Report

A Primer for Creating a Flipped Psychology Course

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Abstract

Instructional design for psychology courses is ever changing. Recently, there has been an explosion of scholarly literature related to flipped classroom pedagogy in higher education. This essentially entails inverting a course so that lectures are viewed outside of class, and class time is devoted to active learning through activities such as demonstrations and group work. Although beneficial to student learning, implementing the flipped course design into a psychology class can be difficult, time consuming, and daunting. As such, we provide a primer for successful implementation of the flipped design. Based on the literature, we describe several teaching tips (e.g., what content to deliver in class versus online) that may aid in the implementation process. Additionally, we describe several common pitfalls to avoid (e.g., apprehension about learning new technology) when implementing the flipped classroom.

Keywords

Psychology teachers are constantly looking for ways to deliver course content in a way that keeps students engaged and active in the learning process. The science of teaching and learning is particularly prevalent in the field of psychology likely due to foci in the field (e.g., learning, memory, and motivation) that lend themselves to inform best practices in and out of the classroom. Faculty looking to increase student engagement and learning often turn to elements of the flipped classroom design (Ash, 2012; Edwards et al., 2014). In a flipped classroom generally speaking, the work that is traditionally completed in class is done outside of class and vice versa (Cummins-Sebree & White, 2014; Lage, Platt, & Treglia, 2000; Wilson, 2013). The most common course structure in a flipped classroom is to require

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lectures to be viewed outside of class. Lectures often take the form of voice-over slide presentations (Cole & Kritzer, 2009), prerecorded videos (Lage et al., 2000; McDaniel & Caverly, 2010), podcasts, and/or preexisting online lectures (e.g., www.khanacademy.org offers numerous short instructional videos) that students seek out on their own (Pierce & Fox, 2012; Wilson, 2013). Placing lectures outside of the course room creates time during class meetings to participate in various active learning techniques such as discussion, project-based learning, group work, and problem-based learning (Cole & Kritzer, 2009; Hussey, Fleck, & Richmond, 2014). Furthermore, the flipped classroom allows for greater teacher-to-student interaction and places the onus of learning more on the student (Pierce & Fox, 2012). Putting students in charge of their learning as well as getting them to actively participate in their learning has been shown to have positive outcomes such as increased student retention, perceptions of support, involvement, and academic achievement (Chi & Wylie, 2014; Detlor, Booker, Serenko, & Julien, 2012; Prince, 2004). The purpose of this paper is to offer teaching tips on how faculty can successfully flip their psychology classes based on a review of the scholarly literature.

In the last 15 years, the pedagogical literature on flipped classrooms has grown in both size and scope; however, more work is needed. Many articles reflect on (and less so evaluate) the effectiveness of flipped classrooms (e.g., Cole & Kritzer, 2009; Enfield, 2013; Findlay-Thompson & Mombourquette, 2014; Foertsch, Moses, Strikwerda, & Litzkow, 2002; Hussey et al., 2014; Pierce & Fox, 2012; Wilson, 2013). In addition, much of this research is mixed in terms of outcomes, perhaps due to the varied forms of flipped classrooms and implementation (Ash, 2012), and fails to help teachers successfully implement this method of teaching. It is not enough to simply put lectures online and do homework during class (Ash, 2012; Findlay-Thompson & Mombourquette, 2014; Sams & Bergmann, 2013; Wilson, 2013). Teachers need to be prepared and thoughtful in developing active learning opportunities (i.e., what material to put online and how versus what to cover in class, and how) as well as prepared to actually create, implement, and maintain those opportunities. Furthermore, more research needs to empirically evaluate the effectiveness of this method using controlled and randomized studies of learning outcomes.

Why Should We Flip?

