# Small steps on the journey to 'flipping the classroom'

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*I would like to thank colleagues from the ERiE research group (Department of Economics, Birmingham Business School (BBS)) and participants of the BBS Education conference 2022 for their useful feedback and discussion when this case was presented.*

**Abstract**

This reflective case study focuses on the implementation of a flipped classroom approach in the context of a large quantitative second year module. More specifically, I propose to share a very gradual and nuanced approach, which will be of interest to those who are already convinced of the benefits of the flipped classroom but are concerned about how to approach it. This intermediate solution or a 'semi-flipped' approach should be particularly relevant in the context of the post-pandemic teaching environment. The key idea is to select the relatively simpler parts of the course for bite-sized pre-recordings for students to engage with before the lecture, while the more challenging material, requiring more comment and interpretation, is discussed in a more traditional way. The main expected benefits are two-fold:

- students have the opportunity to familiarise themselves with the foundations and terminology of the subject at their own pace, enabling them to be better prepared for the more advanced material
- there is more time and space in the lecture room for discussion of this more advanced material.

**Introduction**

The aim of this case study is to describe my experience of the flipped classroom approach to teaching with the hope of encouraging others to consider it in different contexts, which may be felt as a particularly daunting or challenging task when teaching large cohorts of students and in some technical or quantitative subjects. Using the example of a second-year

undergraduate compulsory microeconomics module with over 400 registered students, I will illustrate that the flipped classroom approach can still be used, and that the teaching does not all need to be 'flipped'.

The flipped classroom approach has been implemented in a variety of contexts since the late 1990s (see, for some examples: Lage *et al*., 2000; Mazur, 2009; Brame, 2013; Uzunboylu and Karagozlu, 2015, Schell and Mazur, 2015); its merits having been discussed and demonstrated multiple times across a variety of subjects and levels of study (Roehl, 2013; Little, 2015; Rowley and Green, 2015; Strelan *et al*., 2020). While the debate may persist on the costs of implementation vs the relative benefits for learners for specific subjects/circumstances, I will neither discuss this nor provide any evidence to address this question. Instead, I will focus on the practicalities of the implementation, taken as given that the decision to take interest in the flipped approach is already made and bearing in mind some of the reservations colleagues may have (as, for example, discussed in Dumont (2014) or in the excellent reflective account by Towey (2015) of a failed flipped classroom design in the particular context of a computer science course).

**The starting point**

The key idea of the proposed approach is simple and in line with the original proposal of Mazur (2009): the relatively easier content of the module is provided in bite-sized pre-recordings, while the more complex (and often more interesting to discuss) material is presented during an interactive session with the students. However, I would argue that we are currently in an advantageous position to attempt such an approach as a considerable number of courses *already have* all / most of the material pre-recorded due to the actions taken during the COVID-19 pandemic. This is not to say that those recordings can all be used 'as is'; but they do present a wealth of material as a starting point, or as a draft that can be edited (which is easier than to start from scratch).

**Implementation: small and simple does it**

The first nuance that I propose is to carefully select the relatively simpler elements of the most fundamental material (i.e., material that is less likely to change, especially for

beginners and intermediate technical courses), and to edit it into ’bite-sized’ sections, embedding, if possible, interactive elements (e.g. recorded videos allow for simple embedded quizzes). This selection will constitute the ‘pre-recorded’ part of the course. Noting that studies (e.g. Harrison, 2020) have argued in favour of bite-sized videos due to the attention span and psychology of feeling ‘the progress’ in learning, I do not propose to agree or argue with this view, which has been met, in my personal experience, with strong opposition from colleagues. Rather, I consider what the merits of bite-sized recordings are for me as a teacher as well as for the students: having small sections enables the teacher to assemble and re-assemble the course, editing a small fragment rather than a long recording of a video, thus providing more flexibility. This should also enable an increase in the potential mix of teaching materials, remembering that it is important to have some/sufficient interactive elements (embedded quizzes in the virtual learning environment (VLE) being the most straightforward to incorporate).

