded to it by the PTAS adjudication committee and the Principal Investigator or School Administrator appropriate can provide financial statements showing the funding usage as and when required by the UoE Development Trusts who may require it for auditing purposes.

Please send an electronic PDF copy of this report to:

Email: iad.teach@ed.ac.uk