It is worth noting that flipping a class is not for all faculty and possibly not for all classes (Wilson, 2013). Instead, flipping a course (partially or entirely) appears to be best suited to faculty who are motivated to try new teaching techniques, looking to increase active student learning, willing to put greater onus of learning on their students, prepared to devote the time and energy upfront to create the course materials, as well as feel comfortable in the evolving process of successfully implementing new pedagogical tools (Edwards et al., 2014; Wilson, 2013). Faculty who have experimented with the flipped classroom design have done so in an effort to solve perceived issues with their traditional courses. For example, how to correct issues with the lack of student engagement during class, passive learning via lectures, student learning in general, ineffective lectures, as well as the disconnect between content and real world applications (Cummins-Sebree & White, 2014; Foertsch et al., 2002; Sams & Bergmann, 2013; Schullery, Reck, & Schullery, 2011; Wilson, 2013). Although these instructional issues may be solved by implementing a number of approaches, we suggest using a flipped course design and creating opportunities in the classroom where students are more engaged in the material through interactive lectures provided by faculty or sought out by

students, demonstrations, and group work (Chi & Wylie, 2014; Detlor et al., 2012; Prince, 2004).

Student-Centered Learning

Frequently, lectures are needed in higher education courses as a means to communicate foundational and often complicated course content (Foertsch et al., 2002). However, viewing lectures outside of class provides delivery of content while allowing time in class for more student-centered learning instruction and opportunities. During class meetings, students can be involved in a variety of course related tasks and faculty are able to directly observe and help students who have the liberty to ask questions when needed (Cole & Kritzer, 2009; Hussey et al., 2014; Wilson, 2013). For example, in a psychology statistics course, Hussey et al. (2014) designated a series of in-class meetings as "application days" where guest speakers would present data on issues of social justice in the community. Students read the guest speakers' articles to prepare for the application days, providing an opportunity to learn about social justice issues as well as see how statistics are often used. The guest speakers' data sets were also made available to the students to work on following their presentations. In another flipped psychology statistics course, Wilson (2013) used class time to have students complete group homework assignments. In addition, Talley and Scherer (2013) used class time in a physiological psychology course for more practice testing and student driven exploration of online materials. Hands-on labs, problem solving, worksheets, and experiments have all also been utilized in flipped classrooms (Cole & Kritzer, 2009; Hussey et al., 2014; Lage et al., 2000). There are several specific activities that have been scientifically investigated for use in numerous psychology courses and we have compiled and delineated these investigations in Table 1. However, it should be noted that these types of in-class activities are not unique to flipped courses. What is unique is the opportunity for faculty to employ more of these hands-on learning experiences in the flipped course. In other words, in the flipped classroom, the time that would be spent lecturing can now be devoted to discussing, experimenting, and engaging students in deeper learning opportunities. Furthermore, research suggests that students prefer to be engaged in such hands-on activities in the classroom versus listening to faculty lecture (Gilboy, Heinerichs, & Pazzaglia, 2014; Pierce & Fox, 2012).

Student Perceptions

The literature repeatedly shows that the majority of students exposed to the flipped course design enjoy or prefer the course structure, regardless of actual learning outcomes (Cummins-Sebree & White, 2014, Pierce & Fox, 2012; Wilson, 2013). For example, Cole and Kritzer (2009) found that undergraduate and graduate students reported learning more in the flipped face-to-face meetings as compared to their traditional lecture-based courses; however, actual learning outcomes were not examined. Positive student perceptions in psychology research methods and statistics also include preferences for self-paced learning and the advantage of being able to re-watch, pause, or seek prerecorded lectures (Cummins-Sebree & White, 2014). The majority of undergraduate students in Foertsch et al.'s (2002) flipped computer science courses gave significantly higher ratings for the course, material, and instructor than those in the traditional course. Even though there were no significant differences in academic performance between flipped and traditional courses, students still

Table 1. Potential in-class activities for a flipped course.

