Flipped Classroom Online

Learnovate has compiled a series of guides to support Higher and Further Education lecturers and tutors. The purpose is to provide support in these challenging times to those providing teaching and assessment activities to their students through the use of digital tools and technologies.

This report was created by Learnovate at Trinity College Dublin.

1. Context

In light of the recent COVID-19 global pandemic, as a leading learning technologies research centre, Learnovate has been tasked with curating a number of best practices in relation to distance education. The purpose of this information is that it can be used and shared by Higher Education institutions to continue to provide teaching and assessment activities to their students through the use of relevant digital tools and technologies.

Learnovate is an industry-led centre of excellence for research and innovation in learning technologies. Learnovate boasts a multidisciplinary team of specialist researchers in learning sciences, computer science, user experience and user-interface design – as well as industry experts at the forefront of e-learning and EdTech innovation.

1.1. Online engagement - Flipped Classroom

As we transition to the need for online teaching and learning one of the factors lecturers concern themselves with most is the lack of face to face contact. Lecturers usually have the ability to read and understand a class with very little need for verbal interaction.

It will probably always be the case that face to face, especially in small classes, is the ideal but there are approaches you can adopt on digital channels to maximise engagement and learning for your students. Here we look at guidelines to Flipped Classroom Online to enhance your approach to digital teaching and learning.

We hope you will find this information useful.

For any further queries, please do not hesitate to contact us at Learnovate.

www.learnovatecentre.org

@LearnovateC

2. Flipped Classroom

2.1. What is it?

If you are involved in lecturing or tutoring, you are probably already familiar with the term 'flipped classroom'. Indeed, the term itself is the subject of some controversy as to when it was coined and when the approach was first developed but let us not concern ourselves with that.

Bergmann and Sams popularised the concept and give the basic definition "that which is traditionally done in class is now done at home, and that which is traditionally done as homework is now completed in class" (2012).

There is a concern in adopting the term 'flipped' at face value, as meaning flipping what is there already, i.e. the lecture delivered at home/outside the class and homework done in class. Such a black and white approach is not helpful and will more than likely be unsuccessful. The term 'blended learning' is often seen as reflecting the approach better with aspects of Kolb's Experiential Learning Theory (Zhai, Gu, Liu, Liang and Tsai, 2017).

There has been some criticism of the approach in relation to instruction being sacrificed to increase student collaboration and student led activities, with even the originators Bergmann and Sams have called for research into which circumstances are most appropriate for flipped approaches. However "many more instructors report successfully

implementing flipped learning but also the initial empirical evidence is promising" (Brewer and Movahedazarhouligh, 2018).

2.2. What it does

Kolb's theory refers to four stages in the learning process;

- Concrete Experience (doing / having an experience)
- Reflective Observation (reviewing / reflecting on the experience)
- Abstract Conceptualisation (concluding / learning from the experience)
- Active Experimentation (planning / trying out what you have learned), (Kolb and Kolb, 2005).

The flipped classroom approach allows for the first of these stages to take place before live class time. Concrete experience in terms of pre-recorded lectures, readings etc. mean a student can participate in active and often collaborative exercises (see our report on Collaborative Learning) in class time.

"Learning is best facilitated by a process that draws out the students' beliefs and ideas about a topic so that they can be examined, tested, and integrated with new, more refined ideas" (Kolb and Kolb, 2005). In brief this is what the flipped classroom facilitates when done correctly. As Honeycut and Garret state "inverting the design of the course so students engage in activities, apply concepts, and focus on higher-level learning outcomes" (2013). It provides students the opportunity to leverage knowledge

4

recently acquired, outside class time, in class exercises which affords them the opportunity to actively work with the prior knowledge in problem solving and often peer supported tasks. In turn embedding the learning in the overarching goals of supporting students to 'do' rather than to 'know'.

