How to induct students into the flipped-classroom model

Jonathan Sim explains how he has designed learning activities to ensure students complete the preparation work necessary to get the most out of the flipped-classroom model

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Jonathan Sim
National University of Singapore

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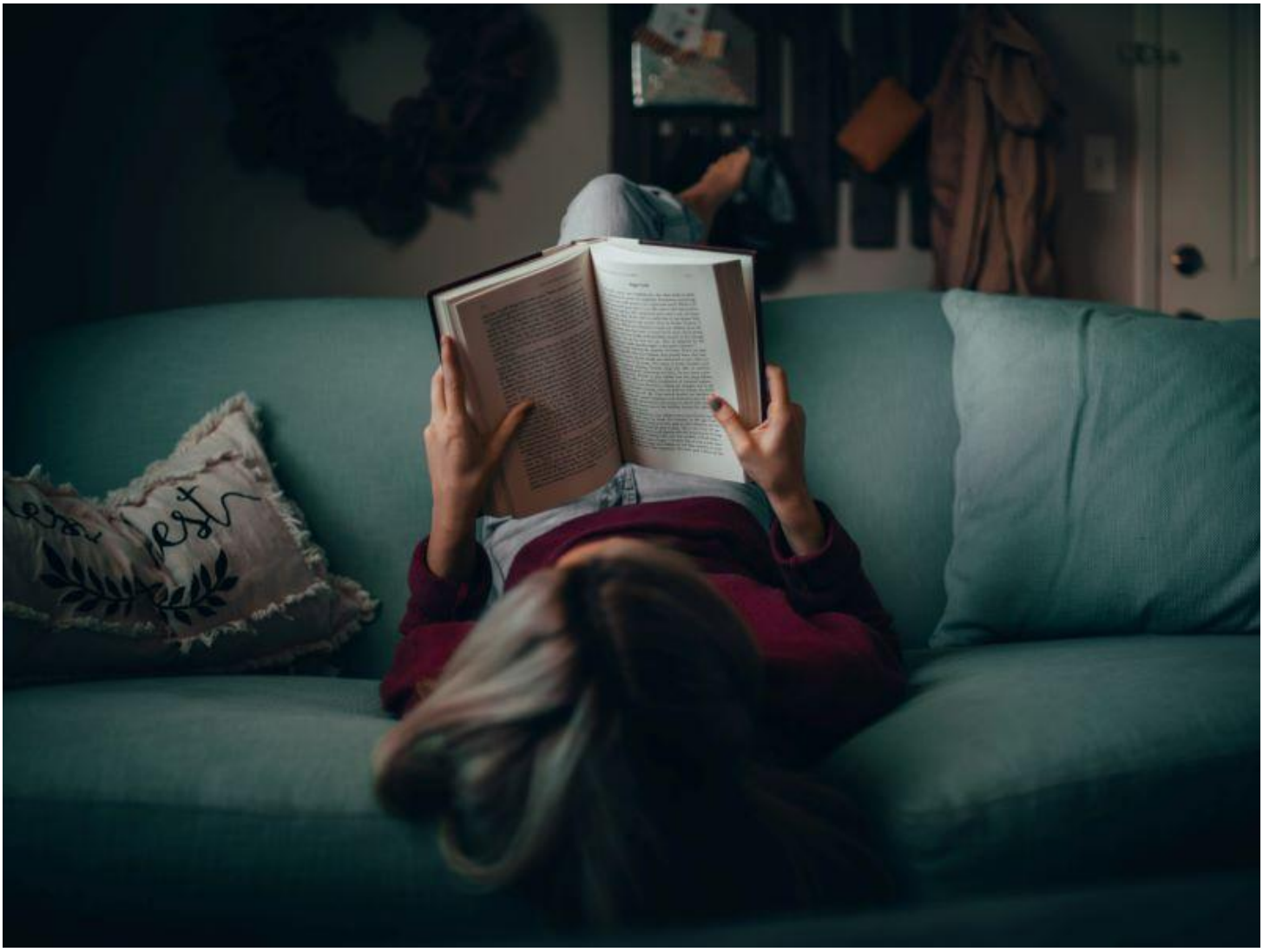

Top of page (/campus/how-induct-students-flippedclassroom-model#) Main text (/campus/how-induct-students-flippedclassroom-model#main-text) You may als

The flipped-classroom format is a type of blended learning where students are required to do preparatory work – such as watching lecture videos or completing assignments – before coming to a face-to-face class to work on more challenging problems with the facilitation of an instructor.

