PROCEEDINGS OF THE 1ST ANNUAL HIGHER EDUCATION FLIPPED LEARNING CONFERENCE

EDITORS

JERRY OVERMYER

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FOREWORD

The Flipped Learning Academy was created in 2014 as part of a Provost's Call for Innovation at the University of Northern Colorado (I@UNC). The project was funded for two years in the *New Pedagogies: Re-Imagine Teaching and Learning* strand. The project provided 30 UNC faculty with opportunities to create robust and effective flipped learning environments. The project provided professional development and resources to participating faculty through workshops and one-on-one mentoring of best practices. The goal is for each participant to create and assess the effectiveness of one flipped class during their first semester of participation and implement this flipped classroom the next time they teach the course. This included lecture videos, active and dynamic in-class activities, and assessment instruments to gauge effectiveness. The outcome will be a fully flipped learning environment that creates a more engaged, energetic and effective learning experience for UNC students.

The Flipped Learning Academy and the MAST Institute hosted the First Annual Higher Education Flipped Learning Conference on June 8-10 on the campus of the University of Northern Colorado, in Greeley, Colorado.

The conference allowed higher education flipped classroom practitioners to exchange information, highlight faculty engaged in assessment of flipped classrooms, and discuss the future of flipped learning in higher education. The conference was for instructors, faculty, and graduate students from universities, colleges, community colleges and any other post-secondary institution. Previous experience with flipped classrooms was not required. The conference was a blend of novice and experienced flipped educators sharing best-practices and research.

The program included welcoming remarks from Dr. Ellen Gregg, Dean College of Natural and Health Sciences at UNC, and opening and closing sessions by Dr. Jerry Overmyer and Dr. Nissa Yestness. A plenary session was given by MacKenzie Mushel Ellis, SHAPE Dance Teacher of the Year. The keynote was presented by Dr. Caroline Fell Kurban of MEF University. The conference included 44 presentations and 6 posters on higher education flipped learning philosophy, practice, and research.

The Proceedings of the 1st Annual Higher Education Flipped Learning Conference is a record of select presentations and faculty who participated in the professional development to create a flipped classroom. Our hope is that these papers will serve as a resource for future practice and research in higher education flipped learning, as the field continues to develop and expand.

Sincerely,
Jerry Overmyer
Nissa Yestness

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Flipping the Finals Frontier: Starsuasion

A Practitioner Report by Lin Allen

UNC

Abstract: Going "where no [plan] has gone before," *Star Trek v* The Prima Facie Directive" implements flipped philosophy via Spock Trials. Teams select an ideological issue or invention with ideological implications from a *Star Trek* episode and present it to the class for a verdict in a Mock Trial format.
Key words: Compelling Needs, Ideology, Invention, Persuasion, Prima Facie, *Star Trek*

Described as a "syndicated war horse" (Worland, 1994) *Star Trek* presents two persuasion facets: (1) ideological and (2) inventive. Both facets are incorporated in my Persuasion class assignments, designed from completion of a Flipped Learning Academy at a midsized institution in the rocky mountain region. The course theme, "*Star Trek v.* The Prima Facie Directive," plays off of *Star Trek's* guiding philosophy, The Prime Directive, which aspires to explore, though not interfere, with new civilizations.

Going "where no [plan] has gone before," *Star Trek v.* The Prima Facie Directive" implements flipped philosophy via Spock Trials. Ericson, Murphy, and Zeuschner (2011) define a prima face case as one that "establishes such a high degree of probability that the proposition would be accepted unless the case is refuted" (p. 124). Teams select an ideological issue or invention with ideological implications from a *Star Trek* episode and present it to the class for a verdict in a Mock Trial format. These Mock Trials are called "Spock Trials" in recognition of Leonard Simon Nimoy's role as the logician Dr. Spock in the Original Series.

Scripts from the television series Original and Next Generation releases explore a myriad of issues ranging from forging foreign policy to forming friendships with new civilizations. A sampling of scholarly articles published about *Star Trek* in the Communication and Mass Media Complete database reveals this breadth: " From the New Frontier to the Final Frontier: Star Trek from Kennedy to Gorbachev," "Star Trek and the Ecology Movement After 25 Years: Development of Parallel World Views and Rhetorical Approaches," and "Popular Imagination and Identity Politics: Reading the Future in Star Trek: Next Generation." As *Publishers Weekly* (2016) argues, "Star Trek . . . is about more than spaceships and aliens, it illuminates the present by showing a future to strive for" (p. 52).

Persuasion plays a key role in each episode, as the Starship crew debates options about how best to encounter, and yet not interfere with, unknown civilizations. Parallel to the crew debate, the class debates, in the form of Spock trials, give students a chance to play roles to engage the controversy. I am writing scripts as extensions of the episodes, casting lines for judges, attorneys, witnesses and jury members. Roles rotate to give class members various opportunities to voice the issues illustrated in the episodes. A VQ (verdict question) is selected for each episode. For example, the verdict question might be: Was Captain Picard justified in violating the Prime Directive in this episode?

A sample Spock Trial is presented in the FLA Conference: "Salia *v.* The Dauphin," based on a *Star Trek: The Next Generation* Season 2 episode titled, "The Dauphin." In this Spock Trial, Salia is the Petitioner who is challenging The Dauphin's edict that she must return to her home planet, Daled IV, from which she was exiled as a child. Descended from two warring dynasties, Salia's dual parentage makes her the ideal creature to reconcile the division

and bring a long-anticipated peace to her planet. Salia, however, rebels and seeks permission to stay aboard The Starship Enterprise, where she seeks a new life unhinged from her heritage.

In the classroom activity, opening statements are presented on behalf of Petitioner Salia as well as Respondent The Dauphin, followed by witness testimony from both sides. One of the witnesses called to the stand is the author of a stratagem of compelling needs that individuals must weigh when making decisions. Through direct and cross-examination of this witness, the needs strata is examined and challenged both from a theoretical and practical perspective, giving the jury a foundation for reaching a verdict. Visual verdict forms give the jury a tangible reference point to envision the competing worldviews established by Petitioner and Respondent in the case.

An excerpt from the trial's witness testimony is included here:

DIRECT EXAM by Petitioner

Judge   Petitioner, you may call your next witness.

Atty   Petitioners call Vance Packard to the stand. Your Honor, we ask that Mr. Packard be sworn as an expert witness in this case.

Judge   So stipulated.

Atty Please state and spell your name for the court.

Packard Vance Packard V-A-N-C-E P-A-C-K-A-R-D

Atty Mr. Packard, what is your area of expertise?

Packard I study human motivation.

Atty Since when?

Packard 1964.

Atty And have you published any notable work on the subject?

Packard My book, *The Hidden Persuaders*[1], became a best-seller.

Atty In the academic world or popular press?

Packard Both-back in the quaint age of the printed page.

Atty And what do you mean by hidden persuaders?

Packard The needs that compel humans to act—Historically, earthlings named them hidden needs, or more recently, compelling needs.

Atty And you have had a chance to observe and interview Salia, the Petitioner in this case?

Respondent Atty Objection, Your Honor. Compound!

Judge Sustained. Please rephrase the questions as separate inquiries.

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[1] Packard, V. (1964). *The Hidden Persuaders.* New York: Pocket Books.

Atty Gladly, Your Honor. Mr. Packard, have you had a chance to observe Salia?

Packard I have.

Atty Have you had the chance to interview Salia for the purpose of discerning her needs?

Packard Yes.

Atty Your Honor, Petitioners would like to introduce Exhibit A into evidence, which displays 8 compelling needs discovered by Packard.

Judge So admitted.

Atty And which, if any, of your compelling needs did you discern from your observations and interviews with Salia?

Packard Two needs seemed most prominently in play. First, the need for love objects.

Atty Love objects?

Respondent Atty Your Honor, I object!

Judge You object to the objects?

Respondent Atty I object on the basis of relevance. I fail to see where this sentimental line of inquiry is going.

Judge Overruled, I'll allow it, as long as you remain objective.

Atty Can you describe the importance of love objects?

Packard They are tokens that remind us of affection, such as a ring or teddy bear.

Atty Thank you, Mr. Packard. And what is the other compelling need that seems important to Salia?

Packard Easy. The need to exert control over her life. In a word, autonomy.

Atty Your witness, counsel.

CROSS EXAM by Respondent

Atty Hello, Mr. Packard. Shall I address you as Professor Packard?

Packard No, please call me Vance.

Atty Thank you for letting me know in advance.

Atty How did you determine that love objects were important to Salia?

Packard Ensign Wesley Crusher developed a crush on Salia immediately when she boarded the Enterprise. She treasures a charm bracelet he gave her.

Atty   And she would be able to take this charm bracelet back to her planet?

Packard As far as I know, bans on charm bracelets have now been removed from the list of restricted items confiscated during planet re-entry.

Atty   So returning to her planet would not deprive her of her so-called love objects?

Packard Not necessarily.

Atty And you stated that the other compelling need that Salia exhibits is autonomy—control over her life?

Packard Yes.

Atty And who is in a better position to exercise control? The ruled or the ruler?

Packard The ruler.

Atty And isn't it true that Salia has been selected to rule her planet?

Packard So I've been told.

Atty And does the Starship Enterprise have a ruler?

Packard Yes, Jean Luc-Picard is the Captain of the Enterprise.

Atty If Salia's wish to stay on the Enterprise is granted, is Captain Picard prepared to step aside to let this headstrong young woman command his ship?

Petitioner Atty Objection, Your Honor—calls for speculation.

Judge Overruled.

Packard That seems a bit unlikely.

Atty So it is safe to assume that Salia, if returned to her planet, would be in a stronger position—a ruling position—than if she stayed aboard the Enterprise?

Packard I suppose so.

Atty And she would have infinitely more power, control and authority as the ruler of a planet rather than as the rookie aboard the Enterprise?

Packard That's what The Dauphin wants you to believe.

Atty Nothing further. The Petitioners rest our case-in-chief, Your Honor.

By playing the roles of witnesses in the case, students are exposed not only to the content of the theorists' or characters' insights, but they also examine the counterparts of that content. This provides an opportunity for critical analysis as well as a comparison of competing perspectives.

The course where I have implemented my flipped philosophy is a Communication Studies class focusing on Persuasion. The University course tag states that the course is designed to "investigate major variables surrounding attitude change and human persuasion." In

previous semesters, covering two-plus decades, my approach would be to go over key concepts (rhetorical variables) for each of the assigned textbook chapters. Though term project options have varied significantly over the years, from persuasion analysis to persuasion activation, the lecture/discussion format of the course has focused on providing definitions and examples of concepts and their relevance to advocacy.

The advantages to the Flipped Format are: (1) dialogic inquiry, (2) dynamic interaction and (3) aesthetic distance (which allow exploration of controversial issues in a projected context, rather than the heat of the immediate controversy). The new format gives students the opportunity to *engage in* rather than *talk about* persuasion within a projected context.

With the "verdict" in for the classes, commentaries from student evaluations capture the surprise as well as strength of the Flipped Academy Format. Although the initial reaction may be that the format "threw me for a loop at first," and that students "never had a class like this before," the trend was that although some struggled at first, "it opened my eyes to new things." Still others commented positively on the opportunity "to think outside the box" and "loved the relationship between *Star Trek* and the concepts! Would recommend!" Others liked the weekly activity of "creating a verdict for the class."

In sum, the Flipped Format honors the inaugural invocation to "Let both sides seek to invoke the wonders of science instead of its terrors. . . . explore the stars, conquer the deserts, and encourage the arts and commerce" (Kennedy, 1961). Starsuasion is designed to format this mission by flipping the finals frontier.

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Investigating Student Motivation and Expectation on Attitude toward Flipped Learning

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Flipped learning is an innovative approach to classroom structure and delivery of new information to students in which classroom time is utilized for problem solving and discussion instead of lectures, which are provided as videos to be watched outside of class. The current study investigated the effects of motivation and expectation on student attitude toward flipped learning in an effort to provide more information to educators regarding flipped learning and successful incorporation of this strategy into teaching practices. A survey was given to students in two classes at a Midwestern university to investigate their perceptions and beliefs about flipped learning. Findings from regression analysis and ANOVA implicated motivation as a key factor on student attitude about flipped learning. Suggestions for future research and applying these findings were provided.

Keywords: Flipped learning, motivation, expectation, and attitude.

Literature

Flipped learning as an innovative classroom/homework structure has recently emerged as a novel delivery system of instruction (Fulton, 2012). In flipped learning, homework and lesson presentation are literally flipped from the traditional delivery system, and lesson presentation is delivered in a recorded lesson that is watched or listened to at home while "homework" actually takes place in the classroom (Butzer, 2014; Fulton). This flipping of homework and lesson delivery allows classroom time to concentrate on problem solving with the availability of the teacher to assist as needed. It also allows the flexibility of students working individually, in groups, in peer-tutoring pairs, or other student arrangements based on learning style, needs, and abilities.

Flipped learning as a delivery system is related to self-determination theory, which suggests that there are different kinds of motivation and orientation to tasks that influence learning (Butzler, 2014). In intrinsic motivation, the student is self-motivated for reasons of his/her own rather than relying on outside factors such as grades (extrinsic motivation). When students are not motivated at all, they are described as a motivated. The kind of motivation a student shows has an effect on that student's success and satisfaction, with those showing both intrinsic and extrinsic motivation also reaching the highest levels of academic performance. With the advent of flipped learning with the characteristic of student responsibility for watching and listening to academic material outside of class, it is important to understand the role that motivation plays in completing these tasks.

This flipping also reflects the constructivist emphasis upon student-centered learning, where students are actively engaged in their own learning, versus the traditional teacher-centered learning, where students tend to be passive listeners (Butzler, 2014). In a flipped classroom, knowledge acquisition occurs outside the classroom and class time is used for knowledge construction and problem solving. However, flipped learning might not be as successful and satisfying when learners are less academically prepared or are not self-motivating. When Butzler (2014) investigated this concept in an open enrollment college, he found that even though the

learners reported less satisfaction than with traditional formats, they also reported improved study skills. This finding appears to suggest that satisfaction may not be as critical in success; nevertheless, more empirical research is needed in order to better understand the role of satisfaction and motivation in flipped learning. Moreover, a prevailing problem in current research on flipped learning is conflictual findings on satisfaction with flipped classes.

For example, Missildine, Fountain, Summers, and Gosselin (2013) confirmed Butzler's (2014) findings in their discussion of the effect of flipped classrooms and student satisfaction and improvement toward flipped class. Their study investigated three ways to improve student performance and satisfaction, including two innovative ways that incorporated technology, to teach students as a way to address the problem of retention. Missildine et al. used a quasi-experimental design with adult student participants to compare both satisfaction and achievement in three different models of delivery: traditional classroom, lecture plus access to recorded lectures, and flipped classroom in two health courses in a nursing curriculum. A convenience sampling technique was used to obtain the 589 participants for the three-semester study. The first semester was taught using the traditional classroom approach. The second semester added the feature of recorded lectures for additional review and study, but still presenting lectures in the traditional format. The third semester employed the flipped classroom format. The results of the study by Missildine et al. (2013) support the authors' hypotheses that the flipped classroom resulted in better student achievement, but found that there was also less student satisfaction. However, a confounding variable of limited access to high-speed Internet by some students could have influenced the satisfaction levels.

In contrast to Butzler (2014) and Missildine et al. (2013), Linga and Wang (2014) found a high level of satisfaction toward flipped learning when they investigated whether flipped learning could be successfully implemented in a large college class setting (nearly 300 students), followed by a second question probing student perceptions of the large flipped class. Although the authors presented no review of literature, they seemed to imply that flipped learning had so far concentrated on smaller class size, and they were interested to see if the same kind of success and satisfaction could be achieved in much larger classes. Linga and Wang used a flipped format for two lectures in one of the modules in a chemical and bimolecular engineering class, using class time for guest speakers working in the field and open discussion. Afterwards, the evaluation of their flipped procedure was measured both by student performance on homework and examinations and by a brief survey of three questions that collected both quantitative and qualitative data. The authors found that more than half of the students felt that flipped learning was appropriate for large classes, and another 30% thought that possibly it was appropriate. Only 15% felt it was inappropriate. An additional finding was that only 38% of the students felt that flipped learning added to their workload, and another nearly 50% were neutral on this. Finally, when the researchers asked students if flipping classes should be researched in other modules of the course, half of the students replied in the affirmative, and an additional 33% replied possibly. The authors concluded that the survey results suggested a high positive response on the part of the students, and that these students would welcome even more opportunities for flipped learning.

Supporting Linga and Wang's (2014) findings of increased satisfaction, McGivney-Burelle and Xue (2013) also found improved satisfaction of flipped learning in their study of flipped and non-flipped sections in a college calculus course, with equal time devoted to each section and an exam following each section. In the flipped section, students were expected to watch short videos regarding new material prior to class, and at the beginning of the class period,

were given a brief "entrance quiz" in which students were asked to write down the formula presented in the video lecture. These quizzes comprised 2% of their class grade, and the remainder of the class period was devoted to working in small groups on 5-7 problem sets, with the instructor rotating around to answer questions and provide feedback on their problem-solving tasks. The authors found improved student performance in the flipped sections on exams and generally positive perceptions about flipping in a follow-up survey. Almost all of the students preferred the flipped format, and the one consistent criticism was the inability to ask questions of the instructor while watching the lecture videos. It was suggested that the instructor spend the first few minutes of class time addressing questions before initiating problem-solving activities.

Another study finding improved satisfaction and better student performance in flipped class formats was Schwartz (2014) in a statistics course for Ph.D. nurse candidates. Schwartz was charged with the task of converting two 3-credit classes in the curriculum to a single 4-credit class, with three class periods a week and an added weekly 1-hour computer laboratory experience. He accomplished this assimilation by converting the course to a flipped format and assigning a teaching assistant to help with student questions. Approximately 12 students registered for this course annually, but no actual number of participants was given in this study. A pre-test and post-test was used to ascertain student performance, but since all students took this revised course, no comparison of student performance between traditional and flipped formats was possible In addition to the pre-test and post-test as an objective measure of student progress, a questionnaire containing a series of questions about flipped learning and student reactions was given. Both formative and summative assessments of student evaluation of their own learning and of specific aspects of the flipped format were conducted in conjunction with this class, with a 5-point Likert style survey, yielding an average of 4.5 and a median of 4.8 where 5 represented "strongly agree." In addition, all the students spontaneously got together, purchased a gift of chocolates to the instructor with a thank you card signed by all students, expressing their gratitude and comments related to better in-depth comprehension and learning via a student-centered approach.

Johnson (2013) found improved satisfaction in flipped learning as well in an examination of flipped learning at a high school level in advanced math courses. Johnson (2013) studied student perceptions about the flipped format, whether this format supported students' learning, perceived benefits and recommendations for improvement. A 10th grade and two 11th grade pre-calculus courses were flipped for 63 participants in a Western Canadian province district. Both quantitative and qualitative measures were employed; a 17-item Likert scale survey was evaluated quantitatively, and a 5 item open-ended questionnaire was evaluated qualitatively. Johnson found that students had greater satisfaction with the flipped format, perceived that they did less homework but learned more through the self-paced, mastery learning and student-focused approach, and that they experienced greater teacher-student interaction, increased engagement, communication and understanding through flipped classrooms. The students also recommended that lecture videos be more interactive, that more in-class learning activities be provided, and that assessment be broadened from computerized timed assessments to include more pencil/paper untimed methods.

An interesting study by Stone (2012) actually found quite different levels of satisfaction toward flipped learning between two very different sizes in classes. He examined the effects of flipping in two classes in a biological studies program, one a small-specialized course in Genetic Diseases, and one a large introductory course in General Biology at a small Midwestern university. Three research questions were asked: whether flipping impacted student learning,

student attendance, and measuring student attitudes toward flipping as a teaching strategy. In both of the courses, lectures were pre-recorded and made available to the students to watch before class, along with reading assignments. The author compared outcomes of both courses with previous traditional courses, which served as control groups for each course. Results indicated that student performance and attendance was consistently better in the flipped course of Genetic Diseases whereas in the General Biology course, student performance was slightly lower on the first exam in the flipped course. However, student performance was increasingly higher on successive exams, and student attendance was higher throughout for this class. Significantly, the dropout rates for both flipped classes were much lower than in the traditional offerings of both classes (control group). Student attitude toward flipped learning was much more positive in the Genetic Disorders class than in the General Biology class, but was still more positive than either control group courses. One reason posited by the authors for this difference in satisfaction was a difference in student population, with those taking the Genetic Disorders class already very successful and highly motivated, whereas the student population in the General Biology course were just starting their college coursework, entered with various levels of enthusiasm and academic success, and poorer attitudes and appraisals of self. A final factor may have been that the General Biology class was offered at 8:00 am whereas the Genetic Disorders class was later in the day, a factor that has previously been associated with less satisfaction.

In addition to levels of satisfaction, prior attitudes and expectations as well as student needs have been linked to educational outcomes in a variety of studies (Drennan, Kennedy, & Picarski, 2005; Fulton, 2012; Linga & Wang, 2014). Drennan et al. (2005) examined two key factors, positive perceptions of technology and autonomous learning styles, that affect student attitudes about online learning in an effort to achieve balance in college classes between traditional approaches and the use of emerging technologies. In their review of previous literature, Drennan et al.determined that one area needing more research is related to locus of control as a variable in perception of technology used in college classes. As a result, Drennan et al. designed a model of student satisfaction that included locus of control and posited several hypotheses: that the perception of ease of use of technology was influenced by ease in recovering from computer error, that student course satisfaction was directly or indirectly related to locus of control, and that there was a direct relationship between perceived ease of use of technology and perceived usefulness about flexible learning.

Obtaining a 97% response rate, the authors found that both positive perceptions toward technology and perceived positive locus of control had a direct effect on course satisfaction. Also, perceived ease in recovery from computer error was positively related to perceptions of usefulness. However, perceived ease of use did not have an effect on course satisfaction. Drennan et al. concluded that student success and satisfaction with technology integrated in college coursework is directly related to positive perceptions toward technology and an autonomous learning style coupled with an internal locus of control. With this knowledge, instructors can better design and incorporate technology into coursework, and can address those factors that are related to lower success and satisfaction in students without as much technical expertise before a course begins, and can add external rewards for those students with a more external locus of control.

At present there is still reluctance on the part of educators to incorporate flipped learning as part of their instructional delivery. While there seems to be some evidence for academic success in flipped learning, educators are still unsure just how to implement flipped learning and for which students flipped learning might be most appropriate (Butzler, 2014). Because flipped

learning is such a novel approach, there is still not a large body of research regarding factors for success in implementing this approach, of empirically based findings supporting true academic improvement, or of the critical components of flipped learning (Stone, 2012). With the initiation of flipped learning as a new way to deliver instruction, several questions have arisen about factors related to the success or lack of success of flipped learning as a delivery system, indicating gaps in the literature that need to be addressed. One of these questions is if and how prior attitudes and expectations might affect the success of the instruction (Valenza, 2012). Gaining better understanding of these factors not only will contribute to making flipped classrooms successful, but will also help teachers and instructors to implement this delivery system more effectively, including addressing student needs.

In order to address these gaps, this study will investigate the factors of motivation, expectation, and attitudes regarding flipped learning on the part of undergraduate students. The purpose of the present study is to see if there a relationship between motivation to learn (cognitive) and expectation regarding taking flipped class on student attitude toward flipped learning class.

The research questions are:
- To what extent does motivation explain the level of student attitude toward flipped learning class?
- To what extent does expectation explain the level of student attitude toward flipped learning class?

The hypotheses were:
- Students with higher motivation will have a more positive attitude about flipped learning.
- Students with higher expectations will have a more positive attitude about flipped learning

Operational Definition:
Motivation: as measured by students' view of engagement, discovery learning, and meeting the goals of learning of flipped learning classes
Expectation: as measured by students' expectations about flipped learning classes including feedback, cooperative learning, and flexibility
Attitude: as measured by the e-learning usage questionnaire.

Methodology

Design

A survey I designed for the current study was adapted from research conducted by Ong and Lai (2006), Al-Samarraie, Teo, and Abbas (2013) and Paechte, Maier, and Macher (2010). The students in flipped learning classes completed the survey. Since no independent variables were manipulated to determine if they have an effect on dependent variables, this design is considered non-experimental (Creswell, 2012).

Participants

I selected the participants using a convenience sampling method, drawn from two classes undergraduate math and audiology and speech- language sciences at a university located in Colorado in which flipping has been integrated. All the participants were 18 years of age and older. Permission from the two professors to conduct this survey in their classes was obtained. The potential participants were initially contacted through the professors of these classes. I explained the purpose of the study, outlined the procedures and requirements, and distributed the consent forms and study description. Enrollment in these two classes was approximately 60

students. This is only a pilot study thus comprising a small sample. Using G power, a sample size of 107 was proposed to be sufficient for statistical analyses.

Instrumentation

Students' attitudes toward flipped classes. This ten-item survey was adopted from an instrument developed by Ong and Lai (2006), that consisted of items asking about students' perception about the ease, effectiveness, value, and clarity of flipped learning classes, as well as their view of whether flipped learning classes enhance their performance, productivity, and amount of work in the class. The survey created for the current study used a four point Likert scale (4-strongly agree, 3-agree, 2-disagree, 1-strongly disagree). The anchor points on the original study were based on a 7-point Likert-type scale (Ong & Lai, 2006) but were revised for the current study so that there would be an even number of anchor points. This modification was made so that participants could not choose a middle option. A sample item is "Interacting with the flipped class does not require a lot of my mental effort." The possible score range was 1-4 based on summing responses to the ten items.

The total score was the summation for all the items by taking the average mean. The reliability of the scores reported in Ong and Lai's (2006) study for a sample of employees taken from six international companies was greater than .80. My survey was based on a previously developed survey called "E-Learning Usage Questionnaire" (Ong & Lai, 2006). To address the content validity of Ong and Lai's survey, the items in their study were adapted from prior studies that measured computer self-efficacy, perceived usefulness, perceived ease of use, and behavioral intention to use electronic learning. Several studies found a strong relationship between scores on the E-Learning Usage survey and the technology acceptance model, mobile service, and using technology and learning effectiveness (Terzis, and Economides, 2011, Smarkola, 2007). The participant population in Terzis, and Economides, (2011) were undergraduate college students. The participant population in Smarkola, (2007) were student and experienced teachers. In the meta- analysis study by Sumak, HericKo and Pusnik, (2011) the role of user types and e-learning technology types and E-learning technology acceptance was examined and the authors reported that E-Learning Usage Questionnaire was frequently used.

Students' motivation toward flipped classes. The eight survey items measuring motivation were adopted from Al-Samarraie, Teo, and Abbas's (2013) instrument, which consisted of items asking about students' view of engagement, discovery learning, and meeting the goals of learning of flipped learning classes. The measure of students' motivation created for the current study used a four point Likert scale (4-strongly agree, 3-agree, 2-disagree, 1-strongly disagree). A sample item is "Flip class will help me reach my personal goals." The possible score range was 8-32 based on summing the responses to the 8 items. Even numbers of anchor points were used in the current study so that participants cannot choose a middle option. Previous research that used Al-Samarraie, Teo, and Abbas's (2013) E-Learning Measure reported a Cronbach's alpha reliability estimate of .88 based on undergraduate college students similar to the participants that I had in my study. Regarding validity evidence supporting use of this measure, there is one study that found a relationship between scores on the E- Learning usage survey and students' perception regarding online courses (Richardson, J. C., & Swan, K., 2003). Items on the motivation subscale on the E-Learning usage survey were used and adapted for the current study because flipped learning is somewhat similar to E-Learning usage.

Students' expectation for flipped classes. The nine-item measure was adopted from an instrument developed Paechter, Maier, and Macher (2010), and consists of items asking about students' expectations about flipped learning classes including feedback, cooperative learning, and flexibility. The measure created for the current study will use a four-point Likert scale (4-strongly agree, 3-agree, 2-disagree, 1-strongly disagree), although the anchor points on the original study were based on a 6-point Likert scale. A sample item is "Flipped learning gives me the possibility to establish greater personal contact with the instructor." The possible score range is 9-36 created by summing responses to the nine items. Paechter et al. found correlations up to $r = .63$ between students' expectation, self-assessments of achievements in media competence, and scores measured by an achievement test. Which provided support for criterion validity. They did not report reliability. Several studies provided validity evidence where they found a relationship between the E-Learning Usage survey and research practice, perception of web based learning system, and evolution e-learning from developers' perspective (Abdellatief, Sultan, Jabar, & Abdullah, 2011; Arenas, Ramírez, & Javier 2011; Garrison, 2011).

Demographic questions

Participants answered demographic questions regarding their age, gender, major, first language, and type of course.

Procedure

Before collecting data for the current study, I applied for and received IRB approval. I recruited 33 students from the two classes whose instructors granted me initial permission to collect data. After students read the consent forms, and they were willing to participate, they received the survey in a paper format. Participants responded to items related to motivation, expectation, and attitude towards flipped learning as described above. These surveys were completed in the class period and I collected them at the end of the class.

Data Analysis

Prior to conducting the analyses to answer the research questions preliminary descriptive analyses were conducted such as frequencies, descriptive, correlations. Simultaneous entry multiple regression analysis was conducted for answering the research questions. The outcome variable was students' attitudes and the explanatory variables were students' motivation and expectation. Residual plot indicated meeting the assumption of linear relationships between variables, independence of observations, normality, and equal variance. Therefore, an alpha of 0.05 was used when conducting the statistical tests, and all statistical analyses will be conducted using SPSS version 13.

Results

In this study, I performed the multiple regression analysis to analyze the data. The dependent variable is mean attitude (mean = 28.077, sd = 5.538), and the independent variables are mean motivation (mean = 15.355, sd = 5.732), mean expectation (mean = 22.469, sd = 7.751), age (mean = 20.72, sd = 1.904), and gender (mean = 1.32, sd = .476). Refer to Table 1 in the Appendix.

The multiple regression analysis showed that the F = 19.028, with p < 0.001. The model shows a significant variation that is explained by the independent variables. The individual t-test showed that all of these independent variables were not significant except for mean motivation. For the mean motivation, the t-test = 2.1244 with p = 0.046. Expectation and attitude did not show significance. Age and gender were also not significant. The adjusted R-squared = 0.750. The result showed that 75% of the variation in the dependent variable of attitude is explained by the

model. The remaining variation was attributed by extraneous variables. The standard error of the estimate is 2.767.

Discussion

The current research investigated factors of age, gender, motivation, and expectation on student attitudes toward flipped learning. The goal of this research was to provide more information to assist educators in decisions about incorporating flipped learning as an alternative method of structuring classes and delivering new information to students. Considering the results of this study, it appears that neither age nor gender has a significant effect on student attitude toward flipped learning. This finding can be helpful for educators in reducing their apprehension about using flipped learning approaches with students of various ages and either gender.

The findings also suggest that the most salient factor related to student attitude toward flipped learning is student motivation. This finding can be very useful to educators as it provides a gauge by which to ascertain which students will find flipped learning most effective and helpful. This finding also illustrates the importance of developing stronger motivation for students who have not yet attained this. It also suggests that such students may need more external motivators to help them achieve success and satisfaction with flipped learning (as reported by Butzler, 2014).

There are several limitations to the current study. First, there was only a small sample (30) and all were from one Midwestern university. They also came from only two classes, and the study took place only during one semester. Future research to confirm the findings of this research could expand to other universities and include students from many different fields of study.

Inasmuch as motivation was revealed as the most significant predictor of student attitude toward flipped learning, it is recommended that further studies investigate this factor of motivation more thoroughly. For example, future research could study both internal and external motivation for comparison on student attitude toward flipped learning. Also, more investigation could examine how to discriminate high and low motivation in students and effective ways to build motivation to better prepare students to take classes utilizing flipped learning and experience success. Finally, it might be interesting to explore if flipped learning could be integrated in small sequential steps to see if students can be "acclimatized" to this new approach to classroom structure and dispensation of learning material.

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THE ORIGINS OF "THE CLASSROOM FLIP"

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As the title suggests, this paper tells the story of the beginning of the Classroom Flip, first given that name in 1998. The concept for it is rooted in work that was done with emerging communication technologies in the 1990s, trying to determine if the technologies being used for distance education had any application for face-to-face classes on a residential campus. The paper (1) calls attention to the seminal thinkers who laid the foundation in the 1990s for different ways of thinking about college teaching, (2) reviews the initial goals of the Classroom Flip as they were first presented in 2000, (3) discusses key contributions of the Classroom Flip model and (4) presents important lessons that were learned as faculty first began trying the approach for their students' learning. Each of those is still relevant today as new adopters begin implementing their own version of "flipped learning".

Key words: Classroom Flip, Flipped Learning, Active Learning, Instructional Technology

Let me acknowledge here at the beginning that there are a number of people who—working independently—came up with the concept of what we are calling at this conference "Flipped Learning." An important example of this is that Lage, Platt and Treglia (2000) were working on what they called the "Inverted Classroom" at the same time I was developing what I called the "Classroom Flip" (Baker, 2000c). In addition, others came along in succeeding years who were unaware of this earlier work and developed the concept on their own. So, there are many people who have developed, written about and promoted the approach through the years.

It seems appropriate at this inaugural Higher Education Flipped Learning Conference to start at the beginning—to move beyond the bare citations of a literature review and flesh out the story of the origins of the approach. My four main goals in sharing this brief overview of my journey through the past 20 years or so are: (1) calling attention to the seminal thinkers who laid the foundation in the 1990s for different ways of thinking about college teaching, (2) reviewing the initial goals of the Classroom Flip as they were first presented in 2000, (3) discussing key contributions of the Classroom Flip model and (4) presenting important lessons that were learned as faculty first began trying the approach for their students' learning. Those sources, goals, contributions and lessons are still relevant today as new adopters begin implementing flipped learning, by whatever name it is called. So I think it is important to share them with you and get them on the record. And along the way I will tell the story of how the Classroom Flip got its name.

The Beginning (1995)

The origin of the Classroom Flip approach goes back to fall of 1995. I had been teaching a class in multimedia program screen design for a couple of years by that point. Since there were no textbooks dealing with computer screen design at the time, I had the students work through a traditional print graphic design text, while I lectured in class on the application of the principles of print design to screen design. We did not have any projection systems in the classrooms before 1995, so I had to cart a computer and two monitors from my office to the classroom for every class session.

Then in Fall Quarter 1995, Cedarville College launched its computer network, dubbed CedarNet. Every dorm room had a college-provided computer for the students and several classrooms were outfitted with Tech Carts and projectors. Now I was able to put my presentations on the network and use in-class projectors to display the presentations. I remember vividly the day in the screen design class when I was clicking through the slides, with the students dutifully copying down the information in their notes. In the middle of the lecture, I stopped and said, "This is really stupid! The information on the slides is going from the screen to your notes without passing through either of our brains. The presentation is on the network. Just access them online before class and let's not waste time in class just copying down slides."

My office was located on the other side of campus from the classroom and I can remember getting about half-way back to my office when it suddenly dawned on me: "I just gave away all of the content for the class. What am I going to do in class the rest of the term?"

Fortunately, I had already been thinking about how to harness the two converging trends of changes in thinking about teaching and learning and advances in computer technology so as to change the traditional undergraduate classroom, as the following note (from a 1999 presentation for in-service training) indicated:

> For a long time (since [my] first presentation [at Cedarville on educational technology] in 1982) I have been encouraging faculty to consider using electronic media as ways of delivering "rote" material outside of class so that the classroom can be used for active learning, allowing the instructor to move from information-provider to mentor. The problem for years was that there was no infrastructure to allow that to happen. When I began experimenting with solutions CedarNet provided, I went back to that idea and came up with the "Classroom Flip" . . . . [But one] of the big challenges has been experimenting with what you do with the time in class moving lectures out allows (Baker, 1999a, Note for slide 13).

As I now faced the opportunity to actually implement such a change I drew from several sources that were part of the ferment in the re-thinking of college teaching at the time. Key influences were Boyer's (1990) "Scholarship of Teaching" from his book *Scholarship Reconsidered*, Caine and Caine's (1994) "brain-based learning," Barr and Tagg's (1995) discussion of the paradigm shift in higher education from *instruction* to *learning*, and, most importantly, Chickering and Gamson's (1987) "Seven Principles for Good Practice in Undergraduate Education" and the follow-up by Chickering and Ehrmann (1996) in which technology was presented as a way of "leveraging" the Seven Principles.

When I got back to my office, I sketched out an approach to class that was centered on four verbs and emailed it to the students. The image in Figure 1 is from a printout of that first memo[1], which I cut out and taped to my office desk in order keep the steps in mind as I first started to use them in re-structuring the class.

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[1] When I was moved out of that office, the clipped note got packed away, along with early handouts used for conference presentations. I had forgotten about this original version until, much to my surprise, I found it tucked in among those old handouts as I sorted through them in August 2015. I only wish I still had the whole printout so I could pinpoint the date. The last line should have read "once we *get* past the mid-term exam" (rather than "*can* past").

> Here is my vision for what I would like to see accomplished during class time:
> - CLARIFY by dicussing any questions you have from reading & class slides
> - EXPAND on the material by you adding to the "mix" material from your own reading or
> things covered in other classes which inform the current topic (e.g., some of the
> students have read some research articles for Electronic Media Research which deal
> with experiments on screen design; we should have the benefit of those findings for
> our discussion)
> - APPLY the material by looking at and analyzing sample screens based on the
> principles discussed in the text and slides
> - PRACTICE the application by spending time in design groups working on the project
> steps (this will come more once we can past the mid-term exam)

Figure 1. The "four verbs" structure for class discussion set up for my first flipped class, Fall 1995.