2.3. Why for digital?

Online, offline or blended there is support for flipped classroom, done well, as an effective pedagogy for Higher Education, both in terms of performance, (Brewer and Movahedazarhouligh, 2018; Custodio Mingorance Estrada et.al. 2019), engagement and real-world application (Doyle, 2015). In a review of flipped classroom research in higher ed Estes, Ingram and Liu found positive support for performance, engagement and attendance, (2014).

By its nature flipped classroom models start with digital learning, providing materials to be studied by students out of class. While readings can be part of this process Bishop and Verleger say for effectiveness video is the desired format (2013). This means the challenge under current circumstances is to provide lecturer support and facilities for students to practice and collaborate in the 'in-class' stage. Below we provide information on some digital tools that can facilitate this process well including LMS.

2.4. Best practices

In undertaking a flipped classroom approach the lecturer may take on a series of different roles including: subject matter expert, instructional designer, facilitator and media developer. The lecturer also needs to be comfortable taking on spontaneous questions that may arise after the pre-class activities.

Students can feel that 'flipped' means more demanding work or that they are teaching themselves, so it is important to take some time upfront to explain the approach. Outline the benefits of active learning, making class time a richer and more effective learning experience.

To scaffold the design and development of flipping a classroom Estes, Ingram and Liu developed a three stage model around 'pre-class, in-class and post-class (2014). See fig 1 below.
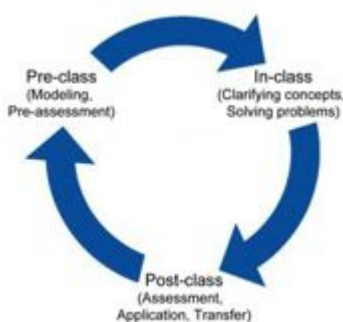
Fig 1 Estes, Ingram and Liu Flipped Class Model

Pre-class

As already referred to, pre-class is the time to deliver material akin to the traditional lecture. In doing this it is worth thinking about format and timing. Options could include:

- instruction using an existing video (eg youtube or TED Talk)
- video or videos shot as a piece to camera.
- a voiceover to a presentation such as powerpoint
- direction to resources produced by others but available

Another valuable use of pre-class is to assess students' current levels of knowledge. This can be done with online quizzes and can be a useful way to start to the process of flipping classes. To be effective it is important to leverage any results to inform the design of subsequent in-class activities.

Pre-class work should not contain excessive detail, and as such will more than likely be shorter than an in-class lecture, however it should cover primary learning points (Rotellar and Cain, 2016.

"Much of the success of the flipped approach depends on the interplay between pre-class and in-class activities" (Rotellar and Cain, 2016). To be effective the link between the pre-class and in-class materials should be worked. If there is too much in the pre-class the students may not see the value of attending the in-class and vice versa if there is too little in the pre-class students may feel unprepared to face the in-class tasks.

In-class

As mentioned the purpose of flipping the classroom is to provide valuable in-class time to apply the learning to problems and to do this normally in a group or team facilitating the ancillary skills of communication and collaboration. To this end it would be expected to have students trial many examples (Estes et. al., 2014).

In the flipped model the teacher takes on that role of coach and facilitator prompting students through quizzes given at the beginning of class, group learning activities, problem solving, case discussions, or other active-learning methods that apply to different learning types " (Rotellar and Cain, 2016). Peer feedback and Peer Instruction would also be typical of the flipped in-class scenario leveraging the social learning promoted by Vygotsky.

Post-class

Students should be encouraged to further develop their application of knowledge skills and self-regulation. Providing opportunities for students to display and share what they have achieved through developing their own videos or e-portfolio submissions, either individually or as groups is a good way to achieve this digitally.

2.5. Tools to help

There are plenty of technologies around the web that could significantly help developing a successful flipped classroom activity on the teaching framework when turning online.
Initial advice will be focussing on budget and time. Budget means that you should better select an open-source / free tool for beginners that will match the requirements of your activity. Later, you could search for more professional options depending on specific needs on the activity and tool's functionalities. Time means that you should better pick a user-friendly tool on beginners mode, so you can split wisely the time spent between teaching content, activity approach, and the tool experience.