It is important to note that the selection of material should focus on the relatively simpler parts of the course, rather than exclusively on theory or descriptions. The division ‘theory vs practice’, if applied to the selection of the material, is likely to: (i) devalue the theory as something secondary that can be learned in one’s own time and (ii) confuse learners where more complex theoretical concepts are presented, lessening the opportunities to ask questions and to ask for additional explanations. I do not have a theoretical underpinning for the above - it is only suggested by my own experience. The next practical question that may arise is how one is to know what is relatively simpler? To this, I have only one answer: experience and observation. The relatively simpler material is that which has in the past generated relatively fewer questions from students.

**Discussion: thinking before speaking**

The second nuance that I propose to discuss is the engagement with students during the flipped lecture. When I first attempted to flip the classroom, I believed that I had to interact with every (or nearly every) student - which is, of course, challenging for any course with more than 50 students. I now hold a different belief: it would be sufficient to: (i) give a good number of students the opportunity to interact (for example, to answer a question/problem

set) and/or (ii) invite students to talk to each other for 5-10 minutes (ideally about the lecture; this is a peer learning approach). Let us look at both types of interaction in the context of a large quantitative lecture from the perspective of a student: answering (or even asking) a question in front of one's peers is intimidating, daunting, and generally not accessible to many types of learners (those who are shy of their knowledge, accent, background, etc.). While we always encourage our learners to participate by being both inviting and approachable, we are not, and cannot be, in control of their fears, prior experiences, etc., especially when there are 200+ peers (especially if the lecture is recorded, which may add to the potential stress of speaking up). Additionally, and no less importantly, it takes time to process the question or presented content, to think of an answer or a suitable question, to formulate it and to gather the courage to speak up.

To summarise the arguments above, I believe that for an interactive lecture, learners should be given time to think/process information before an interaction is expected. Giving 5-10 minutes of thinking alone, or when appropriate, talking to a neighbour, enables learners who are relatively shy to contribute; and gives time for everyone to formulate a question or an answer. Is this time wasted? Is this a break for the lecturer? I argue that thinking time is not time wasted, and that this is far from a break for the teacher. The second part of the argument is easy to defend: while students are talking, make your way round the room (especially to the back of the room) and engage with some students, perhaps giving some hints, etc. Thus, it is not a break; rather, it is a good opportunity to give students individual time with the teacher with less pressure.

The first part of the argument about the thinking time requires some stepping back. The most immediate counter-argument would be that students can, or even should, do the thinking in their own time outside of the lecture room: that is what 'University independent learning' is all about. My point is that the in-session thinking time is not instead of, but rather *in addition* to, the individual thinking time: it also fosters the habit of critical thinking, questioning and discussion. In other words, for those students who are not accustomed to doing so (thinking *is* different from rote learning, which is much too common in some schools), it fosters a good habit; it enables more interactions (of different types) from a

more diverse group of learners. This does not need to be to the detriment of the volume of content presented in any given course: the time in the interactive lecture is 'freed up' by the pre-recordings. Given that the material discussed is more complex, it is also only natural to give learners more processing time. Given that this material is also hopefully more interesting and more conducive to a debate, it is also more satisfying to deliver for a lecturer, particularly if the course is repeated multiple times. In a post-pandemic context (and where safe), increased interactions in the lecture room are also conducive to a more cohesive and collegiate/collegial environment.

While I hope that the arguments above are convincing in terms of large lecture rooms, little has yet been said specifically on relatively more quantitative subjects. I propose two additional points specific for such subjects: (i) the teacher needs to give suitable time for processing and asking/answering questions as this is likely to be slower than in more discursive subjects; (ii) the problem sets/questions put to learners in the room need to be of suitable difficulty and time requirement; if a complex problem needs to be processed, an intermediate result may be either asked for, or given, rather than the solution to the whole problem.