Topic	References	Example in-class activities
Abnormal	Canu (2008)	Students generate data related to phobias
	Tolman (2011)	Students' learning and assumptions are challenged through a variety of transformational learning experiences
Cognitive	Swinkels (2003)	Students work with a number of scenarios where they employ various heuristics
	Thompson, Vermette, & Wisniewski (2004)	Students work in groups in ten activities that apply cognitive concepts
Developmental	Hershey & Jacobs-Lawson (2001)	Students reflect on their (mis)perceptions of quality of life across the lifespan
	Sheldon (2004)	Students work in groups to analyze radio diaries using developmental theories
History	Boynton & Smith (2006)	Students participate in hands-on simulations of historical experiments in psychology
	Walter & Walter (2010)	Students compare memories of a classroom event to demonstrate the interpretive nature of personal history
Personality	Friesen (2008)	Students develop, implement, and assess an interview-based personality assessment
	Segrist (2009)	Students work in groups to role play the id, ego, and superego in a way that also demonstrates levels of consciousness
Physiological	Holloway (2013)	Students use role playing to learn about neurons and neural networks
	Vanags, Budimlic, Herbert, Montgomery, & Vickers (2012)	Students draw and label clear plastic shower caps to aid in learning brain regions
	Vanags, George, Grace, & Brown (2012)	Students play Brain Bingo as a way to engage them in learning physiological terms
Research methods	Stansbury & Munro (2013)	Students use the video game Dance, Dance, Revolution to teach factorial designs
	Zhang & Moore (2005)	Students are deceived by the instructor to demonstrate research ethics
Sensation & perception	O'Drobinak & Woods (2002)	Students participate in activities that demonstrate afterimages and aftereffects, including group discussion prompts
	Wolfe (2010)	Students learn about multisensory integration through the illusion of eyelid droop
Social	Kite & Whitley (2012)	Students examine common phrases in the English language as a way to reflect on stereotype use
	Lawson, Haubner, & Bodle (2013)	Students learn about conformity in a standing in the hall activity

Table 1. Continued

Topic	References	Example in-class activities
	Pratarelli & Johnson (2012)	Students learn about the concept of the "tragedy of the commons" through a fishing activity
Statistics	Holland (2007)	Students use a double-headed coin to demonstrate concepts related to hypothesis testing
	Kolar & McBride (2003)	Students work in groups applying statistical knowledge to create word problems for other groups
	Owen & Siakaluk (2011)	Students use their course preferences and demographic characteristics to better understand statistical analyses

perceived that they learned more in a flipped course while putting in an equal amount of work as they would for a traditional course (Findlay-Thompson & Mombourquette, 2014). Finally, Cummins-Sebree and White (2014) flipped their psychology research methods course and found students liked having their professor available during class to answer questions while they were working on their homework. Just as in the examples provided, it is suggested that faculty taking on a flipped course design assess student perceptions using tools such as the Teacher Behavior Checklist. This is a valid measure that can be easily implemented and used for assessment (see Keeley, Smith, & Buskist, 2006).

Faculty Perceptions

Although most of the flipped classroom research has focused on student perceptions and learning, faculty often offer formal and informal feedback to researchers about their perceptions of the flipped course design. In that, similar positive perceptions are reported by faculty who indicate that flipped classrooms are more enjoyable to teach, increase student involvement, aid in learning and motivation, and provide more time for one-on-one interaction with students when compared to traditional classrooms (Cole & Kritzer, 2009; Enfield, 2013; Wilson, 2013). For example, Schullery et al. (2011) flipped a large introductory business lecture course and anecdotally reported more student interaction with faculty, a greater sense of connection within the class, deeper learning, and a method for maintaining involvement with students who want to participate but struggle with a short attention span. Others describe the gradual progression one engineering program took to slowly flip the curriculum (Leicht, Zappe, Messner, & Litzinger, 2012). Instructors reported that they intended to continue with the flipped format because the students preferred the high level of faculty-student interaction and found greater enjoyment in the interactions. Furthermore, in her psychology statistics course, Wilson (2013) posits her preference and enjoyment of the flipped course design because it allows more time for students to actually "do statistics" (Wilson, 2013, p. 197). Other researchers offer a more formal investigation into faculty perceptions of the flipped classroom; however, the sample sizes were often limited (Kim, Kim, Khera, & Getman, 2014; Lage et al., 2000). Nevertheless, in those studies faculty did

report greater student interaction in the flipped classroom and more student questions, which likely contributed to faculty reporting that: "the course was considerably more stimulating to teach" (Lage et al., 2000, p. 37). Development of comprehensive studies of faculty perceptions using the flipped classroom technique would be a major contribution to the literature.