A re-casting of the four verbs in a 2000 conference presentation provided a more generic description of how to use them to organize a class session:

- *Clarify*—begin by discussing any questions the students have from the assigned readings for the session.
- *Expand*—next, invite the students to add to the assigned material by drawing from their own experience, other reading or what they have learned in other classes. This stage recognizes the students as co-contributors of knowledge and can help place the content for the day in a "real world" setting as students draw upon insights gained from their own life experience.
- *Apply*—one of the most important contributions of the model is the time it provides to concentrate on student understanding and application of concepts. Thus, on a "normal day" most of class time will probably be spent on this stage, where students are asked to apply what they have learned from the assigned materials. This model provides a greater amount of time for these kinds of activities without sacrificing any of the course content.
- *Practice*—this stage takes application beyond the critique stage and involves the collaborative groups in creative thinking (Baker, 2000c, pp. 13-14).

In the next class period the approach was presented to the students and the restructuring my first "flipped" class began.

The basic concept of the Classroom Flip was to use technology to move the transmission of information that had been the content of the lectures out of the classroom (delivered instead through presentations available on the campus network) and to use the opened-up class time for active learning as the students worked on application of the principles from that content and practiced their use while I was there to see what they were doing, answer questions and make suggestions (see Figure 2). So, for example, rather than lecturing on how principles of the use of color could be adapted to the then limited palette of a computer, the students would look over the presentation slides on that topic before class. The class would begin with the *Clarify* and *Expand* steps. After that, the students would be broken into learning teams and presented with an example of a poorly designed screen for them to critique by *applying* what they had learned from the out-of-class readings. Then the teams would put the principles into *practice* by re-designing the screen.

Initial Goals of the Classroom Flip Model

As the model developed, some pedagogical goals where established for what should be done in and out of the class now that newly opened-up time in class became a blank slate with which to work. Those initial goals were presented in a March 2000 presentation of the Classroom Flip model:

- Find an approach to move from "sage" to "guide."[2]
- Reduce the amount of time spent in class on lecturing.
- Open up class time for the use of active learning.
- Focus more on understanding and application than recall . . .
- . . . while not sacrificing presentation of the factual base.
- Provide students with more control over their own learning.
- Give students a greater sense of responsibility for their own learning.
- Provide students with more opportunities to learn from their peers (Baker, 2000a, slides 10-12).

The main question to be answered through the model was how developments in instructional media intended primarily for distance education, particularly the advent of Course Management Systems, could be used to support instruction in a traditional face-to-face classroom on a residential campus. In fact, the early name used to describe the model that was emerging was "Short Distance Education," which was promoted with the slogan "From my Office to Your Dorm Room."[3]

Finding the Metaphor (1998)

It was in 1998 when I came up with the Classroom Flip name to describe the concept. As part of the implementation of CedarNet, I held a position as Faculty Liaison to Computer Services. My responsibilities in that role included conducting faculty training sessions for the use of CedarNet. It was in one of those sessions, as I was describing the "Short Distance Education" approach, that someone[4] said, "So, what you're doing is flipping the classroom and homework around." That comment—particularly the word *flipped*—immediately caught my attention. My discipline is media and I was teaching another class at the time that included a discussion of the "Negroponte Flip" (also dubbed the "Negroponte Switch")—the prediction by the head of MIT's Media Lab, Nicholas Negroponte, that wired technologies are becoming wireless and wireless technologies are becoming wired (for example, the shift from landlines to cell phones and broadcast TV to cable TV). I didn't think calling my model "The Baker Flip" was appropriate or meaningful, so at that point I adopted the name The Classroom Flip to describe the model. I don't recall exactly when that happened, but I have a document and an HTML file used in a Cedarville faculty development session on November 19, 1998, that mentions the "Flip" model, so it was sometime earlier that year, probably in an opening faculty in-service for the fall term.

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[2] Later interaction with faculty in workshops who objected to the "guide" term, arguing the faculty member was still a "sage," even when his or her role changed from dispenser to mentor, persuaded me to adjust the terms here, changing the common description of the approach to "from 'sage on the stage' to 'sage by the side.'"

[3] An early presentation on the model, done in November 1997 for the faculty at Northwest Nazarene University in Nampa, Idaho, was titled "'Short Distance' Education: Using the Campus Network and the Web to Improve Teaching."

[4] I wish I could remember who! I remember the session and the comment clearly, but for the life of me can't put a face to the person making the comment.

A visualization of the basic concept was provided in a series of presentations in 2000 when the model was introduced outside of Cedarville (see Figure 2).
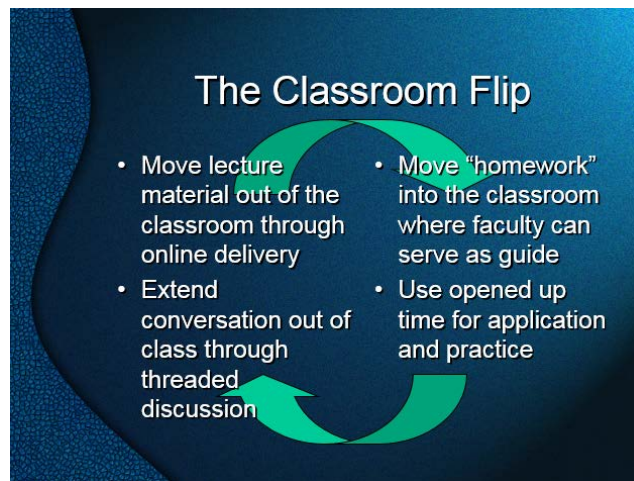
Figure 2. The "Classroom Flip" model. J. W. Baker (2000a), The Classroom Flip: Becoming the "Guide by the Side", slide 13. [Presentation slides]. Retrieved from http://www.classroomflip.com/presentations

By the next year the diagram had been expanded to suggest more options on elements that could be moved outside the classroom and to emphasize the importance of using the opened up time for active learning (Figure 3).
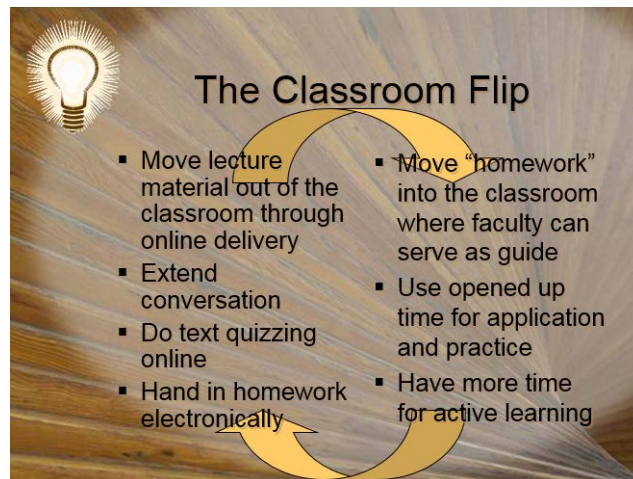
Figure 3. The "Classroom Flip" model revised. J. W. Baker (2001), The Classroom Flip: A model for pedagogically effective use of a Course Management System, slide 11. [Presentation slides]. Retrieved from http://www.classroomflip.com/presentations

The Contributions of the "Flip" Model

Recognizing the importance of two converging trends – As indicated in the discussion above, from the start, the Classroom Flip model sought to bring together what were then two emerging trends: changes in thinking about teaching and learning and innovations in information technology. In the initial conception of the model (Baker, 2000a), the "Flip" was presented as a way to "[b]ring the pedagogical and technological trends together" in an approach designed to "[c]hange teaching and learning in the traditional undergraduate classroom" (slide 8).

On the teaching and learning side, there was a shift from an instructional paradigm with its emphasis on information transfer to a learning paradigm with its emphasis on student learning (Barr & Tagg, 1995; Baker, 1999b, slide 5), introducing such things as active learning strategies and the use of formative assessment.

The changes in information technology were the result of the convergence of computers and telecommunications as personal computers were adopted and linked first to dial-up connections and then to the Internet. As a result, the computer was conceived not just as a computing machine, but as a communication device in its own right. Reflecting Barr and Tagg's analysis of how teaching and learning were changing, the introduction of networked personal computers promoted a shift from technologies that were passive, analog and linear to those that were interactive, digital and non-linear (Baker, 2000a, slide 6). The fact a key attribute of these emerging media was their interactivity made them a perfect match for new approaches to the classroom that emphasized students as active learners.

Another crucial technological innovation that began in the late 1990s was the introduction of Course Management or Learning Management Systems, particularly WebCT and Blackboard. As a result, the "Classroom Flip" curriculum that was developed for faculty workshops was closely tied to the technological solutions those platforms provided.

Emphasizing teaching and learning – In 1996, just as the Classroom Flip model began developing, the Ohio Foundation of Independent Colleges received a grant from Ameritech to help college faculty in independent higher education learn how to use technology in their teaching. One lesson we learned from the first couple of years of technology workshops was that starting with the technology begins at the wrong point. The consistent feedback from the early participants was, "This is interesting, but I don't have time to learn it all right now. So maybe later I'll figure out how I can use this in my classes." As a result, the approach was changed and the Classroom Flip curriculum used in this new approach started with the faculty member's need. The starting question was, "If you could fix one thing about your teaching or your students' learning, what would it be?" or "What is your biggest frustration in your teaching or your students' learning?" Interestingly, those needs often reflected at least one of Chickering and Gamson's (1987) Seven Principles. Once a need was identified, then the focus moved to various learning strategies that could meet that need. It was only then that the faculty member was introduced to the various instructional technologies available to help implement—or allow for the implementation of—the learning strategy. The curriculum sought to provide a close connection between the need, the strategy and the support, providing grids that started with common needs and then suggested possible strategies and related support to help meet the needs (Baker, 2000b, pp. 6-9).

Charting a middle ground in the "coverage" debate – The Classroom Flip model also sought to find a middle ground between the either/or, lose/lose debate between faculty who had to "cover the content" and active learning proponents who argued that helping students learn how to learn was more important than "covering the content." (Recall from above that two of the

goals for the model were to "[f]ocus more on understanding and application than recall . . . while not sacrificing presentation of the factual base" (Baker, 2000a, slide 11; *see also* Baker, 2002b, slide 13).

This was brought home to me when I worked with nursing faculty, who were among the first at Cedarville to adopt the Classroom Flip model. While they were sympathetic to the need to bring active learning into their classrooms, their dilemma was that they could not eliminate content to allow that to happen—they *had* to cover the content their students needed to pass their certification exams. Thus, the model provided a both/and approach, assuring that the content was covered while opening up class time to allow for the use of active learning methods.

Staying open to alternatives – From the beginning, the model was agnostic about any particular learning strategy or technology. Although some people today seem to equate the "Flip" to videotaping lectures and providing them outside the classroom, the model was never limited to that—in fact, the technology to deliver digital video through a computer network didn't exist when the model was first developed. The Classroom Flip curriculum and workshops provided an overview of many different active learning strategies and many different learning technology solutions and tried to show how they could be connected (Baker, 2015a, pp. 5-14), leaving it to each faculty member to find the combination that worked best for his or her class.

Providing scalability – An initial fear of faculty was that implementing the Flip would be a huge undertaking, requiring them to re-do their whole class. So the Classroom Flip curriculum and workshops encouraged faculty to begin small: address one need in one module or unit of a class. Once a faculty member had success in meeting that need in this initial test of the approach, then he or she could expand it to other parts of the class. For many faculty first getting started, the Classroom Flip simply meant reconceiving regular quizzes over readings as formative rather than summative assessment and then using online quizzes to move them out of the classroom. Just doing that opened up 10 or 15 minutes of a 50 minute class session that could be used for a variety of activities besides lecturing. This example also shows that sometimes the technology solution (online quizzes) *indirectly* supported the pedagogical approach (bringing active learning into the classroom). At the other end of the scale, faculty could move all of their content out of the classroom through a variety of means and leave class time completely open for active learning.

The Spread of the Flip Model (1996-2004)

There is not space in this paper to chronicle the spread of the model from Ohio to other independent colleges and universities across the country (see Baker, 2002a, and Baker, 2015b for details on the history). However, from 1996 to 2004, supported by grants from Ameritech and SBC (two of the regional "Baby Bells"), the Foundation for Independent Higher Education and the Council of Independent Colleges, the Classroom Flip model had been presented in almost 40 conferences and workshops to hundreds of faculty from private colleges and universities across fifteen states. In addition, scores of Teaching and Learning Mentors were trained in the use of the Classroom Flip curriculum and were using it in training at their own campuses across eight states.

Lessons Learned

From this early work in helping faculty implement the Classroom Flip, several lessons were learned that continue to be helpful for those starting out their own changes in teaching and learning:

1. *Don't get the cart before the horse: Start with your need* – As discussed above, this was an early lesson learned from the OFIC/Ameritech project. Faculty are sometimes pushed to use technology by administrators who want to see a return on their investment in the technology or by vendors who are hoping to sell it. The problem with starting with the technology is that it becomes a solution in search of a need. Starting with the need signals to the faculty member that this change is not about implementing technology, but improving teaching and learning. It also provides the faculty member with the incentive to make the effort since it is intended to meet a need he or she has identified—and people (students or faculty) learn best at a point of need (Baker 2002b, slide 10).

2. *It's OK to start small* – There is a lot of risk in attempting a new approach. It takes time to work through the process of identifying the need, investigating instructional strategies and learning how to use the technologies to support the strategy. The thought of changing an entire class without any evidence the effort will actually result in improving student learning causes faculty to balk. So, we encouraged faculty to start small: Pick one need and address that in one unit or module of one class. Then learn how to use one technology in a way to effectively support the change. Once a faculty member finds an approach that works, then risk is reduced and he or she will be on a path of expanding it to the whole course and then using those lessons learned to change his or her teaching across all courses.

3. *Let your students know what you are doing* – Here is the tip on this "lesson learned" from the current version of the "Classroom Flip: Pedagogy & the Role of a CMS" handout:

    One of the most important things the professor must do is to explain to students the approach that is being taken in the class. Based on their previous experience, students come expecting the professor to tell them what they need to know. When that expectation isn't met, the students become frustrated and complain that the professor is not doing his or her job. In fact, D. R. Woods, in his book on Problem-based Learning, "observes that students forced to take major responsibility for their own learning go through some or all of the steps psychologists associate with trauma and grief" (as cited in Felder & Brent, 1996, para. 5). The experience of Cedarville College faculty involved in the early implementation of the Classroom Flip showed that if students are told at the beginning what the approach of the class is and why it is being done, they will "buy into" the approach. Those frustrations are lessened because expectations have been changed. O'Brien, Millis & Cohen (2008) recommend that the professor share his or her philosophy or approach to the class in a "Learning-Centered Syllabus" (Baker, 2015a, p. 7).

4. *There has to be an exchange* – The visualizations of the Classroom Flip model (Figures 2 & 3) show arrows going in both directions. Faculty can't pile more out-of-class work on students without offering some relief in return. Some learning activities

formerly done as homework need to be moved into the classroom to help balance the load between in-class and out-of-class work.

5. *You can't just replicate what you are doing in class* – The whole point of the model is to change what is going on in the classroom. You can't just put videos of the same lectures provided in-class on-line and then wonder why students aren't coming to class. There has to be a value-added dimension to the in-class activities. If students see that what is being done in-class is a necessary part of their learning, then they will come to class.

Conclusion

It is now 20 years after that day when it suddenly occurred to me that I had "given away all of my content" and wondered what I would do in class the rest of the term. In that time I have been fortunate to be able to develop the Classroom Flip model, to share it with hundreds of faculty at workshops and conference presentations across (counting this conference) sixteen states and to have a number of them share with me how this shift in their approach to the classroom helped reinvigorate their teaching and their students' learning. I am indebted to many people, particularly Dave Rotman, CIO of Cedarville University, Ken Hoyt, president of the Ohio Foundation of Independent Colleges at the time, and Ed Barboni, a senior consultant with the CIC at the time, who provided opportunities and helped secure funding for the model to be developed and shared. And I am glad so many others have found the "Flip" analogy a helpful way to think about changes in teaching and learning, sparking their own creative approaches and applications.

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Flipped and Differentiated: Creating Engaging In-Class Activities

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Engaging students in flipped learning in higher education can be a challenge at times. Creating out-of-class videos and modules   tudents and create accountability at the same time can be difficult and tedious. Creating in and out of class lessons that provide motivation, engagement, and appropriate levels   hallenge   earners in higher education takes consideration and planning. Research has determined that differentiated instruction within the classroom is one way to meet the needs   verse learners. Examples   fferentiation provides examples of hands-on application of instructional practices used to "flip" the classroom. A variety of examples of how to differentiate content, product and process are presented.

Keywords: Flipped learning, higher education, differentiation

Flipped and Differentiated: Creating Engaging In-Class Activities

Meeting the needs of diverse learners is an ongoing challenge for educators in k-12 schools as well as instructors at colleges & universities. Students come from different cultures, with different interests, background experience, interests, and with a wide degree of readiness to learn. There is growing evidence that differentiated instruction has positive effects on student learning (Rock, Gregg, Ellis, & Gable, 2008). Some basic principles of differentiated instruction are simple (O'Brien & Guiney, 2001): every child can learn, every teacher can learn, and all children have the right to high quality education; there is a presumption of student competence and progress for all is expected, recognized, and rewarded; and students have common needs, distinct needs, and individual needs.

Creating lessons that provide motivation, engagement, and appropriate levels of challenge for these diverse learners takes consideration and planning. Research has determined that differentiated instruction within the classroom is one way to meet the needs of diverse learners. One effective strategy used in differentiating instruction is "flipping the classroom". The flipped classroom or flipped learning allows the teacher to guide instruction on the side, often through the use of technology and collaborative learning, much like mentoring. Other strategies include differentiation of content, process, and product outside of class and during face-to-face classes. Through the hands-on application of differentiated instructional practices students can demonstrate their leveling of learning in any content area.

Differentiation

Tomlinson and Imbeau (2010) state, "At the core of the classroom practice of differentiation is the modification of four curriculum-related elements—content, process, product, and affect—which are based on three categories of student need and variance—readiness, interest, and learning profile." Teachers who differentiate lessons provide students with choice, flexibility, on-going assessment, and creativity in how concepts are learned.

When planning differentiated instruction, it is critical to consider different ways to offer content, engage students in learning, and provide opportunities for varied end products. The first step in planning for differentiated instruction is to know your students. Begin this process by creating learning profiles. Collecting information that includes student's learning preferences, academic scores, and other scores related to academic performance, and also collect personal information such as family structure, hobbies and interests (Anderson, 2007). Knowing how a student understands or "makes sense" of a particular skill, allows the teacher to plan instruction to extend that understanding. Students need to be challenged, and if tasks are too easy, they become bored and do not learn. Conversely, motivation is lessened when tasks are consistently too difficult. Getting to know students helps teachers provide meaningful and engaging lessons.

Content refers to the materials used for instruction. Differentiating content, the "what" of instruction, allows a teacher to vary the level of complexity of materials. Differentiating process, the "how" of instruction, means that teachers vary the learning activities based on the interests or learning styles identified when creating learning profiles. This can include grouping methods such as whole group, small group, pairs, fixed groups, flexible groups, etc. Differentiating product provides students with a choice in how they demonstrate what they have learned. This

can include a variety of ways to express knowledge, degree of difficulty, as well as different types of evaluation (Tomlinson, 2001).

Several concepts have been included in literature about differentiation. One method of differentiating is to use a RAFT activity. The acronym RAFT stands for *Role, Audience, Format* and *Topic*. In a RAFT assignment, a choice of *Role* is presented, such as child, adult, workshop participant, or student. The writer takes on the persona of the person and writes in that voice. *Audience* describes to whom the person is writing. *Format* describes how the writing will convey the idea. *Topic* specifies the content for the writing. If a student is focusing on readiness levels, they can be assigned to a specific RAFT depending on their readiness (see figure 1).

Role	Audience	Format	Topic
Hard to reach student	Teachers	Advice Column	How to reach students using flipping
Innovative teacher	Change resistant instructors	Memo	How to flip a class
Long time instructor	Teacher who flips	Role Play	How to create engaging lectures
Student	Instructors	Poster	Why this class should be taught using flipping
Presentation facilitator	Audience in an auditorium	Step-by-step directions	How to learn in a flipped class

Figure 1: RAFT

Other strategies for differentiated instruction include Tic Tac Toe assignments, where students need to complete three activities. These can be assigned as three in a row, any three of the choices, or on in each column, but have choice as to which ones they choose, depending on the desired outcome. Teachers can strategically place assignments on Tic Tac Toe boards to ensure that all concepts will be covered. For example, if students need have one written assignment, one group assignment, and one hand-on assignment, there would be one row of written assignments, one row of collaborative or group assignments, and one row of hand-on (which maybe individual, group or a combination of assignments).

Tiered instruction requires developing assignments with different degrees of complexity. Tiered assignments can be more abstract or concrete, require different amounts of support, different resources, or different background knowledge and skill. Task cards are cards that contain some task or activity for students to complete. They can be used for either individual or group learning and can be created to target a wider range of skills while promoting student autonomy (Tomlinson & Imbeau, 2010).

Flipped Learning

Flipped learning is a strategy where direct instruction is conducted outside of the traditional learning environment and active, interactive learning occurs during group time. Learners apply concepts and engage in creative activities, problem solving, and collaborative learning to show their content learning (FlippedLearning.org; Roehl, Reddy & Shannon, 2013).

When beginning to use flipped learning it's important to plan and research the content and the activities used to engage learners. Videos for flipping are key to engaging students and knowing how to make a good video is critical. Making the video, editing, and producing the video can be very basic to complicated, depending on the abilities and hardware/software available. Videos do not have to include all the "bells and whistles" to engage students; they must engage the students and be no longer than 10-15 minutes. Including the best strategies when producing videos helps to ensure students will complete the homework and be ready to apply the materials when entering the classroom (FlippedLearning.org).

Including accountability into online videos that students watch prior to class is also a concept that has been made easier using online software. One free application is Zaption.com Using Zaption allows the instructor to have the students watch a video and embed questions within the video. As the student watches the video, periodically embedded and

The benefits of flipping include students being more engaged for the student to answer. The responses and score are collected and the instructor can review the students' responses.

With an increase in class flexibility, more time is available during face-to-face classes to answer questions, and students can acquire a clearer understanding of class expectations (Mok, 2014; Roehl, Reddy, & Shannon, 2013; Yeung & O'Malley, 2014). Additionally, students have the opportunity to re-watch more complex videos giving them more opportunities to understand materials and formulate questions prior to class assisting those who struggle understanding class concepts (Mok, 2014). Flipping is not a new concept in k-12 education but is relatively a new concept when applied to higher education. With an increase in the availability of inexpensive technology and software, flipped learning is becoming more accessible to instructors.

Conclusion

Teachers, who effectively differentiate, employ numerous strategies to meet the needs of diverse learners. This paper has outlined some of the processes for providing differentiated instruction and flipped learning. Teachers who successfully differentiate instruction are consistently reflective of their practice, and stay apprised of effective pedagogy and how students learn (Parsons, Dodman, & Burrowbridge, 2013). Those who employ flipped learning in their classrooms in higher education are on the cutting-edge and through sharing strategies can help to engage students and increase student learning.

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TEACHING UNDERGRADUATE MUSIC HISTORY: A NEW MODEL USING FLIPPED LEARNING AND IPAD TECHNOLOGY

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This paper describes a new model for teaching the traditional undergraduate music history survey required of all music majors in most higher education music degree programs. This innovative and award-winning approach incorporates online learning, video instruction, and an in-class "hands-on" methodology. Although it involves the teaching of music history, this method is not limited to music history; in fact, the model can be adapted to a wide variety of music and non-music courses in higher education. This project was chosen for the 2014-15 College Music Society Instructional Technology Initiative Award.

Key Words: Music History Pedagogy; iPad Technology; Flipped Learning; Project-based Learning; Collaborative Learning

The history survey of Western art music is traditionally taught in a two- or three-course sequence in most undergraduate music degree programs. At my relatively large public university, this music history sequence includes three courses: Music History I covers antiquity through the Renaissance; Music History II spans the seventeenth and eighteenth centuries; and Music History III, the nineteenth, twentieth and now, twenty-first centuries. Course objectives for this sequence are twofold: to learn the historical, aesthetic, cultural and philosophical framework that lies at the heart of music history (*context*); and to understand how that information relates to musical compositions (*application*). And in a music history course, *application* means studying style characteristics in musical scores and hearing those characteristics within the music. Both of these objectives must be met in order to achieve the overall goal of any music history course, which is to produce better musicians through a comprehensive understanding of musical style.

Traditionally, and perpetually, music history courses are taught by strict lecture, supplemented by homework assignments of readings and/or musical score analysis (Baumer, 2015). My frustration with this method of teaching is that class time is dominated by providing students with the context, leaving little time for practical application. Moreover, due to the current costs of textbooks, score anthologies and sets of recorded CDs, classroom score study is often ineffective, as many students do not participate simply because they do not have the resources to purchase scorebooks and other materials. Leaving this important task to students in homework assignments is also ineffectual, as their work tends to be unsatisfactory either because of a lack of guidance, or effort.

Therefore, the current project involves flipping, so that the context is learned outside of class, by means of online video and e-materials, and class time is then spent assessing student progress, and, more importantly, in application of the learned information through the study of musical scores. All of this is accomplished by means of iPad technology, as all of my students use iPads in both the online and in-class portions of these hybrid classes.

The Flipped Music History Class

Today, my music history classes are vibrant, engaging, and dynamic, with students enthusiastically involved in learning activities during class, and yet still receiving the necessary contextual information, but on their own time. Outside of class, students watch video lectures based on slideshow presentations and receive all other class materials through Apple's outstanding course delivery system iTunes U. In class, students engage in collaborative and project-based learning by dividing into groups to answer analytical questions about representative musical scores.

Online

Removing lectures from the classroom environment and making them available online is one of the main ingredients of today's flipped classroom (Bergmann and Sams, 2012, pp. 4-6). There are many ways to do this. Some who have flipped their classrooms simply videotape their lectures or create screencasts, and then post them online. Instead, I used my own pre-existing *Keynote* slideshows, recorded lectures as mp3 files, imbedded these files into the individual slides, and then saved the slideshows as *QuickTime* movies. This method of creating online lectures allows one to change part of a lecture without having to re-record the entire presentation. Because these video lectures are available on iTunes U, students can stream or download them to their iPads for viewing at any place and at any time of the day.

Study scores and audio files can similarly be placed in iTunes U for regular and repeated access by students. Public domain musical scores, such as those from the *Petrucci Music Library* website, can be downloaded from iTunes U into a music reading app such as *piaScore* or *forScore*, where students can mark annotations, structural analyses and/or chordal analyses. Likewise, audio files can be streamed directly to the iPad, or downloaded to the iTunes U app for listening when WiFi is not available. Incidentally, these audio files can only be accessed through the iTunes U app, and cannot be downloaded to any other app on the iPad. Therefore they cannot be illegally shared or copied. And when the semester is over, these audio files are no longer accessible to students, unless they have purchased them through iTunes. The American Library Association has provided a comprehensive guide to copyright issues with regard to Fair Use and the TEACH Act for courses such as this (*Distance Education and the TEACH Act*, n.d.).

And then there are many, many additional materials that music history instructors commonly make available to their students. These may include study guides and tips, translations of vocal texts, book chapters, journal articles, opera librettos and synopses, films of operas, ballets or orchestral concerts, or even interviews with composers and performers. In this flipped music history class, all of these materials are conveniently placed in iTunes U and are available to the student on the iPad. This "one-stop-shop" aspect of iTunes U is one of the features that my students like best. Everything they need for their course is on the iPad, and resides in iTunes U.

In Class

Of course, the online portion of a flipped class is only half the story. Flipping also involves returning traditional homework or active learning assignments to the classroom, where an instructor can monitor the learning process. Accordingly, my students engage in project-based and collaborative assignments, but also discussion and assessment, on a daily basis.

In my flipped music history class, discussion of the prepared material takes place during the first ten minutes. If students are hesitant to speak, I will randomly call on several to ask a

prepared question. This will usually stimulate a short discussion or at least a clarification of the prepared material. Next is a short assessment using an app called *Socrative*. This app is offered in both teacher and student versions for the iPad. From the teacher app, an instructor can wirelessly send a short quiz to all of the students in a class, and then *Socrative* instantly scores the quiz. Furthermore, the teacher app shows real-time assessment, so the instructor can see at a glance which students probably did and did not adequately prepare for the class, and also which questions posed the most problems. This type of daily formative assessment is valuable because the instructor will be alerted to a general misunderstanding of course material, and can address the problem immediately.

The majority of class time is spent analyzing musical scores appropriate to the topic of the day. I divide my classes into groups of four or five students and then pose a series of analytical questions to each. Before each class, students are requested to download the scores for the day into their music reading apps (*piaScore* or *forScore*). I prepare the analytical questions in advance and save them as PDF files in my iPad, and then in class I send the files wirelessly to the students' iPads through *AirDrop*. At this point, the "teams," begin to work by answering the questions and marking annotations in their scores. The attractiveness of this procedure is that the instructor is available to circulate from group to group, answering questions and guiding the process. Finally, each group makes a presentation to the class by projecting the annotated scores onto a large video screen by means of *AppleTV* and *AirPlay*. If time allows, the music can be played through classroom loudspeakers while the score is displayed on the video screen.

Why Flipped?

Placing course materials in iTunes U is a much more efficient method of content delivery because students can access them anywhere and at any time. My students consistently tell me in end-of-course questionnaires that this is the feature of the flipped class they like best. Students can also apply the learned information more effectively by studying scores in the classroom, with the instructor guiding the process and fellow team members available for collaboration. Furthermore, student engagement is one of the most important reasons for implementing a flipped class such as this. Here are some typical comments from my students concerning engagement:

> *I feel that the learning is more in my hands than it would be in a traditional lecture style class.*

> *Very interesting, never boring, appealed to the three learning ways of seeing, hearing and physical interaction.*

> *I seem to learn easier and gain a better understanding using technology. I was more engaged throughout the course than I ever had been.*

> *I feel like with this new approach that I'm not just learning the information to pass the class. I feel like I will carry this information with me in the real world.*

> *Honestly, when you told us the way the class was set up at the beginning of the semester, I thought this would be a nightmare. But I can honestly say this has been a great experience. This is (the) most I feel like I have learned in a music history class, or any history (class) for that matter.*

Thus far, only three students from a total of one-hundred and forty have indicated they prefer the old method of classroom lecture, resulting in a student approval rating of almost 98%. And frankly, those three dissenting students were from my first two flipped classes. Each time I have taught the new method, I have made improvements to the approach based on personal experience and student feedback. In the last three classes, I received no indications that students would prefer another teaching method.

In addition to efficient content delivery, effective score study, and student engagement, there are other positive outcomes from implementing a hybrid course such as this. First is the cost factor.

Course materials in a music history class are usually quite expensive. There are three types of course materials that each student must have: a textbook, scores for study, and music for listening. The bar graph below compares retail and pre-owned costs for these materials with the costs for my students in the flipped music history class:
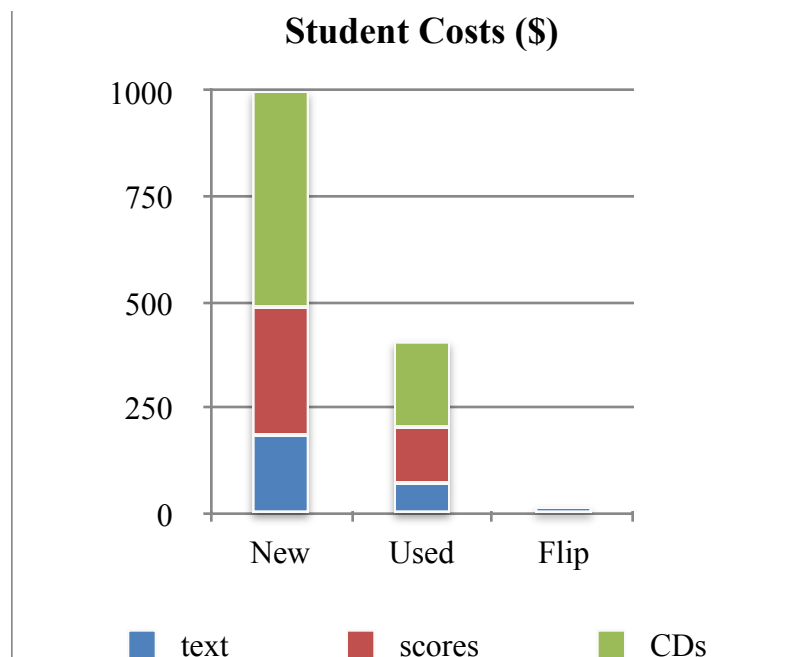
Student Costs ($)

One textbook covers the entire content from the first course of the sequence through the last. My chosen textbook costs $182 retail and around $70 used. Although one textbook will suffice for all three courses, students must purchase a separate score anthology for each course at about $100 each, for a retail total of $300 for the sequence. Likewise, students must purchase a different set of CDs for each course, for a total of over $500 retail cost. In sum, students must pay about $1000 for new course materials, or over $400 for used materials, for the three-course sequence. But because I can populate my lessons in iTunes U with up-to-date materials, and can "push" new materials throughout the semester to my students, I don't feel the need for them to purchase the most recent edition of the textbook. In fact, I encourage them to purchase earlier editions, which they can find online for around fifteen dollars used. In addition, I post public domain musical scores and audio files on iTunes U for my students to download and stream to their iPads, at no cost. It should come as no surprise that this is also one of the most popular features of my flipped classes.

Finally, there is one unintentional consequence of this new method of teaching music history. These classes traditionally consume large amounts of paper, from the twelve-page syllabus on the first day of class to the multi-page research essay to the final exam. In the flipped music history class, I use absolutely no paper at all. Everything, from course materials to tests to written assignments, is accomplished electronically on the iPad.

Results

In order to create a fully hybrid course sequence, and because of the time involved in preparing online videos, I found it necessary to flip one class at a time. I began by flipping Music History III first, and then proceeding backwards, flipping the first course in the sequence last. Because I created the hybrids in reverse order, I was able track several cohorts of students who began the sequence in the traditional lecture style, and yet ended the sequence with the flipped classes. The following bar graphs show grade distributions for the first two of these cohorts, both lecture and flipped:

Cohort #1 – Lecture (%)

A: 0
B: 31
C: 41
D/F: 28

Cohort #1 – Flipped (%)

A: 11
B: 26
C: 33
D/F: 30

Cohort #2 – Lecture (%)

A: 6
B: 8
C: 43
D/F: 43

Cohort #2 – Flipped (%)

A: 8
B: 23
C: 32
D/F: 37
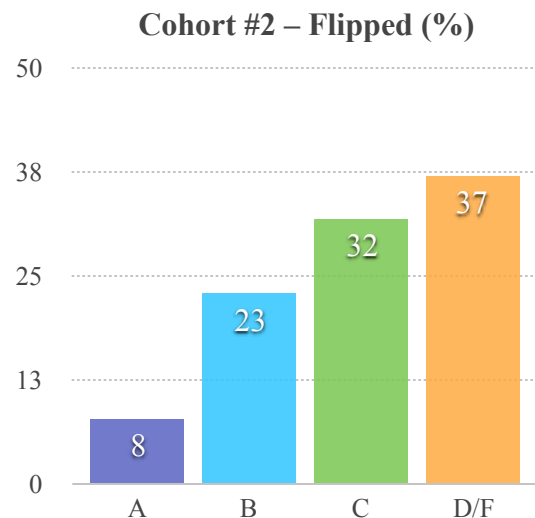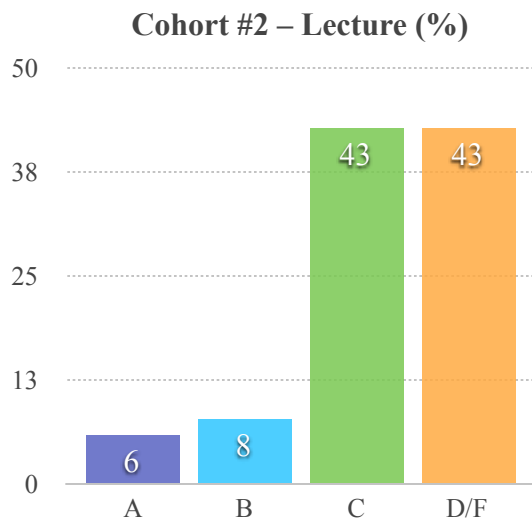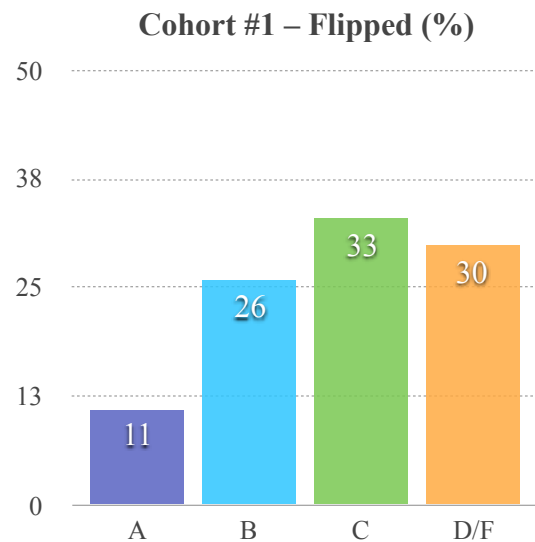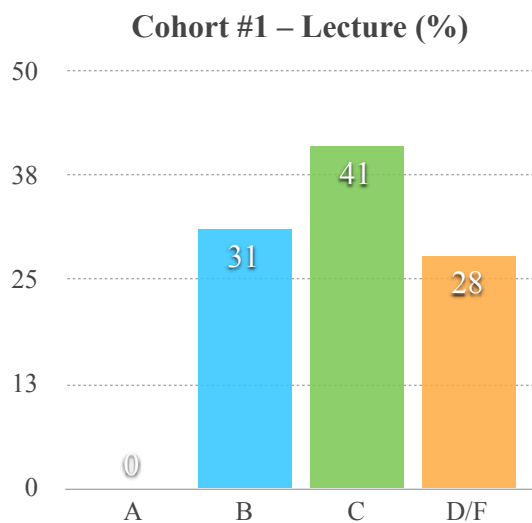
These charts show significant migration from the "C" category to the "B" and "A" categories, but not much movement in the "D/F" categories. One conclusion that may be drawn from this data is that the motivated student is able to rise to the next level with the flipped class. However, I was not pleased with the large number of unmotivated "D/F" students, and so I continued to make minor adjustments in each successive class based on my own perceptions and student suggestions. The following pie chart shows a marked improvement in the "D/F" categories from a more recent Music History III class. More data is needed, and will continue to be collected over the next few years. Even so, while these preliminary results may be inconclusive, they are certainly encouraging.