**Suggestions and potential for evaluation**

The prospect of flipping your classroom can be daunting, but I suggest that the way to progress is by trial and error. In a very risk averse HE environment, I suggest a 'small steps' approach. I suggest that one does not need to fully commit to a flipped approach, whereby most, if not all, simple core material is pre-recorded, and only complex topics discussed in the session. On the contrary, it may be useful to choose *one sub-topic* per lecture, where *some* simple content is pre-recorded, and an interesting case study discussed in the lecture. Such an approach presents the problem of lack of habit-formation for learners: however, offering a limited flipped approach in each or every other lecture may be sufficient, as long as students are warned in advance. The aim of such a 'small steps' approach is to gradually build confidence in both the lecturer delivering and the learners attending. Learners are likely to value (or at least not resent *en masse*) the approach and the lecturer will have the possibility of improvement in this technique from one year to the next.

Anecdotal evidence suggests that some students, notably those who appeared to be the most engaged, reported (via occasional email/conversation) that they valued the opportunity to have more interaction in the lecture as a result of some material being pre-recorded. Some international students also mentioned that they appreciated the opportunity to familiarise themselves with the terminology from the pre-recordings before attending the lecture. However, these evaluations have to be taken cautiously, as there was no direct comparison for the same course with a more traditional approach at the same level: all students were subject to the same treatment. As yet, no formal evaluation was asked from the cohort: a questionnaire and several focus groups with semi-structured interviews will be appropriate methods to evaluate the effectiveness of this approach (as illustrated by Nguyen, 2018). Another, and perhaps under-appreciated method of evaluation, would be to provide peer-instructor observations of several sessions to judge students' level of engagement and progress, but also to observe whether all learners feel included and comfortable with the approach.

**Limitations and mitigations**

The first and main limitation of the flipped classroom approach (which has been pointed out by several colleagues in the Birmingham Business School Education conference in 2022) concerns learners who have failed to engage with pre-recorded material, due to time constraints, environmental/access constraints, lack of organisation, or 'recordings fatigue'. This is undoubtedly a very valid limitation of the proposed approach. It is, to some extent, mitigated by the fact that *some* content, and the most interesting part of it, is delivered during the interactive session, where the lecturer can show their passion for teaching their subject and fully engage their students. Thus, students who have not engaged previously should acquire the motivation to engage with pre-recorded materials. However, this addresses only part of the issue; a careful selection of the material and formative/summative assessments as checkpoints should be used. Students who are falling behind are always a concern, just like those who are much more advanced than the rest of the group. One suggestion is to split the cohort according to the level of prior study and/or

provide additional help or advanced/optional materials, although both of these solutions require additional and significant resources.

The second important limitation concerns resources. Delivering a flipped or semi-flipped lecture requires more time and energy (at least in the first few years of teaching a particular subject) than a traditional lecture (as highlighted by, among many others, Tu and Liu, 2016). Additional thought and preparation are required for in-session discussions; pre-recorded materials and any interactive elements need to be prepared and updated. Even more importantly, the delivery of the session and interactions require more energy and passion from the lecturer (and any assistants) during the session as more aspects could go wrong, more cohort-management is needed, and simply more walking about the room and interacting with students is expected. In a very resource and energy constrained HE environment, these are important considerations.

**Conclusion**

Reflecting on my own experience on the choice of a flipped classroom approach, I recognise how much of it was driven by practical considerations of what can go wrong, which is particularly daunting in a large cohort setting. Some decisions were shaped by either a cost/resource minimisation attitude (e.g. use of existing pre-recordings) or by strong risk-aversion (e.g. flipping only the relatively simpler elements and flipping only part of the syllabus). However, while practical considerations are very important, these are also anchored in a sound pedagogical approach: from the decision to adopt all or part of the flipped classroom teaching to giving learners space to engage with their learning within the lecture room setting. These principles, combining practicalities with pedagogy, are both adaptable and scalable to other disciplines and levels of study, just like the flipped classroom approach itself is versatile and beneficial for all levels of learning (Strelan *et al.*, 2020).

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