Learning Outcomes

Although the scholarly literature examining actual academic differences between flipped and traditional courses is still in its infancy, two studies examining the course design in a psychology statistics courses found students in the flipped course academically outperformed students in the traditional course (Hussey et al., 2014; Wilson, 2013). Pierce and Fox (2012) experimented with flipping a module of their pharmacy course and found students exposed to their flipped module performed significantly better on the exam for that module. In addition, Talley and Scherer (2013) flipped the sections of a physiological psychology course where they commonly found students struggled and, after doing so, found final course grades on average a letter grade higher than when the courses were not flipped. However, it is important to note that grades are not the only assessment tool that can be used. For example, it is relatively easy to develop a short quiz on course concepts that can be given at the start of the semester and then again at the end (Hussey et al., 2014). The quiz can come from the textbook test bank or be written by the professor. Administering a quiz in this way would provide a clear measure of learning over the span of the course. Future research studies on the flipped design should focus efforts on examining learning outcomes in these ways.

How Do We Flip?

Although every class is unique, we offer tips and suggestions regarding how to implement the flipped design into the core elements common to every course in the developmental sequence in which they often occur. It is important to note that a flipped course is not completely different from a traditional course. Instead, one can look at a flipped course as a new way to deliver the course that allows for more time and opportunities to cover course material, interact with students, and engage in hands-on learning. In this regard, flipping a course is not a mountain one must climb, but simply a new path one must navigate. Because the flipped classroom is, for the most part, developed before the start of the course, an underlying theme is prediction and preparation.

Below are some novel and specific ways to think about how faculty might deliver information in their courses, what to do with the extra time flipping the course creates, and questions to consider along the way. Table 1 provides a springboard of ideas for in-class activities that can be used in an introductory psychology class as well as topic specific psychology classes. Although what follows might seem somewhat linear in nature, we want to highlight the cyclical and iterative process that is commonly involved in any course development.

Objectives

A logical place for faculty to start is to focus on what they want students to accomplish and then consider how best to facilitate those learning goals (Wilson, 2013). This can serve as a

guide when creating in-class and online materials and activities (McDaniel & Caverly, 2010). For example, Wilson (2013) started by drafting course expectations from the field as well as her university and department. Then Wilson (2013) aligned course objectives with Fink's (2003) taxonomy of knowledge (e.g., foundational, application). It is also important to keep in mind that clearly stated learning objectives can help reduce workload (Tao, Fore, & Forbes, 2011). In addition, when transitioning from a traditional classroom to a flipped format, this often means rewording learning objectives to be more learner-focused versus content-focused (Herreid & Schiller, 2013; Kim & Bonk, 2006). There is also a number of helpful resources available for writing objectives as well as how to meet them for faculty looking for guidance in creating or reworking learning outcomes in their courses (see, Biggs, 2003; Driscoll, 2000; Krathwohl, 2002; Mayer, 2002; Wilson, 2013).

Choosing Materials

When flipping a course, the materials offered online must be well selected. For example, what should students read (e.g., textbook, articles, online resources, etc.) online or outside of class? Although course materials are common to any type of formatted class, in a flipped course faculty need to make certain determinations prior to beginning the course due to the structured format of the flipped design. For example, when looking over the course materials, it is important to identify the content with which students will most likely struggle versus which they are most likely to understand. The flipped classroom may allow for more opportunities for faculty to interact with students one-on-one in the classroom to become aware of these problem areas as well as more time to address them (Wilson, 2013). By predicting trouble spots, faculty can better structure the course to support students as well as to prepare for in-class questions. Additional written supplementary materials can be provided to students to aid in note taking, question generating and asking, and to be used as reference tools. For example, Hussey and colleagues (2014), as well as Lage and colleagues (2000), have distributed PowerPoint slides to accompany prerecorded lectures. Students used these to take notes as well as highlight points of confusion.