A Recent Music History III Class
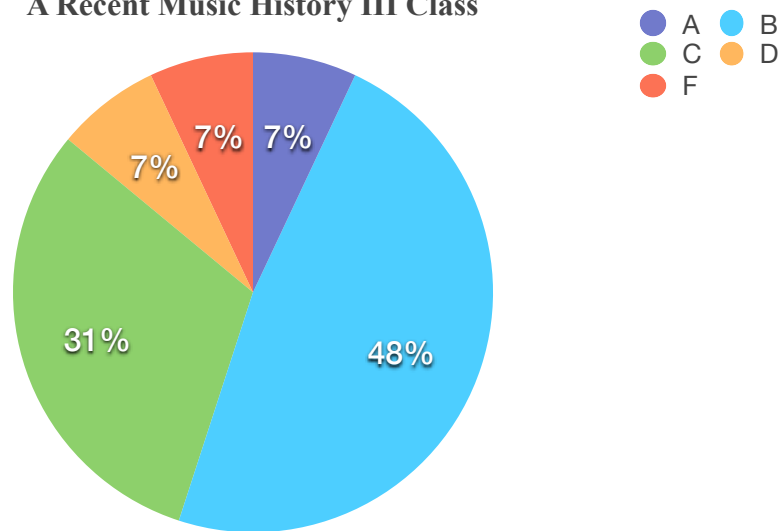
A Final Word

In spite of the promising results shown above, it must be understood that my principal reason for moving to a flipped-class approach was not to raise student grades, although that has certainly been a pleasant result. Rather, my primary motivation was to more fully engage my students.

Too often, students experience various degrees of boredom in the typical music history lecture class. They will sometimes sleep through class, and yet will usually learn enough to pass the tests and assignments, but will promptly forget all of it. And that is a pity, because the content is exciting, the music is compelling, and the knowledge is necessary for a successful career in music.

If we, as teachers, can instill enthusiasm for the subject matter in our students, it just might produce in them a desire to learn, an excitement for discovery, and an eagerness to continue learning once the class has ended. With the flipped music history class, I am now beginning to experience this type of reaction in my students. I encourage anyone who desires the same results to try this method of instruction in their music courses, or other courses, in higher education. While it is true that the initial preparation of a flipped class takes more time than usual, I have found the results to be well worth the effort.

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First Experiences with "Flipping" a Class: Landing on Your Feet or Landing on Your Head

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This article presents the authors early experiences with learning about and implementing "flipped" learning strategies for a graduate level nursing course. Practical lessons learned and considerations for using these strategies in courses is discussed.

Key Words: flipped classroom; teaching strategy;

Preparing to "Flip"

The term "flipped" classroom was floating around our department and campus. Being the curious person I am, I signed up early for the first "flipped learning academy" being offered through a special grant project on our campus. My first reaction was, "OMG, what have I gotten myself into"? As I went through the academy, I realized that I already had many elements of a "flipped" classroom built into my courses, but I still had a lot more to learn. There are so many more ideas out there that I hadn't used.

The technology available now to enhance our courses is moving at such a fast rate of development, I am getting left in the dust. While I had used voice over slides in powerpoint, I had not used Camtasia. The ability to edit and refine a slide show using this technology is fabulous, however I found it a bit intimidating and time consuming. Just because you can do expert work, the time it takes may not be worth it. It wasn't for me. I learned to just do short videos of myself and go out and find videos and movie clips that illustrated points in a much more professional and interesting manner than I can create on my own.

I found the camaraderie of colleagues helpful in the flipped learning academy. We all gleaned new ideas from each other. I also used the projects of the academy to begin to restructure my course. A lesson learned is that it will take you twice as long as you think it will to revise a class, much less a whole course. Exploring what resources are available through the web and developing guides for the pre-class preparation students will do, all took a good deal of time and consideration. Having clear and measurable objectives for the class or assignment are a must for many reasons including giving points for preparation and student guidance. Getting educated myself about what "flipping" was all about took time as well. Reading, practicing filming myself, developing clear and specific guidelines for students, and learning about what other professors who were more practiced in using this teaching strategy were doing, took time beyond normal class preparation.

Lessons Learned

Preparation assignments students were to do caused me some difficulty in the beginning. First I learned that I needed to verify what the students did in a way that counted. Turning papers in at the beginning of class instead of at the end was useful. Otherwise, students would write up their responses during class. I also had to be very clear about what I wanted students to get from their preparation. Instead of just asking what the student learned from a video, I learned to ask them to

reflect on a specific issue then describe how they would use that information in a clinical situation. The wording of these instructions went through several iterations before I was finally getting what I was looking for. If I wasn't very clear and specific in what I wanted them to get out of the preparation material, I tended to get very superficial responses. The problem was typically my lack of clarity. Once I presented what I wanted more clearly, students responded with more depth and thoughtfulness.

Another way to assess pre-class preparation was to do clicker quizzes. These seem to catch student's attention. They can be fun and not so intimidating. Recording and giving points is imperative I found. Students will work for points, especially students who are competitive and grade oriented, as mine are. Points given however have to be significant. Students won't engage unless it really matters. They work much harder if the quiz or pre-class assignment is worth ten points vs. two points.

Don't become a drone! I found I was bored with my own voiced over powerpoints. If I fall asleep listening to myself, what will students be doing? Any self-produced videos I do, I limit to 5-6 minutes. Otherwise I find my voice tends to drop into droning mode. I try to cover content points I want students to pay special attention to. I may ask a few Socratic questions to pique the student's interest and help introduce the subject and get students thinking.

While many think that using a "flipped" classroom style means you don't lecture, I found this not to be effective. Students tend to be familiar with lecturing, like lectures and powerpoints (maybe because it requires less involvement on their part), and they don't always know what is important to focus on. Lecture can help them identify what information is key. Lectures I did were about 10 minutes and hit on key points I wanted students to remember.

There is a temptation to add to classes once you use "flipping" strategies (Hessler, 2017). Avoid this temptation. With students coming more prepared, it seems like you have more time. Class may move along more quickly. Instead of adding content, have more interactive projects or more in-depth material to discuss.

Consider the time you need to "flip". Developing your own videos will take you longer than you expect. You can probably make it perfect, but do you want to spend days doing so? Leaving the humanness in can endear you to your students. Be brave! It's OK to be human and not perfect.

Looking for relevant material available online takes a great deal of time. You may only want a small segment of a particular video you find, but to know that you will likely watch the whole thing. Hours and hours can be spent finding 20 minutes of information you want to focus on. Also, consider the permissions you may need. Obtaining permissions can be time consuming. Sometimes your University will have someone who can help with obtaining the correct permissions. Using that support is going to save you a lot of angst as well as time.

Consider the Culture You Work In

The Flipped strategy is not for everyone. Be aware of students who may struggle. Many students are very good at memorizing what is on a powerpoint presentation and answering multiple choice questions based on what they memorized. The flipped strategy asks something different

from them. The responsibility for gleaning information is on them more and many students resist this change in the way they are asked to engage in the learning process. While the flipped strategy may work well for some students, it does not meet the learning preference for all students. Students are used to lectures. New expectations can make them feel uncomfortable and insecure (think change theory). The flipped class however can facilitate collaboration and students can learn from each other. Vicarious learning can be very powerful. Weak students can benefit from listening and engaging with stronger students. This means that some consideration for how groups are formed is important. Try strategies that mix up groups so that the same people aren't always together.

Be prepared to stumble. Learning new ways of doing things is uncomfortable for all of us. Don't be afraid of re-designing an activity. Try something out, if it doesn't go well, you can redo it. Don't give up if things don't go as smoothly in your early attempts. We as professors are comfortable with lectures as well. Be courageous! Don't give up.

Seek the support from administrators and colleagues in trying the "flipped" classroom strategy. Student evaluations can be expected to be lower than usual as you introduce something new. This can be difficult to accept and without administrative support, can lead to discouragement and fear of trying something new.

Consider using qualitative as well as quantitative data for evaluations of your course. Here are some qualitative comments from students: "allowed for a round table discussion, a different prospective and style of instruction was refreshing"; "class discussions were great"; "engaged us in conversations, encouraged us to explore topics [in more depth] in class".

Research Is Needed

There is limited data available on the efficacy of the "flipped" classroom. Of course, the same could be said of lecture. Educational research is needed regarding all strategies of instruction. There are so many variables that it is difficult to design solid studies to obtain results that are valid and reliable. Rigorous studies are needed still. As difficult as it is to measure improvement in critical thinking, the use of "flipped" classroom strategies may well indicate this when compared to straight lecture style classes. We need to find out.

Resources

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Outcome of Transforming a Course to Flipped Pedagogy
Susan Collins, Ph.D., Assistant Professor, Gerontology and Human Services
Post-Implementation Report

I have been teaching the undergraduate *Program Planning in Human Services* course for a number of years and during that time my method has slowly evolved toward short lecture presentations, with students spending most of their class time working on their projects. This resulted in good skill development, but was leaving some of the understanding of program planning unexplored, or at least undemonstrated by each individual student. The opportunity to formally learn about flipped pedagogy was just what I needed to continue a method that was working fairly well, but with the approach that shifting lecture material to online delivery could enhance student understanding of the meaning behind what they were doing in class.

My goals for transforming this course were :

1) to increase student conceptual understanding of program planning principles, while

2) spending most of our in-class time practicing program planning skills by working on projects,

3) so that conceptual understanding and skills become integrated, such that students may recognize the transferability of what they are learning to any setting.

Here are the questions I will answer here, in the post-implementation report
1. How did your actual implementation compare with your plan?
2. What unexpected successes or challenges did you encounter?
3. What changes will you make as you move forward in your flipped teaching?

1. **How did your actual implementation compare with your plan?**

Conceptual Understanding: The addition of short quizzes about Video material helped me to see who was understanding the concepts and who was not. This was an improvement over past semesters, when I did not quiz students, and if they worked in groups, all students in the group got the same grade on everything. At least one question for each quiz asked specifically about a program planning concept that was presented in video only, and not in class lecture. I cannot directly correlate increased understanding with the videos, but can definitely report that those who watched them did better on the quizzes.

Spending more Class time on Skills: This semester we spent more time working on projects during class time than ever before, even though that has always been part of this class. Students could work in groups of up to four, or on their own. The Human Services program topics selected by students this semester included child abuse, domestic abuse, pornography addiction, support for military families, healthy eating and obesity reduction, resources for teen mothers, socialization for autistic children, assistance for individuals living homeless, and support for adoptive parents of children with Reactive Attachment Disorder. For the instructor, each one of these is like mentoring a separate project, and having more class time for students to work on them was also helpful to me, as I could spend more time assisting with the unique features of each project.

Integrating Conceptual Understanding and Skills; Transferability: Students this semester did better on their first try at putting together the logic model, and the budget (even though some of them still said they would like to spend more time on the budget, mostly due to math issues). I had posted videos of each of these on Blackboard. Although these seem like cut and

dried skills, there are conceptual aspects to developing each, and in the past students struggled with those concepts. I have asked students to review whether the videos were helpful for these tasks, on the course evaluations, although these are not available to me yet.

2. **What unexpected successes or challenges did you encounter?**
   Successes:
   - I developed and uploaded eight videos (inclusive of those I made during the flipped academy last fall). Several of the videos can be used next fall, but I still need to work on making videos that are generic enough, but not bland. Examples of some successful videos, although one is too long!: https://youtu.be/rhwKVZcIXYI https://youtu.be/gauvttMxZ0g   https://youtu.be/CcHTLDdcllI

   - I figured out how to upload YouTube video directly into PowerPoint, and used this as a supplement to ppt text, but only in the classroom this semester. A goal for fall is to do this for recorded lecture, including animations for when the video should be played (as I would do in class).Having said this, I did upload the ppt with video as notes in Blackboard and asked students to view it, to save time in class.

   - Addition of short quizzes on video material helped me to see who was understanding not only the directions for each assignment, but the concepts behind why we were doing things this way. Although the quizzes were all done in the classroom (rather than online as I had planned), it was clear who had viewed the material and who had not.

   - At least one question on four of the six quizzes was directly related to information provided only on the video, and students who watched the videos did better on these questions. I was somewhat surprised at what a big difference it made, and gained some confidence that learning off of the videos could be as viable , or better, as covering the same material in class lecture.

   - In past semesters it was a struggle to balance classroom lecture and time for students to work on their projects. This semester we spent much more time on projects in class, and I was available to help each group or individual in more detail. I was pleasantly surprised to see that in general, students worked diligently on their projects during class time.

   Challenges
   - My plan was to put up more content in video than I actually accomplished. I used several videos that I had made during the Flipped Academy in Fall 16, so had eight all together. It took me longer than some to learn the basics, especially editing, but I got better at it as the semester went along. My videos tended to be too long (about 20 minutes) so I spent a lot of time re-doing. One thing I figured out during recording was to just stop and be quiet if I hit a snag about what to say next (using a script didn't work very well; I sounded like SIRI when I used one), because that gave me a clear place to cut when editing. In this way I did not need to just start over!

- I was surprised to find that it was uncomfortable for me during times when students were working on their projects and did not need me hanging over them or interrupting the flow. It felt odd to just wander around asking if anyone needed help, and just as odd to stay out of the way, trying to look busy until a hand went up. This is such a pedagogical shift for me as an instructor, and I would like to learn and practice a lot more, about this aspect of student-centered learning. Several times I asked the class if they felt they were getting enough information or help from me, and they always said yes (their assignments and final grades bore this out), but I believe I may have seemed to lack confidence by asking.

- Because of requirements to view video online, I made 12 of our Fridays into optional workshop days; This was a day students were not required to attend class, but could come and work on their projects, with me there to help where needed. Many students did come on these Fridays, particularly those who were working in groups, as this gave them a time in their schedules to meet (one of the most difficult things for students in past courses was for them to find time to meet outside of class). Even though many of our Mondays and Wednesdays were now working periods as well, the Fridays gave those who came extra time to confer with me. One thing I noticed this semester was that fewer students came to my office hours, because they could meet with me in class on Fridays instead. The challenge? The very students who were struggling and should have come on Fridays, or to office hours, were the least likely to attend. I was not surprised at this, but have still not figured out an equitable way to handle the problem. For now, I am making it clear that as a 400 level course, students need to be responsible for seeking assistance when needed, and for planning their work schedule.

- I am only partially satisfied with the outcome for the goal of integration of concept and practice; lots of time was spent "doing", but I often found that students simply copied some of my examples with minimal integration relevant to their own plan. I allowed revisions when this happened, but I may stop allowing that.

3. **What changes will you make as you move forward in your flipped teaching?**
   - I will definitely explain more on the first day about the flipped concept and philosophy to students, both in a video, and invite discussion in class and perhaps a writing assignment. My students this semester seemed very open to the online learning, even though I did not emphasize that this was a "flipped" class. I think my future students will enjoy understanding that in order to spend as much class time on projects as we do, there is a responsibility on their part to spend time out of class learning what would usually be lecture material.

   - I will make more videos, but need to consider what topics are appropriate, and how I can break up the material between aspects appropriate for video, and material that needs students to be able to make immediate, face to face responses in the classroom. For example, our coverage of the pitfalls and benefits of group work is material best covered in person, because students seem to enjoy telling their past experiences. However, having said that, I think a video, with an assignment for online discussion

(maybe even anonymous) afterward might be even more fruitful.

- I will work on a "how to watch video lectures" video this summer, and will look at the research and best practices about how to put this together. I will assign the resulting video during the first week of class.

- I'm still not sure how to get more comfortable while students are working in the classroom, during times when they are doing fine without me! This is something I will work on in the fall, and will also look for any research that has been done about this, if any.

- I want to build in some "teachable moment" time at the beginning of class days after they have watched a video lecture. I may also do this as an online exercise, with a posting board for the class, or private journal for individual students.

Appendices
Narrative of Original Implementation Plan
Original Implementation Plan Table, with Outcomes

Pre-Implementation Narrative
Face-to-Face in the Classroom
Must it Be Named to Be Claimed?: In our flipped academy meetings we spoke at length about the advisability of using the term "flipped" when describing this method to students. There were some concerns that students would feel as if they were *our* projects, and that if we were not lecturing we were not doing our jobs (some of the research on flipped pedagogy reported these student views). However, I don't foresee students in my class having an issue with the flipped concept because the course is already set up with much built in hands-on time in the classroom. Inspiring them to feel comfortable with lecture online will be a process for me to explore this first semester of implementation. I will point out that this is their homework, in place of reading a textbook or having to meet for many hours with their groups outside of class. I do have some concerns about students claiming that they do not have the technologies to access the videos conveniently, but will need to go through at least one semester to see if this is a problem. During one of our first few class sessions I will walk students through a "how to" video, explaining that they may take notes just as if they were in class, with the added opportunity to start, stop, slow down, speed up, and return to material that they would like to review for better understanding. I will also ask them to keep track of any questions they have about the video material, and bring it to the next class session. For some presentations I may provide a link to a private journal or class discussion board, where they may ask questions online.
No "Homework" Expectations?: Hardly! As shown below in how I plan to use video, students will have ongoing expectations for regular viewing of online content, and will be accountable for that both in online responses and in the classroom. I plan to incorporate short concept quizzes based on the videos, with some questions embedded throughout the online presentations. Some of these will involve asking students to write something on a Blackboard journal or discussion board, and some may be done during the first 10 minutes of class meetings, followed by the "teachable moment" of reviewing answers. I may also use these to respond online with "just in time" videos to explain

anything that students did not understand. As for face-to-face class attendance, I won't change the current policy, which is that they may have three unexcused absences, then lose three points per subsequent absence without documentation of an emergency. Attendance is very important in this class, because most students work on group projects and they need to be responsible to their team. I have had some students who work on their own question why they need to come to class if they are not in a group, but adding the in-class quizzes should reduce that inquiry. In addition, my role during class time is to provide individual/group help with their projects, so the opportunity to have assistance on the spot (rather than waiting until another class session, or coming to office hours) is one big advantage of this pedagogical method.

This is an active learning course, where students apply concepts to developing a program. Students work on six step by step assignments that will culminate in a full program plan to meet a human need of the students' choice. The assignments include a needs assessment, current resource assessment and priority setting, writing problem and mission statements, writing goals and objectives, a simple line item budget, and a marketing plan. Students have the choice to work in groups of up to four individuals, but they may also work alone. In the flipped academy we read about and discussed the value of group work, but I have found that some students learn new material better by working alone, and since understanding the concepts of program planning are as important as the hands-on skill, I want each student to learn in the ways that work best for himself or herself. During one of the first sessions I have a presentation on what to consider when deciding to work in a group, and we talk about this in class. For the flipped version, the video on group work will be online, followed by discussion during the first part of our next class meeting.

How will Video and Online Learning Fit into My Plan?
Learning the Tech: Learning to use Camtasia and some of the other online technology has greatly enhanced my ability to effectively present information that students may access outside the physical classroom. Although I am well versed in using Blackboard (my graduate level courses are all online), adding video lecture and announcements to online materials and discussion will allow me to formally present this course as "flipped." I plan on making videos right in my office, mostly narrated PowerPoint, with my taking head on the first slide only, just for context. I also plan on using a document camera to show instruction on creating the budget, and perhaps some of the other material. Most of the videos for the course will be my own, however, there are some good examples of some of the concepts we need to think about for program planning, such as YouTube videos of different points of view about the causes and solutions to homelessness. I already link to these in my classroom lectures, and will continue to include them in my videos.
How will Video be Used?: Students will be asked to view topic concept/content videos before specific class meetings, and due dates for viewing will be indicated on the syllabus course schedule. Because each student or group has a different human service topic they are working on, most video presentations will be broad in nature about what is important for planning (for example, conducting a needs assessment and the methods for doing so), with a few human service related examples that students may extrapolate to their own projects. Each video will include some questions for students to ponder and answer either online or on a quiz, such as *"In an objective statement, how could you indicate when an evaluation will be done, without using the word "evaluation."*? Some videos will include instructions to bring something to the next class, such as *"Bring a list of at least 3 things your participants may be worried about giving up by coming to your program."* I also plan to include additional "just in time" material on Blackboard, in response to questions that come up during class meetings or online. These just in time materials may be video, or just posted on Blackboard (I already

do that now, posting an announcement on BB if a student asks me something that could actually help the whole class).

Pre-Implementation Plan Activity (Original Table)   and   Outcomes added May 2016 Name Susan Collins

Think about the course you will be flipping. List three goals in transforming this course:

Increase student conceptual understanding of program planning principles Addition of short quizzes on Video material helped me to see who was understanding and who was not	Allow for most of our class time to practice skills and work on program planning projects Yes, although I did not put up as much online content as planned.	Increase student demonstration of understanding and skill as an integrated whole, rather than spending so much time "doing" that there may not be enough learning and understanding I am not satisfied with the outcome for this goal; lots of time spent "doing", and often found that students simply copied some of my examples with minimal integration relevant to their own plan.

Write down your ideas about each of these prompts, including any assistance or resources needed.
Class Time

Will you use the term "flipped" learning with your flipped course? What language will you use to introduce the students to your flipped course? How explicit will you be about goals/methods/purposes, etc?	I won't use the term "flipped" because in this class students already spend a lot of time working on planning projects during class meetings, and we do not have a textbook. This will make assigning the videos and any other online content reasonable, as homework. I explained that we were spending most class time working on projects, and that there would be online lecture, but I still gave half the number of in-person lectures as usual. I found that making the videos, with editing, etc. took a lot longer than I expected, and without the direct feedback from the course during lecture (I tend to be Socratic) I had some trouble planning what I wanted to say on the videos.
How will you check to ensure that students have watched your videos?	I plan to incorporate short concept quizzes based on the videos. Some of these will involve asking students to write something on a Blackboard journal or discussion board, and some may be done during the first 10 minutes of class meetings, followed by the "teachable moment" of reviewing answers. I may also use these to respond online with "just in

	time" videos to explain anything that students did not understand.
	The quizzes worked well, both as a result of flipped and regular topic delivery. I asked one or two short questions specifically from the presentations, and then had each student "self brainstorm" about whatever planning assignment we were working on that week. In this way I could make sure that individual students were understanding the material, and not relying on the group to carry them.
Will you change your attendance policy? How?	I won't change the current policy, which is that they may have three unexcused absences, and lose three points per subsequent absence without documentation of an emergency. Attendance is very important in this class, because most students work on group projects and they need to be responsible to their team. I have had some students who work on their own question why they need to come to class if they are not in a group, but adding the quizzes should take care of that complaint. In addition, my role during class time is to help individuals and groups with their projects, so the opportunity to have help on the spot (rather than waiting until another class session, or coming to office hours) is one big advantage of this pedagogical method. I did change one thing; all but four Fridays (class is MWF) were optional workshop days; I was there in class, and students could come in and work on their projects if they liked. This provided time to work together for those who were in groups, but some of the singles also came in for consulation. My rationale for this workshop day was that because I was asking them to watch some lecture presentations on their own, this increased the normal time they would spend learning concepts outside of class.
What active learning strategies will you use? (Group work, clickers, student presentations, projects, simulations, etc…)	Students work on six step by step assignments that will culminate in a full program plan in some aspect of human services. Students may choose the human service need they wish to serve. The assignments are a needs assessment, current resource assessment and priority setting, writing problem and mission statements, writing goals and objectives, a simple line item budget, and a marketing plan. Students have the choice to work in groups of up to four individuals, but they may also work alone. I have found that some students learn new material better by working alone, and since understanding the concepts of program planning

	are as important as the hands-on skill, I want students to be able to learn in the ways that work best for themselves. During one of the first sessions I have a presentation on what to consider when choosing to work in a group, and we talk about this in class. For the flipped version, the video on group work will be online, followed by discussion during the first part of our next class meeting. The video on group work will be made for next fall; it turns out that this particular material worked better when students could give immediate feedback, and examples of the kinds of things they like and dislike about group work. For fall I will make a video, and ask them all to give feedback on a discussion board online (will allow anonymity among students, but will track who has participated and who did not).
Will you provide training to your students in "how to watch" videos?	During one of our first few class sessions I will walk students through a "how to" video, explaining that they may take notes just as if they were in class, with the added opportunity to start, stop, and return to material that they would like to review more for understanding. I will also ask them to keep track of any questions they have about the video material, and bring it to the next class session. For some presentations I may provide a link to a journal or discussion board, where they may ask questions. I did not accomplish this for spring; Will definitely work on it for fall.
How will you address student concerns about less lecture?	This is still a bit undetermined, because I have not experienced it yet, but will point out that this is their homework, in place of reading a textbook or having to meet for many hours with their groups outside of class. I do have some concerns about students claiming that they do not have the technologies to access the videos conveniently, but will need to go through at least one semester to see if this is a problem.

Video Making:

Where do you see yourself making your videos? (e.g. home, office, screencasting lab in Ross, faculty media workroom in Michener, etc...)	I plan on making these in my office. I will have narrated powerpoint, as well as video cam of me talking. I did make these in my office, with my webcam or Camtasia, and edited both in Camtasia. Although the background for my videos was not blank, I tried to make the background somewhat neutral, and also, sat in a position that would keep the YouTube arrow off of my nose!
How do you see yourself	Students will be asked to view topic concept/content videos

using online videos in your flipped class? (Pre-class lectures, supplemental, just-in-time, solutions, etc…)	before class meetings, and due dates for viewing will be indicated on the syllabus course schedule. Because each student or group has a different human service topic they are working on, most video presentations will be broad in nature about what is important for planning (for example, conducting a needs assessment and the methods for doing so), with a few human service related examples that students may extrapolate to their own projects. Each video will include some questions for students to ponder and answer either online or on a quiz, such as *"In an objective statement, how will you indicate information about when an evaluation will be done, without using the word "evaluation."*? Some videos will include instructions to bring something to the next class, such as *"Bring a list of at least 3 things your participants may be worried about giving up by coming to your program."* I do plan to include additional "just in time" material on Blackboard, in response to questions that come up during class meetings or online. These just in time materials may be video, or just posted on Blackboard (I already do that now, posting an announcement on BB if a student asks me something that could actually help the whole class). This did not pan out much this semester, because I need to work more on how to present video in a generic enough way that all students relate to it, even though they all have different projects. The videos I made were broad enough about program planning concepts and directions for step-by-step requirements, but I would like to use more examples from the students' topics.
How do you see yourself making videos? (e.g. narrated Power Point slides, doc camera, in front of a white board, Smartboard, phone/tablet etc...)	Narrated ppt, with my taking head on the first slide only, just for context. I also plan on using a document camera to show instruction on creating the budget, and perhaps some of the other material. Most will be narrated ppt. All were narrated powerpoint, with one or two webcam short announcement videos just to give general course information. A goal for the summer is to use the document camera to develop step by step hand written directions for the budget, logic model, and Goals/Objectives
Will you exclusively be making your own videos, or will you use existing videos? Mix?	Most of the videos for the course will be my own, however, there are some good examples of some of the concepts we need to think about for program planning, such as YouTube videos of different points of view about the causes of

	homelessness. I already link to these in my classroom lectures, and will continue to include them in my videos. I figured out how to upload YouTube video directly into powerpoint, and used this as a supplement to ppt text, but only in the classroom this semester. A goal for fall is to do this for recorded lecture, including animations for when the video should be played (as I would do in class). Having said this, I did upload the ppt as notes in Blackboard and asked students to view it, as we ran out of time in class.
Any other thoughts or questions about videos?	I have really appreciated learning how to do the basics of Camtasia video and am still a novice at editing and adding callouts, etc. However, I should have more time during the summer to experiment with all of the tools, as well as use some other delivery platforms (such as ScreenCast and Vimeo) that seem more professional than YouTube. The course evaluations for this course aren't in yet, but verbally, I have had feedback from students that they appreciated the time spent in class on their projects. I haven't had too much feedback on the videos yet, although those who watched them did better on quizzes.

Hofstede's Cultural Dimensions and the Role of Understanding in a Higher Education Flipped Learning Environment in America

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Abstract

America faces the reality of a large amount of foreign students enrolling in its schools at every level. Many come from China and other Asian countries. Owing to the fact that an Asian's educational system looks somewhat different from an American one, teachers in higher education need to make sure these foreign students receive the highest amount of support. Moreover, in Flipped Learning classrooms, there might be additional concerns that would need to be addressed since Flipped Learning classrooms emphasize autonomous learners as well as freedom in fulfilling a classes' learning outcomes. Autonomous learning is relatively new to most students coming from an Asian background (. Using two of Geert Hofstede's cultural dimensions, the paper highlights areas of dissonance that might develop between students from China and Turkey and their American counterparts and teachers. Specifically, the study will narrow in on settings where Flipped Learning is the accepted pedagogical method for all its classes.

Keywords: Hofstede cultural dimensions; Flipped Learning; Higher education; Power distance; Cultural competence

The Need for Culturally Competent Teachers and Students

Every American student has special needs to consider, whether they are Native, colored, white, Asian or Hispanic. Each comes with her own set of assumptions about life as well as the need for and approach to education. Coupled with this is the reality that American universities are experiencing an influx of foreign students—some sources say that there are over 1 million foreign students now studying in the United States. The top five universities for foreign enrollment enroll over 50,000 foreign students (Jordan, 2015). Many American teachers face the reality of a very diverse student body.

Having spent some time working with foreign students at a university in a large mid-western city in America, I'm aware of the challenges foreign students face both educationally and culturally. They are away from their familiar settings. Academic standards are different (Jordan and Chen, 2016). And, perhaps most important, the friendships that foreign students need to create to sustain a healthy learning and collaborative environment might be more difficult to form (Stahl, 2012).

On the other hand, teachers also play a key role in the discussion of classrooms with multiple cultures. As some of the first impression makers for all their students, the teacher's role is important in bridging the cultural divide (Compton, 2016). A teacher's willingness to listen and understand her foreign students' concerns will go a long way in making those students experience a fulfilling and productive university life.

As was noted above, and according to the reports issued by Homeland Security and the Wall Street Journal, there are many students coming from Asia (Jones, 2015). Given these figures, cultural competancy is absolutely vital. Without this competency, there will be many barriers to the encoding and decoding of messages between sender and receiver. Geert Hofstede's landmark study (Hofstede, Hofstede, Minkov, 2010) on cultural dimensions helps enable both students and teachers to understand where areas of dissonance might lie in the interaction that these two groups have in a Flipped Learning context.

In this particular paper, I want to build on a previous paper I wrote about Turkish students and foreign teachers in Flipped Learning environment in a private university in Istanbul, Turkey (Compton, 2016). That study included the idea that teachers and students must understand the ways in which the other person has been culturally molded in order to better deal with potential cultural tensions. Particularly important is the realization that MEF has adopted a competely Flipped Learning program for all its faculties (Fell Kurban, 2016) and almost exclusively employs non-Turkish teachers in its foreign language department. The pedagogical assumptions of Flipped Learning are not the normal pedagogical assumptions of a Turkish classroom (Compton, 2016), and a host of foreign teachers who come from diverse backgrounds provides a challenge for the incoming Turkish student. But, since Turkish students are not a large minority group in American Universities (Institute of International Education, 2015), it seems reasonable to include data from other more dominant minority groups, like the Chinese when the focus becomes an American university setting.

Hofstede's Cultural Dimensions vis-a-vis a Flipped Learning Environment in America

I will make connections between American, Chinese and Turkish students and American teachers in order to highlight particular areas of dissonance that would need to be addressed. Although there are six cultural dimensions outlined by Geert Hofstede, I will highlight just two for sake of time and to expedite the discussion. Following these, I will briefly discuss their relationship to a Flipped Learning context with foreign students. Finally, I will make a few suggestions for moving forward.

The first dimension I want to highlight is power distance. Power distance is the level of comfortability with hierarchy (Hofstede, Hofstede, Minkov, 2010). For example, the more comfortable one is with a hierarchical imbalance between staff and employers the higher one scores on the scale. Many Asian cultures, along with Turkish culture rate quite high on this scale, having a higher level of comfortability with inequality. For example, China sits at 80 on this scale while Turkey is at 66. Americans, however, are typically much less patient with differences in power structures, thus, their score of 40 reveals a culture that is more interested in establishing a measure of equality than in maintaining strict segragated power structures.

What could be said of this dimensions' relationship to Flipped Learning? Of course, every faculty has different content to cover and different skills it deems important to impart. Every teacher needs to consider what is the most effective way to deliver the content and discern whether or not the students have acquired the skills. But as Jonathan Bergmann and Aaron Sams note in their first book, a teacher who wants to flip their classroom does so because they want to utilize their face-to-face time in the classroom for the most effective purposes (Bergmann and

Sams, 2012); in other words, the classroom time is probably not going to be exclusively content delivery related.Thus, for students who are used to teachers in the front of their classrooms delivering information, this kind of autonomy and power is new and will take some getting used to. Moreover, Flipped Learning is a pedagogy connected to the idea that students and teachers are expected to have a healthy relationship in the classroom, one where guidance is provided but differences of opinion might occur. And Flipped Learning encourages student empowerment. The teacher often allows the students to have a major role in choosing how they are going to fulfill the objectives (Bergmann and Sams, 2012; Bergmann and Sams 2014). Therefore, for Chinese students in an American university, a Flipped Learning approach will probably be met with some misunderstanding, or at worst, resistance, unless there is a sufficient orientation given to the benefits of Flipped Learning.

The fourth cultural dimension is uncertainty avoidance. As the name suggests this dimension deals with how much a culture is interested in making it difficult for the ambiguous or anxiety to surprise someone (Hofstede, Hofstede, Minkov, 2010). Another way to put it would be to ask how easy does a society accept new ideas? Or, another way to think about this dimension is how many rules and laws a country has—a society's method to avoid uncertainty. America's score of 46 and China's score of 30 show that both of these societies, China in particular, are comfortable with trying out new things and slightly more comfortable with ambiguity. Turkey's score of 85 demonstrates a high degree of dislike for ambiguous situations.

What could be said of this cultural dimension as it connects to Flipped Learning? Chinese students are going to be more interested in trying new things and venturing into more debatable topics than their Turkish counterparts would; that said, it is also important to remember that because Chinese people have a greater toleration for power differences, they are not going to be as willing as their American counterparts to go against the status quo; so, if everyone is doing it, the Chinese will accompany and most likely the Americans. However, the Turks will probably opt out until they have much more information.

Moving Forward in Cultural Competence

Given the realities of differences of thought and assumptions between students and teachers, I would like to offer two suggestions to improve this situation. Of course, no solution is full-proof, and every classroom is going to have its own idiosyncrasies. However, moving in the direction of understanding would seem the right way forward, particularly in contexts which involve a new pedagogy such as Flipped Learning.

Initially, it seems clear that teachers should have training in cultural competency. Perhaps, the NEA recommendations are suitable for this situation. The organization has laid out the C.A.R.E. strategies for helping their teachers test whether or not their attitudes and curriculum are helping their foreign students adjust (C.A.R.E.: Strategies for Closing the Achievement Gaps, 2005). There are questionnaires and model lesson plans aimed at the four main sections of the cultural competance strategy: culture, abilities, resilience, and effort. American educators would benefit from thinking through their own cultural assumptions and those of their students.

Second, students should have training in cultural competency. If the teacher is the guide, then the students could discuss various issues invovled with cultural competency such as

awareness of alternative points of view; advantages and disadvantages of different kinds of thinking about family, decision-making, and, of course, education. Perhaps an orientation for all students on the advantages and disadvantages of diversity would help. A document put together by the University of Wisconsin states,

> A vast and growing body of research provides evidence that a diverse student body, faculty, and staff benefits our joint missions of teaching and research by increasing creativity, innovation, and problem-solving. Yet diversity of faculty, staff, and students also brings challenges. Increasing diversity can lead to less cohesiveness, less effective communication, increased anxiety, and greater discomfort for many members of a community ("Benefits and Challenges of Diversity in Academic Settings", 2010).

Flipped Learning seems to capitalize on student-centered learning. But if the students at the center have different ideas about what to learn or how to learn, then discussions and activities aimed at surfacing assumptions is crucial.

Conclusion

As can be seen the Cultural Dimensions of Hofstede can help pave the way for an understanding of the differences between Americans teachers and students and Chinese and Turkish students. Focusing on an open dialogue with tools that are already available has the advantages of helping both teachers and students begin to understand the cultural milieu each is speaking from and allows open communication to guide the way to a university experience which has the potential of being rewarding and productive for both student and teacher alike.

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Improving Retention and Performance in Organic Chemistry
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Abstract

A prerequisite for many graduate and professional programs is successful completion of an organic chemistry sequence. However, the failure rate in organic is notoriously high. Studies have shown that a large percentage of students who enter universities as pre-medical students do not complete their pre-professional studies largely due to negative experiences in chemistry classes. By changing content delivery from traditional lecture to the flipped learning model coupled with in-class Socratic pedagogy, student engagement, retention and success in an organic chemistry course have been improved. Methods of assessing student achievement and how active learning was implemented are discussed.