Following, the recommendations for online tools when performing flipped classroom (Estes. M. D. & Liu, 2014):

Before you start …
- Khan Academy & Crash Course: both platforms provide you with thousands of video lessons you can use on your activities.
- Explain everything: allows you to create your best explainer videos.
- Doceri: create the screencast of your online class, recording your lesson, sharing the whiteboard captured as image and publish on your video channel.
- Voice Thread: record your explanation with comments and annotations, both synchronous or asynchronous mode.
- Edpuzzle: allows you to edit existing explainer videos or create your own with notes, prompting questions and answers.
- YouTube: use the platform to create/post your video demonstration for the activity.
- Blackboard: allows you to create and organise content to conduct and orientate the students on the activity.
- Canvas: allows you to create a full course and helps you apply the flipped classroom model.

- Moodle: allows you to upload your content with instructions on how to evolve during the activity and follow up with assignments and quizzes.
- Sakai: open software providing useful tools for the online collaboration and flipped classroom activities.
- Google Classroom: allows you to create full content for your course.
- Google Forms: might help you surveying your students initially in order to gain knowledge on their capacity.

During the task …
- Socrative: allows you to build your questioning and assessing itinerary while deploying the task.
- Edmodo: you can set an activity and follow the progress with regular quizzes, assignments and give feedback in the form of badges to build students' engagement.
- Google Classroom / Moodle / Blackboard: as we mentioned before, these tools will allow you to follow up the entire activity.

Closing and collecting …
- Youtube: again, a digital channel for your students to present their results nicely and professionally.
- ScreenCast-o-matic: students will be able to create their customizable videos and screencasts to demonstrate the knowledge acquired.
- Google Sites / Docs: allows students to build web content with the result of the activity to share with the classroom and instructor.
- Wordpress: a more broadly professional option for your students to show up and present results in the form of a eportfolio.

3. References

Bergmann, J. and Sams, A. (2012). *Flip YOUR Classroom - Reach Every Student in Every Class. Every Day*. USA. ISTE, ASCD.

Bishop, J.L. and Verleger, M. (2013). *The flipped classroom: A survey of the research*. ASEE Annual Conference and Exposition, Conference Proceedings

Brewer, R, and Movahedazarhouligh, S. (2018). *Successful stories and conflicts: A literature review on the effectiveness of flipped learning in higher education*. J Comput Assist Learn. Vol. 34: pp409– 416. https://doi.org/10.1111/jcal.12250

Custodio Mingorance Estrada, A., Granda Vera, J., Rojas Ruiz, G. and Alemany Arrebola, I. (2019). *Flipped Classroom to Improve University Student Centered Learning and Academic Performance*. Soc. Sci. Vol. 8, (315). doi:10.3390/socsci8110315

Doyle, P. (2015). *Massive open online courses. Will they create opportunity or inequality?* American Journal of Educational Studies, 7(1), 39–43.

Estes M, Ingram R. and Liu J.C. (2014). *A review of flipped classroom research, practice, and technologies*. Intern Higher Educ Teach Learn. Vol.4.

Honeycutt, B. and Garrett, J. (2013). *The Flipped Approach to a Learner-Centered Class*. Madison, WI, USA. Magna Publications.

Kolb, A.Y. and Kolb, D.A. (2005). *Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education*. Academy of Management Learning & Education, Vol. 4 (2), pp. 193-212

Rotellar, C. and Cain, J. (2016). *Research, Perspectives, and Recommendations on Implementing the Flipped Classroom*. American Journal of Pharmaceutical Education 2016; Vol 80 (2) Article 34.

Zhai, X., Gu, J., Liu, H., Liang, J.-C., & Tsai, C.-C. (2017). *An Experiential Learning Perspective on Students' Satisfaction Model in a Flipped Classroom Context*. Educational Technology & Society, Vol. 20 (1), pp 198–210.