Once instructors have determined which course content is most likely to be difficult for students, they might also consider what audio and visual materials they could use to supplement the delivery of course content (e.g., videos, guest speakers, etc.). This will likely be the basis on which the online lectures are developed. Depending on the topic, faculty preference, and/or planned activities, students can also watch relevant prerecorded and/or preexisting videos or recordings of guest speakers (e.g., TED Talks) outside of class to reinforce their learning of course material. For example, for a flipped psychology course, Wilson (2013) had students find relevant statistics lectures at the Khan Academy online. Researchers suggest keeping these videos no longer than 15–20 minutes to keep students engaged (Gilboy et al., 2014; Leicht et al., 2012). In addition, class time can also be used to invite guest speakers, which could be followed by a class activity or group work.

Delivery of Materials

Student-centered teaching is a purposeful combination and placement of common course elements that may include face-to-face meetings, reading assignments, online and virtual tools, and hands-on demonstration and practice (Beck & Ferdig, 2008; Sadaghiani, 2012; Sams & Bergmann, 2013; Senn, 2008; Tao et al., 2011). This is difficult to achieve and is

largely dependent on the course objectives. However, there are a few general strategies offered by the scholarly literature that faculty can use for selecting the delivery method of course material.

Easily digestible material. This includes basic factual information, such as definitions. For the most part, students should be able to read factual information and take notes as necessary outside of class. It can be a waste to spend face-to-face time having students copy definitions from PowerPoint slides when they can do that on their own outside of class (Foertsch et al., 2002). Although all courses contain foundational knowledge, survey courses such as introduction to psychology have an especially large amount. When flipping a class, faculty should consider the level of the information as well as the students' familiarity with such knowledge. To help faculty flip their introductory nutrition courses, Gilboy et al. (2014) used Bloom's Taxonomy to offer faculty a basic template of what material to cover before, during, and after class. For example, activities geared toward lower-level learning objectives were assigned outside of class (e.g., understand) and face-to-face time was spent on activities that focused on higher-level learning (e.g., application). This same flipped template can be applied to psychology courses as well as used by faculty looking for more structure when implementing the flipped design.

Harder to digest material. There might be times when students struggle with foundational knowledge. This includes more advanced levels of information, such as conceptual, procedural, and metacognitive knowledge (Krathwohl, 2002). In this case, this type of material may require multiple modes of delivery and likely be the focus during online lectures, face-to-face mini lectures, and classroom activities. For example, students often struggle to understand how neurons communicate. Here, students might begin with reading about neurons (factual). Next, students would be assigned to watch a video outside of class about the different types of neurons within the brain and how they communicate as well as how scientists study neurons (conceptual and procedural). Then face-to-face time could be used to apply the knowledge through activities such as those listed in Table 1. In this example, students could use role playing to learn about neurons and neural networks (Holloway, 2013). They could then discuss and reflect on the difficult material and how it impacted their learning (metacognitive). Depending on class size, Tao et al. (2011) suggest that faculty might want to use laptops or clickers for electronic testing and to improve students' metacognitive knowledge and provide immediate feedback.