However, one challenge of teaching flipped-classroom modules is that a big proportion of students often come to class unprepared. Either they do not watch the lecture videos or they skim through them before the tutorials. Thus, they lack a proper understanding of the content and many are unable to participate in class activities. The tutorial ends up becoming a lecture where we go over the basic content instead of challenging the students to take their learning further.

When I have asked my students why this happens, the most common reason is their unfamiliarity with this learning model. Raised in the traditional classroom model, almost all students are new to the flipped classroom. They enrol with the expectation that they can learn more effectively in the presence of a live teacher, where they can pick up hints and clues on what they should be focusing on when they review the course materials. This way, they feel assured that they are on the right track when they revise the course materials on their own.

Limited effectiveness of quizzes

A common solution is to implement graded online quizzes right before face-to-face classes. I have experimented with this and found the effects quite limited. Quizzes alone are insufficient in inducting students into this style of learning.

Also, students can score well in online quizzes but still retain many defects in their learning. I like to think of the flipped classroom as analogous to learning to drive. It is not possible to learn to drive well from watching videos alone. And quizzes are insufficient in testing or reinforcing driving abilities. More needs to be done to facilitate the student's learning. The student cannot know what he or she does not know until the student has had the experience of being on the road, so to speak.

The benefits of pre-tutorial assignments

Over the semesters, I've found that a particularly effective way to induct students into the flipped-classroom model and ensure higher levels of pre-class preparation is through a pre-tutorial activity. In my classes, this takes the form of an open-ended assignment of 600 to 800 words that is due before each tutorial.

Students are given a scenario and a problem to solve. The discussion invites them to role play and so invokes their imagination. For example, an assignment topic could be: "Imagine that you are an intern and your boss has tasked you with developing an algorithm to determine a delivery route for emergency medical supplies".

Role playing is powerful because it forces students to step out of themselves and, for that moment, pretend to be someone else. This helps motivate them to solve the problem to the best of their abilities as they can sympathise with the people they are tasked to help. And the sense of accomplishment in completing the task is a lot greater, making the activity very satisfying and almost like playing a game.

The scenario is designed such that it requires students to creatively apply what they learn in the lectures. This compels students to develop their understanding beyond a superficial level as they try to turn their theoretical comprehension into something practical. It helps students discover and rectify defects in their learning. Students have provided feedback on how this has helped them think more deeply about course materials as they revise the lectures and quizzes or seek clarifications from my teaching team.

Scenarios are designed so there is no one clear answer, but instead myriad possible solutions. Assignment grading is based not on getting the right answer, because there are many possible ones, but on the way students explain their thought process to demonstrate reflective, self-critical awareness. This encourages students to experiment and explore approaches before presenting what they think to be the best solution.

I inform students that tutorials are built on what they have done for pre-tutorial assignments. This sets expectations on what needs to be prepared before class. And when students see what is expected of them in the pre-tutorial work, they make more effort to be well prepared for the challenge that awaits them later.

The introduction of the pre-tutorial activity has been very effective in flipped-classroom courses. With well-designed pre-tutorial activities administered regularly throughout the semester, I had about 80 per cent of my students coming to class well prepared for the challenging tutorial activities in the second semester of the 2020/2021 academic year, up from 40 to 50 per cent of students in earlier semesters when I was experimenting. As a result, we were able to take their learning a lot further in class.

More importantly, students said that the pre-tutorial activities helped to induct them into the flipped-classroom model. This has helped them learn to become more independent learners as the assignments provided them with the structure to confidently pursue self-directed learning and exploration.

Jonathan Sim is an instructor in the department of philosophy at National University of Singapore (https://nus.edu.sg/).