Contemporary Teaching Issue Research Paper: Flipped Classroom

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In a 2015 editorial in the *Journal of Chemical Education,* Dr. Pienta of the University of Georgia described one of the most profound educational struggles of our time. On the one hand, research has made it abundantly clear that active learning must be employed in our nation's classrooms at all levels; "in summary and to put it bluntly, everyone should be taken off the control (i.e., traditional lecture) and switched to the treatment (i.e., carefully considered active learning methodologies)" (Pienta, 2015). On the other hand, educators are now teaching a generation of students who have been raised with unprecedented access to information, great demands on their time, and a talent for prioritizing tasks and being selective with their attention; meaning that, without seeing the clear value of a certain activity at the outset, students are unlikely to engage in the activity (Pienta, 2015). This is the core struggle present, as well, in the implementation of the "Flipped Classroom" technique, where traditional class lectures are eschewed in favor of carefully planned in-class engagement activities. This switch is intended to increase active student engagement and investment in their own learning (Pienta, 2016). In a flipped classroom, "instructors make the kinesthetic-cognitive leap to learning in action in that they use class time for hands-on activities and group practical exercises" (Harris, Harris, Reed & Zelihic, 2016).

In a traditional setting, lectures are given during class time and students actively engage with the content in the form of homework assignments. In a "flipped" setting, homework would include some pre-class passive learning activity (such as viewing videos or annotated lecture slides), and the active engagement is performed during class time (Bishop & Verleger, 2013; Harris, et. al., 2016). The potential benefits of the "flipped" model are several, but requires diligence from the students involved. Therefore, the methodology requires careful teacher

structuring, communication, incentivization, and expectation management, the strategies for which remain an active debate among the nation's educators. However, the potential benefits may be too great to ignore; research generally shows learning gain differences between traditional and flipped classroom models (Unal & Unal, 2017; Bishop & Verleger, 2013), particularly among students in the bottom third of class percentile rank (Ryan & Reid, 2016).

There are those that claim the current research is too narrow, and more breadth and depth is required before any conclusions can be made (Bishop & Verleger, 2013); however, research on the topic is becoming increasingly abundant. It is true that many of the technologies that make flipped classroom a possibility are relatively new, especially to the teachers themselves. Also, more research has been done on the model at the college level than at K-12, and some of the research is heavy on conclusions and light on details regarding the specific nature of in-class and out-of-class activities (Bishop & Verleger, 2013).

The general structural requirements of a flipped classroom that appear to be consistent throughout the research. The first is that lectures may not be a primary component of in-class time; instead, content is delivered to students in some form, usually multi-media, that students access independently, prior to class. The second is that in-class time is dedicated to active engagement, often in group work settings (Bishop & Verleger, 2013; Ryan & Reid, 2016). Factors such as out-of-class assignments and the specific nature of activities change from study to study (based on factors such as educational level, subject matter, available technology and teacher preferences).

One feature of a flipped classroom is the requirement of careful planning, and the preparation of additional materials as compared to those necessary in traditional teaching. For

example, in a 2017 study where teachers volunteered to teach some classes in a flipped method and others in a traditional method (so as to create direct comparisons), the participating teachers had to prepare video lectures for the students to view beforehand (Unal & Unal, 2017). They did so using a variety of technologies.

The possible advantages of the flipped classroom model are numerous. In this format, the teacher is present for the work that is most cognitively challenging for the student. Instead of spending time on lecture and multiple formative checks, including basic concept checks, instructors can focus on student's most pressing challenges, better tailoring class time to the needs of the current class. Also, teachers are able to pre-record lectures and therefore fact-check them, re-record them if they spot an accidental error that may cause a misconception, and avoid the boring work of presenting repetitive lectures for each class section. For students, lecture videos are often abbreviated when in a recorded format, and they are able to rewind and rewatch specific portions as best suits their own individual needs (Ryan & Reid, 2016). In addition, peer assistance is available for learning activities that would otherwise be assigned for homework.

As with all things, benefits come packaged with challenges. Teachers often create their own recorded lecture content, which is initially quite time consuming, and a learning curve may be required for teachers to adapt to necessary technologies. In addition, changes are difficult to make "on the fly," as even a minor change requires an entire re-record, or at the very least a prompt and clever piece of video editing to ensure students are not continually being delivered incorrect or out-of-date information.

Students also face some disadvantages from the flipped classroom model. For example, students need to complete all the activities given to them in order to benefit from this particular

pedagogical approach; while working at their own pace, students must not falter in completing the tasks assigned. Homework cannot be optional, as it is the primary vehicle for communicating curriculum information (Bishop & Verleger, 2013).

Further, some may worry that the students who reap the most benefit will be upper-strata students with dedicated study strategies, possibly leaving students behind who have differentiation challenges who cannot learn well from reading and/or video lectures. However, since some research shows the largest benefits for the lowest strata of student achievements, this claim is not well supported by the available evidence (Ryan & Reid, 2016).

In discussing the reality of implementing a flipped classroom model, one editorializing university administrator complained that instructional staff are frustrated at students who do not seem to want to do required reading or video viewing, and who are uninterested in struggling with educational tasks in the ways that are features of the flipped classroom model (Pienta, 2016). For others, this is a feature rather than a disadvantage: “student engagement in the flipped classroom relies on students taking responsibility for their learning process; they become stakeholders in cognitive processes including knowledge, skills, abilities, and attitude development” (Harris, Harris, Reed & Zelihic, 2016). It’s certain that the instructor’s outlook plays a vital role in viewing student engagement as either a challenge of patience, persistence, and the stubborn maintenance of high expectations, or as an impossible cliff off which students fall. The research as a whole seems to tell the story of the former rather than the latter, but the future of the technique will be determined by educators themselves.

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