Not unlike a typical face-to-face or online class, when flipping a course the class level and student skill level are also important variables to consider. However, the flipped course design offers more support for courses in which students' content knowledge is heterogeneous. For example, students in upper division or specialized courses (e.g., senior capstone courses, advanced statistics, or cognitive psychology) typically have a solid foundational knowledge of a topic so that faculty can assign activities requiring higher levels of knowledge of course content. However, this is not always the case for a number of reasons (e.g., lapse of time since a prerequisite course was taken). Instead of using class time to teach or refresh students on foundational knowledge, the flipped course design allows students to build necessary knowledge which they can apply during class activities that focus on higher levels of learning. For example, in a psychology statistics class, Wilson (2013) wanted students to: "critically evaluate the appropriateness of conclusions drawn from statistical analyses in published work" (Wilson, 2013, p. 198). Based on this objective, Wilson had students

in an in-class group project find statistical information (e.g., level of measurement, type of variable, scale, etc.) in local newspapers or online news sources. Wilson also had students apply statistical knowledge to their future careers by identifying an activity they might engage in (e.g., athletic training), then propose a variable to measure the activity (e.g., injury recovery time), and which central tendency measure would be used (e.g., mean). Therefore, in a flipped course, instructors have a unique opportunity to encourage foundational knowledge outside of the course, but then build application knowledge within the face-to-face class time.

What to Do During a Flipped Course

Once the planning of the structural elements of the class are complete and the lectures have been recorded and/or preexisting lectures selected, there are additional steps faculty can take to make the most of face-to-face time as well as help to ensure student success in the new course structure.

Establish Class Community

Given the increased group work in the flipped design as well as online communication, it is imperative that students form positive connections with their peers in order to be and feel successful in a flipped course. Wilson and Wilson (2007) demonstrated the importance of the first class meeting by having students in an introductory psychology course experience either a positive or negative first class. Those who had experienced a positive first day reported greater motivation for the course and perceptions of learning. A significant challenge in using an online learning environment for a flipped course is to successfully establish a sense of community (Ackerman, 2008; Mortera-Gutierrez, 2006). Because community has, among other effects, a powerful influence on student perceptions of learning (Rausch & Crawford, 2012), it is important in a flipped classroom to establish the sense of community early and often. There are numerous ways to accomplish this task. In a flipped course, we suggest that faculty use an icebreaker activity (e.g., "Syllabus Speed Dating") or another planned introduction activity during the first face-to-face class to establish connections between peers and foster interaction (Ackerman, 2008; Hermann & Foster, 2008; Rausch & Crawford, 2012; Weimer, 2013). In addition, faculty can use introduction online discussion forums, which allow students and faculty to get to know one another. Faculty can also create student-only discussion forums that can promote unconstrained communication among peers throughout the duration of the course (Cole & Kritzer, 2009; Heinze & Procter, 2006). The communication advantage in a flipped classroom is that after online faculty-to-student and student-to-student discussions, there is an opportunity to use face-to-face class time to ameliorate any additional potential problems and/or address any questions that arise.

Clearly State Expectations

Similar to traditional classrooms, the first meeting during a flipped classroom provides the opportunity to communicate course expectations (Strayer, 2012). This is especially important with a flipped design, as this course structure might be new to many students. Time should be used to explain the theoretical underpinnings of the flipped course design, expand on learning objectives, and/or explain particular assignments (Findlay-Thompson &

Mombourquette, 2014; Gilboy et al., 2014). In addition, time management in flipped courses can be problematic for students who are unfamiliar with such formats (Lage et al., 2000). The flipped design places greater responsibility on students for their own learning. Students who only have experience with traditional course formats might be accustomed to doing minimal preparation before class without any real consequences, because the instructor covers all the material from the textbook in their lecture (McCarthy & Anderson, 2000). Conversely, students must come to class in a flipped course having read and/or watched lectures in order to build the foundational knowledge necessary for the in-class activities. Thus, faculty should use the first face-to-face meeting to describe the effort and time needed to be successful in a flipped course and suggest strategies for time management. For example, providing students with timelines for viewing online lectures (Foertsch et al., 2002) or creating modules based on course themes (Cole & Kritzer, 2009) may help students to stay on track and fully participate in class. These timelines can be based around which concepts to cover when and/or which skills should be mastered by when (Sams & Bergmann, 2013).