Keywords: organic chemistry, student engagement, Socratic questioning, retention, active learning

Improving Retention and Performance in Organic Chemistry
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About 300,000 students earn undergraduate degrees in the areas of science, technology, engineering and math (STEM) annually in the United States. However, within the next decade, it is estimated that at least 1 million additional STEM professionals above those being currently produced will be needed if the U.S. is to maintain its level of stature in science and technology. Unfortunately, according to the 2012 report of the President's Council of Advisors on Science and Technology (PCAST), fewer than 40% of students who enter college as STEM majors complete their programs. Demographically, approximately 70% of all college students today are women and members of minority groups. Members of these groups tend to leave STEM majors at higher rates than other segments of the student population and earn only about 45% of the total number of STEM degrees awarded. This "underrepresented majority" comprises an expanding pool of potential talent that is being under-serviced in our current educational environment. In fact, studies show that many students who leave STEM programs actually perform well in college level work but describe the atmosphere and teaching methods in introductory STEM classes as ineffective and uninspiring (Brainard & Carlin, 1998; Seymour & Hewitt, 2000).

The problem to be solved is how to improve retention of STEM majors. If retention rates can be improved from 40% to just 50%, three-fourths of those additional STEM graduates needed in the U.S. would be produced (PCAST, 2012). To solve this problem, higher education faculty need to find ways to foster student engagement, help students develop confidence in their abilities and improve achievement in STEM classes, all of which will lead to increasing rates of retention.

The institution of the university came into being in Europe in the 11th Century. Lecturing has been the primary method of transmitting knowledge to students since that time despite evidence students can't concentrate effectively for the 50 or more minutes of a typical lecture period. A 2010 study which investigated concentration lapses in general chemistry classes found that students experienced recurring 1-2 minute attention lapses throughout the class period. They also discovered that these attention lapses became increasing more frequent as time progresses so that by the end of the lecture period, lapses were occurring about every two minutes (Bunce, Flens, & Neiles, 2010).

Freeman and colleagues published a paper describing their testing of the hypothesis that lecturing maximizes learning and course performance at the university level. Their research involved a meta-analysis of 225 studies previously conducted by other researchers comparing the student performance in STEM courses using traditional lecture methodology to courses employing some level of active learning component. They found that when students are active participants rather than passive listeners, scores on exams improve, and course failure rates are reduced. Their results show that students in traditional lecture courses are 1.5 times more likely to fail in STEM courses than students in courses utilizing an active learning component (Freeman et al., 2014). In addition, Bunce, et al. (2010) found that a relationship existed between attention and active learning activities, Fewer attention lapses were seen during active learning classroom segments then during traditional lecture. They also found that lapses in attention occurred less during lecture segments in the period immediately following an active learning component than in normal lecture periods.

These studies suggest that a way to better engage students and affect their achievement in STEM classes is to modify the content delivery method to incorporate a greater amount of active learning. This paper describes how changing from the traditional lecture mode to flipped learning at a small, public liberal arts university has improved retention and performance in organic chemistry , a course which generally is considered a "weed out course" for pre-medical and other pre-professional students in universities. Demographically, the student body of this institution is composed of about 45% first generation college students with about 35% of the total student body falling into the category of economically disadvantaged. This university also possesses a large population of that untapped, "underrepresented majority" pool with 60% of the student body being female and 22% belonging to minority groups.

Results

Organic chemistry classes at this university typically range from about 35-50 students with most majoring in either chemistry or biology and many in a pre-medical or other pre-professional emphasis program. Comparing the number of students who successfully complete the full year of organic chemistry to the number of students who began the sequence of organic chemistry was used to calculate annual retention statistics. In 2009, the retention from start to finish was 61.4%. In fact, statistics for the ten years preceding 2009 show retention rates typically averaging approximately 60-61%. Retention (73.9%) in 2010 was abnormally high. In fact, this was highest retention rate by a large margin over that seen in any of the previous 22 years. In 2011, retention returned to a more normal level at 59.5%. Beginning in 2012, the mode of content delivery was changed from traditional lecture to a flipped learning format. Over the next three years, retention rates increased from 72.3% in 2012 to 80.8% in 2013 and 87% in 2014.

While these statistics show a desirable trend in improving retention, they do not show whether mastery of organic chemistry by the students also increased. One way to monitor changes in achievement is to use an identical comprehensive knowledge assessment tool each year. For the period 2009 through 2014, the American Chemical Society's (ACS) Organic Chemistry exam was administered to all students completing the organic sequence. The measure used to compare achievement across the range of years was the percent of students earning scores placing them above the 50th percentile of national norms. In 2009, 43% scored above the 50th percentile; 60% in 2010; and 33% in 2013, all years in which content delivery was traditional lecture. After changing to the flipped learning model, 50% exceeded the 50th percentile in 2012, 55% in 2013 and 61% in 2014. This method of measuring of achievement showed a upward trend analogous to the retention rates over that same timeframe. Again, unexplainable, abnormally high scores were obtained in 2010. This result also was anomalous when compared to results from different versions of ACS Organic Chemistry exams administered during the prior decade. It appears from these results that not only have students been retained, but they also seem to have increased their mastery of the course content. The comparative data is shown in Figure 1.

Discussion

Integration of flipped learning in the organic chemistry classroom has not been without its challenges and has gone through an evolutionary process of improving the active learning component. The content delivery method used in this environment is composed of three components. Before coming to class students do specific work to prepare to participate in the in-class activities. During class, they practice applying key concepts while obtaining feedback (formative assessment) on how well they have mastered the concepts needed for that day's work

and how well they can connect the concepts to the body of organic knowledge they already possess. After class, students work homework exercises to cement their understanding of the concepts and further extend connections.

The pre-class component consisted of a textbook reading assignment and viewing of video lectures which were generated from slide presentations as narrated screencasts. Students today process information very differently than those of previous generations. They are used to getting their news from 140-character tweets, being entertained by You-Tube videos, playing video games on phones, iPads and computers and "Googling" everything. Experience showed that pre-class videos are most effective when they are short and contain engaging elements such as animations, embedded video segments that present information in a non-lecture style or mini-tutorials that require the student to do something involving pencil and paper. The slides for screencasts should contain only that text which is essential so that students are able to listen to what is being said. If students are reading, they cannot be listening. Pictures are generally much more memorable than paragraphs of text. Many students today will view the pre-class video presentation on laptop computers or mobile devices such as tablets or smart phones. Therefore, it is important to minimize screen clutter in screencasts to make them easier to view on small screens. The bottom line is that pre-class presentations need to be engaging, or many students will not watch them.

Anyone who has taken organic chemistry knows that that the way to be successful is to practice, practice, practice. However, traditionally it has been difficult to get a significant number of organic students at this university to complete non-graded homework assignments outside of class. The original intent in implementing flipped learning was to have students work exercises in class that would allow them to practice concepts and develop critical thinking skills by applying those concepts to increasingly more complex questions. A typical in-class period began by having the students do a short review the material for the day by answering a group of quiz-like questions followed by writing mechanisms, devising multi-step syntheses and solve paper unknowns via worksheet methodology. Since collaborative learning is often viewed as being more effective for many students than isolated learning, the class was encouraged to work in groups to complete the activities while the professor circulated among the groups to answer questions and provide feedback. Unfortunately, since these activities were non-graded, a significant percentage of the students did not see the value of completing the exercises. They would chat, work on assignments for other classes, text, or even get up and leave the class. It became apparent that while the flipped method was working well for some of the students, too many others were not being motivated and were being left behind. A new strategy was needed to encourage the students to participate in the in-class activities.

Another approach to active learning is to teach by asking questions which is sometimes referred to as the Socratic Method. The goal of the Socratic Method is not to tell, but rather, to provide questions which allow students to synthesize answers and make connections. The challenge for the teacher is to come up with the right questions to ask. The types of questions that can be asked can be broken into groups and placed into a hierarchy of increasing complexity. At the bottom of the hierarchy are questions which probe the basic concepts that provide the foundation onto which more in-depth knowledge can be built. Questions at this level often cover things such terminology and fundamental principles that require rote memorization. The next higher level poses questions that require students to be able to articulate the fundamental concepts found at the bottom of the question hierarchy. The next higher level involves questions requiring students to apply the concepts to activities such as constructing the

mechanism for a reaction or filling in the missing parts of a chemical equation. The highest order questions require students use the concepts to build something such as is done when they devise a multistep synthesis, compare different synthetic pathways, analyze the spectra for a compound to determine its identity, or analyze a group of related facts to determine the identities of a group of unknown compounds in what can be called an unknown roadmap problem.

The goal of teaching by questioning is to test knowledge, allow students to make connections and to discover and dispel misconceptions they might have about the concepts being studied. The drawback to teaching by asking questions is that it is often problematic to get students to publicly offer answers when issues are controversial or when there is a danger of being seen choosing an incorrect answer.

Audience Response Systems (clickers) provide a vehicle by which students can answer questions without the fear of embarrassment. When clickers are used to log answers to questions, students get immediate feedback on the accuracy of their responses which provides them with a measure of the level of their understanding of concepts (formative assessment). The instructor is also provided with information about those concepts students are not grasping.

A number of studies have been published that give insight into student perceptions of how clickers work best for their learning. The findings of these studies have been used to develop the in-class, active learning techniques used in the organic chemistry class at this university. In a 2008 study, students reported that using clickers makes them feel like they are playing a video game and makes them more apt to participate in classroom discussions. Although responses are anonymous to the group, students think more seriously about the answer they choose because they do not want to be the only wrong one recorded (Osterman, 2008). Students prefer to be able to actively collaborate with neighboring peers when using clickers in the classroom rather than using them in an independent, no interaction, quiz-like response application (Keller et al., 2007). When students know that their responses are worth points, it can positively increase not only their class participation, but also their before class preparation, attendance and in-class attention (Lantz & Stawiski, 2014). Finally, when clickers are used as a vehicle for increasing collaboration with peers, giving students some level of reward for posting any response, even if incorrect, is more effective than only rewarding those responses that correctly answer the question posed (James, 2006).

During the last 3.5 years for which retention/achievement was reported earlier in this paper, the in-class component involved review of the day's material through answering questions of varying difficulty. As the class period progressed, the questions posed climbed the question hierarchy requiring progressively more application of principles and critical thinking. Questions asked ranged from the concrete (asking definitions, structure analysis such functional group identification and electron distribution, nomenclature, and reaction completing) to those requiring application of concepts and critical thinking (mechanism writing, synthesis design and unknown roadmap problems). Sometimes students worked independently to answer quiz-style questions when rote memorization of facts was required. However, this was only an occasional activity and took only a minor amount of the total class time. Most of the time, students collaborated with each other to find a solution to each question that had been posed. Students were permitted to consult notes taken from the pre-class videos and use their phones, tablets, laptops, textbooks or anything else that aided them in coming up with an answer. By encouraging the use of these tools, less illicit use of phones, tablets, etc. was observed during the class period. The ultimate goal of this approach is to have the students actively interact with the course material.

The ability to earn class participation reward points was used to encourage student attendance. For each class period, if a student got half or more of the day's questions correct, four points were earned. For getting less than 50% correct, a student earned two points while no points were earned by absent students. To accommodate for illness and other absences, score drop days were incorporated into the grading scheme. This approach appeared to work with student class attendance typically ranging between 90 to 100%. In total, clicker points composed about 15% of a student's grade.

The questioning process began with a question being projected on a screen at the front of the lecture hall, and polling opened for students to input answers. When all students had logged an answer, the polling was closed and a class discussion followed. Questions typically posed at this point were "How should you approach solving this problem?" and "What do you need to know to answer this question?". The discussion covered what was wrong with the incorrect answers, why one answer was more correct than another, etc until a consensus solution was reached. Only then was the correct answer revealed. During the discussion phase not all students were willing to participate by offering suggestions. However, the discussions appeared help everyone in the class.

The after-class component is fairly traditional involving assigned, but non-graded homework problems and graded problem sets asking more complex application problems such as multistep synthesis design, involved roadmaps and spectral identification of unknown problems. In an effort to encourage students to see value in completing non-graded homework assignments, in-class quizzes were administered at the end of each chapter unit. The questions on these quizzes were taken from the assigned homework problems. This technique was successful with a majority of students, but some did remain unmotivated to do the assignments.

In conclusion, since adopting flipped learning methodology in organic chemistry, retention and achievement have shown a promising upward trend. It also appears that it is the average and at risk students who have benefitted most from the change in delivery method. A longer evaluation period is needed before a definitive statement can be made about the success of this content delivery system. It is hoped that retention rates will continue to remain in the 80% range in the future.

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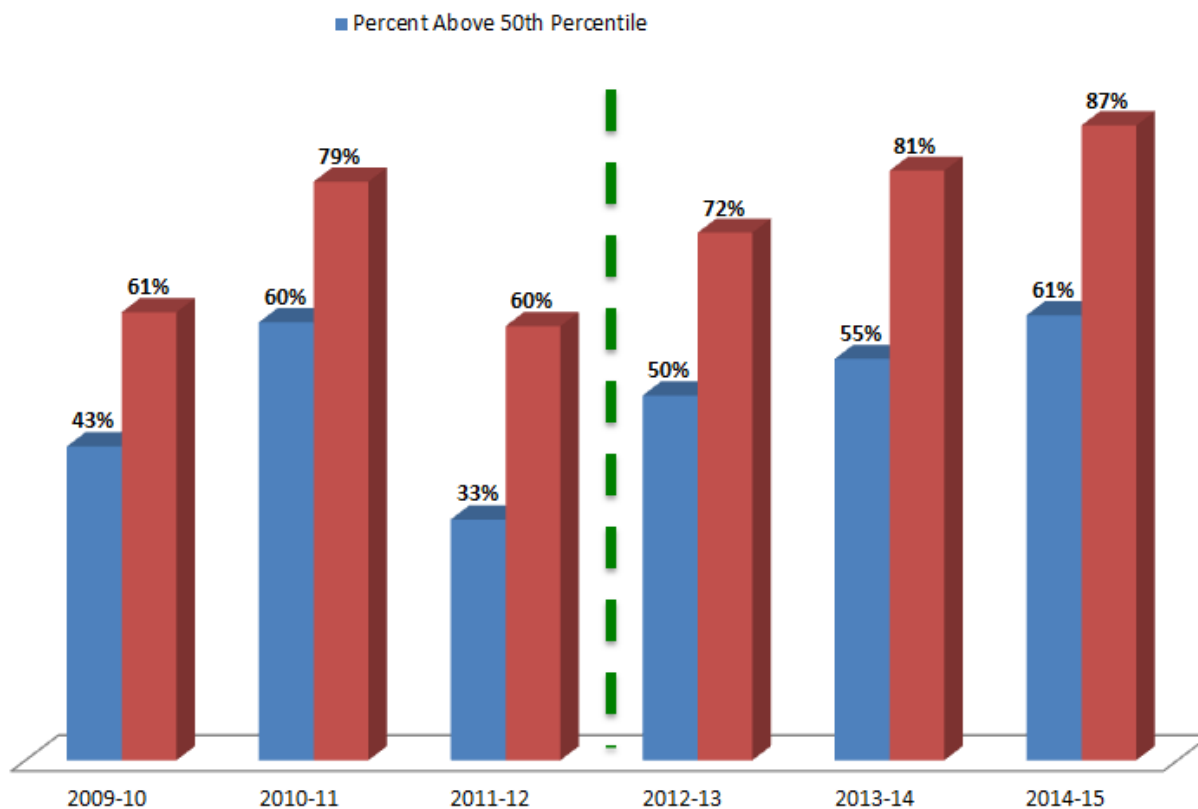
Figure 1. Comparison of retention statistics and achievement as measured by performance on the ACS Organic Chemistry exam. The performance statistics are measured as the percent of class scoring above the 50th percentile of national norms. Blue bars represent exam statistics and red bars show retention statistics. Data to the left of the green dashed vertical line are from years in which course content was traditional lecture. Data to the right of the green dashed vertical line are from years in which flipped learning was used.

Flipping a Research Methods Course in Anthropology: A Report and Assessment

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Abstract

This paper describes the plan, implementation, and assessment of a flipped curriculum for a junior level anthropology course at a mid-sized university in the Rocky Mountain Region of the United States. We developed the new curriculum with the goal of increasing hands-on activities and student interaction, and improving retention of knowledge and skills. The course was flipped by adding brief video presentations that consisted of narrated slideshows viewed online prior to class. Online quizzes based on the videos ensured that students watched them. Twenty to thirty minute lectures, with discussion (in a three hour class) replaced long lectures and most of class time was devoted to newly developed group labs that applied the concepts, skills, and knowledge introduced in the videos and assigned readings. Course evaluations, student interviews, and course grades indicate that the flipped curriculum achieved its goals and improved the course.[1]

Keywords: Archaeology, Anthropology, Flipped, Video, Quiz

Course Overview and Reasons for Flipping

The research methods course described here is capped at thirty students and introduces a wide range of archeological field and laboratory research methods. In the past this course was offered two or three days a week with one to two days of lecture and one day completing a short lab. I have long felt the need to increase the number and complexity of hands-on labs in this course in order to improve skills development, successfully achieve course learning objectives, increase student interest, facilitate completion of larger projects, and make the topic come alive. The flipped approach in this course follows well published philosophies and practices for improving active learning, replacing long lectures with mini lectures in class and multimedia out of class, and completing homework in class in groups with instructor supervision.[2] As part of the flipped plan I moved the course to one meeting per week, added videos consisting of narrated slideshows, added quizzes to ensure viewing of the videos, revised course learning objectives, and devoted most of class time to group labs that applied concepts from the videos and readings, which focused on building the knowledge and skills necessary to collect and analyze archaeological data. These changes are summarized in Table 1, along with a discussion of expected advantages and challenges.

Improving Student Buy-In

In order to improve student buy-in to the flipped curriculum, in my syllabus, mini-lectures, and lab instructions I emphasized the importance of hands-on, engaged learning for

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[2] See for example Alvarez 2012; Bonwell and Eison 1991; Lage, Platt, and Treglia 2000.

development of applied skills as well as better knowledge and skills retention, which results in better grades. I also explained that these practices improve job prospects in a range of archaeological, museum, or heritage management-related career tracks. Thus, the extra work required of students for flipped curriculum makes in-class labs more beneficial on many levels and the course more enjoyable. I provided study guides for exams and emphasized the importance of skills mastery by making the labs a significant part of the course grade and including applied activities on exams, thereby enhancing the importance of knowledge and skills gained in the labs.

Active Learning

A central goal of flipping the course is to increase active learning. Prior to flipping the course students did not have sufficient time to complete more complex labs in class, did not have access to artifacts at home, and struggled to complete as homework written assignments that lacked lab materials or a hands-on component. Increasing time for group labs in class made it possible to cover more complex concepts in a setting where I could step in to explain the instructions, connect the dots, and answer questions. The active learning for this course includes labs such as:

- Analysis of materials, including sorting artifacts by material, function, manufacturing technique, type, style-period, and material source.
- Pedestrian survey and field recording of artifacts in order to answer research questions and test hypotheses devised by the students (takes place outside the classroom).
- Analysis of human and animal bone, and plant remains to discern sex, age, height, diet, and the structure of the food system in a given society.
- Geophysics field survey demonstration and application of knowledge to multiple applied case studies (part of this takes place outside the classroom).
- Archaeological field excavations using the mock excavation site I constructed at the a local learning center fifteen minutes from campus (takes place outside the classroom).
- Development of flint knapping skills to supplement analysis of lithics and aid in understanding the morphological markers of production processes.
- Developing research designs for case studies that incorporate multiple archaeological field and laboratory methods.

Table 1

Key differences between the flipped and original course.

DIFFERENCE from Original Course	ADVANTAGES	CHALLENGES
Course is now offered once a week for 3 hours.	Enough time to complete substantial labs, including set-up and tear down, as well as outdoor labs that	Students may find it difficult to fit a 3-hour course into their schedule. Some students have difficulty staying focused for 3 hours, but in this case much of that time is spent on

	require transporting equipment.	engaging activities that should mitigate boredom or inattentiveness.
Core course content is delivered in a series of narrated slide shows ten to thirty minutes each that are posted to the course webpage. These videos are supplemented by min-lectures of twenty to thirty minutes in-class (in a three hour course).	Students arrive to class with pre-exposure to the main ideas for that week, and an introduction to the lab.	Students may resist watching videos in addition to reading and written homework. I addressed this concern by making the purpose of each video clear, emphasizing the value of having a lecture you can revisit when studying for tests, and keeping the videos brief and focused. Each video connects to an interesting lab that draws the students into the content and makes it seem especially relevant.
Revised course learning objectives.	Revised objectives focus on applied, measurable outcomes.	It is difficult to ensure that students meet each learning objective in the labs and other assignments. I build in iterative activities that work towards multiple learning objectives over the course of the semester by applying skills and knowledge in multiple contexts.
Addition of weekly on-line quizzes or short written assignments related to the videos.	Added to ensure that the students watch the videos and prepare for class.	Students may have anxiety about quizzes, or their grade may suffer if they forget to do them. To mitigate anxiety the quizzes are timed but open book / notes. The goal is not to test the students for mastery of content but to ensure that they look over and consider the material before class.
Students complete weekly and semester long group projects (~ 5 persons per group) that require mastery of a set of analytical techniques and coordination between groups.	The relevance of the methods studied will become clear as they are applied in the course of the project. By working as a class towards a larger goal, but with efforts parceled out to smaller groups, students will feel like their contribution matters.	Some students, especially very good students, hate group work because they feel that they have to carry more of the load than others in the group. To mitigate this each group completes peer-review evaluations to ensure equal participation and reward those who do their part. Students should also understand that they could not complete this project except by teamwork, just as archaeologists do not work alone. Thus the project demonstrates the social environment of archaeological research.

Table 2

Comparison between the flipped plan and its implementation.

DIFFERENCE from Original Course	IMPLEMENTATION	COMMENTS
Course is now offered once a week for 3 hours.	This was implemented for the first offering of the flipped curriculum and we achieved the advantages described in Table 1. Students remained engaged for the entire class period through hands-on activities in most classes.	It is difficult to continue offering the course once per week due to conflicts with other courses. Going forward the course probably will be offered twice per week. This may require some labs to start on day one and continue on day two, which could harm continuity or on the contrary reinforce learning objectives through iterative practices. In the course evaluations several students complained about the three hour meeting time (see assessment section, below).
Core course content is delivered in a series of narrated slide shows ten to thirty minutes each that are posted to the course webpage. These videos are supplemented by min-lectures of twenty to thirty minutes in-class (in a three hour course).	Students viewed eleven instructor videos posted online, one online video produced by an outside source, and one in-class video.	I did not receive complaints about the videos, and in the course evaluations most students said the videos were helpful. Most weeks I also provided a twenty to thirty minute mini lecture and discussion that introduced a topic or reviewed of some of the video content. Interestingly, in course evaluations the students complained about the few days on which I lectured for an hour; apparently they came to expect only labs, not lecture (see assessment section, below).
Revised course learning objectives.	Revised objectives focus on applied, measurable outcomes.	Each video and in-class activity connects to the new learning objectives. I think this helped the students see the value in the activities.
Addition of weekly on-line quizzes or short written assignments related to the videos.	Eight videos were tested by online quizzes. One video was tested by an in-class writing assignment. All videos were tested through in-class group activities that applied concepts from the videos.	I did not receive complaints about the quizzes in class and only one person stated in the course evaluations that they were not useful. Most students completed all the quizzes with good scores. The students seemed more prepared for class than in the past, and more engaged with the activities.

Students will complete group projects (~ 5 persons per group) that require mastery of a set of analytical techniques and coordination between groups.	Every class period included a group activity. Group size ranged from five to six persons.	Students clearly enjoyed most of the activities. Even shy students became more engaged as they got to know their classmates and worked in groups more frequently. The whole-class group project had to be canceled for logistical reasons. As a replacement, a series of activities at the end of the semester required students to work together to determine the appropriate methods to apply to solve a series of archaeological problems. For this assignment they had to draw on methods they studied throughout the semester.

Summary

The implementation followed the plan in all areas except for the semester-long group project, which was replaced with a series of shorter activities (see Table 2). The main challenge as an instructor was to stay ahead of the students with videos, quizzes, and activities. Going forward I should be able to re-use much of this material and add new or modify existing material as needed. Another challenge was class size. This course typically enrolls around twenty people, but at the time of flipping enrollment was twenty six. This relatively large size placed a strain on resources for constructing enough material for group activities. Most activities were successful but some will require expansion in the future to accommodate more students. Successes were common, especially in the area of the activities (engaged students), quizzes, and videos, as described in Table 2.

Assessment

The success of this flipped course can be assessed by considering my impressions of student engagement, grades, course evaluations, and interviews and observations conducted by a graduate student who is writing a dissertation in education.[3]

Impressions

The videos, quizzes, revised learning objectives, and activities were successful. Students were clearly more engaged with the course content than in the past. Student anxiety about tests seemed less than in the past, but this is difficult to gauge. As they completed their final integral activities I felt that most students truly mastered the main course learning objectives.

Grades

Final course grades improved five points over the average score from two years prior, seven points over three years prior, -0.75 points under four years prior, and six and a half points over five years prior.[4] These figures are too limited to state a statistically reliable correlation between the new curriculum and grade improvement, but my sense from watching the students complete labs and exams is that in addition to getting better grades than in the recent past, they

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[3] The graduate student is not named in order to protect the students' privacy and ongoing research.
[4] The course was not offered one year prior.

also mastered the material better; that is, the grades from the flipped course more closely track skills and knowledge mastery than in the past.

Course evaluations

Course evaluations consist of ten questions to which students respond with a Likert score of 1 (strongly disagree) to 5 (strongly agree). In addition, students have the option to provide written responses to several additional questions such as what they liked the most, the least, how they liked the readings and multimedia, etcetera. With a 100% response rate (administered in-class, anonymously, with the instructor absent), Likert scores for each question are above 4.5 with an overall average of 4.69, the highest score ever for this course. However, the relationship of this score to the flipped curriculum is not clear because the course scores have always been high (two years prior: 4.62; three years prior: 4.54; four years prior: 4.33; five years prior: 4.42).

Written comments were overwhelmingly positive (see list below), with students often stating that the best thing about the class was the video lectures and hands-on activities. Only two students complained that the videos were either not helpful or too long. Oddly, the most common complaint was that lectures should be short and less frequent. This is surprising because out of sixteen three hour class meetings I only lectured for more than an hour on one occasion, and about an hour on two other occasions. Most in-class lectures, combined with a lot of discussion, lasted 20 – 45 minutes. It seems that since hands-on activities formed most of the class-time content, the few occasions with longer lectures really stood out as less engaging. The second most common criticism was of the three hour, once a week class meeting. Several students stated that it was difficult to keep up or stay focused and they requested that we meet at least twice a week.

Here are representative examples of the positive comments about the flipped content:
- Videos helped explain subject matter more clearly.
- What I liked most about the class was having assignments in class. Having the professor explain the topic and give us assignments that are related to the topic.
- I enjoyed the in-class labs. It was good to get a lot of hands-on exposure and practical application.
- [I would like] more online primer videos. I enjoyed those for a heads up of discussion content.
- [I liked most] the practicality of the course and the way it reflects real life methods needed for archaeology.
- I liked the videos before the class that introduced the subject that then left time to do labs [in class].
- What I liked most about this course was how interactive it was.
- [I liked most] the activities where we got up, walked around, or went outside.
- I really enjoyed the "hands-on" aspect of the class.
- I liked that this class was hands-on and that hypothetical situations were given.
- The videos ....were really interesting.
- I liked the activities, they helped me learn, practice, recall, and retain the information taught during the lecture. The videos and the quizzes also helped me remember and retain the information taught during the video.
- What I liked most was that the video lectures were online.
- I think the video/bb [blackboard] quizzes worked [illegible] well. Having class time be more like a lab was really useful in learning material.

Interviews and observations conducted by a graduate student in education

The graduate student[5] interviewed five self-selected students from the course to ascertain their experience. Results from this assessment echo the comments on the course evaluations discussed previously. The graduate student reports that the students enjoyed the narrated powerpoints especially because they felt that it was me talking to them personally instead of a generic slide show. They said that the videos and quizzes helped them study, prepare for and participate in class. They were pleased to devote most of class time to activities, and were happy to have my attention as I circulated to help them with their tasks. Happily they asserted that the flipped curriculum taught them to prepare for class and to focus on understanding concepts and developing skills. Their only complaint was that they were hungry because it was a three hour class late in the afternoon!

In addition to the interviews described here, the graduate student also observed class in person and examined the flipped content posted to the course website. The graduate student reports that the course was well organized with clear statements about what videos to watch, how long the videos would last, and what learning goals were inherent in each video, quiz, and lab. In class the graduate student felt that I spent just enough time reviewing concepts from the videos and readings and moved on to the labs before anyone got bored. Finally, on the basis of comparing my course to others the graduate student has observed, the graduate student's initial impression is that requiring a quiz for each video is essential for ensuring that the students watch the video.

Conclusions

This flipped implementation was successful, as indicated by student receptiveness, improved student engagement, better grades, and overwhelmingly positive course evaluations. Although Likert evaluation scores have been strong for this course in the recent past, improved grades and student comments demonstrate that even a good course can benefit from flipping. This evidence also shows that at the very least the flipped curriculum did not harm the course learning objectives or student performance. I believe that improved grades indicate improved mastery of skills and content, and my observations of student activities support this assertion. In the future, videos, activities, and assigned readings will be re-evaluated to continue good integration and connection to the course learning objectives. Next time I offer the course I probably will have to modify the content to fit a schedule of two meetings per week, not just one. I will also have to make some additional videos, and rearrange the order of topics so that some activities build upon one another more successfully. I may attempt to institute a semester-long class project to better integrate the activities and course content. On the basis of this successful flipped course I plan to flip other courses in whole or in part in the coming years.

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Taking a Flipped Approach to Higher Education: Designing Universities for Today's Knowledge Economies and Societies

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Abstract

MEF University is the first and only fully Flipped university in the world. This article, based on the upcoming book "The Flipped Approach to Higher Education: Designing Universities for Today's Knowledge Economies and Societies" (Şahin & Fell Kurban, 2016) summarizes why and how MEF adopted Flipped Learning as a new, transformative, educational approach. The organizational design process for becoming a Flipped institution is outlined, and the physical and geographical infrastructure, and human and intellectual capital needs are discussed. Emerging stories from administrators, pedagogical and technical support staff, instructors, and students are shared, in which they reveal their experiences over the first two years with Flipped Learning and how this has impacted their educational experience at MEF. These experiences are used to develop short-term performance enhancement milestones in the areas of leadership, institutional commitment, infrastructure, and instructor and student support and development. Long-term plans at a national level are also pronounced.

Keywords: Flipped Learning, Higher education, Knowledge economies, Knowledge societies, Practical application

The Economic and Technical Nature of Today's World

Baby Boomers and Gen X benefited from a stable working environment in which individuals graduated from university, entered the job market and worked their way up through the company until retirement - the "escalator model" (as cited in Hoffman & Casnocha, 2012, p. 4-5). This encouraged individuals to attend university, as a degree was a good investment. However, in today's employment market, many people are stuck at the bottom, overeducated, underemployed or jobless, while older workers struggle to retire, as pensions and social security are eroded. Jobs for life have gone. Individuals move between companies, meaning employers expect employees to arrive with skills already in place, or be willing to learn them themselves (Hoffman & Casnocha, 2012, p. 6). Globalization, mechanization, advances in technology, and robotics have altered types of job available and brought the loss of many blue-collar and white-collar jobs (Sherman, 2015). Also, many new jobs have emerged that did not previously exist, such as "social media strategists… app designers" ("Clarius : 30 popular jobs of 2014," 2014). Old jobs become obsolete, new jobs appear. Individuals are pushed out of fields and have to re-educate themselves to stay relevant. Growth is taking place at the bottom of the market, as service industries grow, and at the top where creative-thinking entrepreneurs are much sought after (Auerswald, 2012). However, employers at the top end are struggling to employ individuals with the creative and entrepreneurial skills needed, leading to a "global talent shortage" (Zhao, 2015, p. 131).

Flipped Learning: A Transformative Approach Designed to Meet the Needs of Today's Knowledge Economies and Societies

Over the past 50 years, technology has transformed the way we communicate. The amount of information we now consume through our mobile devices is limitless. Individuals, to be successful, need to be educated to source relevant information and use it strategically. Universities can no longer solely impart knowledge. For millennial students, "traditional approaches of teaching and learning may be outdated… when students come into the classroom, they… expect an environment that mirrors their world" (Findlay, 2012, p. 28). They need their education to furnish them with the 21st century skills needed in the 21st century marketplace such as life and career skills; learning and innovation skills; information, media and technology skills ("Partnership for 21st Century Learning," n.d.). To do this, educational institutions must put in place: effective learning environments; professional development; carefully written curriculum; clear standards and assessments ("Partnership for 21st Century Learning," n.d.). At MEF University, we believe the answer to these needs is the Flipped Learning approach.

In traditional education, the instructor disseminates knowledge to students, who take notes and are expected to remember and understand. They put this into practice after the lesson, when working alone. Herein lies the weakness. When the student is expected to work at the highest level of cognition, they are working without instructor or peer support. Flipped Learning overcomes this by reversing the stages of learning. Knowledge transfer is made available via a video hosted on a learning management system (LMS), which students access prior to class. They then arrive in class prepared to use that knowledge in higher cognitive activities in an environment supported by their instructor and peers. This provides a more effective active-learning environment, and is more aligned to how they will work when they enter the job market.

In addition, millennials have grown up in a digital world. This has affected how they consume information and socialize. They expect to see these same patterns in their university education and know they will need technological skills when they start work. Their education needs to match these realities and needs. Flipped Learning meets both, through maximizing the use of technology and collaborative working within the curriculum, and by focusing on freeing up classroom time for creative, high-level thinking, and active learning. This approach gives students the skills and attitudes that will help them thrive when they enter today's socio-economic and socio-technical market places. They will be used to being autonomous, collaborative, critical thinkers and have the ability to train themselves with the skills needed for the many changing jobs they will have throughout their working lives (Hoffman & Casnocha, 2012) and also possess the creative and entrepreneurial skills needed to fill the "global talent shortage" (Zhao, 2015, p. 131).

From Current Practice to Future Practice: Making the Decision to Flip

MEF Educational Institutions was founded in the 1970s by İbrahim Arıkan, an educator and businessman. In 1996, he founded MEF national and international K-12 schools in Istanbul and Izmir. In 2013, he founded MEF University. As both educator and entrepreneur, Arıkan was in a unique position to establish a university. He was aware the educational system was not well suited to the current needs of students and society, and envisioned a totally new educational approach for MEF University. To find this approach, he hired experienced university president, Muhammed Şahin. As Şahin embarked upon his search, Flipped Learning started to

emerge as a possible solution. Since Mazur's *Peer Instruction* model in 1997, this prototype of Flipped Learning had since been trialed with mathematics and geology (McConnell, Steer, & Owens, 2003), psychology (Chew, 2004), biology (Smith et al., 2009), and computer science (Simon, Kohanfars, Lee, Tamayo, & Cutts, 2010), all of which saw increased student successes. Clintondale High School's introduction of Flipped Learning saw failure rates drop dramatically across all subject areas, and the entire school moved to the Flipped instruction model by 2011 (Rosenberg, 2013). *The New York Times* published an article quoting successes in Flipped Learning by a professor at Stanford (Epstein Ojalvo & Doyne, 2011). Jonathan Bergmann and Aaron Sams, high school chemistry teachers, coined the term "The Flipped Classroom" and became pioneers of this method (Bergmann & Sams, 2012). Next, *The Chronicle of Higher Education* published "How Flipping the Classroom Can Improve the Traditional Lecture" (Berret, 2012). This was followed by *Harvard Magazine's* "Twilight of the Lecture - The trend toward 'active learning' may overthrow the style of teaching that has ruled universities for 600 years" (Lambert, 2012). After that, *The New York Times* published the article "Classroom Lectures Go Digital*"* (Fitzpatrick, 2012), and Jerry Overmyer published *Flipped Classroom 101* (Overmyer, 2012). In December 2012, *The Stanford Daily* printed "Flipped Classroom Movement Gains Steam" (Gifford, 2012). By 2013, California State University Flipped one of its electrical engineering course; pass rates increased by 46% (Ferenstein, 2013). Also in 2013 Harvard professor, Margo Seltzer, Flipped her Computer Engineering Operating Systems class, which led to greater engagement, sense of community, and support for struggling students. Attendance went up by 75%, and students reported that they felt the approach was effective (Zhang, 2013).

Convinced the Flipped Classroom was an effective approach, Şahin shared his findings with Arıkan. Arıkan asked Şahin to run two focus groups: one with professors; one with students. In the professors' group, 80% did not support this model, concerned about their role. In the students' focus group, 80% of the students said they thought the Flipped Classroom was the best approach to educate their generation. On hearing this, the decision to embrace the Flipped Classroom approach was made, and on November 20th 2013, it was announced to the press that MEF would open as the first and only fully Flipped University in the world.

Organizational Design and Transformation

After the announcement, plans for the organizational design and transformation process started. The first consideration was location. Şahin recommended a small campus in the center of Istanbul, as students should be learning not only from the university education, but also from the culture and commerce of the city. Therefore, the campus was located in the *Ayazağa-Maslak* business district. Next was classroom design. Şahin presented Flipped Learning to a number of architecture companies, eventually selecting a proposal from b-design, a Turkish-American company experienced with educational institutions. Their design saw five groups of tables with six chairs coming out from a central podium. There was a smart board on one wall, and "magic paint" on the remaining walls turning them into whiteboards. A "smart" library was also designed for students to access digital materials 24/7, allowing them to control and personalize their learning.

