

## Flips, double flips and advanced flips: next steps in flipping the classroom

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The Flipped Classroom is a pedagogic approach that currently has a high profile. It supports the use of digital technologies and online resources and as a result it is one of the key ways blended learning is being taken forward in higher education. This paper explores the concept and how it is being put into practice at the University of Brighton, and considers some ideas for more advanced flips.

The flipped, or inverted classroom, as it is sometimes known is a pedagogic model where the “typical classroom and homework elements are reversed” (Educause 2012). The model was brought to prominence by two US high school chemistry teachers, Jonathan Bergmann and Aaron Sams, who originally wanted to be able to offer students who had missed class due to sporting commitments a way to catch up. These first flips were simply Powerpoints with an audio commentary shared between the two teachers that students could view at home. However, Bergmann and Sams quickly realized the potential of getting all students to view the videos at home before they came to class, as then in class they could complete the learning activities with the help of the teachers (Bergmann and Sams, 2012). This was effectively doing what would have been homework, but in class. They describe flipped learning as “a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter” (Bergmann and Sams 2014 p. 6 taken from [www.flippedlearning.org](http://www.flippedlearning.org)). They subsequently developed their flipped model to create programmes of study that allowed their students to complete their learning at their own pace while all working in the same class (Bergman and Sams 2014). Students could view videos and complete the classwork as it suited them, or as their ability in the topic allowed, an approach which is almost impossible to achieve in traditional teaching models. The model is increasingly popular in many schools across the USA and UK, and received national attention outside the education sector (New York Times 2012; Washington Post 2012).

The definition of the flipped classroom in higher education in the UK is broader than in Bergmann and Sam’s model, and is based on an understanding of the importance of active learning in the classroom, the challenges of finding time to allow those activities to take place, and the opportunities afforded by the use of new technologies. Its core features have been identified as “content in advance... educator awareness of students understanding, and higher-order learning during class time” (O’Flaherty and Phillips, 2015 p 95). There is a wide variety of ways that the flipped approach can be incorporated into teaching, and quite

often this can simply be a rebranding of activities that teachers have always engaged in with a technological edge, for example, giving students electronic rather than paper articles to read. There is a huge variety of different activities taking place, and these are only just beginning to be systematically researched and published. Overviews of these publications suggest that there is a lot of indirect evidence that flipped classroom improves student learning and encourage further research to be done to confirm this (Abeysekera and Dawson, 2015; O'Flaherty and Phillips, 2015).

The potential for the use of technology within flipped approaches is also attracting attention. Within higher education it has been identified as an important development by Educase (2012), the leading think tank on trends in learning technology in all areas of education. This is mainly through the broadening of the media students can use to access the flips, for example mobile devices, and the range of resources that are easily created by tutors (e.g. video, quizzes) or accessed by tutors from the internet to share (e.g. Open Educational Resources known as OERs). The opening up of face-to-face sessions to more interactivity also encourages the use of technologies such as mobile devices in class.

As a result of this national and international interest, the University of Brighton developed a small flipped classroom initiative that was approved by the Blended Learning Sub Committee and Learning and Teaching Committee in autumn 2014. The aims were to identify:

- The impact on student learning as perceived by the students and indicated by their levels of engagement both online and F2F
- Levels of support required
- Technology requirement
- Time commitment

While some staff at the University of Brighton are experienced in the flipped learning approach (see Wood 2014) this initiative was aimed at participants who had little or no experience. The one staff member who had previously created flips developed three new ones for this initiative. In total 7 members of staff signed up. Each one was met individually by a member of the Centre for Learning and Teaching and a Learning Technologies Advisor to discuss the pedagogic and technical aspects of the idea, and follow up support was provided as required. The discussion focused on developing ideas around both the material to be flipped and what subsequent classroom activities would be developed, based on the University's blended learning tool, the 6 Key Steps to Blended Learning. The breakdown of the kinds of flips that were developed are presented in table 1.

Type of pre-session activity	Face to face activity
Students watch videos sourced from the internet (2 examples)	1 Discussion and poster presentation 2 Students undertake the skills based task demonstrated in the video
Students read ejournal articles (2 examples) with an activity e.g. addressing particular questions	1 Nearpod interactive sessions, and groupwork to create a presentation 2 Discussion in groups applying theory to case study
Students read online articles, visit websites and watch videos	Students visit exhibitions in London having chosen appropriate information to help them engage.
Students do internet research on a visiting speaker	Speaker spends less time on introduction and more time on question and answer session
Students watch videos created by the tutor, and apply skills to a set reading, completing a form	Group discussion on the form

**Table 1 Description of flips undertaken in the initiative**

The flips developed by the participants were in many ways typical of the flipped classroom approach. These include finding resources on the internet which cover content which would otherwise be presented in class, for example, videos of skills that normally would be demonstrated at the start of a practical session. Reading journal articles before a session is a traditional learning activity, but these flips had the extra dimension of using ejournal articles that are accessible on many mobile devices, combined with students answering questions to focus the reading activity. Research has shown that increasing interactivity with flip materials increases student engagement (Delen, Liew, Willson, 2014; McKenzie et al 2013).

While in the wider literature the flipped classroom is often characterised by the creation of videos based on Powerpoints, only one of these examples created a video from scratch. Creating videos can be quite time consuming, but was helped in this situation by the fact that the lecturer had video production experience.