Faculty Involvement

In a flipped class design, it is important for faculty to be involved in *all* course elements, including the work done outside of class. However, how best to be involved outside of class can be a steep learning curve (Beck & Ferdig, 2008; Kim & Bonk, 2006). Because students are often introduced to new material outside of class in a flipped course, some faculty suggest holding online office hours in addition to traditional office hours to better meet the needs of students (Cole & Kritzer, 2009; Heinze & Procter, 2006). This might include media such as Skype, Facetime, instant messaging, or texting, depending on what works best for faculty and students. Online office hours can help students who are grappling with new content outside of class time as well as make the professor more available to students during the time that they are first introduced to material. Online discussion boards can also be created for peer-to-peer mentoring. It is also important for faculty to determine the optimum amount of participation in online discussion forums. Too much faculty involvement may hinder student participation and too little may reflect a lack of interest to students (Cole & Kritzer, 2009). Data suggest that the best role for teachers is to be a guide, or to ask probing Socratic-style questions of their students without taking over the conversation (Mazzolini & Maddison, 2007). For a flipped classroom, these research findings apply to online discussions as well as those that might occur in class or possibly during group work.

How Do I Prepare for Potential Pitfalls?

There are many common pitfalls that teachers might face when implementing the flipped course design. We have identified some of the challenges and provide suggestions on how to avoid them.

Time and Technology

Time is the most valued commodity in academia and, as such, it should be considered when implementing any new pedagogy. As all courses require considerable time commitment, the flipped course is unique as the time commitment is frontloaded before the semester begins because of such tasks as pre-recording lectures (Enfield, 2013; Gilboy et al., 2014). However,

after early preparations have been made, teachers may have more time during the semester to prepare for in-class activities, to modify the course, and to interact with students, all to facilitate learning (Cole & Kritzer, 2009). When considered as a whole, designing a flipped course is not likely to consume more time than a typical change to an existing traditional course (e.g., updating a course to fit a new textbook), especially when implementing the recommendations stated previously. Faculty might also consider flipping certain parts of their course as a type of pilot for the design before flipping their entire course (e.g., Pierce & Fox, 2012). It is not essential to flip the entire course in one semester. A flipped classroom can be built over a few semesters.

Faculty and Technology

One particular reason that faculty might feel unsuccessful at implementing the flipped course design is an aversion to technology, because of the time it takes to either learn it or to mitigate the problems it causes (Cole & Kritzer, 2009). Like many fears, this particular point is rooted in some truth. It does take additional faculty time to learn and manage new forms of technology. To help alleviate this issue, we suggest that teachers seek out faculty who have used this design to act as mentors in addition to the school's technical support team to aid with creating and using various video/audio programs (e.g., Jing, Camtasia, YouTube, Vidcast, and Podcast). There are also online resources that enable professors to create lectures that are deliverable via the internet (e.g., www.techsmith.com and http://panopto.com/panopto-for-education/) Such webpages can help faculty members who wish to utilize screen capture technology, or want to create a video presentation for their flipped course. It is also important to note that faculty do not have to create every lecture. For example, Wilson (2013) used preexisting online lectures for her psychology statistics course and Talley and Scherer (2013) had students create online lecture videos covering difficult physiological psychology concepts. In fact, a number of fantastic lectures already exist that are usable for a range of psychology topics. Faculty might consider use of The Open University on iTunes, Khan Academy, or TED Talks.

Students and Technology

Students may also need technical assistance as they might lack procedural knowledge needed for the new flipped course format (Findlay-Thompson & Mombourquette, 2014). Faculty should be aware that this may result in increased communication from students (Beck & Ferdig, 2008; Senn, 2008), and plan additional time to provide students with feedback on assignments in a flipped course (Beck & Ferdig, 2008). One way to reduce the impact on faculty time is to change some assignments to be peer reviewed versus faculty graded (Wilson, 2013). In addition, faculty might consider alternating between online and hard copy submission of assignments to help alleviate some of the tedious email communication (Beck & Ferdig, 2008; Mortera-Gutierrez, 2006). For students struggling with technical problems, it is important they know where and how to seek help. Faculty can include IT support numbers, frequently asked questions, and troubleshooting pointers in their syllabi and/or online course page. Groves and O'Donoghue (2009) suggest that students go through a training session as part of a required course assignment early in the course. The training may help students understand how to successfully navigate and use the course learning platform (e.g., Blackboard, Moodle, etc.). In addition, troubleshooting problems as they

arise can help students become comfortable with the technology and course design (Cole & Kritzer, 2009). Applying these strategies may reduce stress and the time commitment associated with learning a new instructional design and the technology required to implement the change.