Next, the focus was on human, social and intellectual capital. It takes a certain person to join a start-up. Individuals must be flexible, have high tolerance for uncertainty, work from a vision not direct instruction, and wish to create a legacy. MEF advertised in *The Chronicle of Higher Education*, and specified the Flipped

Classroom as the institutional pedagogical approach. Only candidates successfully showing how they would implement Flipped Learning were hired. To support students and instructors, Şahin established the Center for Excellence in Learning and Teaching (CELT). He also hired an Instructional Technologies Coordinator (ITC) to advise and administrate on the technological issues related to Flipped Learning.

Finally, the technological infrastructure was put in place. Blackboard was chosen as the LMS to host the online component. An in-house recording studio was built for instructors to professionally create videos for their Flipped courses. The studio was designed by 1000 Volt, a post-production company owned by Arıkan. A postproduction director and cameraman were also hired from the same company.

Flipped Learning Theory, Policies and Practices

In September 2014, the university opened. However, most instructors had no experience of Flipping their courses. All attended workshops in the summer of 2014, but none had yet put this into practice. A Flipped Learning instructional design framework was needed. To develop this, in my role as director of the CELT, I started to investigate recommendations from emerging practitioner research. In addition, I gathered feedback from MEF instructors. I then made an analysis to identify "performance gaps… the difference between where you are and where you want to be" (Chevalier, 2007, p. 90). I presented these to the instructors and they identified possible root causes of these gaps. After that, I attempted to classify the causes. These classifications were presented to a group of instructors, and they brainstormed possible interventions. The ideas that emerged were used to create: the Flipped Learning course design process; instructional design handbook; instructional design online course; and best practice checklist. In addition, an instructor mentorship program was established. For the students, an online academic support site was created to provide Flipped Learning learner training, and a student drop-in center and a student mentorship program were established.

To troubleshoot Blackboard or other technical issues, the ITC created self-help videos and mailed links to students and instructors as well as uploading them onto the LMS on the students academic support page and on the instructor support page. To orient students to university life and support them throughout their educational journey, the MEF University student mentorship program was set up, pairing junior students with senior students.

Emerging Stories

To improve Flipped Learning at MEF, it is necessary to gain feedback from a range of stakeholders so their insights can be analyzed, evaluated, and improvement plans put into place. During the second year, the CELT invited a range of stakeholders to share their stories. These are shared in detail in chapters six through sixteen of "The Flipped Approach to Higher Education" (Şahin & Fell Kurban, 2016). The university president shared his ideas on leadership: transparency, vision, accountability, and resources. The CELT, ITC, and library director presented their experiences regarding supporting Flipped Learning through digital pedagogy, training and digital resources. Representatives from the English Language Preparatory Program gave insights into how they were engaging students in a Flipped language-learning environment. Instructors from the School of Foreign Languages described how they had Flipped language, literature, and digital literacy classes. One professor from the Faculty of Engineering described how he was developing its Flipped approach to calculus. The Dean of the Faculty of Education

and his professors wrote about how they are creating the Flipped educators of the future, through leading by example. From the Faculty of Economics, Administrative and Social Sciences, one professor discussed the differentiated approaches he is using in his Flipped classes, and two others shared their experiences of using digital platforms. A law professor shared her personal experiences of making the transition from a traditional lecture approach to a Flipped approach. The Dean of the Faculty of Arts, Design and Architecture and his team described how it emerged that the educational approach in architecture is already Flipped, especially in the design build studio. Three students shared their experiences about being Flipped learners. Finally, an American instructor in the English Language Preparatory Program discussed his research into the cultural aspects inherent in Flipped Learning.

Milestones for Success

MEF opened in 2014 as the world's first fully Flipped University. However, it is not possible for an institution to immediately achieve Flipped Learning excellence; that takes time. Nevertheless, by starting with this bold statement, MEF was able to set a shared vision right from the start, stating the clear need for a new type of educational system to suit the needs of today's students, and societies. The challenge now is to continually develop the Flipped Learning provision. In this section, MEF University's milestones for success are outlined, along with how that success will be evaluated. These milestones were developed through the analysis of the experiences shared by our stakeholders. Feedback was also gathered via a questionnaire sent to all instructors. To create a framework to develop milestones, we drew on Louise Thorpe's work "6 Characteristics To Increase Technology Adoption" (Thorpe, 2015). To achieve successful adoption of a new innovation, such as Flipped Learning, Thorpe recommends looking at: leadership from the top; institutional commitment and investment; robust and reliable infrastructure; effective and available support for academic staff; ability to demonstrate the benefits to the student and staff experience; and evidence-based decision making and a continuous cycle of improvement.

Leadership from the top.

"Good leadership is vital to any change process, especially when it comes to introducing new technology within a university" (Thorpe, 2015, p.3). MEF University president, Muhammed Şahin, is constantly driving for improvement. To do this, he draws on the vision of the university "to educate innovative and entrepreneurial global leaders to shape the future" ("MEF University Vision and Mission," n.d.). Visions are a useful means for creating shared targets. It is imperative that visions are clearly shared between an institution's leaders, as the vision must be adopted across all departments to be effective. To ensure the shared vision is fully adopted at MEF, the following milestones will be implemented.

Provide incentives by reinforcing positive performances. MEF Teachers' Awards will be implemented at the end of academic year 2016-2017. Students and instructors will nominate instructors. Awards will be given based on excellence in planning for teaching learning, enabling learning, assessing learning, and instructors evaluating their own teaching and professional development. Additional awards for best video, most authentic real-life assessment, and most innovative use of new technology will also be

presented. Awards will be presented at a ceremony at the end of the year (graduation ceremonies in the future) and be celebrated in newspaper articles, on social media, and on the website. MEF Learner Awards will also be introduced, with each faculty (instructors and students) nominating a student for the award. Winners will be chosen on their ability to plan for their own learning, support of others, academic success, and personal development.

Develop an institutional philosophy in order to develop a contemporary assessment system. To maximize the effectiveness of the Flipped Learning Approach, MEF leaders will investigate how leading universities, such as Harvard, are changing their traditional assessment systems for contemporary systems. From what is discovered, a MEF philosophy on assessment will developed and more meaningful assessments will be introduced where students demonstrate skills they will need when they enter the workforce.

Institutional commitment and investment.

"Institutional commitment is demonstrated through investment and internal resources" (Thorpe, 2015, p. 5). While the physical and technological infrastructure were put in place by 2014, it is important that needs are constantly reviewed so that technologies are kept up-to-date and the changing needs of instructors and students are met. It is imperative these needs are met as this provides "reassurance to the academic community that the institutional leadership is aware that appropriately resourced support is essential to effective adoption" (Thorpe, 2015, p. 5).

Allocating more funding for Flipped Learning conferences, memberships, research, and publications. Traditionally, research, publications, and conferences are field-specific. However, at MEF, it is essential instructors are also researching their own Flipped Learning practice. For this reason, as well as providing financial support for instructors' fields of research, funding will be provided in support of research, presentations and conferences specifically related to practitioner research into Flipped Learning.

Robust and Reliable Infrastructure.

"Learning technology is playing a central and mission critical role in delivering high quality learning opportunities and supporting the broader student experience" (Thorpe, 2015, p. 7). When offering a fully Flipped educational experience, it is critical the technological infrastructure is able to support learning. If there are consistent technological problems, student and instructors' belief in the system will fail and resistance will develop. Institutions must ensure their technological infrastructure is reliable, robust, and constantly reviewed so changes or updates can be made when required.

Convert any remaining classrooms in the university into fully functional Flipped classrooms. Feedback from instructors and students on the design of the Flipped classrooms was extremely positive. All agreed the design facilitated active learning. By the end of the second year, all classrooms in the faculty building were in line with the MEF Flipped classroom design. However, the English Language Preparatory Program (ELPP) classrooms did not follow this design. To address this, the ELPP director will work in

collaboration with the ELPP instructors to redesign the ELPP classrooms, and liaise with the buildings manager in order to bring these designs into reality.

Effective and available support for academic staff.
"For most academic staff, adopting learning technology for the first time is a change to their well-established and proven practice" (Thorpe, 2015, p. 9). Despite all incoming staff agreeing to follow the Flipped Learning approach, pockets of resistance were seen as some struggled to let go of previous practice and come to terms with the new method. At times, feelings of anger or blame emerged. Some bargained to return to the traditional approach. Some felt loss of the familiar. Others slowly accepted the change and moved into a creative phase. Students may also go through these stages. It is therefore important to provide adequate support to each individual in to establish and sustain an environment of growth and development.

Effective practices for Flipping large classes will be developed. Class size has arisen as an issue for some instructors. It easier to set up active learning in the Flipped classrooms, with a maximum of 35 students. However, large classes will be a necessity on core, 101 courses, and the majority of these will take place in lecture theatres. Some instructors give recommendations on how to Flip very large classes, such as John Boyner at Virginia Tech. However, it is important MEF develops its own research-based practices. To do this, in the upcoming semester, in my role as CELT director, I have requested a large, core class that will take place in a lecture theatre, in which I will trial a range of techniques, technologies, and assessments in to develop best practices.

Provide clear guidelines regarding copyright. The CELT, Library Director, and representatives from publishing companies will draw up a document clarifying what can and cannot legally be included in videos. This will ensure instructors are clear on what is in breach of copyright.

Formalizing an instructor development program. A voluntary, year-long instructor development program will be developed in the third year that focuses on best practices in Flipped Learning course design, implementation and delivery and how to create engaging, relevant and creative videos.

Introduce a program for peer observation and collaboration. A peer observation and collaboration program that focuses on classroom practices and shared knowledge and experience will be implemented in the third year.

Ability to demonstrate the benefits to the student and staff experience.
"It is vital that the impact and benefits to the learner are considered as well as that of the staff when adopting new technology (or approaches)" (Thorpe, 2015, p. 12). To believe in Flipped Learning, students must see that the learning experience is superior to previous learning experiences. Likewise, instructors must be able to see how it can improve the teaching and learning experience, making it more fun, dynamic and motivating.

Provide more information to students about effectively engaging with Flipped courses during the orientation program and beyond. By September

2017, the CELT will develop a differentiated orientation program for students. During faculty orientations, each faculty will use the best practice course they have developed, containing showing student testimonials on how to be an effective Flipped learner, and what is expected of them. This will be an interactive session. Voluntary learner-training courses on the *Student Academic Support Site* have not been well utilized by students. Instead, these learner-training elements will be integrated into the *Introduction to University Life* mandatory freshman course, so that all new students are exposed to this learner-training component.

Evidence-based decision-making and a continuous cycle of improvement.
"The adoption of technology (or new approaches) in teaching and learning frequently raises questions about how it impacts on students' success, improves the student experience and makes effective use of staff time" (Thorpe, 2015, p. 14). Meaningful data should be gathered in order to inform evidence-based decision-making.

Build capacity and skills in order to enhance evidence-based decision-making. A precise analytics tool is required that can connect data from the LMS and student information system together. This is of vital importance to faculties undergoing external accreditation. Ultimately, more detailed and connected analytics will assist in guiding our actions to benefit and all the stakeholders at MEF University. We will review options in the upcoming academic year. Research projects will also be conducted to gather data to examine and improve learning and teaching provision.

Develop differentiated best practices for Flipped Learning, specific to disciplines. By the end of the first year, best practices for Flipped Learning had been developed. However, these guidelines were too generic. Differentiation was needed for each discipline. In addition, to get buy in from instructors, direct input was needed from each faculty. To do this, the newly formed CELT Advisory Board, with representatives from each faculty, prepared a questionnaire about instructors' perceptions of Flipping their courses. Questionnaires went to all instructors, and the CELT Advisory Board grouped the responses by faculty to find emerging patterns. Over the summer of 2016, faculties will be given the results of the questionnaire and asked to formalize their best practices. Faculty specific best practices for Flipped Learning will be developed with the representative from the relevant faculty overseeing the process. These will be turned into institutional quality assurance parameters against which instructors will be held accountable. On completion, each faculty will develop one course, which follows all aspects of the quality assurance parameters. This will be used as a training tool for new instructors on that faculty, and also for student orientation into the faculty.

Introduction of more digital platforms. Current trials of digital platforms have been successful. In the next academic year, students will be required to buy access to the interactive platforms. There is little difference between the price of a hard copy book and access to a digital platform. There is, however, an enormous difference in media and interactivity available between them.

Looking to the Long Term

It is with great pride that we see Flipped Learning is beginning to be adopted at a number of universities in Turkey. On a daily basis, we are contacted by universities who wish to implement Flipped Learning. We are happy to support them by sharing our expertise. However, by the time students enter university, traditional learning habits are already internalized. Students need exposure to the Flipped Learning approach from the earliest stages of their education. Looking to the long term, therefore, we wish to support schools wishing to embrace Flipped Learning. Ultimately, we would like to work with the Turkish Ministry of National Education, to create a framework for schools to follow a Flipped approach on a national level.

Conclusion

MEF, being the first university in the world to apply the Flipped Learning Approach university-wide, is at the forefront of change in higher education. In this article, I summarized the stages gone through in the first two years of MEF establishing its Flipped Learning program, as detailed in the book "The Flipped Approach to Higher Education: Designing Universities for Today's Knowledge Economies and Societies" (Şahin & Fell Kurban, 2016). Through this book, MEF University strives to share its vision with other educational institutions and provide a roadmap for how to make that happen.

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EXAMPLES OF INTERACTIVE "FLIPPED" LESSONS FROM A SECOND LANGUAGE ACQUISITION CLASS

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In this paper, I will outline the activities from a Second Language Acquisition college class to encourage deeper connection with the content, provide opportunities for collaboration, problem solving and critical thinking. As part of the assessment and evaluation, students apply what they have learned.

Key words: Flipped Classroom, Collaboration, Problem Solving

As we move into the 21st century, it is imperative that we as educators ensure that our students are engaged in authentic learning. We need to challenge them with important, intriguing problems, prompt them to think critically and collaboratively. Our job is not just transmitting knowledge, but providing the questions that help them construct knowledge. Flipped lessons have the potential to encourage independent, critical, creative thinking and problem solving.

Flipped Lesson: Guess who's coming to dinner!
Pre-class preparation

At Front Range Community College, the Second Language Acquisition class is a hybrid/flipped class, which means that part of time students meet face to face with the instructor and part of the time the course is online. Students prepare for the interactive in-class activity by completing a variety of assignments. An instructor prepared video provides an overview of the unit and includes an *essential or guiding question* to help focus students' reading, research and preparation. In order to participate in the in-class discussion, students are required to bring printed copies of their assignments, annotated readings and research.

The topic for this unit is "Schools of Thought in Language Acquisition Theory" and "Nineteen Centuries of Language Teaching." The *essential or guiding questions* for this unit are: "Considering your current philosophy regarding teaching and learning, which aspect(s) of the historical theories do you find meaningful and relevant? What makes them significant and how do they influence your thinking?"

In-class activity #1 Fishbowl discussion

During class discussion, students evaluate concepts and theories from the text and research for the purpose of determining which theorists they would invite to a fictional "class dinner party." The classroom is arranged with two concentric circles of desks or tables. Students who come to class with copies of their assignments and research are seated at the inside circle, and those without the required materials are seated at the outside circle. Students at the inside circle participate in the discussion and evaluation and those on the outside keep track of the key points made during the discussion. The note-takers are not active participants in the discussion.

In-class activity #2 Sparkling dinner conversation

After the allotted discussion time, a vote is taken to determine which theorists will be invited. All students vote to decide which 3 theorists will be invited guests. Then the class is randomly divided into groups of 3-4, and using their notes, research and available technology, they collaborate to write 5 thought-provoking questions for each invited guest theorist. Groups post their best questions on flip chart paper. Since there really is no dinner party, the groups collaborate to answer a specified number of questions.

In-class activity #3 Evaluation and follow-up

As evaluation or follow up, students individually respond to reflection prompts. Possible prompts are included below:

1. How has your thinking about a theory or theorist changed after the class discussion?
2. Did the discussion change your thinking regarding the theories you originally considered most influential? Explain.
3. What surprised you about this class activity? What conclusions can you draw from the experience?
4. Consider the elements that were part of this activity. Which was the most valuable for you as a learning experience? How can you capitalize on that?

Flipped Lesson: Gallery Walk and Pecha Kucha
Pre-class preparation

Second Language Acquisition also includes a historical outline of 8 common teaching methods used to teach foreign languages. The instructor-created video includes the following guiding or essential question: "After evaluating the methods, which elements should be integrated into language teaching today?" After completing the historical overview, students choose 2 of the methods to explore and research. As part of the preparation for the in-class activity, students also research the Pecha Kucha presentation method.

In-class activity #1 Story board rough draft

Working with a partner, students use flip chart paper to create a story board rough draft that outlines their Pecha Kucha. Storyboards should include an example of each visual and the text that will accompany or explain their key points. Traditional Pecha Kuch includes 21 slides which is too lengthy for this topic, so students include 10-12 slides instead, and the oral presentation is shortened to 5 minutes.

In-class activity #2 Gallery Walk

The flip chart story board drafts are posted around the room. With classical music playing, students silently walk round the room and view the story boards. Their task is to review as many story boards as possible during the allotted time, and using sticky notes, post constructive feedback, ask questions, make note of great ideas, make recommendations, etc. At the end of the designated time, partners return to their

story board rough drafts to discuss the recommended changes, review the questions, etc. Their next task is to refine and revise and prepare for their Pecha Kucha presentations.

In-class activity #3 Pecha Kucha presentations and evaluation

Both partners are responsible for the Pecha Kucha presentation. After all presentations are complete, individual consider which elements they consider relevant and they create sample lesson plans integrating those elements. In the rationale for each lesson plan, they identify the strategy or strategies they have incorporated, and explain their reasoning.

Summary

Flipped learning includes more than putting video-taped lectures online. The flipped learning environment shifts the priority from "covering" material to creating a deeper understanding of content. In turn, this requires the creation of in-class activities that are authentic and integrate higher order thinking tasks. This shift in focus is challenging, but essential as we move forward in the 21st century.

Boosting Motivation and Participativeness through Flipped Learning and Social Media Integration

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Keywords

Flipped Learning
Social Media
Active Learning
Motivation
Participation

Abstract

Traditional teaching methods undermine students' learning abilities by using a one size fits all technique. This defies the main purpose in education of bridging the gap between knowledge and its retention. Students have different learning styles and pace which renders language courses challenging for some and boring for other.
In the adoption of flipped learning and the principled integration of technology and social media, students are given the opportunity to reach their potential and achieve better understanding of the content covered in a course.
In this paper, a brief overview of flipping a language course, integrating social media, and following blooms taxonomy to motivate students to become more participative and to build a strong learning community will be outlined.

Introduction

Similar to the way printing press technology revolutionized education during the 15th century, current advances in computer science and the oversimplification of media usage brought a fairly new wave of online education, computer assisted tutoring and the use of technology in the increasingly nontraditional classrooms.

This new wave of online education as well as selective integration of available Internet content in courses had first started with MIT's OpenCourseWare (OCW) initiative in 2001, which enabled anyone interested in learning, an Ivy League education for free. Five years later, Salman Khan founded Khan Academy, which provided free online lectures to assist middle and high school students. These lectures became popular once his cousin, whom he was tutoring via videos, further shared the lectures with her friends who as a result found them to be very interesting and helpful.

Both initiatives pushed a number of institutions and individuals to share their knowledge online in the form of short videos for free. This inspired teachers to take advantage of this new technology, drew students' attachment to this new media and started a flipped classroom movement.

A Brief Introduction to Flipped Learning

In 2007, Jonathan Bergman and Aaron Sams, two chemistry teachers from Woodland Park High School in Colorado's Pike Peak, were striving to help absent students keep up with lessons when they thought about recording lessons and uploading them online for these students to watch at their own convenience. To their surprise, not only did the absent students watch the videos, even the ones who attended class used the videos to prepare for exams. As a result, students and teachers from all over the world started reaching out to them and thanking them for their initiative (Bergman and Sams, 2012, p 3, 4).

The experiment did not stop there as Sams observed that the time students mostly needed him was when they were doing homework not when he was delivering content (Bergman and Sams, 2012, p 4, 5). This Remarque was turned into a teaching model named the "Flipped Classroom 101" (Bergman and Sams, 2014) and developed into what is now known as Flipped Learning.

In a flipped classroom, students have the opportunity to watch a prepared lesson prior to class as many times as they need. By doing so, every student receives the opportunity to learn at his or her own pace without worrying about being embarrassed to ask a question. They are empowered by the available resources, which would enable them to pursue learning after they finish their course (Tucker, 2014).

The principle of the flipped classroom is that assigned homework would include lectures and restricted practice activities that are straightforward in comparison to practice work at school that students need more assistance with. Hence the availability of a video or materials to be watched or studied individually would help get students on similar starting points before they arrive in class the very next day. This approach gives students enough time to absorb the material and have follow-up questions (Tucker, 2014).

Kristal Kirsh, a high school math teacher at Segerstrom Fundamental High School, Santa Ana, clarifies in her story "Deeper Learning through a Student Centered Classroom" (Bergman and Sams, 2014, p39-54), that one of the key issues teachers face in their classrooms is the diversity in learning styles, abilities, likes and needs among their students. Every student comes to class with certain needs and expectations, which makes it difficult for teachers to attend to every single individual while being fair and covering the required curriculum. The flipped classroom allows for that, though.

Since teachers take on the role of a facilitator in this model, they have more time to observe their students in action and reflect on their learning process. (Bergman and Sams, 2014, 56)

In the article "The Flipped Classroom," Tucker also mentions that it is evident that the instructional videos that constitute the basis of the Flipped Classroom are only one of many facets of the success of this method and that they should be part of an extensive and well researched lesson plan and supporting materials. Class time in this case becomes a workshop where students use the knowledge they learned from their homework as a tool to enhance their learning, reinforce good learning and engage in collaborative activities. Through these in-class tasks and the questions students come armed with, they maximize their learning and benefit from the teacher's knowledge as well as their classmates' input (2014).

While discussing the advantages of the flipped classroom, it is indispensable to mention the role of active learning in this model which is described by Meyers and Jones (1993, p. 6) as the ability to provide students with opportunities to practice content and "meaningfully talk" about the topic tackled in the covered unit. In summary, the flipped classroom offers "interactive group learning activities inside the classroom and direct computer-based individual instruction outside of the classroom" (Ibrahim and Callaway, 2014).

As expressed in a number of blog posts and articles on the flipped classroom, this teaching model encourages the "guide on the side" rather than the "sage on the stage" approach, which has been the most common teaching practice. The former incites the learner to *seek* knowledge through inquiry-based learning and make an effort to acquire it rather than be spoon-fed. It also allows time to clear up misconceptions before they are practiced and applied incorrectly, which usually leads to fossilization.

Furthermore, John Bransford, Ann Brown, and Rodney Cocking point out in their book *How People Learn* the three major discoveries in the science of learning which are enhanced in the Flipped Model:

> *"To develop competence in an area of inquiry, students must: a) have a deep foundation of factual knowledge, b) understand facts and ideas in the context of a conceptual framework, and c) organize knowledge in ways that facilitate retrieval and application"* *(p. 16).*

Although the flipped classroom has received considerable amount of attention from teachers and researchers, it is still unclear as to what it exactly is, how it effects students' learning and whether it is useful or not.

In 24 case studies on students' acceptance of the flipped model and its effectiveness, Jacob Lowell Bishop concluded that almost all students liked the flipped classroom and preferred video lectures in comparison to in-class ones because it allowed for more practice time in class. The results in students' performances were promising, however, he stated that the studies were not enough (for lack of one or more elements of a complete study) to draw any conclusions. In an article by Clyde Freeman Herreid and Nancy A. Schiller, they discuss 13 benefits of the flipped classroom, seven of which are Kathleen Fulton's long advocated benefits of the flip such as giving students an opportunity to work at their own pace and to teachers to observe students doing what is considered homework in the traditional teaching style and how they interact with it. The other six benefits were reported by two hundred teachers who had adopted the model. These benefits included: students' ability to spend more time doing authentic research, doing hands-on experiments, catching up on missed lessons, being an intrinsic part of the learning process, enjoying classes more and promoting critical thinking.

In her book *Time for Learning*, Kathleen P. Fulton demonstrated why flipping the classroom could change education. One of her top ten reasons focuses on the effect of the flip on educators. Her argument is that since teaching is a 'solo practice,' the same way there are lucky students who have exceptionally talented teachers; there are others who have struggling ones and sharing knowledge online could help teachers and benefit struggling students (2014. P 71,72).

Adopting the flipped classroom model does not mean that the teacher will have less work to do or their job will become easier. On the contrary, according to a 6th grade teacher Andrea Smith, the effect it had on teachers was valuable as all of the teachers who adopted the flip went the extra mile to make the experience worthwhile and give it their best because putting together an instructional video was more than just a challenge but an art.

Rational Behind Using Flipped Learning and Social Media Integration in Teaching

I am addicted to watching videos on educational websites such as Linda, Ted and Coursera and I do a lot of reading on topics I am interested in online. I am also constantly checking my email and using my phone.

This love and dependency relationship I have with different media forms makes me think of how younger generations, who are usually my students, deal with the separation when they are in a class and the teacher does not allow the use of computers, tablets and cell phones.

How can they spend three hours of class time without checking their email, WhatsApp or Instagram? How can they spend the whole semester doing work on a book and getting all of their information either from it or their teacher?

Giving students the option of using phones as a dictionary, voice recorder for homework reminder memos, a camera to take pictures of grammar explanations on the board or just as a video recorder to tape teacher or classmates presenting were always possibilities I would offer my students at the beginning of the semester. These privileges were never taken advantage of.

I have also used online resources and videos before as supplement materials that I would email my students in case I felt that they were not all on the same page, that some did not understand a grammar point or needed help to improve on one of the four skills.

As a teacher trainer at an international language school, I have also seen and observed many teachers (mostly the ones uncomfortable presenting grammar) show YouTube videos of other teachers presenting a grammar lesson while students are taking notes, which in my opinion defies the purpose of coming to class as that is a task that could be completed on a student's own time.

Reflecting on my own struggles teaching grammar, achieving full-class participation, raising motivation, and helping students get their "aha moments", I thought of assigning my students grammar videos to watch for homework. Then, I would ensure that everyone understands the concept and engage in more activities and tasks to practice what they have learned. This was my first step toward adopting a raw form of flipped learning.

The majority of my students responded well the model and asked for more videos and out of class resources. This led to integrating social media –WhatsApp groups– to share the videos and start organic conversations among students. The class was encouraged to ask questions via the instant messaging application and create opportunity to practice the content studied.

This change in delving my course, was an efficient and rewarding forum to open up multiple Learning Styles routes for my students to achieve their language acquisition goals. Moreover, the use of interactive activities such as messaging, creation of video selfies and vlogs, blogging, collaboration group/pair work and scenario simulation games helped students move to higher levels within Bloom's hierarchy of learning.

Personal Reflection

The first day of class, I was not sure how my students were going to react to my decision to use the flipped classroom model with them. I was armed with tens of reasons why I needed them to do the core grammar work at home and watch other teachers' videos presenting the content instead of me modeling it in class. To my surprise, the sound of flipped, watch, grammar, more time for other activities and active learning all resonated with them pretty well. They simply agreed that it made sense and as long as I believed it was going to work, they did not doubt me. This only confirmed to me what Bergman and Sams describe as "flipping speaks the language of today's students". (2012, p 20)

For me, this was a great and promising beginning. My students kept surprising me by doing their homework and coming to class full of questions and energy. We had a clear routine. Before we started a unit, the students reviewed the grammar presentation pages in their student

book, watched the videos I assigned on the topic and did a few simple restricted practice activities. After they check their homework in pairs, we do free practice activities as a class along with work on presentation skills, pronunciation, idioms, personal readings and free writing to list a few.

This technique opened up most of the class time to focus on what, in my opinion, makes a difference in students' learning and application. In a traditional classroom, and even in the most communicative classes, so little time is left for practice activities and for students to choose what they would like to learn other than plain grammar.

In my opinion, the traditional model leads to more bookish and unnatural speech while the flipped classroom frees up time for students to practice important real life situations, dialogues and scenarios.

To quote one of my students from this semester on this method, "I feel that I'm learning more real English in this class."

The experience was not the same for all students. Even though the whole class had access to computers and the Internet, some of them did not have email accounts and were not accustomed to completing homework online. With my assistance, their classmates' support, and their motivation, determination, and willingness to learn, they easily caught up with the technology and ended up learning more than just English in this class (basic Microsoft Word and PowerPoint skills).

As for learning, the flipped classroom method allowed students to work at their own pace and challenge themselves to outperform. If I were to compare last semester to this one, I would say that both classes did well and learned most of what was planned for them. However, the students from this semester were empowered by techniques and strategies that helped them take control of their learning. By the end of last semester, quizzes and tests showed that students were comfortable with the knowledge they were presented with in class and that they could use the grammar assigned in their daily interactions. However, they relied on the teacher's explanations and guidance solely which delayed some "aha moments" and was frustrating for both advanced and lower level learners. In comparison, students from this semester were empowered by tools and strategies that facilitated their learning and gave them efficient amount of time to process grammar. Class time was then used to practice the learned form and to clarify any confusions and misunderstandings. The responsibility the students were given empowered them to go the extra mile.

Lastly, the fact that I was sending my students homework via email and using WhatsApp to check on them and answer their questions made them feel cared for and further allowed them to connect with me. They all felt that I love my job, performed it with dedication and provided them with a lot of my time which lead to their full engagement, high motivation and participativeness, and undivided attention in class.

Conclusion

With the flipped classroom method, teachers are able to perfect their craft by observing students' behavior and needs as well as offering their students an opportunity to use their factual and conceptual knowledge in class while guided and receiving feedback. This empowers them to reflect on their own learning process and be aware of any difficulties or weaknesses.
The flipped model offers the flexibility to learn anywhere and the possibility to catch up with classmates if a student struggles with a specific area or has missed a class.

All of which leads to better education, fulfilled teachers and successful learners.

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Flipped Classroom Combined with Team-based Learning in Engaging Students in the Classroom

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Abstract

The success of the flipped teaching depends on careful planning and execution of the learning material in engaging students outside the classroom, while also introducing content to encourage deeper learning during class time. Team-based learning (TBL) strategy combined with flipped teaching provides a highly structured environment that not only offers accountability for self-paced education, but also strengthens the learning through interactivity, problem-solving, group assessments, communication, and leadership skills. A step-by-step detail in the preparation for flipped teaching, combined with TBL and formative and summative assessments is addressed in this report. Suggested resources are based on students' responses and can be modified to fit the needs of the course content. Student perceptions are generally positive about the learning experience although they claim that this method demands more time.

Key words

Team-based learning, Group activity, Guided readings, Student-centered learning, Lecture video

Introduction

Flipped teaching is one of the many student-centered learning approaches that is embraced by educators in the recent years (Gilboy, 2015, Ryan et al., 2016, Wong et al., 2014). This teaching method is shown to improve student preparedness as well as the level of engagement during class (McLaughlin et al., 2014, O'Flaherty, 2015). It allows flexibility of blending the latest teaching technology as needed although it can still be effective when combining technology is not feasible. However, many educators at present are reluctant to incorporate flipped teaching into their classrooms due to two major concerns. One, faculty are concerned about the upfront time commitment that this strategy demands, at least in the initial stage of development, and secondly, they recognize that student evaluations could plummet since the students appear to believe that this strategy requires more time than the traditional lecture format (Khanova et al., 2015, Osborne et al., 2014). Indeed, for those students not accustomed to preparing ahead for class, flipped teaching may require modifications in their study habits and schedules and this frustration could be expressed in the form of resistance for this approach.

Even when faculty are convinced about the value of flipping the classroom, they may struggle with determining how best to use the classroom time that would have been devoted to lecture in a more traditional structure. Adapted team-based learning (TBL) offers a valuable tool to help teachers structure and pace that teaching time, just as other student-centered methodologies such as case-based learning and problem-based learning do. Student success in TBL requires students to be cooperative, have positive interdependence, promote each other's

learning and success, hold each other individually accountable to do their fair share of the work, and use interpersonal and small-group skills. Deep learning does not occur simply because students are working in groups, but it emerges from the careful, sequenced assignments and activities ─orchestrated by a teacher committed to student learning (Rawekar et al., 2013, Wiener et al, 2009). As described by Michaelsen (1992), the primary features of TBL include permanent and purposeful heterogeneous work groups, grading based on a combination of individual performance, group performance, and peer evaluation, and the majority of class time devoted to small group activities. TBL combined with flipped teaching creates a dynamic approach to engage students in the classroom and can help maximize student learning. Assessment of this methodology is crucial and should be done in systematic inquiries that explore whether the flipped material is being mastered.

Methods

The TBL study design consists of three phases:

Phase 1 (Preparation phase): Small groups of 4-6 students are formulated either prior to or during the first week of the semester using a number of criteria as described in Gopalan et al. (2013). Each group is allowed to choose a leader, a recorder, and a reporter early in the semester and students have the option of rotating these roles within their groups. The leader is expected to ensure that the group completes the out-of-class assignments, the recorder maintains attendance for the group and assumes the role of writing the answers for the group, and the reporter would be responsible to answer questions for the group. The remaining members in the group serve as participants whose role is to have all of the resources required to complete the assignment such as the laptop computer and the text book (Michaelson, 1992).

Phase 2 (Readiness Assurance Process): This phase deals with the delivery of the lecture content that is consistent with the learning objectives and/or learning outcomes. The content conveyance is in the form of instructor-producded lecture videos, guided readings, PowerPoint slides and a work sheet. Faculty may choose any of the learning resources that engage students although many claim that lecture video must be one of these resources. Lecture video production is less complicated today due to the wide variety of gadgets that are readily available. The data processing capability at fast speed to host these lecture videos on the course management systems has also improved significantly. One may select videos that are freely available on line as long as the content accuracy and the depth of the details match faculty members' expectation. In some situations, slight manipulation to the video may be required and there are many options for video editing as well. Although there are mixed responses, students often prefer instructor-developed videos to the on-line commercial videos.

Phase 3 (Assessment phase): An individual Readiness Assurance Test (iRAT) is assigned along with the lecture content for students to have it completed after reviewing the material and prior to the scheduled class session. iRAT is an online assessment that is graded automatically. The scores from this assessment are hidden until after all students have taken it to avoid students sharing their answers with other students. The assessment typically consists of five-questions that are released in a random fashion from a 10-15 question pool and the questions are written at the knowledge or comprehension level based on Bloom's taxonomy (Bloom et al., 1956).

The TBL session begins with a group discussion of the lecture content for the first five minutes. Students are constantly encouraged to ask questions on the topics that were not clear from the assigned resources but they seldom use this opportunity. On the other hand, the instructor addresses quiz questions that the students struggled with. Moreover, an additional 10 minutes of the class time are used to review the difficult topics prior to the team Readiness Assurance Test (tRAT). The tRAT consists of five higher order questions such as the application, analysis and evaluation categories. This process takes approximately 20 minutes. Once all of the groups have turned in their tRAT assessments, the instructor reviews each question and provide detailed immediate feedback. The entire TBL session lasts a total of 50 minutes.

It is important to limit the percentage point allocation for both iRAT and tRAT. iRAT scores reward students for being responsible in completing out-of-class assignments but this obligation allows students to use resources required to answer the quiz questions. Similarly, there may be some students who come unprepared for the in-class group assessment. Thus, assigning higher percentage points for the tRAT may reward the less-prepared students in the group. Besides iRAT and tRAT, students will be given individual exams which mostly determines their actual grade.

Peer evaluation is an important component of TBL. Members within each group evaluate their team members twice in the semester where the first evaluation is typically scheduled during the early part of the semester such as the third or fourth week of classes. The second and the last peer evaluation would be close to the end of the semester. Intervention of groups may be required based on the first peer evaluation although it is rather uncommon. Although students tend to provide generous peer evaluations, any major issues would be identified from the students in the team. The instructor may have had speculated the issue which is typically confirmed by the students via peer evaluation that helps to intervene and handle the matter appropriately. Although very rare, if a student is problematic, a one-on-one conversation and other appropriate measures would be required.

Discussion

Although most flipped teaching may involve some form of peer interaction, the flipped teaching with a recognized TBL format helps create a highly structured classroom environment. It is a student-centered active learning approach using peer teaching. It offers strategies that allow students to practice higher-level skills such as analysis and application for success. However, there are some challenges in this teaching approach. Active participation of all students during group work may not be the case in spite of all the best efforts as there will be some unmotivated students. Also, the large class size may hinder the success of this approach unless there are teaching assistants to support the instructor's efforts. Although this approach is meant to be an excellent teaching model, the instructor must be flexible to accommodate an unexpected situation. Student buy-in is yet another component to make this teaching strategy be successful. If an instructor is interested in testing this methodology for the first time, one caution is to implement the methodology slowly as planning the activities and assessments occur before class and it requires thorough planning and investment of time upfront. It is critical to be able to distinguish between where students need help and where they are able to learn on their own. The

flipped teaching combined with TBL is a powerful self-directed learning experience with adequate support that allows students to develop the skills of lifelong learning.

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FLIPPING THE CLASSROOM AND LESSONED LEARNED IN OCCUPATIONAL THERAPY EDUCATION

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Institutions of higher learning are facing the challenge of how to maintain academic rigor and provide innovative student-centered instruction in an increasingly global and complex world (McDonald, Lyons, Straker, Barnett, Schlumpf Cotton, Corcoran, 2014). Consequently, educators are transitioning to new learning models to meet this challenge in the 21st century college classroom. The *Flipped Classroom Model* (FCM) of instruction has gained increased popularity in occupational therapy education in the past couple decades because this pedagogy is thought to improve clinical reasoning, student engagement and self- directedness (Bello-Haas& Scudds, 2013; Gagnon, Gagnon, Desmartis, & Njoya, 2013; Gould, Sadera & McNary, 2015). The flipped classroom model refers to the practice of moving lectures out of the classroom and making the information available through web-based presentations or other online formats. Class time is utilized for group projects, assignments and other learning activities (Enfield, 2013, Francl, 2014, McLaughlin et al., 2013 & Strayer, 2012). In a flipped classroom the educator offers guidance and feedback as the learner actively participates in critical thinking, problem solving and skill application for new instructors accustomed to traditional teaching methods, flipping classes or integrating online learning activities into the curriculum can be challenging.