The evaluation of the initiative showed that the time taken to support staff, at 1 hour, was less than envisaged, and that the main support was giving advice on what activities to run in face-to-face sessions. The evaluation also showed that the average time taken to create the flip was about 150 minutes, a not insignificant amount of time for just one session of teaching.

Positive feedback from staff included “[students] all took the time to watch the video clips. They all engaged very positively in the post viewing tasks and the brainstorming and mingle activities during class” and “students fed back in student-staff meeting that they really enjoyed it”.

While at least one group of students engaged well with the flip resources, this was an issue for other groups, with feedback from staff on what they would do differently in the future including “Finding ways of engaging all students with the content before the lesson, not all of the students looked at the content before the lesson” and “Ensuring that students follow the logical process of learning and not shortcut/avoid more challenging elements... further exposure to flipped learning would help.”

The following are some examples of some very straightforward flips that are good starting points for developing multi-stage learning activities that bridge out-of-class and in-class activities, which are referred to here as double flips, and encourage students to undertake more advanced learning activities outside class (advanced flips). All of these approaches can involve students working together, through for example, problem-based learning approach.

The double flip is a flip followed by another flip. The flip before the class informs an in-class activity, which in turn produces a learning resource which forms the next out of class activity. For example, before class students watch a presentation on a theoretical concept, then in class groups apply the theory to case studies, and together create a four slide presentation on their case study with feedback from their tutor. After class students look at all case studies online, and come prepared for the next class ready to discuss their analysis of what the theoretical approaches reveal about case studies. The presentations can then be used as flips for next year’s students. This is a good way of incorporating a ‘students as producers’ approach into the classroom.

For more advanced students, face-to-face time can be maximised to give more time to higher level cognitive abilities such as synthesis and evaluation (Krathwohl 2002) to take place in class. In traditional flips, the out of class activities tend to be, for example, looking at resources and doing simple activities with them, which would be towards the bottom of Bloom’s Taxonomy triangle (Figure 1), around understanding and remembering. By moving them out into the flip it allows more time for higher level activities such as application and analysis activities to take place in class time. Advancing this would involve putting application and analysis into the flip so that higher level skills of creation and evaluation take place in face to face time where the tutor is present to guide and extend this learning.

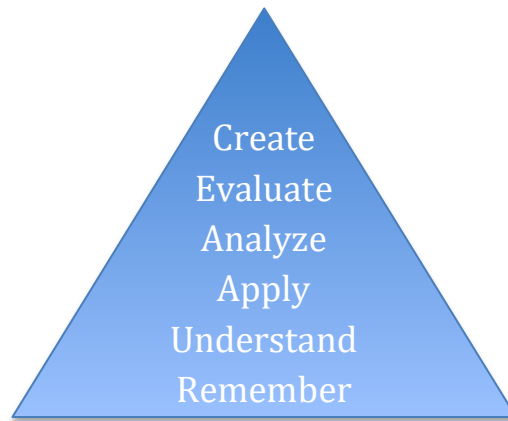


Figure 1 Bloom's revised taxonomy, based on Krathwohl 2002.

For example, before the class, students read an eJournal article (understand and remember) then do group work via a discussion forum to prepare a short presentation (application). In the session each group does their 5 minute presentation, then the class discusses the key points from each to create an overview presentation (evaluate and create). Research into more advanced flips such as this have shown that even with a reduction in face-to-face contact time students achieved their learning outcomes (Baepler, Walker, Driessen 2014).

Overall the experiences of this very small initiative fit well with research into flipped learning generally. Student feedback is generally positive (Chen et al, 2014), although, as with many initiatives that involve students to redistribute their work load, feedback can be mixed (O'Flaherty and Phillips 2015). Flipped approaches appear to improve student learning (Davies, Dean and Ball 2013; Kong 2014), although a concern for staff is students not doing the out of class activity, or turning up to class (Chen et al, 2014). There are various techniques to encourage engagement from students such as providing incentives for students to prepare for class, assessing student understanding, and providing clear connections between in-class and out-of-class activities (Kim et al, 2014). A flipped approach can help groups learners of different needs (Brooks, et al 2014), increase student motivation and can effectively manage cognitive load (Abeysekera and Dawson 2015).

Creating flips can be initially time consuming for staff, but perhaps the biggest challenge for staff is relinquishing some control over the delivery of content, for instance, not knowing who had accessed materials before sessions, or active sessions developing in ways the tutor did not envisage. As Bergmann and Sams have stated, in flipped learning "control freaks need not apply" (Bergmann and Sams 2012).

In summary the flipped classroom encourages new roles for staff, including using new technologies, planning learning activities over several sessions, increased communication with students, and further develops 'expert facilitation' skills. It also involves new roles for students, as they access different resources in different ways, and do more inside and outside the classroom. There is also the possibility that students gain a greater understanding of how they themselves learn as they are encouraged to engage with the flipped classroom approach.

Taking up a flipped approach may be as simple as rebranding an activity that is already taking place, or just making small changes to free up even short amounts of in-class time. Even the simplest of changes can support a blended approach to learning, and the development of collaborative learning activities both online and face-to-face. It is perhaps this potential for a big impact from small changes that is the reason why the flipped classroom is capturing the attention of the education world.

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