Negative Student Perceptions

When first flipping a course, it is possible that students will be resistant and view it negatively (e.g., too difficult, time consuming, unstructured), and that ultimately could be reflected in students' ratings of instructors (Gecer & Dag, 2012; Senn, 2008). Although the literature suggests the majority of students prefer the flipped course design, it is important to be prepared for those who do not. One of the predominant reasons that a few students may perceive a flipped course poorly is because in traditional courses they are accustomed to having face-to-face access to their instructor during lectures (Foertsch et al., 2002). This is not always the case in a flipped course and this issue may be compounded by technology (e.g., unfamiliarity with the online course management system), leading to further frustrations for students (Findlay-Thompson & Mombourquette, 2014; Pierce & Fox, 2012). There are numerous strategies that faculty can employ to solve these problems, as mentioned above. For example, keeping online lectures relatively short (e.g., 15–20 minutes) might help to reduce student boredom (Gilboy et al., 2014; Leicht et al., 2012). We also suggest chunking content into more digestible and smaller units (e.g., one chapter could have three mini lectures). This can be advantageous in the amount of content that one can cover as well because faculty do not feel pressured to cram all the content into one traditional 50-minute lecture. Faculty can also vary who delivers the materials (e.g., instructor, students, YouTube, TED Talks), which might also aid in maintaining students' attention (Gilboy et al., 2014; Leicht et al., 2012).

Maintaining Control

When implementing a flipped classroom, some faculty may feel that they are relinquishing control over curriculum and the learning process (i.e., face-to-face content delivery). For example, faculty are no longer the sole provider of information for students in the flipped classroom, nor do they have the same control over what lectures are viewed by students. With online lectures, how can faculty be sure that students watch and pay attention to online lectures? Some content delivery systems (e.g., Blackboard) allow teachers to monitor when and how long students access given assignments and assessments (Gilboy et al., 2014). A nominal portion of students' grades could also be based on whether they viewed the lectures, and/or quizzes can be given at the beginning of face-to-face classes to further incentivize students to watch the lectures (Wilson, 2013). Although some faculty express concerns over whether students will actually watch the videos outside of class, Foertsch et al. (2002) discovered that most students watched prerecorded lectures in order to prepare for face-to-face classes and felt they academically benefited from them. Further, those who came to Cummins-Sebree and White's (2014) psychology methods class unprepared only did so once or twice before realizing the importance of coming to class prepared by having watched the lectures. In truth, no matter what the course format is (i.e., face-to-face versus flipped versus online), the idea of control is tenuous at best and students need to be empowered to take control of their learning (Findlay-Thompson & Mombourquette, 2014).

Conclusion

With the growing body of scholarly work on the flipped classroom, many teachers are eager to implement the design. We encourage faculty interested in trying the flipped classroom to take on the challenge. If there are still hesitancies regarding a full course flip, faculty might consider piloting the flip with a module or two as described earlier (Leicht et al., 2012; Talley & Scherer, 2013). Implementing the flipped course can allow for greater instructional flexibility in offered courses as well as optimize faculty instructional time with students (Cole & Kritzer, 2009; Hussey et al., 2014). Delivering material outside of class may provide additional learning opportunities for students in class. Utilizing this gained time for hands-on and experiential learning activities, students can delve deeper into course content (Senn, 2008). We hope by identifying successful teaching tips, common pitfalls, and remediating strategies, psychology teachers may be able to successfully implement the flipped classroom and add another arrow in the quiver of instructional strategies.

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