Most OT educators are hired based on the quantity and quality of clinical experience and not necessarily their innovative pedagogy skills. OT educators also tend to use the same or similar instructional strategies they experience as students. Subsequently, OT educators may be familiar with more traditional face to face teaching styles. Research has shown successful transition to FCM approach is more likely when educators 1) evaluate their readiness to teach a flipped course 2) evaluate learner readiness for participation in a flipped environment and 3) develop a pedagogical plan for transitioning to a flipped class that aligns course objectives and learner needs with institutional goals (Babb, Stewart & Johnson, 2010; Bayliss & Warden, 2011; Beale, Tarwater & Lee, 2014; Boucher, Robertson, Wainner & Sanders, 2013).

Historically, the occupational therapy education programs where the authors are employed utilized traditional methods for teaching and learning in which the instruction is teacher-centered and the learner is a passive recipient. Recent changes to the methods of instruction in the occupational therapy assistant (OTA) program included the adoption of modern teaching and learning method, specifically flipped classroom instruction. This presentation shared experiences of an Assistant Professor in the OTA program who flipped a clinical conditions course. The authors discussed resources to assess faculty and learner readiness for online learning, lessons learned and practical evidence-based strategies for effective transition. During the presentation at the Flipped Learning in Higher Education conference at the University of Northern Colorado in Greeley Colorado, participants engaged in small group activities designed to facilitate use of best practices for flipping classes. Additionally participants evaluated and problem-solved how they might utilize these teaching and learning strategies in their own education programs.

Flipped classroom instruction is grounded in *Self-Directed Learning Theory (SDLT)*. SDLT was initially developed by Houle, Trough and other pioneering adult educator/researchers in the 1970's. This adult learning theory posits learners become more self-directed in their learning as they mature. Several underlying principles relevant to blended learning and the flipped classroom are: 1) adults accept responsibility for proactive learning such as locating resources 2) adult educators act as facilitators of student learning through creating a venue for exchange of ideas and information and 3) learning can take place both inside and outside the classroom, through learning technologies that allow unlimited access

Flipping the Course

Clinical Conditions is a course providing basic content knowledge about medical condition, their underlying pathologies and clinical manifestations that lead to disabilities. In the traditional course, students met once per week for 8 weeks for 5 hours per session. Students were given 30 minutes at the start of sessions 2-8 to complete a Blackboard based quiz focused on assigned readings for the session. Following completion of the quiz, students were provided answer keys and worked in groups of 3-4 to review the test. A whole class review was also conducted to target or clarify test items a majority of students found challenging. The review process usually lasted 20- 30 minutes and was followed by a 90 minute lecture presented by the professor. For the remainder of each session, students analyzed diagnosis specific paper based case studies to reinforce reading and lecture content. The professor facilitated the small group discussions to promote learner participation. During the last hour of each session, students engaged in whole class discussions of group summaries.

In the flipped format, all lectures were posted on Blackboard at the start of the semester. Web-based diagnosis specific case studies were embedded into the course. Students were expected to read all assigned materials and view case studies prior to class. The initial 45- 60 minutes of the flipped course remained unchanged from the traditional format in which quizzes and review sessions were conducted. In lieu of a 90 minute lecture after the quizzes, the professor opened the floor up for 30- 45 minutes to address student questions and provide points of emphasis related to pre-class work. Students then worked in small groups to analyze web-based case studies and posted a summary of their analysis onto the course discussion board for peer feedback. To ensure high quality posts, the professor facilitated small group discussions and provided feedback to each group before permitting students to post summary analysis. Students were able to go home after posting a high quality summary analysis and submitting a substantive response to at least one other group's summary.

Faculty Lessons Learned

- 23 of the 26 students in the flipped course reported retaining more information in the flipped course when compared to the traditional courses completed in the same semester
- Have a clear rationale for flipping your course and communicate that rational to your students early to increase student support for this form of instruction
- Transitioning is time intensive.
- Faculty expectations and students responsibility in the flipped class must be clear and stated in all course material

- Be flexible and willing to modify aspects of the flipped course that are not effective

Students Lessons Learned

- Good time management is key to successful participation in a flipped class
- Flipped classes require increased student initiative and responsibility for one's own learning
- Frequent feedback and support should, be solicited from the instructor and IT
- Study habits may need to change to increase success in the flipped classroom

Instructional Technology Lessons Learned

- Collaboration between instructor, students and IT should occur early in the transition process
- Technology should, be reliable such that the learning process is enhanced and not hindered by its use
- Faculty and students have varied technological skills and may require unique tech support

Assessing Faculty Readiness for Flipping Classes

- Faculty Self-Assessment: Preparing for Online Teaching from Penn State University is free to use under the Creative Commons license

  https://weblearning.psu.edu/FacultySelfAssessment/#
- Faculty Online Teaching Readiness Survey from the University of Toledo, twenty-question self-scoring survey

  http://www.utdl.edu/lv/assessments/faculty_readiness.html

Assessing Learner Readiness for Flipped Classes

- Online Learning Readiness Questionnaire

  http://www.unc.edu/tlim/ser/
- Student Self-Assessment: Preparing for Online Learning

  https://pennstate.qualtrics.com/jfe/form/SV_7QCNUPsyH9f012B
- Self-Directed Learning Readiness Scale

  http://www.lpasdlrs.com/

Institutional Support

Knowing your team and knowing your relationships gives you the tools and connections to make your plan happen within your institution.

The Team	The Relationships

Instructional designer	Provost
Educational instruction support	Dean
Support technologists	Lab techs
	Budget manager
	Accreditation steering committee

Best Practices

- Make the transition interdisciplinary
- Start by flipping selected modules or class sessions
- Participate in your course in the student role
- Allow colleagues to engage in a navigational trial run
- Build in time for classroom and online management:
- Strategically embed formative assessments to gauge learner progress

  - Blogs or discussion boards to post questions soliciting learner reactions to instruction
  - Muddy Point Technique
  - Critical Incident Questionnaire (CIQ)

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Creating, Building, and Sustaining Community IN and OUT of the Flipped Classroom

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This article explores how one university professor's course, Introduction to English Secondary Methods became "unflipped" in a technologically advanced Interactive Learning Space classroom. Learn what the professor uncovered and discovered about to how to create, build, and sustain a community of learners and professionals in the course. The professor's example is extended by illustrating key pedagogical strategies and practices that were successful and that can be adapted by any higher education practitioner in a flipped higher education classroom to create community.

Keywords: Flipped Classroom, Learner Culture, Learning Community, Interactive Learning Space, Pedagogical Practices

Introduction

As a professor of teacher education students and a former K-12 teacher and administrator, I am well-versed in best instructional practices in a traditional classroom. Ball State University, a public mid-size and Midwestern university, is progressively adopting more and more technologies. In fact, Ball State was recently named the number one unwired campus in the nation by Intel Corporation (Special Education and Technology, 2016). In addition, Ball State is an Adobe test case school supporting an emerging media lab, has acquisition rights to Blue Mars which allows students to simulate cultural heritage exercises using Avatars, hosts and adaptive and assistive technology lab for students with disabilities on campus and for students studying special education.

Another new initiative is the adoption of the Interactive Learning Spaces (ILS) adopted and run by the Office of Educational Excellence. An Interactive Learning Space is both a physical and virtual space where the goal is to "support pedagogy that moves away from the traditional lecture basic course to an engaged learning course" (Interactive Learning Space Initiative, 2016). Steelcase is one company that designs and trains institutions on how to use space and technology differently to teach, design, train, or work differently. It's a space that houses ergonomic rolling chairs with desk space and cup holders and storage underneath and moveable tables for easy collaboration and small or large group interaction, whiteboards, dry erase boards, multiple screens including Apple TV for projection and showcasing from computers, iPads, or iPhones. There are only a handful of universities in the country who utilize these spaces besides Ball State University including the Massachusetts Institute of Technology (MIT), University of Michigan, and the University of Iowa.

Literature

Lev Vygotsy's seminal theory, the Zone of Proximal Development (ZPD), is a simple and critical tenet in teacher design and delivery. The Zone of Proximal Development is the difference between what a learner can do without any assistance and what the learner can do with assistance. Jerome Bruner extended Vygotsy's theory by suggesting that we not only

acknowledge and identify the gap, but also access the tools that can be used to assist the learner and then scaffold the learning gap (Chaiklin, 2003, pp. 39-64). The Interactive Learning Space is such a tool that can be used to scaffold and bridge the learner's gap.

I am an educator, who for 25 years, whether I am teaching in K-12, community education, or in higher education, has designed my curriculum around collaboration and technology. No question that the design and function of the Interactive Learning Space creates more opportunities for the integration of collaboration and technology use.

For example, the room is constructed in such a way that students must face each other and interact. The rolling chairs make it easy for students to move quickly and quietly into collaborative groups, and the technology access allows content to be delivered in multi modal ways and more quickly. I love that my students are not sitting in "corn rows" or in a lecture hall. They are forced to make eye contact with me and with each other. They can easily partner up or work in a group. They have space to use their laptops, iPads, and iPhones and hook them up to large screens. As there is no "teacher station" in an ILS classroom, I sit and stand with my students in the open concept space meaning I interact with them more as well.

I taught my Introduction to English Secondary Methods course in a traditional classroom with cornrows, a screen, and a digital projector with one hook up at the front of the classroom for three years prior to using an ILS classroom. I know first hand that the physical space and the use of technologies in the ILS classroom can and has helped to expedite and bridge my students' Zone of Proximal Development learning gaps.

For example, any content that is virtual can be seen, heard, and experienced faster as the technology access in the ILS rooms is state of the art. Students can use multiple devices to participate and illustrate what they have written and created as they don't have to "transfer" content from one device to another or read from someone else's paper or device. For instance, they can show immediately the content on their device or paper on a document camera that projects to three or four screens around the room OR they can use the VGA adapters located within arm's reach to hook up their own device and also project.

And students can group and ungroup faster as the physical act of moving furniture around to form different variations of collaborative work groups or presentation modules is easier. Because there is no "front" of a classroom and because students can easily rotate their chairs to orient anywhere, students feel comfortable "standing and delivering" their presentations or sharing information from their location.

Because my students and I have access and get to practice on these platforms, we are creating and delivering more multimodal presentations and critical content as supported by the upper tier of Bloom's taxonomy (Schrock, 2015, para. 1-2). I read in my students' reflective essays and see in their fieldwork, the integration of these collaborative, critical, and creative practices.

The Problem

The first year I taught in the ILS classroom, I immersed myself, my students, and my teaching in these new technologies and in this new space. I had no doubt that the technology was assisting me in supporting a flipped classroom environment. But I had a nagging question and concern:

- With a flexible learning space and the integration of diverse and sexy technologies and media based content, how do I create and maintain a community of learners who will fully execute and benefit from the Flipped Classroom which encourages not only the flexible environment, intentional content, a professional educator, but also an established learning culture (Flip Learning, para. 5-8, 2014)?

The learning culture was my particular and paramount concern. Our English education program at Ball State University includes only four faculty members and is 140 students strong. The program is housed in the Department of English and students take non-English education methods courses such as Curriculum Development, Multicultural Literature, Foundations of Education, Practicum, and Student Teaching through the Teachers College, which serves Elementary education and other secondary education majors. The English department at my university has smartly advocated for keeping our English education majors housed with other English Studies, Literature, and Creative Writing majors, as we want our students to be both content and pedagogically strong.

Our class sizes in all English classes remain under 25, most are only 15 to 20 students and are taught by a professor, not a graduate assistant. Our students take multiple courses with their English education faculty and with their English department faculty. My students may have me for an English education class one semester and then for an immersive Creative Writing in the Community or a Rethinking Children's and Young Adult Literature Course the next.

We are a tight knit faculty and group. Creating and maintaining a community is key in our department. We have a serious commitment to Public Relations with our Alumni, Foundation Board, and larger community. Our students have a reputation for excellence and are typically hired before they graduate. Schools seek our students for employment as our program is rigorous not only because of the focus on BOTH content and pedagogy, but also the overall GPA requirement of a grade B or better.

While this technology savvy based Flipped classroom is more flexible, it is not physically housed in the English department's building. I worried that students would be separated from the offices they might need to access and to the community of students who socialize and study in our café and study areas. And with the emphasis on using more screens, would students and would I come to hide behind and rely too much on those screens instead of each other? Was I creating a community that would remain a community throughout the remainder of their four years in the program and at this university?

The short answer to that was no, I was not. I know this because I didn't see students walking out together talking. I saw them walking out remaining with their heads focused down on their devices. I didn't see students gathering to meet in the hallways of this building or in the English department building. I saw a decline in the number of students who were gathering to meet for

Coffee Talks (informal study sessions) with the course teaching assistant. I didn't see students talking with one another before class because they were too busy setting up devices. In this course, we map out their four-year plan, and I didn't see that students were signing up for classes together. In the past, on their own, students would choose to remain together as a small cohort until they graduate. Our program is difficult. We typically only graduate half of our students who start in our program. The double major of English and education, GPA requirement, and intensive fieldwork is often too much for students. We have witnessed that students who remain together in classes and collaborate on projects and support each other are often the most successful. I couldn't lose that component if I wanted to keep the program numbers strong.

I knew that my curriculum and teaching design (my readings, my activities, my framework) worked. I have received numerous university-wide teaching and design awards for my immersive designs and teaching. While I didn't want to divorce myself from using the technology, I did want to find a way to get back to that social and intimate community I had once observed. I almost elected to not teach in the ILS space again because of these concerns, however, I had come to rely on being able to get through material faster with the technology so I knew I had to find a way to make it work. I needed to regain the camaraderie and learning community I once had in my small, tech-free classroom WITH this new space and technology.

I had to learn to use the technology and the space to create a successful learning culture. Of all the pillars in the Flipped learning framework, culture, to me, is the most critical. Without a learning culture established, how can we ensure the quality of relevant and intentional content, a flexible environment, or a professional educator?

The Redesign and Implications

I decided that for this last academic year, 2015/2016, I had to redesign my course to account for this lost pillar of the Flipped Classroom framework, Learning Culture. This technology based room with its unique space, promises faculty at our university that they will learn how to flip their course and remain a flipped educator. But, it was actually "unflipping" my course and my teaching. A three-legged chair doesn't sit well. I had to first identify what was missing. Seeking answers to the following questions helped to guide my redesign:

- How could I ensure that students who are first or second semester freshman and often new to the technologies at the university and in the ILS space were still learning and practicing those technologies, but also engaging and learning with and from their peers in the course?
- How could I encourage students to come to me to seek feedback on assignments or projects with either myself or the course undergraduate teaching assistant or with each other?
- How could I continue to take a pulse (formative assessment) as to what students are thinking about and concerned about in the course, and if teacher education was the right career path for these students?
- How could I create an informal opportunity for students to gather outside of class to collaborate on homework and projects?

In seeking the answers to those questions, I learned that in order to *completely and fully* flip my classroom by creating community, *I* had to communicate differently with my students. If *I* learned to communicate differently, then *they* would communicate differently. I set the tone. I had to model and allow them to practice.

It's important to first share with you what I was already doing prior to the redesign to build community for my students and to provide some information on how the course operated. For every course day, there were a series of required readings, required guided annotations or reader responses, and an activity, which could be completed individually or with a partner or small group from the course.

I begin each course session with a video (either presented by myself or students), a think and ink writing exercise, a small group discussion of the annotations, a large group collaborations of synthesis of ideas generated in the small groups, and a partner or small group extension of the activity assigned, and a final writing reflection to allow for individual evaluation. Students use the technology in the room to present ideas or to support ideas or topics during their small group and large group sessions.

Students show me their completed annotations at the start of each course session for a daily completion and participation grade. Students can seek feedback on drafts of major assignments by loading those drafts onto our course Google Drive site where either the course assistant or I would give them feedback to help them improve the document before it was officially submitted. Students turn in the final drafts of their work onto the Blackboard site.

At the start of each semester, I spend the second full day of the course teaching students how to use email and Outlook including creating folders, Blackboard, Facebook, Google Docs, and the university website Student Banner system, which is critical for registration, general information, and grades. I show them how to add their email, Blackboard, Facebook, and Google Drive to their smart devices and required laptops so they can instantly access that information.

I bring in senior students who have experience and set up a lab experience so students receive one-on-one help as I talk them through each tool. Some of my colleagues think this is a waste of an instructional day. I say it isn't. They don't learn this in their orientation, and they often won't seek help or don't know where to seek help. So, I am the "someone" who shows them, and I am the first instructor in the major they have declared. Their other courses are large university core classes. I believe it makes students more productive, and I know that answer fewer emails asking how or why to do something. This day allows the students to get to know older students in the program and to help each other during this lab set up and exercise in technology. And they are more willing after to ask each other how to do something, continuing to interact and build their technology skill set.

Final ways I work to build community is to tell students they can do their homework together. I encourage them to get together to talk about the required reading and complete their annotations/homework together. Every two weeks, I take a pulse to see what students are thinking and feeling by asking them to complete a learning strategy journal that they turn in only to me where they can tell me about highlights in their learning or activities the last two weeks,

UGH moments they have experienced the last two weeks where the readings, activities, or learning was frustrating for them, and strategies we have learned that they think would translate into their future secondary classrooms.

After identifying what was missing, I had to decide what to add or extend to my already good practices to ensure that a learning culture was established in this tech based Flipped Classroom. The strategies I chose were: What's due? Recap Emails, a Facebook Page, and Preservice Teacher Blogs. Below find a brief description of each strategy along with its successful implication of the practice in creating community in my flipped higher education classroom *while* maintaining our consistent use of technology.

What's due?: In higher education, students are expected to check their course schedules to determine what is due and when. However, just three to six months ago, my freshman students were high school students being told explicitly what was due. I have always believed that students need more of a transition from the secondary setting to the higher education setting so I decided to take this task on as it would provide me an opportunity to communicate with my students outside of the class session and was more personal then having them examine the course schedule. And, selfishly, I thought if I was more explicit, I could also get them to complete my homework first. This email regarding what's due initially started out as a way to communicate with my students outside of class regarding homework, but then I also added a recap of the course session, highlighting key moments and issues or topics raised. The following information appears on my current syllabus:

> What's due? Emails
> In addition to the Course Schedule, after every class session, you can also expect a "What's due?" email from me where I will recap highlights of our class session and clarify what is due for the next class session. As well, as we approach mid-term, I will give you a heads-up on what is coming each week so you can work or plan ahead. Check your BSU email daily (you can check it on your phone!) so you can read these. Make sure you keep your email communications from me in your Outlook folder titled ENG150 so you can archive these and look them up by date as needed. The course schedule is also always available on our Blackboard site (Jones, What's due? Emails, 2015/2016).

While, yes, this took a little extra time, I found that 1.) I was answering fewer emails asking for clarification about what was due; 2.) students would email me back with a question about the topics or issues recapped or comment on how much they had enjoyed this topic or that activity; and 3.) it kept me in touch with students outside of class. They knew I was "there" for them, and that I was serious about them preparing their work for the next class.

I did see an improvement in overall grades and more students coming to class with their homework finished. I had an overwhelming positive response on my student evaluations noting how much they liked having this additional reminder. Again, several colleagues let me know that they thought this practice was too much "hand holding," but I enjoyed sitting down and crafting those recaps and it was simple to copy and paste from my schedule. This act only took me five to ten minutes, yet I had more students completing homework and doing it well.

And because they all received the same email, they could clearly and more productively use that as their agenda the next course day as we worked down the list. And finally I would hear conversations as they entered class about, for example, item number four on the list being hard or interesting so they had a frame of reference for not only organization, but also for peer to peer communication. And again, it was the peer to peer communication and communication with me that I needed to grow and improve to create a learning culture.

Blogs: More and more public school teachers are being expected to use delivery systems like Blackboard or Moodle or to create their own websites as ways to communicate with both students and parents. Several of the teachers that work at the school the class visits for their field experiences have their own blogs to highlight events in their classroom and community.

Teachers post and share their blogs and sites on the Teaching Village Facebook page where we engage with those teachers. It occurred to that by having my students write their own blogs, they could 1.) learn to practice a new and important genre of professional writing; 2.) learn how to craft a piece of writing for a professional and authentic audience; and 3.) have another multimodal way to share their annotations or responses with me and with their classmates. The following appears on my course syllabus:

> Blog Posts:
> Over the course of the semester you will be assigned several pieces of reading and a writing annotations that will be discussed in class. You are expected to be an avid participant in classroom discussions as they all will affect your growth and development throughout this course, and the potential to be converted into a blog post.
>
> Blog posts are worth 15 points each, and as such they should be constructed with great time and care. Your posts can focus on an array of different subject; however, I do ask that you focus on topics that we have discussed in the classroom, topics that focus on your development as an educator, or strategies you plan to integrate into the classroom.
>
> You can use whatever social media website that best suits you to create your blog; however, the blog must be visible to myself, the teaching assistant, and fellow classmates to ensure full points and constructive feedback. Posts are to be at a minimum 250 words, written in a professional tone, and posted to the internal class Facebook before class time on the day that they are due (Jones, Blog Posts, 2015/2016)

This exercise proved to be very beneficial in creating community. Students wrote very poignantly and seriously about issues and topics, and students responded with praise, concern, questions, connections: community building. As well, I would hear them talking with each other before class about reading each other's blog posts.

I think the most interesting community building I witnessed with this was that the quiet students, the ones who don't volunteer to speak up or out often enough in small or large groups were heard and students responded to them, and then I saw them participating more in class. They admitted

in their journals (which only I read) that they felt more confidence with their ideas after having peer validation.

Students often wrote deeply about their fears of becoming teachers or their own negative experiences with teachers who had not exercised best practices, and students would commiserate and continue the conversation in class. A blog is a very personal space for narrative writing, and students really got to know each other even more by reading each other's blogs. And I ended up assigning fewer journals because students were answering the questions I posed in those journals in their blogs.

Facebook: In the course, we spend a full school day with one school and its English/language arts department. Students have the opportunity to observe teachers and classrooms, eat lunch with students, tour the building, visit extra curricular activities after school, and talk with teachers.

I wanted students to be in constant communication with those teachers so as they were reading about how to teach and thinking about their own future practice, they would have "real" teachers to immediately address those questions to. The best space to keep the conversation going has been a designated Facebook page for those teachers and for my students called "The Teaching Village." Every week or two, students would be asked to pose a question about what they read, saw, or discussed in class or post a response they had derived at on a philosophical idea such as how to assess student writing. The teachers then could either answer those questions or help students understand what was right or problematic about, for example, their synthesis of how to assess student writing. Students took their audience, a group of professional teachers, seriously, and I had the advantage of other instructors helping support the intentional content I was delivering.

For the redesign, I opted to create an internal Facebook page just for the students in this class where they could ask each other questions about the course or anything university related, vent, laugh, share interesting teacher memes or videos. I made it clear to students that this was their space and after I created it, I turned the administration of that Facebook page over to two of the students and removed myself as an administrator of the site. I asked them to take a group photo to add and to name it. I did remain in the group in case there was a question I could answer.

I told students they could name the site, add images to it, and use the site for whatever communications they wanted: meet up to do homework, ask questions about homework, ask questions or talk about the program or Ball State in general, or make announcements about community or service events that were near and dear to them.

At the end of class, I have always verbally encouraged students to consider finding a partner or group with whom to complete their homework, but now I could encourage them to use the Facebook page to help make these arrangements. It worked. Students would post items like "I'm headed to Bracken from 12-2. Anyone want to hang and work on this Say Something activity together?" Or, "I know Mr. S said on the Teaching Village to not try to grade grammar and mechanics on a paper, but that's not what Kelly Gallaher recommends in the reading Dr. J

assigned. Who is right?" Or, they would post things like, "Hey, does anyone know when the EDPSY paper is due? Anyone else Waite's class?"

Once the page was in motion and being used, I did ask them to use their Facebook page to share their blogs and course required portfolio development and to ask each other for help or feedback. They ended up using the Facebook page more for this kind of peer review and work shopping than they did the designated professional learning communities I tried to develop on their Google Docs. The advantage was that they were seeking feedback not just from me, but from each other.

A goal I have always had in training professional practicing teachers is to get them to collaborate. I consulted with schools all over the state of Indiana for seven years and one of the most significant problems was that teachers weren't sharing information or responsibilities regarding curriculum development and assessment. Teaching shouldn't be an isolating professional act, but an effort of a team and department to deliver the best practices to their secondary students.

Summary

As I delivered my redesign that first semester, I grew to understand that the other three pillars: Flexible Environment, Intentional Content, and Professional Educator also became more visible and defined. For example, with students, we negotiated the schedule. Students often wanted to work longer in their small groups to reach synthesis on a topic, and I allowed it because the conversations weren't stalled, but productive. I allowed them to use large whiteboards and sticky notes to create graphics of ideas instead of just the technology tools like Padlet or Creately. As they blogged or posted questions to each other on the Facebook page, I saw deficits in the reading and deleted some readings and added ones that addressed their concerns. Finally, I saw them take this idea of audience seriously. They communicated on the professional Teaching Village page differently with teachers, than they did on their internal course Facebook page. Over the course of the semester, I read their blog posts transition from a secondary student or a receiver of knowledge to a more mature preservice teacher metacognitively thinking about how to deliver that knowledge. I believe those three pillars strengthened because without a learning culture, a learning community, those pillars had no foundation to stand upon.

After two semesters, I am happy to report that I uncovered and discovered how to create, maintain, and sustain a learning culture in my Flipped higher education classroom. Both semesters, students were hanging out more in the classroom and in the hallways before and after class talking with each other. So much so, that I ended up just adding fifteen minutes to my schedule after class to allow for these continued conversations that lingered. I often had to kick students out as the next class had to get in to get set up.

According to the Facebook page, students were meeting more outside of class on their own accord. During our four-year plan and registration period, students signed up for classes together. And, students continue to keep their Facebook pages going. Even from the first semester of 2015/2016, students are still posting young adult book recommendations, a YouTube video or Ted talk they just saw that reminds them of a reading or topic in class, or inquiries about

events or classes on campus. They still use this space to learn from each other, communicate and engage with other.   They are still emailing me sharing resources or asking questions.

In the seminal nonfiction literary essay, "The Opening of the Womb of the World," John Hales (2002) discusses his experiential experience with a group of students who became a community after seeing and experiencing something extra ordinary outside of the classroom and how he strives to continue to create that kind of community in his courses. He explains this rare phenomena of community in course or classroom as a time "when individuals—some shy or unsure; others defensive, contentious, or simply angry—meld into a community, begin moving toward shared insights derived from the group's sincere acceptance of individual perspectives, understanding the value of each person's experience in life or in reading, for a brief moment absorbing even me, their teacher, into the indiscriminate whole the class has become" (p. 33).

We know that being a teacher requires being a learner. And Paolo Friere (1988), a Brazilian literacy activist whose readings are critical in our study of English education has a beautiful quote that reminds us, "I cannot be a teacher without exposing who I am" (p. 87). In my redesign, I invited students to communicate more with me and with each other and to expose who they were and by doing so, students discovered how they intersect and connect with one another and formed their own learning culture.

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EXPLORATORY IMPLEMENTATION OF FLIPPED CLASSROOM PRACTICES ON LIBRARY INSTRUCTION

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In this exploratory research, library faculty collaborated with teaching faculty to provide library instruction to students in two sections of the same course. Students received either traditional library instruction or instruction through the use of videos in a flipped classroom environment. While both sections came to the library for research, one section received a 30 minute overview of research and the resources available while the second section was allotted the full class period to utilize the resources as they were instructed to view the videos prior to arrival. A survey was administered to both sections and it was determined that both sections showed an increase in comfort with use of the library resources. Additionally, all students showed success in the brief assignment utilized in the course pertaining to the locating of scholarly journal articles.

Key words: Exploratory research, Flipped classroom, library instruction

General library instruction sessions have changed over the last several decades. Common today are varying degrees of "one-shot" general sessions to continuation sessions that occur at various points through the research process (Arnold-Garza, 2014). While library faculty have worked to create detailed outlines, ensuring their instruction session covers all of the necessary information in a logical fashion, the arrival of online tutorials has provided alternate means in the way library instruction can be provided. In this study, two sections of the same Education course were used with two differing deliveries of instruction – traditional "show and tell" and a flipped session with embedded videos into Desire 2 Learn (D2L), the university's content management system.

Literature

The idea of providing students with a variety of resources (in addition to the classroom teacher themselves) has been gaining steam. Plunkett (2014) cited that in 2005, Salman Khan stumbled upon the idea when he used YouTube videos with his cousins to assist them virtually with their math and science curriculum. As many teachers tend to view themselves as the basis of knowledge in their field of study, lecture and notetaking have proven to be the means of learning in many K-12 classrooms, as well as in the area of higher education. As learning moves to student-centered, the use of flipped instruction allows teachers and instructors to provide more one-on-one instruction to students. Bergmann & Sams (2012) explore how "flipping the classroom establishes a framework that ensures students receive a personalized education tailored to their individual needs" (p.6).

When looking historically at undergraduate classes, large class size is typical (MacGregor, Cooper, Smith, & Robinson, 2000) and in 2016, we see class size increasing in higher education. As enrollment continues to grow and funding remains flat ~~in funding~~, larger classes and less course offerings becomes an issue in higher education (Toth & Montagna, 2002).

This exemplifies the need for innovative means of delivering content if instructors are to ensure student understanding.

When using a flipped approach to learning, "what is normally done in class and what is normally done as homework is switched or flipped" (Herreid & Schiller, 2013, p.62). Flipping the classroom is driving changes to traditional instruction. The days of standing in front of students, expecting them to take copious notes, while the teacher or instructor shares content in a lecture format, are moving to the past. Instead, students are engaged outside the classroom via a video, recorded lecture, or other means of obtaining the information while class time is used for hands-on experience. This has proven successful across many disciplines, including library instruction.

All types of libraries struggling with reaching students in the proper fashion for their information needs. At Spartanburg Community College, instruction sessions have reached the point where the demand for library assistance exceeds the availability of librarians (Stiwinter, 2013). "One-shot" library instruction sessions are common in institutions of higher learning and with the increase in class size; they are proving to be a challenge (due to finding space large enough for auditorium sized classes). At Lakeside Upper School in Seattle, WA they began looking into flipping their orientation for students while utilizing new technology, such as *PollEverywhere.com*, to engage their students (Hershey & Belcher, 2013-14). By including videos and technology that their students are familiar with, schools are seeing success in not only providing sufficient library information, but also developing an interest in libraries and their services.

Methodology

This exploratory research was conducted in two sections (taught by the same professor) of an early childhood education course based upon formal and informal assessment. The course instructor, an Assistant Professor within the Elementary Education/ Early Childhood Department, developed an assignment in which students needed to secure three scholarly articles based upon a predetermined topic. The role of the researchers was to provide library instruction on the use of library databases and resources. The research question for this project asked –

How does providing students with a flipped classroom approach improve their success in locating library materials?

The study sample included two courses with a total of 50 participants. Each session was 75 minutes in length. Section 01 received traditional library instruction with the Education Librarian providing a 30 minute overview of the resources available and how to access these resources followed by 45 minutes of work time. Section 02 participated in the flipped instruction and used the full 75 minutes of class time to work independently as both the Education Librarian and professor offered individual assistance. As participation was voluntary, all proper IRB procedures were followed and appropriate disclosure provided.

Following each library session, students participating in the study were given a survey to determine their comfort using electronic library sources prior to the library instruction or videos and their perception following the library session (see *Appendix A*). The survey asked general questions (number of previous library sessions attended, comfort in terms of use of library resources, and areas in need of more training or instruction). As this research is exploratory in nature, percentages were calculated to give the researchers a perception of general success.

Additionally, qualitative data was collected through the use of an open-ended comments section. Fifteen percent of participants provided written comments, which included a mix of appreciation for both the instruction and videos and additional questions on citations, locating full-text articles, and access of databases

General Findings

In both sections, the survey data showed improved knowledge of library resources. All students who viewed themselves as novice prior to the instruction moved up to either beginner or intermediate in the rankings of their abilities. While over 65% of students participating in this research had attended previous library instruction sessions, there was still a rise in all participates with regard to their comfort level in using library materials.

Anecdotally, all feedback was positive in nature with 15% of the participants in the flipped instruction indicating their preference for the online videos. Students participating in the traditional instruction noted the information was helpful with a few follow-up questions being posted in the comment section.

Future Implementation

As the researchers continue to develop best practices in flipping library instruction, the need to address assessment has arisen. Boles et al. (2014) pose the important question in the flipped environment, how do we ensure that our students actually watch the instruction video? The use of quizzes or short open-ended questions is a means to determine if students did in fact, view the videos. At Slippery Rock University, D2L is the online content management system used in teaching distance education. A quiz feature is part of D2L, so working with course instructors, the researchers could upload and implement a graded quiz with student in the traditional instructions session completing an in-class questionnaire to earn the same points, ensuring consistency in points available to both sections of the course.

Plans for future implementation are being developed for the 2016-2017 academic school year. Tentatively, the researchers intend to work with a professor in the English Department who will be teaching three sections of ENGL 102, Critical Writing. Discussions are planned with the teaching faculty member during the summer months.

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STUDENT LIBRARY INSTRUCTION SURVEY

The purpose of this survey is to determine the effectiveness of the library instruction
session you have attended for this class.
Please complete this survey and return it to your professor.
We appreciate your cooperation!

1. **For what class was the library instruction held?**_____

2. **Status (please select one)**:
a. Freshman_____   b. Sophomore_____   c. Junior_____   d. Senior_____
e. Graduate_____   f. Other_____

3. Was this the first library instruction session you've attended?
 a.   Yes_____ b. No_____   c. If no, how many sessions?_____

4. **Prior to coming to this library session, how would you have ranked your knowledge of doing research in a library?**
   a.   Novice____   b. Beginner_____   c. Intermediate_____   d. Advanced_____

5. **After having attended this library session, how would you rank your knowledge of doing research in a library?**
   a.   Novice____   b. Beginner_____   c. Intermediate____   d. Advanced_____

6. **After attending the instruction session, where are you still having problems in the library? (Check all that apply).**
a. Knowing where to get help in the library_____
b. Understanding how to construct a search when doing research_____
c. Finding books related to your topic_____
d. Finding articles related to your topic_____
e. Using electronic databases to locate articles____
f. Obtaining library materials not owned by SRU_____
g. I am not having any trouble with the library_____

COMMENTS:_____

_____

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_____

(Please continue comments on the other side if necessary)

STUDENT ONLINE LIBRARY INSTRUCTION SURVEY

The purpose of this survey is to determine the effectiveness of the library instruction
sessions you viewed for this class.
Please complete this survey and return it to your professor.
We appreciate your cooperation!

2. **For what class was the library instruction held?**_____

2. **Status (please select one)**:
a. Freshman_____   b. Sophomore_____   c. Junior_____   d. Senior_____
e. Graduate_____   f. Other_____

4. Was this the first library instruction session you've viewed?
 b.   Yes_____   b. No_____   c. If no, how many sessions?_____

4. **Prior to coming to this library session, how would you have ranked your knowledge of
doing research in a library?**
    b.   Novice____   b. Beginner_____   c. Intermediate_____   d. Advanced_____

5. **After having watched this library session, how would you rank your knowledge of
doing research in a library?**
    b.   Novice____   b. Beginner_____   c. Intermediate____   d. Advanced_____

6. **After watching the instruction session, where are you still having problems in the
library? (Check all that apply).**
a. Knowing where to get help in the library_____
b. Understanding how to construct a search when doing research_____
c. Finding books related to your topic_____
d. Finding articles related to your topic_____
e. Using electronic databases to locate articles____
f. Obtaining library materials not owned by SRU_____
g. I am not having any trouble with the library_____

COMMENTS:_____

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(Please continue comments on the other side if necessary)

A Flipped Learning-How-to-Learn Course

Peter Lenn, PhD

Abstract:

In this workshop, participants first role played being students on the first day of a flipped Learning-How-to-Learn Course. This was followed by a Q&A on our flipped course and our results. Over 8 years, our team conducted this course on college campuses in California for over 9000 teens and young adults. In a study of the impact, 93% of 1132 students reported improved grades, organization, motivation and confidence one and two semesters after taking the course.

The purpose of our Power Learners course is to prepare students to succeed in their conventional lecture/discussion courses. The flipped format of our course allows instructors to individually coach students with different entry skills, pre-requisites, motivation and confidence.

In this course, students are coached in a flipped class as they do assignments from the Power Learners Handbook or from their other courses.

Introduction

In our work with 1125 learning centers, 4 high schools, and about 1 million teens and young adults, we found that it is possible to help about 90% students to do significantly better in school. The key is to have students learn the power of learning by doing and practicing to mastery. They find that while reaching mastery may initially take extra time, within weeks it saves them time on their courses, gets them better grades and is more enjoyable.

The course syllabus and strategies we used are presented in this workshop, in which faculty members first experience the operation of our flipped course, and then discuss the ideas and mechanics which might be useful for them in their own Learning-How-to-Learn or student orientation classes at the college level.

Role Play of Day One

In this presentation, the participants are asked to role play being students on the first day of our Learning-How-to-Learn course. This role play has these elements:

- **Name Game**: Everyone in the class learns everyone else's name. Depending upon the size of the group, this takes about 15 to 30 minutes. Directions for this group activity are Appendix 1. The purpose of this exercise is for everyone to experience mastery learning. What they find is that they and everyone else in the classes is smiling and feeling good.
- **Introductory Video** (5:15 minutes) Participants watch this YouTube video:

Introduction: Flipped Learning-How-to-Learn Course

- **Master Lesson 1:** This lesson involves a reading assignment and an exercise to memorize and explain 5 statements about learning. The lesson is Appendix 2. In this workshop, when the first participant believes he or she has mastered the exercise, that person indicates to the instructor being ready to be progress checked. The instructor interrupts the role playing to have everyone observe the instructor progress checking the person for mastery. Typically, the person can paraphrase the 5 statements reasonably well but cannot recite them word-for-word fluently. The instructor asks the student how long it would take to be fully fluent, word-for-word. Students typically answer 1 to 2 hours. The instructor asks them to spend another 5 to 15 minutes to bring their competency to the next level. At this point, the role play ends. The instructor comments: "On average, in about 10 additional minutes, the student can recite the passage fluently, with word-for-word accuracy. The point here is to experience achieving mastery and that reaching mastery usually takes just a few extra minutes." Further information on coaching and progress checking is available in the free *Instructor's Guide for a course based on Power Learners Handbook for College Success*.

  [Instructor's Guide to Power Learners Handbook for College Success](#)

- Q&A on Flipped Learning
  The central ideas that typically come up in discussing flipped learning with participants are these:
  - No matter what is to be learned, the student has to do the learning. Learners do this primarily by practicing what they are learning to do. Lectures, books and videos–listening, reading and watching—provide the information and directions for practicing, and often motivation and inspiration. Still most of the learning (conditioning of neural pathways in the brain) is caused by the student's active practice—reciting, writing, solving and discussing.
  - The teacher's main role, once a course has been designed and developed, is to provide help and coaching on an individual basis to students as they practice.
  - Practicing to mastery increases a student's learning rates. Progressing in a course without mastery lowers learning rates.
  - Learners have different learning rates. Therefore, to manage a course for mastery the instructor and students must allow for those differences. There are two basic ways to do that. First, the instructor can accommodate learning rate differences by running a self-paced, flipped classroom. Second, the instructor can deliver a conventional lecture/discussion course and expect each student to spend the time and effort that student needs to master each lesson along the way. Unfortunately, this doesn't work for many of the students entering college. About half of students entering 4-year colleges and 80% of those entering 2-year colleges do not graduate. We have found it possible to dramatically increase student outcomes in conventional classes with a flipped Learning-How-to-Learn course.
  - The key idea of a flipped classroom is to liberate time for the students to do their homework in class. In class, they have access to the instructor and to peers for help and discussion. They also have fewer distractions than at home or in the

library. This at least double learning rates. In addition, students' learning rates increase as they master initial lessons in a subject.

o Large scale studies have demonstrated that this approach can increase the percentage of students reaching A-level competency from the usual 15% to 85%. In place of the conventional 1 hour in class and 2 hours of homework, the flipped class can deliver better student outcomes with a time allocation of 50 minutes in class and 10 minutes of home reading and videos.

o Lecture is inherently slow. Oral delivery is about 100 words per minute, compared to reading at 300 words per minute or more. In addition, lectures are often less well organized and edited than books or videos. Often, a well-scripted video will take about 25% of the time of the live lecture on which it is based. So using videos and books rather than live lectures liberates time for both instructors and students.

o Videos are not necessary for a flipped class. A textbook will work well for any academic subject, dramatically reducing the instructor's work of creating a flipped class. Videos are useful for math, since the video can show the steps in solving a problem more easily than a text. Video or just audio has advantages for learning a new language.

o When a student finishes a lesson during class, the next step is to begin watching the video or reading the text for the next lesson. The student should do that in class. Watching videos outside class is not an essential part of a flipped class. Students can equally well watch videos in class, using a headset to avoid disturbing others. The increased learning rates in a flipped classroom leaves enough time for almost all students to master the full course, mostly without homework.

o On the other hand, lecture works quite well for experts in a field, especially if the lecturer is skilled. Within a course, once students have learned some content, they are experts in a sense. So, even in a flipped class, an occasional live lecture or discussion is a good way for the instructor to share his or her interest, background, and passion for the subject.

Appendix 1 – Directions for Name Game (For groups of up to 25)

1. Arrange the group in a circle so that everyone can see everyone else.
2. Tell the person to your right, "Please say your first name."
3. You repeat that person's name and your own first name. Then explain that you will continue around the circle, adding a new person each time. Explain: It takes about 20 repetitions to memorize a face-name pair. If you wait until your turn to recite the names, it will take hours until everyone learns everyone else's name. Instead, you can practice each time, saying the names to yourself before the person whose turn it is says each name. If you are saying the names and you don't remember someone's name, just point to them. If you are pointed at, say your name as a prompt. Don't use mnemonics or other tricks. Just say the names are we go around.
4. Begin again with the person on your right. When it is your turn again, go around the full circle. Then continue around for about 1/3 of the circle. Have everyone do it silently to themselves. Ask if anyone needs any names repeated and let them get those names by pointing at the person whose name they need.
5. Remind everyone to say the names to themselves ahead of the person whose turn it is. Have the next person in the circle do the names in reverse order. Do this 5 or more times.
6. Scramble the people in the circle and have 5 or more people do the names, with everyone practicing to themselves.
7. Have everyone do it silently to themselves. Ask if anyone needs any names repeated and let them get those names by pointing at the person whose name they need.
8. Arrange the group in two equal lines facing in opposite directions. As they step forward, they shake hands and say, "Hello, xxx." to each other. When they get to the end of their line, they turn the corner into the other line. Continue until you are again facing the person you started with.
9. Point out how well learning by actively practicing works and that mastery is motivating.

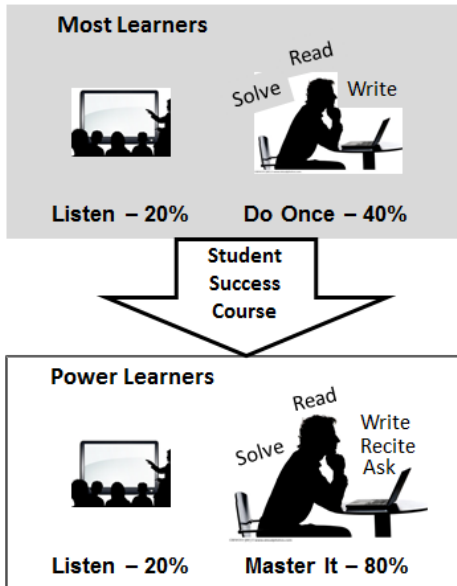For groups of more than 25, create and use a deck of picture flashcards.

Appendix 2

Lesson 1 – A Power Learner's Mindset and Methods

Read this lesson. Then do the memorization exercise at the end.

Principles of Learning

- **What is learning?** A change in your brain that allows you to do something you couldn't do previously.

- **How do you learn?** Primarily by doing—speaking, writing and solving. No one ever became good at anything without practicing. Watching, listening, and reading are preparation for practicing.

- **How much practice do you need?** Enough to master the lesson. People learn at different rates. Access to help while studying at least doubles your learning rates.

- **Can you get smarter?** Yes. Your learning rates are not fixed. The more you learn in a subject, the faster you can learn the next thing. IQ is not the problem. Over 90% of all students are smart enough to get A's (Benjamin S. Bloom and others.)

- **How important are pre-requisites?** Absolutely critical. Missing skills when a course starts make it difficult to keep up. Within weeks it can be almost impossible to catch up.

- **What about motivation?** Success is motivating. Failure is often not. Competition is motivating only if you have a good chance of winning.

What is the Difference between Studying and Power Learning?

Most Learners

Solve   Read   Write

Listen – 20%   Do Once – 40%

Student Success Course

Power Learners

Solve   Read   Write Recite Ask

Listen – 20%   Master It – 80%

As shown in this diagram, most students do their assigned reading, writing and problem solving one time to just get it done. Typically, they get 20% from listening in class and 40% from doing some studying. That gets them maybe a C and not much competence.

In this Learning-How-to-Learn Course you will switch to Power Learning. After listening and reading, you will use best known methods to learn by doing until you master the material.

A Power Learner's Mindset and Methods

The main ideas of Power Learning can be summed up in these five statements:

1. I am intelligent enough to master my courses.

Intelligence is really a combination of native ability plus the effects of previous learning and practice. Those with a lot of previous practice in the subject, compared to the normal amount of practice, appear intelligent. Your intelligence is almost certainly more than adequate.

2. I am an individual with my own learning rates.

The rate at which you learn one subject may differ from the rate at which you learn another. And your rate might be faster or slower than others learning the same subject. This is not a sign that you or they lack intelligence. It only means that you have your own learning rate in each area.

3. I am responsible for my own education.

Other people have responsibilities too, such your instructors and advisers. But you have the most at stake, and you control the most important factors. If you aren't getting educated successfully, you have the option to change what you are doing. You can wish for others to change. You may even be able to convince them to change. But you have far more control over what you do. And what you do is the most important factor in your learning.

4. These steps lead to success:

- **Receive information**
- **Practice to mastery**
- **Get prompt feedback**

Here's a description of the three steps. When you are being taught by an instructor, a book or a video, you are receiving information. That information may be facts, ideas, demonstrations and explanations. It may also include assignments and directions for doing those assignments. All of the information you receive prepares you to practice. Then the practice is when most of the learning actually takes place.

In math, suppose the instructor explains and demonstrates how to solve a certain kind of problem. That night you read the chapter on the same topic in your math book. At this point you've received a lot of information, but to learn the material thoroughly, you have to practice. You do this by solving problems. Practicing to mastery means that you keep solving problems until you can do them correctly and quickly without help. Along the way, ask for help whenever you need it, but don't stop practicing until you've reached mastery.

Getting prompt feedback means checking whether your practice has been successful. Sometimes you can provide your own feedback, for example, by checking answers in the back of the book, or by checking your own work. Sometimes, as in essay writing, you may not be sure that you can tell on your own whether your practice work indicates mastery. In such cases, you may want to get feedback from someone else.

Often instructors have so many students that they can't provide feedback right away. They might need a week or two to grade everyone's essay. Getting feedback the day you write an essay will speed your developing your essay writing skills. So, if there's a delay in getting feedback from your instructor, try to arrange for prompt feedback from someone else.

5. Mastering today's assignment makes tomorrow's assignment easier.

Learning is cumulative. Knowing how to add helps you learn how to subtract. Mastering Spanish 1 paves the way for mastering Spanish 2. Mastering today's assignment sets the stage for tomorrow's assignment. The extra time invested today pays back an even larger time savings before the semester ends.

Practice

Follow the directions below to memorize these five statements of the Power Learner Mindset.

1. I am intelligent enough to master my courses.

2. I am an individual with my own learning rates.

3. I am responsible for my own education.

4. These steps lead to success:

- Receive information
- Practice to mastery
- Get prompt feedback

5. Mastering today's assignment makes tomorrow's assignment easier.

Directions for Memorizing

- Read the statements. If necessary, use a dictionary to get the meaning and pronunciation of any words you don't know.
- Start with the first statement. Read it; then look up and try to say it from memory. (If you're in the library or a class, just speak under your breath.) If you get stuck, look at the page for a prompt and then look up.
- Master the first statement before working on the second statement. Mastery in this case means being able to recite something as quickly and easily as you can say the alphabet: A, B, C, D, etc. Continue practicing until you can recite the first statement from memory— without looking at the page and without stumbling.
- Memorize the second statement. When you have the second statement memorized, work on reciting the first and second statements together. Once you have the first and second statements mastered, start on the third one. When you have mastered 1, 2, and 3, go on to number 4 and then 5, until you can recite all five statements.

Mastery Criteria

As you complete each lesson in this program, get together with your instructor to check that you have mastered the new skills and are applying them to your school work. If both you and your instructor are satisfied that you have reached mastery, then you're ready to move on. If not, together you can figure out what other actions might bring you to mastery.

For this first lesson, the items and demonstrations that would indicate mastery are:

- Recite the five statements of the Power Learner Mindset, from memory.
- Explain the Five Statements of the Power Learner Mindset.

OBSERVATIONS FROM A FIRST TIME HALF FLIPPER OF A GENDER COURSE

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As I prepare to flip a course for the first time, I introduced lecture-like videos and in-class activities into a sociology of gender course. In this paper, I discuss why I began with a "half" flip, the challenges experienced, and feedback received about the new videos and activities. Overall, the half flip worked well in that a community of engaged learners formed, yet meaningful revisions to the videos, activities, and course structure are indicated.

Key words: Flipped Classroom, Gender, Sociology

After 30 years of utilizing primarily a lecture-discussion format in my courses, I sought a more effective and efficient alternative. I enjoy the lecture-discussion experience and find it productive for some. Recently though, it has become increasingly difficult to maintain student investment and participation for full class periods and over the length of a semester. Cell phones are a particular and regular source of in-class distractions despite my best efforts to neutralize them. In addition, with increasing class sizes, personal connections among course participants and engagement with the course content seem to have diminished, and of course, it would be ideal for everyone, not just a small percentage, to participate in the thinking and discussing features of in-class work.

The flipped learning model addresses each of these concerns. In a flipped model, more descriptive course content is conveyed through work done outside of the classroom allowing time for more personalized and responsive experiences inside of the classroom (Bergman & Sams, 2012; Bergman & Sams, 2008; Deslauriers, Schelew, & Wieman, 2011; Kettle, 2013; LaFee, 2013; Velegol, Zappe, & Mahoney, 2015). The burden of covering straightforward content during limited class meetings is relieved, and dynamic practice and individualized working sessions become possible. In fact, putting some of the more straightforward course material in an alternative, readily available, and relatively permanent format, such as videos, that students may review again and again at their leisure, has a number of benefits.   Likewise, more active and dynamic in-class activities can be engaging and demanding in ways that dampen student desire for cell phone-like distractions and facilitate meaningful interactions that contribute to the development of a productive learning community. For these reasons, I decided to "flip" my sociology of gender course.

The Half Flip

After participating in a semester-long flipped learning workshop, I decided to begin with a "half" flip. I was uncomfortable fully flipping the gender course for a few reasons. First, I had tried unsuccessfully to flip a course before taking the workshop. In hindsight, among other things, I had not included enough accountability for the outside-of-classroom work and did not adequately convey the rationale for flipped features to students. My experience in that course left me weary about another semester-long trial. Second, I was concerned that the videos and activities I was creating were untested, and was reluctant to frame an entire course in flipped terms when I would want to be able to revert to the more familiar lecture-discussion format if the

flipped features were not working. Finally, flipped mathematics and natural science courses seem more prevalent than flipped social science courses, and evidence of the value of flipping for social science courses is limited.

In my "half" flip, I made some descriptive content available to students via videos placed on the course website and incorporated immersive in-class activities. I also gave in-class quizzes and explained that their purpose was to encourage outside-of-classroom preparation in advance of class meetings. I did not mention flipping or any related concepts in the syllabus, although I did make it clear during the first class meeting that students would be interacting with each other and me about the course content often during class and that students would do group work and give presentations regularly. The content to be prepared in advance of class meetings was clearly delineated; however, the manner in which we would work with that content in class was left intentionally vague to allow for lecture-discussion or flipped sessions. I also solicited written feedback about the videos, exercises, and other features of the course from students at the end of each of the three sections of the course. I do this regularly in courses, and participation is always optional and confidential with no names or credit associated with responses.

Videos

The videos I created covered topics including an introduction to gender, basic concepts, gender performances, masculinity, gender & politics, gender & families, and gendered work. The videos are about 10 minutes in length and each feature me reviewing course content, most of which is available in the text required for the course. The videos then are merely a repeat of course content in a visual and auditory format with just a few additional examples and connections. Due dates for each video were announced during the semester with the expectation that all would view and review each video by that deadline.

To date, my biggest challenge in attempting to transition to a flipped format has been creating these videos. The technical aspects of video production were not problematic for me. I had some video editing experience, received technical support from the flipped workshop, and editing software is pretty accessible these days. Instead, the challenge for me was deciding what material to include and not include in the videos. The science and math video samples that I was familiar with are straightforward and tend to build upon one another in a linear fashion. It is clear to me how those videos set students up for success in those courses. In contrast, with a gender course, and in sociology more generally, a wide range of topics and content are possible. No given set of topics must be included or excluded. No inherent or agreed upon order or scripting of topics exist. With little in the way of a "common core" then, I was overwhelmed about where to begin. I kept second-guessing myself and re-doing videos. This problem was compounded because gender was a relatively new course preparation for me. For courses I have taught for years, I have a large repertoire of content and impactful examples that have been honed by me and vetted by students. For the gender course, I was wading through mounds of potential and untested content for the course and the videos. This was a costly mistake. I had reasoned that it would be better to construct the new format at the same time I was deciding on content. I imagined that I might be overly invested in material already prepared for a lecture-discussion format that might not translate well to a flipped scenario. Instead, if possible, I suggest selecting a course one has taught many times for a first flip. That would have made my transition easier, more productive, and more efficient.

Moreover, after hearing from students about the first videos I created for this half flip, I had a much better idea about what needs to be included in them. For this course, the videos were

reinforcing for students; they were practice, and served as shorter and mostly straightforward reviews of the material already available to them. In this context, as a review, an alternatively formatted presentation, and another way of looking at the same material, the videos were successful. When initiating video construction then, from my experience in this half flip, I would focus on this primarily descriptive and review function of videos. I can certainly imagine incorporating more variety, new angles on problems, and more meaningful examples that make the videos more compelling and valuable. As a place to start though, simpler is better. The mission of having the descriptive content available outside of the classroom for students had been clarified for me. Focusing on the material already in the course then and trying to put the core of that set of materials onto video is what students seemed to want and value most. With that in mind, producing later videos for this course was more streamlined. I was able to construct more focused videos more quickly. I had thought that merely repeating ideas conveyed in other forms, such as course readings, might feel redundant to students. Instead, it seemed to be a welcomed and helpful review. I did not need new interesting examples for each idea or new content at all for the videos. This was an important insight for me in terms of figuring out how to begin and complete videos for the course.

Student feedback about the videos was overwhelmingly positive. For students, the purpose of the videos was simple-- to assist them in doing well in the course. To that end, students remarked that the videos were "helpful," "useful," "a nice review," and "important." Interestingly, students expressed appreciation for the videos, thanking me for them, as opposed to offering specific feedback about content or format. I think this was because students perceived the videos as bonus material, as extra, instead of as required course content as I had intended. Apparently, I was not clear about that. I had emphasized that the videos were another means of expressing course content that they may find helpful. With that kind of verbiage, students reasonably saw the videos as optional. In addition, students noted that while they enjoyed the videos and found them helpful when preparing for an exam, they did not emphasize them or feel compelled to study them in advance of the designated class meetings. Students explained that this was because I had not included questions on the quizzes that were specific to the videos. To fully attend to the videos and do so by their due dates, students needed incentives in the form of quiz questions that could only be answered accurately by having watched the videos. I had not done that on purpose. As students accurately reported, I had emphasized understanding and applying concepts in general, whether that resulted from reading the text, viewing the videos, or experiencing the in-class activities. As a result, success on the quizzes did not *require* viewing the videos. Following this line of reasoning, student suggestions included video-specific questions on the quizzes and weighting the quizzes more heavily. Apparently, students also were aware that they could do poorly on the quizzes, yet still receive a top grade in the course. Indeed, a few students acknowledged that they did not watch the videos at all. Addressing these structural limitations in the course then should enhance video viewership and overall learning.

Activities

Two kinds of activities are discussed here, a think-pair-share and several iterations of a mini-lecture exercise. Activities were described at the start of the class period in which they were utilized, usually after a quiz designed to encourage outside-of-classroom preparation in advance of class meetings was given. The first exercise in the course was a think-pair-share. The prompt was "In what ways has social expectations around gender impacted you TODAY? THIS

WEEK? Please offer specific and actual examples from your life for each time period." The activity got off to a slow start with a few students seemingly stumped and looking around the room. One asked "What if I can't think of anything?" Another asked "What if there aren't any?" Both questions led to good discussion, and course-mates offered starter examples and strategies. Starter examples involved gendered clothing and hair styling. The most useful starter strategy was to think about the beginning of their day and all that occurred after waking. This seemed to get everyone writing. After a few minutes when the writing slowed, students shared their examples with one or two others. Discussions were animated and light. Pairs then shared their most notable examples with the class. The examples were useful though repetitive. Feedback from students was positive with students describing the exercise weeks later as "fun," "interesting," "informative," "a good time," and "a blast." I think students saw this as a successful getting-to-know-one-another exercise. It did serve that purpose because it occurred so early in the semester. It also though served the original purpose of having students think about the relevance and everyday pervasiveness of gender in their lives. Even with the blank looks by some at the start of the exercise then, students seemed to find the activity and topic non-threatening and productive.

   The second activity was a mini-lecture. Ten questions/ problems from the chapter that students had prepared for that class period were distributed to 10 groups with 2 or 3 members each. Each group worked on their question/ problem with the goal of presenting their work to the class in a novel and memorable way. The specific assignment follows.

> The purpose of this exercise is to practice concepts/ ideas. . . together. In groups of 2-3, take the concept/ idea that I give you and create a mini-lecture. Your mini-lecture should present your concept/ idea in an accurate and compelling manner— using especially apt or memorable examples, through the use of a skit, by making connections to other ideas/ world events. . .   whatever brings the concept/ idea to LIFE for us. Make it pop— make it impossible for us not to understand and remember the idea you present.
>
> You have 25 minutes (that is a very long time!)– to create a magnificent/ memorable/ compelling. . . yet efficient (about 3 minutes) "lecture" on your topic.
>
> Benefits:
> You get to think about and play with your topic in compelling ways with others in the course, and get the best others have to offer on the other topics/ questions.   This is a great way to practice/ think about the material together.
>
> 1. How does "sex" compare to "gender?"
> 2. Where does much of what we believe about men and women come from? How do you know?
> 3. Why do we work so hard to maintain the fantasy of gender differences?
> 4. Are gender (and other kinds of) categories always bad?
> 5. Explain the "gender binary."
> 6. What is the "personal exception theory of gender" and why do we have it?
> 7. How and when do we utilize "gender ideologies"?
> 8. What does it means to say that gender is a social construction?
> 9. Are we are all just doing drag'??
> 10. In what ways is the United States governed in gendered ways?

During the activity, I visited with each group and offered assistance if desired. Even though students had been given this set of questions in advance as a study tool, and these questions were mostly descriptive and merely repeated concepts directly from their course readings, each group seemed to struggle. Most students had come to class unprepared. Many began the exercise by opening their textbook to look up the concept they were given. Next, groups struggled to come up with examples that were not already in their course text or discussed in class. Indeed, most ended up presenting examples that were minor variations of ones we had already read about or discussed, despite my urging in the written assignment and personal pleas to individual groups to focus on the novelty of their examples, to try to find memorable and apt ones we had not already explored. I could relate to their frustration though as they were being asked to construct something new, yet had imagined that interacting with one or two others would lead to productive discussions and some creative insights and examples. That did not happen. As groups presented, it was often not even clear what question they were addressing. Some groups misrepresented their concepts, read directly from the text, or again, offered examples that seemed recycled and fell flat. It was clear to me that the activity did not work and was a waste of class time. I remember thinking that this was exactly why I wanted to hedge my bets, and left that class period certain that we would not be doing that activity again in this course.

Well, students had a completely different view. To my surprise, in their confidential written feedback about the activity, students reported that they loved the mini-lectures. They found them to be incredibly valuable and wanted to do them again. Now, I had a dilemma. I was clear that I was collecting their feedback about features of the course during the semester in order to use that feedback that semester. As a result, I felt compelled to try this activity again. With new questions/ problems, we repeated the activity with a couple of slight variations. It seemed to me that students were lost when other groups presented so the second time around, I put the problem list on the document camera so the question being addressed was highlighted as each group presented. I also prefaced the activity with a discussion of my experience of the first set of mini-lectures, highlighting the examples offered that I thought were most novel and useful. By this time, students also had become familiar with the amount of preparation required to be successful on the quizzes given at the start of most class periods and had experienced full-class discussions that were explorative and resulted in the generation of novel examples. The second time around the activity was successful. Students seemed more engaged with the ideas during their group work, and most groups offered thought-provoking presentations with compelling examples.

In an effort to further solidify this activity, we did it again with one more variation. This version was a "face-off." Each group worked on two problems, and each problem was addressed by two groups. The two groups responding to a given problem presented one after the other, and students used rating sheets to vote for the best presentation for each problem. Group members with winning presentations received a nominal amount of additional points. I thought this variation would elevate everyone's game, knowing there would be a direct comparison with another group's effort and because a few more points were at stake. The face-off did generate much excitement, and some students seemed driven and even giddy about the twist. The quality of presentations was enhanced in my view, and the audience was more focused as they had a job to do in differentiating between pairs of presentations. Student feedback though was mixed. Some were elated by this variation and described the twist as inspirational and motivational. Others though felt pressured by the competition and anxious about presenting and about the points attached to the competition. Some explained that it was distracting for them and competing with their course-mates was undesirable and stressful. With respect to this activity,

one student literally wrote "loved it", while another wrote "hated it." I will try the face-off feature again, but to relieve the pressure that some students felt, I would frame the activity as a fun competition and eliminate the additional points for winning the comparison.

Because I was attempting to refine activities, the course was limited primarily to some variation of two activities. Students noted at the end of the course that they would have preferred more variation in activities. I falsely presumed they would not want a lot of startup time and explanations devoted to new and untested activities. Novelty though was desirable to them. A technical matter that I did not anticipate was that students sat in the same seats, and all were present most days. The result was that when I had the class count off to ten to create unique groups of 2 to 3 people for in-class activities, people often ended up in the same group. I did not realize how consistently that was happening until the end of the semester when students literally said "not -you- again." That was a source of redundancy and boredom for them, and did not match my pledge at the beginning of the semester that they would get to know and work with many other students in the course. A simple fix is to start with a number other than one each time we count. Another concern I had was starting class periods with quizzes. That may have dampened enthusiasm for in-class activities. While the value of quizzes in ensuring preparation in advance of class meetings was highlighted in this half flip, even when quizzes amounted to writing prompts that doubled as warm-ups exercises, students often groaned as I announced them. Indeed, they were draining and not an effective way to begin class. Online quizzes may be necessary.

Conclusions

My purpose in flipping this course was to provide students with a more fully engaged experience with real world practice interacting with and applying concepts, along with greater inclusivity and rates of participation. Each occurred in this course. Although it was a hybrid with flipped content and lecture-discussion, the flipped features resulted in much increased engagement with the material and in relationships with one another. Undoubtedly, a community was formed in which people felt comfortable and safe exploring gender topics together. Almost everyone present participated in meaningful ways in each class session. I was surprised at how receptive students were to the activities. Students looked forward to them and generally speaking, found them to be valuable. Overall, preparing even for this half flip was time-consuming and involved a steep learning curve with many mistakes. The numerous benefits experienced in this trial though were readily apparent and well worth the investment.

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Changing the Landscape of Learning in Dentistry

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At the University of British Columbia Dental School we are using Flipped Learning to teach fundamental medical sciences to the first year students. This paper explains the structure of the curriculum and the flipped techniques being incorporated. It also explains the ongoing research being conducted in our biomedical science curriculum at UBC Dental School. The purpose of the study is to assess the effectiveness of a flipped learning (active) curriculum versus the traditional lecture based (passive) curriculum in a first year Dental fundamental medical sciences course.

Key words: Flipped Classroom, Technology, Biomedical Physiology, Medical Sciences, Research Study

"Education is what survives after what was learned has been forgotten" Professor BF Skinner

The journey to a flipped curriculum at the UBC Dental School was long overdue, and yet for some, came far too fast.

The backstory of the Fundamental Medical Sciences course is an important introduction the new curriculum. For the previous 20 years, dental students at a large West Coast University spent their first two years (of a four year degree) being educated by the Faculty of Medicine. The 50 dental students were thrown in with the 250 medical students for most of their lectures (over 85%). Thankfully, due to curriculum renewal, this practice has now ended. As we welcomed our dental students back into the fold, we realized a new curriculum was required. There was significant debate (still ongoing) over the best pedagogical model. My colleague, Dr. Ian Matthew, and I decided a flipped/blended educational model was the best choice. Unfortunately other faculty members did not agree. There are still a number of senior faculty who are very out spoken (threatened by?) the new flipped/blended curriculum.

Dissenting faculty members were not the only naysayers. The incoming students were also apprehensive. The vast majority had only experienced a traditional, lecture based curriculum. Achieving student buy in was accomplished by transparently explaining the flipped process and by highlighting the benefits to the students. We explained four key elements of flipped learning:

1. Critical thinking

2. Student responsibility for learning

3. Incorporation of technology

4. Varied learning activities

We also spelled out the student benefits of flipped learning:

- Increasing their retention of vital information

- Reinforces necessary work skills
- Higher grades

The new curriculum and its benefits were introduced on the first day of class. We reinforced the advantages of a flipped classroom on a weekly/monthly basis. The nature of the course material helped us gain acceptance of this educational model from the students. We told our student cohort if they didn't fully absorb and internalize these concepts their patients would suffer- as would their careers. Our goal of creating enduring understanding was aided by the weight and importance of the course material. We explained to the students that simply memorizing this content to perform well on exams was not adequate. We need lifelong retention, not transient remembering. A constant refrain, repeated often to the class was "your patients don't need memorizers, they need critical thinkers and problem solvers."

Designing the new curriculum we were faced with many educational challenges- delivering an increasing volume of material in a limited number of lecture hours; staying current with the latest physiologic developments; engaging the students during long (4 hour) sessions; creating enduring understanding. To deal with these challenges we implemented the new curriculum with a set structure that repeated every month:

Monthly Format

Week 1- PBL**,** iClicker Quiz, Lectures + DALEs

Week 2- PBL, iClicker Quiz, Lectures + Debate Styled DALEs

Week 3- PBL, Take Home Assignment Due

       Student Presentations

Week 4- PBL, iClicker Quiz, Lectures + DALEs

       End of Block Exam

Fundamental Medical Sciences constituted 45% of the year one mark and used 18 of the 36 hours in the weekly curriculum. The students were responsible for pre-class work, which included watching recorded lecture videos and videos produced by outside sources, and pre-readings. Their comprehension of the material was tested by a summative 10-15 multiple choice question quiz (iClickers) at the beginning of the 4 hour sessions. During those sessions there were a combination of 10-15 minute lectures, fill-in-the-blanks exercises, anatomy mapping exercises, formative MCQs, mini-case studies, and videos from outside sources. PBL (Problem Based Learning) clinically based cases were delivered in small group learning (SGL) sessions, with eight students/tutor. The DALEs (Dental Applied Learning Exercises) are CBL (Case Based Learning) exercises delivered in SGL groups of 4-6 students.

The frequent low-stakes exams, assignments, and presentations helped increase compliance with the pre-loading (out of class) of material. The iClicker quizzes tested the material delivered in the online lectures and assigned pre-readings. The analytics from our LMS (Blackboard Connect) showed 75-90% usage rates of this content. To increase compliance, next year we will increase

the weighting of the iClickers from 12% to 20% of the final grade. This percentage was decided upon after consultation with educational professionals at the UNC Flipped Learning Conference.

 SMART is an acronym we use to remind faculty and the students why the curriculum is flipped.

SMART Learning

S = Self-directed

M = Motivated

A = Adaptive

R = Resource-enriched

T = Technology-embedded

On the first day of class and many times since then, I told the students my main goal as an instructor is to make myself obsolete. By the end of the year I need the students to be capable of teaching the course themselves. To achieve higher order thinking we incorporate many different peer-to-peer learning strategies. These include weekly student presentations; the creation of expert groups/jigsaw groups that spread out to the class to teach concepts; and PeerWise.

PeerWise is an online platform where the students create multiple choice questions. The students must self-evaluate their own questions, and review/evaluate their peer's MCQs. Each student is responsible for creating 20 MCQs and evaluating 50 peer MCQs. PeerWise constitutes 5% of their final grade, and 12 of the best questions were used on the final exam.

Our Learning Management System uses Kaltura to host our video content. The LMS analytics tell us the average watch time of a video is six minutes. This information helped with our video lecture creation and the videos we posted from outside sources. It meant reworking and shortening many of our videos created with Camtasia, but the results showed improved student compliance with the shorter videos.

Research

We are in the process of receiving a $35,000 Small TLEF (Teaching and Learning Enhancement Fund) Project grant to fund our educational research.

The purpose of our study is to assess the effectiveness of a flipped learning (active) curriculum versus the traditional lecture based (passive) curriculum in a first year Dental fundamental medical sciences class.

Number of students impacted = 50/year

With the Small TLEF Project grant we will hire a project coordinator to design and implement a survey; collect data (both qualitative and quantitative); and analyze the data. We will also hire a research assistant to help with these tasks.

Our quantitative analysis involves two different data banks:

- 7 years of historical MCQ data from the previous curriculum
- The Progress Survey

Of the 800 summative MCQs used this year, 200 were adopted from the previous curriculum. Our initial assessment of this question bank shows the flipped curriculum students performing 11% better on these questions. This is a small sample size, and there are many different factors at play but it is encouraging. The improved performance could be attributable to the flipped delivery, increased testing frequency, weekly homework assignments, monthly student presentations, more dentally centric teaching, and weekly in-class quizzes.

The Progress Survey is a three-hour long test with 200 multiple choice questions that sample all areas of dental cognitive knowledge. Students are assessed on the expected competencies of a new graduate dentist. All student in the Dental Program take this test twice a year- at the beginning and the end of the school year. The results generate a Personal Progress Index (PPI) to evaluate their performance relative to standard benchmarks and their peer group.

The Progress Survey results from the first year (flipped) class were very low (as expected) when they took the exam during their first week of dental school. Their Progress Survey results (using a different pool of 200 MCQs) were significantly better when they took the exam at the end of their first year (as expected). The most interesting Progress Survey data analysis was the comparison of the second year class (traditional curriculum) vs the first year class (flipped). In the September exam the second years did significantly better than the first years (as expected). However, in the May Progress Survey exam the first years had a better average grade than the second year class. This was very surprising and very encouraging. Again it is a very small sample size but students with 10 months of a flipped dental curriculum outperforming students with 20 months of a traditional dental curriculum is exciting.

In addition to the quantitative study we are also conducting a qualitative analysis of the new curriculum. At the end of the school year the students complete a mandatory online questionnaire with the following questions:

- Found the pre-reading material useful

- Consistently read the pre-reading material

- Found the pre-class video material useful

- Consistently watched the pre-class video material

- Re-read the pre-class material for exam review

- Re-watched the pre-class material for exam review

- Compared with other courses the pre-class material was useful

- iClicker quizzes motivated pre-class preparation

- iClicker quiz reviews were a good learning tool

- Course format allowed for a better understanding of concepts

- Initial impression of course format

- Post Course impression of format

The research grant will allow us to hold small group round table discussions assessing the student's impressions of the flipped curriculum. These will be held at the beginning of the year (to examine preconceptions of a flipped classroom) and the end of the year.

Conclusion

At UBC Dental School we are achieving enduring understanding through Flipped Learning. With Flipped Learning we have less transmission, and more synthesis and absorption of knowledge. We are promoting deeper learning and encouraging students to take greater responsibility for their own learning.

Why Flipped Learning...because the world doesn't need memorizers, it needs critical thinkers and problem solvers.

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AN EXAMINATION OF FLIPPING PROFESSIONAL DEVELOPMENT

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Abstract

Many teachers are realizing positive benefits for student engagement and performance with use of flipped learning. As part of the effort to better understand flipping, two professional development workshops for high school chemistry teachers were held in which we modeled the flipped classroom. Participants took a survey before the workshop to gauge their perceptions of the flipping method and content knowledge. Next the participants watched content videos before the workshop. The participants then engaged in a workshop of hands-on chemistry activities. Finally the participants took the same survey again to ascertain change in their perceptions of the flipping method and/or their content knowledge.   There were significant and positive changes in the teachers' perceptions of the flipped method and in their content knowledge following the workshops.   In particular, the participants' familiarity with the flipping method and their opinion of flipping as a way to improve content mastery and student engagement increased.

Keywords: Flipped Learning, Professional Development, Research, Chemistry, Higher Education

Introduction

Science, technology, engineering and math (STEM) fields are losing students to other majors (Chen, 2015) despite a rise in the job market (US DOE, 2015). Whether we see it in the eyes of our bored students or we see it in the declining national science scores, it is clear to teachers and government agencies alike that there must be a change in STEM education (NRC, 2000).

Active learning strategies have been shown to improve learning and narrow the achievement gap between students (Prince, 2004). Improved formative assessment strategies have been shown to increase achievement for all (Black, 2002). Now flipped learning is being used as a way to leverage technology so that more robust educational models can be used in the classroom with students and teachers (O'Flaherty, 2015). For the purposes of this research, flipped learning will be defined by its pioneers Bergmann and Sams in Flipped Learning (2014).

> The basic premise is that direct instruction, which is often referred to as lecture…, is not conducted in large groups. In flipped learning, the direct instruction is delivered individually, usually-though not exclusively-through teacher-created videos. This time shift then frees up the face-to-face time for richer, more meaningful learning experiences for students.

Flipped learning has begun to show promising results in the research for student engagement and improved achievement, especially for low achievement groups (Walsh, 2016; Moravec, 2010). Flipped learning seems to have some answers for meeting the needs of students that are more technologically advanced but less motivated and academically curious.

To better study this model, more teachers need to adopt and practice flipped learning. These teachers will need professional development (PD) training for the motivation and the skills

needed to accomplish such a change in their teaching styles. The purpose of this study was to determine the efficacy of the flipped learning model as a professional development tool. Specifically we sought to answer the following research questions:

1) Will flipped PD have an influence on teachers' perceptions of the flipped classroom?
2) Will flipped PD have an effect on the teachers' content knowledge?
3) Are there benchmark characteristics of teachers that make them more likely to adopt flipped learning?

Methods

An IRB approved research study was conducted at a small private liberal arts university. Two Cohorts have been through the study. Through a collaboration with the Regional Education Service Center, who regularly provides professional development opportunities for science educators, a one day workshop based on the state chemistry standards was developed. The authors of this study served as the curriculum designers and facilitators for the workshop. A brief timeline of the research methodology is listed below and a description of each activity follows.

1) Participants recruited
2) Pre-workshop surveys
3) Pre-workshop video activities
4) PD workshop
5) Post-workshop survey

Participants Recruited. Twenty-four high school chemistry teachers were recruited through the local Education Service Center email and Facebook group to participate in the workshop. Study participants received 6 hours of PD credit for their participation in the workshop. They earned additional PD credit for successfully completing the pre-workshop activities. A substitute teacher covered their high school classes for the day and the cost for this was covered by their local school districts.

Pre-Workshop Survey. Surveys were sent via email to the participants. Qualtrics software was used to generate, disseminate and store all workshop surveys. The surveys consisted of 3 categories of information: 1) teacher experiences and practices, 2) teacher perceptions of the flipped learning method and 3) teacher content knowledge. Participant anonymity was preserved through coding of participants. Teachers' experiences and practices were self-reported including percentage of time they spent in the classroom on different activities and their perception of the efficacy of each of those activities. The in-class activities they were provided included lecture, reading, working problems, group work, labs, demonstrations, and other activities. Teachers also reported the number of times they assigned homework each week, the number of years they had been teaching and the number of years they had been teaching chemistry.

Participants' perceptions of flipped learning were assessed with Likert scale statements in 4 areas: <u>familiarity</u> with the flipped method, <u>effectiveness</u> of the method for content mastery, the methods' <u>engagement</u> of students, and the <u>feasibility</u> of flipping their own classroom. Statements were randomized and stated in both the positive and the negative. Here are some examples:

I am familiar with the idea of a flipped classroom.
Content mastery will decrease in a flipped classroom.
Students will tune out in a flipped classroom.
I could do flipped classroom methods with my classes if I knew how.

Participants' content knowledge was assessed before and after the workshop using a 5 question multiple choice quiz. The questions were generated by the workshop facilitators and were based on the state chemistry standards that participants are required to teach. The correct answer to each question was worth 5 points, with the other answers being worth a varying amount of points depending on how close it was to the correct answer. Here are some example questions:

Which of the following is/are exothermic? (mark all that apply)
a) The combustion of gasoline
b) The melting of snow
c) The evaporation of ethanol
d) The sublimation of CO_2 at room temperature

A 3.54 g piece of aluminum is heated to 96.2 ºC and allowed to cool to room temperature, 22.5 ºC. Calculate the heat (in kJ) associated with the cooling process. The specific heat of aluminum is 0.903 J/ g · K.
a) $+ 0.236$
b) $- 236$
c) $+ 236$
d) $- 0.236$
e) $- 0.638$

Pre-Workshop Video Activities. After completing the email surveys, participants were sent links to chemistry content videos to watch and take notes. The videos were produced by the workshop facilitators for their own flipped college level general chemistry courses. There were 2 videos approximately 10 minutes in length containing concept explanation, manipulatives and quantitative problem solving examples. Participants were asked to take notes during the videos and email those notes to the workshop facilitators. The links were provided through Qualtrics as well, so verification of time spent on the videos could be verified.

Professional Development Workshop. The participants then attended a one day workshop held in the labs and classrooms of the university, from 9AM to 4PM with a 1.5 hour lunch break. The workshop was conducted by 4 professors in 1 lab and 2 classrooms. Activities included demonstrations, a hands on lab with calculations, discussions of the flipped method, constructing foldable lesson aids, and problem solving with lab simulation software. In Cohort 1 the topic was stoichiometry and in Cohort 2 the topic was thermochemistry.

Post-Workshop Survey. At the end of the workshop the participants completed the post-workshop survey, either on paper or on their personal devices, before they left the site of the workshop. The post workshop survey contained the same 10 flipped perception questions as the pre workshop survey, covering familiarity, effectiveness, engagement, and feasibility. The 5

multiple choice content questions were also administered again. Coding was used to match participant's pre and post surveys.

Results

Pre and post survey data comparing perceptions and content mastery were analyzed for variance with ANOVA. An alpha level of .05 and below was considered significant. Correlations among teacher experience, content knowledge and perceptions of flipping were analyzed with linear regression. The survey was validated with a Cronbach's alpha score of .71 in Cohort 1 and .783 in Cohort 2. The Likert Scale was flipped when negative statements about the flipping method were used, so that higher values represented a more positive attitude about the flipping method.

When comparing the effect of the flipped PD on the participants perceptions of the flipped method, positive effects were seen in the participants familiarity with flipping (p=.03), their opinion of the effectiveness of flipping (p=.022; .000) and their opinion of the ability of flipped learning to improve student engagement (p=.004; .03; .014). Conversely, their perception of the feasibility of flipping for their own classroom, did not significantly change, and even went down in Cohort 1. Table 1 below shows the Likert statements, the effect that the PD had on them and the alpha level for statistically significant findings. There were no negative changes that were statistically significant.

We took note that there were not as many significant positive changes in Cohort 2 as there were in Cohort 1, and we think there are two reasons for this. The first reason was that there were 8 participants in Cohort 1 who also joined Cohort 2, so we would expect them to make negligible gains in their perception of flipping because they were exposed to the same method while in the workshop the first time. The second reason was that the content covered in Cohort 2 was more difficult in nature than the content covered in Cohort 1. Stoichiometry, from Cohort 1, is covered earlier in the year in the high school curriculum and the participants all teach their students this material. Thermochemistry, from Cohort 2, is covered later in the year and many of the participants run out of time at the end of the year to teach thermochemistry thoroughly to their classes, so the teachers were less familiar with the content. To illustrate this point, average pre-workshop quiz scores from Cohort 1 were 21.8 and 17.0 in Cohort 2.

Likert Scale Statement	Effect of PD	Alpha level
I am familiar with the idea of a flipped classroom.	Positive change in Cohort 1	.03
Students will not learn as well in a flipped classroom. (negative statement)	Positive change in Cohort 1	.022
Content mastery will decrease in a flipped classroom. (negative statement)	Positive change in Cohort 1	.000
Students will tune out in a flipped classroom. (negative statement)	Positive change in Cohort 1 and 2	.004 and .03
Students will interact less with the teacher in a flipped classroom. (negative statement)	Positive change in Cohort 1	.014

Table 1. Significant findings from pre-post comparison of Participants' Perception of Flipping.

When comparing the effect of the PD on the participants' content knowledge, positive changes were found. In the first Cohort the overall positive change in quiz scores was significant

(p=.018) and in the 2nd Cohort the change was positive but not statistically significant. The quiz average went from a 17.0 to a 19.6 after the workshop. We believe the reason for this was that questions 1 and 2 on the quiz showed very little change because the teachers all scored very high on those questions in the pre and post surveys, so they already knew this material well before the workshop. There were positive gains on questions 3 and 4, which were covered directly by the workshop content.

Correlations among participants' experiences, perceptions and content knowledge were also examined. In Cohort 1, a correlation between teaching experience, r = .34, p (two-tailed) < .05 and positive perceptions of flipping, r = .34, p (two-tailed) < .05 on 2 statements, in other words the more experience the participants had the more likely they were to have a positive opinion of flipping. Because of this finding we examined several other correlations, but found none. Teacher experience was not correlated with content knowledge. Content knowledge was not correlated with a positive opinion of flipping. We also examined the practice of assigning homework and found there was no correlation between amount of homework assigned and the participants' opinion of the feasibility of flipping for their own classroom.

Discussion

Our findings support using flipped learning as a tool for professional development. Note that our PD workshop was not on the topic of "flipping", it was on the topic of "chemistry" and we chose to flip the workshop as a way deliver the chemistry content the participants needed. They were attending the workshop to learn chemistry, not flipping. Nonetheless, the flipped PD improved the participants' familiarity with the method. It also improved their perception of the method's ability to effectively teach content and engage students. However, participating in this PD did not improve their perception that it was feasible to flip their own classrooms, even though they thought of flipping as an engaging and effective means of instruction. Through group discussion during the workshop we saw possible explanations for this resistance. Participants tended to believe it takes too much time in teacher preparation and they believe their students will not comply with the pre-class activities. Without improving the perception of the feasibility of flipping, adoption of the flipping method will be minimal. Further work needs to be done to address the issues that keep teachers from making a change to flipped learning. We would also like to see more work comparing content mastery in flipped and non-flipped classrooms, as our work only examined a flipped classroom.

So to answer the research questions, 1) Will flipped PD have an influence on teachers' perceptions of the flipped classroom? Yes, but it did not change their perception of their own abilities to do the method in their own classroom. 2) Will flipped PD have an effect on the teacher's content knowledge? Yes, especially when prior knowledge of the content is very low. 3) Are there benchmark characteristics of teachers that make them more likely to adopt flipped learning? Maybe, some evidence was found that more experienced teachers are more positive about the flipped learning model.

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Are we throwing the baby out with the bath water?

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Abstract

Since the move of midwifery education into higher education methodologies for
teaching and learning have become somewhat conservative. Flipped learning is
transforming midwifery students' experiences of their undergraduate programme
at a UK University. They are becoming active learners within the classroom who
are now engaging is deeper learning than previously possibly when using didactic
lecture methods. Our favoured definition of Flipped Learning is

*'it is a pedagogical approach in which direct instruction moves from the group
learning space to the individual learning space and the resulting groups space is
transformed into a dynamic interactive learning environment where the educator
guide students as they apply concepts and engage creatively in the subject
matter.'* (Flipped Learning Network, 2014).

Since the introduction of flipped learning the module evaluations have been
positive and students report that they are finding the methodology beneficial to
their learning. The support of the learning technologists have been invaluable for
the support they have offered the midwifery academics in preparing the virtual
learning platform.

Key words (3-5)
Student Midwives, FLAME (Flipped Learning and Midwifery Education),
'deeper' learning

Historical context

Pre-1992 midwifery was delivered in NHS Schools of Midwifery based within
hospitals. The intakes were small and the course was on year, then eighteen
months in length for registered adults nurses. Teaching sessions were arranged
within the departments using dedicated teaching space. The ration of teachers to
learners was approximately 1: 20. As the maternity wards were on site a number
of teaching sessions were held in the clinical maternity setting
The course led to purely a professional qualification enabling the successful
completers to register with the regulatory body to be able to practice as a qualified
midwife.

The move into higher education brought many changes to the midwifery
programme. A direct entry route was developed where students with the
appropriate entry qualifications, but not a registered adult nurse, could enter onto
a three-year programme and be awarded on completion either a diploma or
honours degree. Around 2006 the diploma route was dropped so that the

profession could be all-graduate. The cohorts became larger and the constraints placed upon lecturers in terms of central timetabling meant that teaching became predominantly lecture based. With the move into higher education the programmes then became regulated by both the universities and the professional regulatory body.

The Current UK Context of Midwifery Programmes
Midwifery in the UK is currently a three-year, full time, undergraduate programme. More recently a graduate entry route has been developed for candidates with first degrees; the academic award after three years is a masters degree. For students that successfully complete the midwifery programme at whatever academic level as eligible to register with the NMC as a registered midwife on completion. This is required for them to be able to practice as a midwife within the United Kingdom. Therefore, the programmes are complex in that they must meet both HEI and regulatory body requirements.

The programmes are planed so that 50% of the programmes weeks are in theory and the other 50% of time are spent in clinical midwifery practice
There is no compensation allowed within the modules, all must be passed and due to the relatively small numbers of students per intake for example a range of 55-25 the students are not given a choice of modules. A further restriction is that the regulatory body determines that there must be an exam each year of programme (NMC, 2009). Currently fees and bursary paid by the NHS but new finding arrangements from 2017/18 entries bring health care students in line with other students. So they will need to secure a student loan for course fees and living expenses.

Midwifery programmes are very practice focused as the students are being prepared for their role of a midwife and they require many skills to equip them for practice. Therefore, it was somewhat puzzling that lecturers so readily adopted the lecture more of delivery for many of the sessions.

Over the years midwifery students have evaluated teaching sessions with mixed messages namely, whilst enjoying what they have been taught they prefer more interactive and clinical sessions. The following are a sample of anonymised comments from a recent evaluation of the module in the undergraduate programme.

What our students were saying:

'Death by Powerpoint'
'Self directed study – should have the opportunity to discuss the session in the classroom.'

'There was so much to learn in this module'

'The lesson I enjoyed most were the interactive session where we were split into to discuss different aspects of a topic before coming together as a class to discussion options as a whole.'

'Too much self-directed study – little actual teaching.'

Therefore, the Division of Midwifery recognised that the approach to teaching and learning needed to change. The development of a new curriculum for delivery in September 2015 provided an ideal opportunity to review what we doing and consider a new pedagogy for the curriculum. Midwifery Undergraduate students need to be equipped with higher level, critical appraising skills to be effective practitioners (Nicholls & Webb, 2006).
The flipped model enables student engagement with the lecturer to be more effective than the traditional lecture model (Aronson et al, 2013, Tagaras and Digital Ignite, 2011). Sonic Foundry and CDE (2103) reported that that has observed changed in their teaching as well as their students' attitude to learning improved as well as their mastery and retention of information.

It is becoming evidence that there is a difference between the generation in terms of their expectations and their approach to learning (Jane, Warren and Davies, 2015) Our students are mostly the so-called generation Z who are digital natives, self-directed and use up to date technologies. It is suggested, therefore, that student midwives commence the programme with the skills to embrace flipped learning. With the proposed introduction of flipped learning into the 2015 midwifery curriculum a model, called the FLAME model, was developed to demonstrate the various stages of teaching and learning in student midwives.

The FLAME Model – Flipped Learning and Midwifery Education
The image of the model depicts an inverted pyramid that suggests the increase in knowledge as a student midwife progresses through the individual topics, modules and the midwifery programme. The change in the colours on the model's as you move up through the levels represent a 'flame' as it changes from an ember to a flame. It is analogous to the increase in 'thirst' and depth of knowledge that is fostered in the student as they engage with the midwifery curriculum. The lower levels on the model are predominantly the activities that the student undertakes as guided blended learning. Therefore, the student will come to the classroom with some knowledge and understanding of the midwifery topic. The 'face to face' sessions with the facilitator will enable ~~the~~ activities to be undertaken which critically analyse the topic and apply it to midwifery practice. This leads on to 'face to face' sessions that focuses on student –led enquiry based learning where the midwifery knowledge can be further evaluated to promote further understanding of the concepts.

Figure 1

The 'FLAME' Model - Flipped Learning and Midwifery Education

Creating

Evaluating

Analysing

Applying

Understanding

Remembering

Student led enquiry based learning

Facilitator led learning

Guided blended learning

Reference: Adapted from Anderson L.W. Krathwohl, D.R Bloom, B. (Eds) (2001) A taxonomy for learning, teaching and assessing: a revision of Bloom's taxonomy of educational objectives. New York. Longman.

The starting point for module planning is the development of themes and whether they suit delivery in the 'flipped model' mode. Recognition of what would work well 'flipped' and what would not is an important stage in the planning of a module. Additionally, the assessment needs to be considered early in the planning stage to ensure students are adequately prepared throughout all teaching and learning activities. A template of ten hours per theme was notionally suggested to support the planning of the flipped model throughout each module: four hours of guided blended learning, two hours facilitator led learning and four hours of student led enquiry based learning. This template was not meant to be restrictive but was seen as a guide in the early stages of the delivery of the model within the curriculum. More recently the Division has moved towards allocating a percentages of the overall time to each activity as the time required to cover topics varies.

Figure 2:

Example of Flipped Learning in the Midwifery Curriculum

Figure 3 Sample Guide to Learning Activities

Title: *International Midwifery*	The Flame Model and Taxonomy of Learning
1) On-line activities, created in the virtual learning environment (2 hours) e.g. - review of the World Health Organisation (WHO) website and review of worldwide maternal mortality statistics; - Review Millennium Village Projects website – select two projects to review - completion of a quiz using WHO website and White Ribbon Alliance.	Guided blended learning - remembering - understanding
2) **Face-to-face session (1 hour)** e.g. Discussion and review of on-line materials and quiz	Facilitator Led - applying - analyzing
3) **Student led group discussion (2 hours)** e.g. Review of 2 key films on challenges of midwifery practice in emerging countries followed by discussion (Facilitator present to guide and support discussion)	Student Led - evaluating - creating

The challenges of flipped learning for the midwifery programme
One of the difficulties cited in the literature is in respect to the time that needs to be invested into redesigning the delivery of the programme (Aronson et al, 2013; CDE, 2013). However, Seaboyer (ND) found that although time was required initially it was recouped later on. The midwifery lecturers are encouraged to redevelop materials that are already in use as well considering the use of open education resources. Morris and Brown (2013) recommended that there needs to be initial institutional support for the change to this student-centred approach, but over time this this was less of an issue; the support of a learning technologist is invaluable in reducing these effects.

There has been interest in the conditions under which flipped learning is most effective (Lape et al, 2014). They argued that making broad statements about the benefits of flipped learning oversimplifies how the learning process is affected. They proposed that application of the flipped model is key to ensure that students'

learning benefits. Aronson et al (2013) discussed how students who may struggle with the traditional lecture model might still find the flipped learning model a difficult adjustment. Students have to put more effort into the guided study to ensure they are fully prepared for the face-to-face sessions. It is also suggested that observing the progress in the students' deeper learning was particularly rewarding to academic staff (Seaboyer (ND).

Aronson (2013) also highlighted that student evaluations vary in respect to the flipped learning model and cite some dissatisfaction with it. However, he suggested that as students become more experienced with the approach their opposition decreases. The author has had some insight into student dissatisfaction where it was found that midwifery guided study packages were being used quite independently of the rest of the programme with no follow up. Student midwives need to be fully briefed on the flipped learning model so they are informed of their role as well those of the academics.

Missildine et al's (2013) study of nursing programmes using flipped learning found some increase in assessment scores but there was less satisfaction of the programme. These authors suggest that less programme satisfaction could be as a result perceived increased workload. The move to flipped learning could also be seen as a need to address an overcrowded curriculum and the midwifery programme could be also accused of this. Lecturers need support to become good facilitators rather than just delivering content through the didactic lecture approach. They also need to be still mindful of midwifery students with learning differences and how they change their pace and style to better suit their needs.

Midwifery education flipped – are we throwing the baby out with the bath water?
To date we are observing that students are engaged in the blended learning and are highly motivated in the classroom. They are inquisitive and many students are anecdotally saying that they are going beyond the materials that they are guided to complete thus potentially broadening and deepening their learning.

Three modules of the new curriculum have been delivered to date; two have run twice one once. From the evaluations in response to the specific question
'Teaching methods used in the module help me to learn' the students who responded:
Module 1 100% of the student strongly agree or agree
Module 2 63% of the students strongly agree or agree
Module 3 100% of the students strongly agree or agree

The following comments were also provided:

'The flipped learning was extremely useful as I was able to build knowledge before a lecture'

'I liked the flipped learning before the class'

'I enjoyed the extra reading that the blended learning suggested'

'The tests were really useful at the end to see how much had gone in and what need more work on.'

'The combination of documents, video as and text all work well.'

In respect of module 2, which is a predominantly biology focused module, it was determined that that the on-line activities were to extensive to be completed within the timeframe allowed. The Module Team has reviewed the timing of all on-line activities to ensure students are provided with correct timings for their completion.

Conclusion

The midwifery curriculum is well suited to this model particularly where learning needs to go beyond simply understanding. The challenge is for midwifery lecturers is for them to move from a somewhat didactic delivery to one of facilitation whilst being receptive to the different learning styles amongst the cohorts. Stumpenhorst (2012) suggested that flipped learning does not remove the need for a lecture or direct instruction, however, it allows effective teaching to be more evident whilst still delivering the amount of set content. More research is needed about the flipped learning model in relation to how it can potentially increase conceptual understanding and independent thinking. The Division of Midwifery is currently evaluating the experiences of flipped learning by the student midwives studying on the new programme. This will published in due course.

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The Effect of Explicit Information: Evidence from Half-flipped Processing Instruction

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Abstract

Using 88 Chinese primary school students as participants, the present paper compared the effect of explicit information in the half-flipped processing instruction and in the traditional processing Instruction on the acquisition of English 3rd person singular present tense. The results show (1) both the half-flipped processing instruction and the traditional processing instruction have priority over the processing instruction without explicit information in students' interpretation of the English 3rd person singular present tense; (2) EI plays a relatively greater role in the half-flipped PI than in the traditional PI; (3) the greater effect of EI in the half-flipped PI group in comparison with the traditional PI group doesn't last after two weeks. The results demonstrate that flipped processing instruction might be a better approach to boost the reconstruction and internalization of explicit information though difference between the immediate and the delayed posttest adds to the complexity of the explicit information effect in flipped processing instruction.

Keywords: flipped class, processing instruction, explicit information

Introduction

Flipped learning is a kind of pedagogical approach in which in-class activities consist of group discussion, peer instruction and interactive demonstrations while off-class activities involve web-based brief videos, lecture notes and assignments (See www.flippedlearning.org, for detail). Thus, in a flipped approach, direct instruction moves to off-class individual space and in-class becomes a place where the instructor and the students dynamically interact concerning the related teaching objectives and content. The present study uses half-flipped due to the fact that (1) off-class activities are not web-based brief videos but papers handed out to students performed off-the-class; (2) input processing sequence is flipped from explicit information (EI) followed by SIA (SIA) to SIA followed by EI.

Processing instruction (PI), as a kind of input-based language teaching approach, aims to affect the ways in which learners attend to input, and consequently enrich the learner's form-meaning mapping (VanPatten, 2004). PI consists of two components: (1) EI about the linguistic item and the particular input processing strategy that may mislead the learners to make incorrect form-meaning mapping; (2) SIA based on learners' input processing. PI has put forth a rigorous research agenda and showed to be an effective second language learning approach (e.g., Lee & Benati, 2013；VanPatten & Cardierno 1993a). Besides, more and more researchers began to seek the role of EI in PI with controversial findings (e.g., VanPatten & Cadierno1993b; VanPatten, Collopy, & Qualin, 2012; Zhang & Chen, 2015).

What should be pointed out is that almost all the researchers investigated the effect of PI with EI followed by SIA without studies with SIA followed by EI. Given the fact that the role of EI in PI is still unsettled and sequence can play a significant role in recognition (Baralt,

Gilabert, & Robinson, 2014; Granena, 2013), the present study flipped the traditional PI by giving SIA first followed by EI in order to further investigate the role of EI in PI to provide implications to grammar teaching in Chinese primary school.

Literature Review
Explicit information in Processing Instruction

PI, as an instructional pedagogical intervention that draws insights from the model of input processing (IP), is different from the other modes of pedagogical intervention that concerns language forms alone in instruction in that it aims to alter the ways in which learners attend to input, and consequently enrich the learner's form-meaning mapping (VanPatten, 2004). EI in PI refers to the rule explanation about the linguistic item and the particular IP strategy that may mislead the learners to make incorrect form-meaning mapping.

An increasing interest in SLA is the role of EI. Many researchers claim that EI is beneficial for SLA because it promotes noticing of forms in the input which can help the learners to process these forms better than if they are left to their own devices (Hulstijn, 2015; Ellis, 2002). However, in contrast to the researches mentioned, PI researchers found mixed results concerning the role of EI in PI. The majority of the studies confirmed that EI might play no significant roles for the PI effects (VanPatten & Cardierno, 1993b; VanPatten, Collopy, & Qualin, 2012), while Fernandez (2008) announced that the nature of the task structure as well as the processing problem seemed to make a difference in the effects of EI. Henry, Culman & VanPatten (2009) echoed that additional researches on the role of EI were needed. Zhang (2015) found the role of EI is related to the learners' foreign language learning motivation. Given the mixed EI results, the present study will also take EI as an important variable to further investigate the primary effect of EI in PI.

Considering that the majority of the participants in PI are adults and the quite mixed opinions concerning EI on the younger and the elder L2 learners (VanPatten, 2004; Doughty 2003) as well as the controversial findings concerning how to teach L2 grammar especially to the younger learners (Ellis, 2010; Granena, 2013), it is of interest for us to further gauge the justification of the presence or absence of EI on younger learners in PI in order to lend further implications for foreign language teaching.

Flipped Classes

The concept of flipped class was initially put forward by two middle school chemistry teachers in 2007. As the name suggests, in flipped classes what typically happens in traditional classes such as content delivery will be transferred to off-class time while off-class activities like homework will be shifted to class meeting (Bergmann & Sams, 2012; Gilboy et al., 2014). The purpose of it is to shift the toughest part in learning into in-class so that students can get in time feedback and instruction when they encounter difficulties in their application of the instructed knowledge. Therefore, it is worthwhile to point out that flipped class is more than putting a lecture online and doing homework in class. The key features of it are the various modes of off-class content provision with in-class time devoted to other activities, such as active learning, critical thinking, and problem solving (Jenkins 2015).

Flipped classes are proved to be beneficial to both cognitive and affective gains in various subjects in general. Wilson (2013) compared social science majors in her flipped statistics class to those in her traditional class and found that after moving the majority of basic knowledge acquisition out of classroom in flipped classes, making room for interactive

activities during class time, attitudes toward the class and instructor as well as on students' performance in the class had been changed positively. Peterson (2016) also studied the flipped class effect on statistics course and found that students in the flipped classroom outperformed their lecture peers by more than a letter grade on the final exam. Further, he also found that overall students in flipped class were more satisfied with the course. However, Peterson's study is not exempted from limitations either for there was no random assignment to the condition. Katharine (2016)'s flipped law teaching experience also led her to conclude that flipped learning was an overall positive teaching method preferable to the traditional one. What needs our attention is that the students in her flipped course received more educational material than those in her traditional class because the different input between the classes might cast doubt on the reliability of the results.

Despite the positive reports, researchers also found that flipped classes could be not as beneficial as expected. Through questionnaires and interviews, Strayer (2012) investigated students' perceptions of flipped classes and found although students were more open to cooperative learning in the flipped section, they were less satisfied with the poor connection between the online and face-to-face course components. Wilson (2013) also found almost more than half of the students in flipped classes had a low satisfaction with and low access to the textbook reading, reading quizzes and lectures online though their performance tended to be a little better. Hussey, Richmond and Fleck (2015) also pointed out that technology assistance, negative students' perceptions and monitoring issues were needed to be considered in flipped classes. Jenkins (2015) even pointed out that students preferred the partially flipped format. The complex results lead us to think whether flipped classes are suitable for all the subjects or all part of a subject.

Based on the literature review of EI in PI and flipped classes, the present study investigated the effect of EI in half-flipped PI using a controlled, pre- and posttest approach to answer the following questions: (1) Are there any EI effects in half-flipped PI and in traditional PI significant? (2) Are the effects of EI in half-flipped PI different from that in traditional PI? (3) Are the effects of EI in half-flipped PI remain the same after two weeks?

Method

Participants

Participants are Chinese Grade six primary school students from four intact classes. The initial subject pool, numbering 224, was reduced to 88: Traditional PI group (n=26), half-flipped PI group (n=24), PI without EI group (n=26) and control group (CG) (n=16).. The reason for it is that only subjects who scored at or less than 60% of the maximum score in the pretest as measured by the interpretation tasks on the target linguistic features were included in the final pool to make sure there was room for the participants to make progress after the treatments. Apart from the elimination score on the pretest, full attendance of all the experimental procedures was also required.

Target Linguistic Feature

Target linguistic feature is English 3rd person singular present tense for the following two reasons. First, English 3rd person singular tends to be affected by the lexical preference principle, the nonredundancy principle and the sentence location principle under the primacy of meaning principle (VanPatten 2004). Second, errors concerning 3rd person singular -s can occur even at the beginning of English learning because there is no 1:1 mapping between

cues and their outcome interpretations for L2 learners who are confronted with the challenge to process -s in the input for it can function as a subject-verb agreement marker and a possessive form, a contracted copula and a plural marker as well (Ellis, 1994).

Instrumental Treatments

Four separate instructional packets were used for different groups: Traditional PI group (G1), half-flipped PI group (G2), PI without EI group (G3), and CG (G4). The materials for different groups were balanced for the vocabulary used, the verbs targeted, and the amount of practices. In addition, the choices of vocabulary were composed of familiar and frequent items and were consulted with the participants' regular English teacher as well. Participants under different treatments were given different instructions each of which lasted two days with a total of 2 hours' exposure time. All the instructions were performed by the same instructor with the assistance of their regular English teacher.

Traditional PI group. Materials for this treatment consist of EI and SIA. EI contains rules explanation and demonstration about the forms and functions of English 3rd person singular present tense. In addition, EI also contains instructions about processing strategies that the students are prone to concerning English 3rd person singular present tense. Besides, the participants are warned not to rely on the overt subject (noun or pronoun) in initial position of the sentence but to pay attention to the verb's ending to understand whether the agent is 3rd person singular or not. SIA were designed purposefully to push the learners to pay attention to the target structure. The two hours' linguistic item exposure time was divided into three times each of which lasts 40 minutes and administered in class. After an explanation of the EI (about 40 minutes), SIA were instructed to the students by the teacher.

Half-flipped PI group. Materials for this treatment are exactly the same with that in the traditional PI group. The difference is that the two hours' linguistic item exposure time in this treatment was not completely carried out in class with one third of it performed off the class. That is to say, in the half-flipped PI, EI, together with one third of the SIA was handed out to the students to take home to do. The purpose of it is to let the students have an awareness of the class objectives, know what is unknown to them, and be prepared with some metalinguistic knowledge and questions. It will take them about 40 minutes overall. Students were instructed to do the activities first before referring to the EI. In this way, it is expected that they could read the EI with prior questions in mind. To mark sure that the students do the activities and read the EI, they were required to provide the metalinguistic knowledge for the activities. In addition, they were told that their off-class performance would work as a diagnostic tool not an assessment tool, and credit would be given for their effort instead of their correctness. Two thirds of the exposure time were carried out in class and consist of a mix of SIA and feedback suggested by students' off-the-class responses.

PI without EI group. Materials for this treatment consist of SIA exactly the same with that in the traditional PI group and the half-flipped PI group. The two hours' linguistic item exposure time was the same as that of the traditional PI group.

Control group. Control group has roughly the same amount of exposure to the target linguistic feature as the experimental groups. Different from the experimental groups, participants in this group received no rules explanation on the target structure. Neither was the target linguistic item mentioned to them. Instead, they were required to read the materials, and had a discussion concerning the materials from whatever perspectives they liked in class

under the same instructor who only explained the unfamiliar words that might occur to them.

Assessment Instruments and Scoring

A pretest-posttest design was used as the means of assessment in this experiment which contained pretest, immediate posttest and delayed posttest. Pretest was used to select the participants to make it as objective as possible that there were no significant differences between the participants so that any different results after the treatments could be attributed to the effect of different treatments. Three versions of the same test marked A, B and C were developed in a split-block design and were administered as the pretest, the immediate and the delayed posttest to measure the participants' knowledge of English 3rd person singular present tense. Each version consists of two sections: a sentence-level interpretation task and a discourse-level production task. The sentence-level interpretation tasks contain 20 sentences: 10 of these contain the target linguistic item and the other 10 are distracters in which the subject nouns or pronouns were removed to make sure the participants could only rely on the verb morpheme to establish whether the subject was 3rd person singular or not. The discourse-level production task require the participants to fill in 10 blanks in a short passage using the verbs given which contain 5 distracters that don't contain the target linguistic feature.

Following VanPatten & Cadierno (1993a), both the interpretation tests and the production tests were scored as the following. As to the interpretation tests, responses were scored as right or wrong answer for 1 point each (total = 10 points; distracters were not scored). As to the production tests, 2, 1, 0 scoring procedure was used. If the participant used the correct form of the target linguistic item and the required word exactly, he would be awarded 2 points. However, if the participant used the required form of the target linguistic item but didn't agree to the rules exactly, to say, the participant wrote *-saies* instead of *–says*, or used the required form of the target linguistic item but didn't use the required word, he would be awarded 1 point. Each blank response and no attempt to use the required forms of the target linguistic feature would be given no points. Also, the responses to the 5 distracters were not scored, so the total point was 10.

Procedures and Analyses

In order to provide more realistic treatments than previous laboratory experiments which are prone to limited ecological validity, and to conduct the research in a more strictly controlled environment than a real classroom to get more convincing results, the present paper carried out the empirical study in intact classes with specially designed materials and hand-picked students in accordance with the previous studies (VanPatten & Cadierno, 1993a). In addition, production tests were presented to the participants ahead of the interpretation tests so that the latter could not be served as input during the pre-post tests, and the whole procedure was administered by the researcher with the help of the participants' regular English teacher. Firstly, pretest for the two target linguistic features was administered to all the students to measure their prior knowledge of the two target linguistic features: English 3rd person singular present tense and English simple past tense. It took about 20 minutes on average. Then, two days after the pretest, the intact classes were randomly assigned to different treatments under group 1, group 2, group3 and group 4 respectively. Immediately after the treatment, immediate posttest was administered. And delayed posttest was administered two weeks after the treatment. SPSS 15.0 was used to do the analyses.

Comparison of Interpretation and Production Pretest Scores for Four Groups

A test of homogeneity of variances was conducted on both interpretation and production pretest and revealed that the four groups were homogeneous as the Levene Statistic for interpretation is .093 (p = .964 >.05), for production is 1.572 (p = .202 >.05). The results showed that One-way ANOVA on pretest scores which revealed no significant difference among the four groups as to Interpretation (F(3, 87) = 1.462, p = .231 >.05) and Production (F (3, 87) = .501, p = .683 >.05) were valid. It means that there is no significant difference among the four groups prior to the experimental treatments as measured by both the interpretation and production tasks. Thus, we can contribute any gains in the following interpretation and production tasks to the different instructions but not to the prior knowledge of any of the groups.

Comparison of Interpretation and Production Pre-Post Test Scores for Four Groups

Table 1 Descriptive statistics of interpretation pre-post tests for four groups

Groups	N		Pretest	Immediate posttest	Delayed posttest
1	22	Mean	3.41	7.59	7.05
		SD	1.297	1.709	1.241
2	24	Mean	4.00	7.00	7.42
		SD	1.285	1.865	2.225
3	26	Mean	3.50	5.77	6.62
		SD	1.175	2.471	2.994
4	16	Mean	4.06	5.00	6.00
		SD	1.389	1.592	1.033

Table 1 provides descriptive pre-post test scores on interpretation tasks for four groups. It shows that both immediate posttest and delayed posttest have higher mean scores than pretest, indicating that all the four groups had gains on English 3rd person singular present tense as measured by interpretation tasks, and the gains can maintain for about two weeks. However, great variation was evident among the four groups. As to group1, the mean scores ranged from 3.41 to 7.59, then to 7.05; As to group2, the mean scores ranged from 4.00 to 7.00, then to 7.42; As to group3, the mean scores ranged from 3.50 to 5.77, then to 6.62; As to group 4, the mean scores ranged from 4.06 to 5.00, then to 6.00. Although group 1 had the highest score among the four groups followed by group2 and group3, with group4 to be the lowest as measured by the immediate interpretation tasks, and group2 had the highest score among the four groups followed by group1 and group3, with group4 to be the lowest as measured by the delayed interpretation tasks, it didn't show whether the gains were significant or not. In order to establish whether there are statistically significant differences among the four groups, scores for the interpretation immediate posttest and delayed posttest were submitted to one-way ANOVA separately.

Table 2 provides tests of between-subjects effects of two posttests scores on interpretation tasks for four groups. It demonstrates significant differences among the four groups on the immediate posttest (F (3, 87) = 6.876, p = .000 <.001), while no significant differences were found on the delayed posttest (F (3, 87) = 1.564, p = .204 >.05). It indicates that there were significant differences among the four groups immediately after the treatment. However, the differences didn't sustain two weeks after the treatment.

Table 2 Tests of between-subjects effects of two interpretation posttests for four groups

Source	Dependent Variables	Type III Sum of Squares	df	Mean Square	F	Sig.
Groups	Immediate posttest	81.510	3	27.170	.876***.000	
	Delayed posttest	21.501	3	7.167	1.564	.204

Notes: *** = The mean difference is significant at the .001 level.

Multiple comparisons (See Table 3) of the immediate posttest scores on interpretation tasks for four groups revealed that the significant between-subjects effect was due to the significant difference between the PI groups (group1 and group2) and group4, and the significant difference between group1 and group3 (Mean difference = 1.82, p = .023 <.05). As shown, both group1 and group2 were significantly better than group 4 (Mean difference = 2.59, p =.002 <.01; Mean difference = 2.00, p = .026 <.05, respectively), while no significant difference was found between the group 3 and the group4 (Mean difference = .77, p = .687 >.05) as measured by the immediate posttest. As to the delayed posttest, only group1 was demonstrated to be significantly better than group4 (Mean difference = 1.05, p = .042 <.05) while no significant difference was found between group2 and group3 (Mean difference = 1.41, p = .060 >.05), and between group3 and group4 (Mean difference = .62, p = .921 >.05). That is to say, although group3 outperformed group4 on the immediate posttest, this difference wasn't maintained on the delayed posttest.

Table 3 Multiple comparisons of two interpretation posttests for four groups

Dependent variable	I	J	Mean Difference (I-J)	Sig.(a)	Results
Immediate Posttest	1	2	.59	.798	
(Scheffe)		3	1.82*	.023	1>3
		4	2.59**	.002	1>4
	2	3	1.23	.197	
		4	2.00*	.026	2>4
	3	4	.77	.687	
Delayed Posttest	1	2	-.37	.981	
(Tamhane)		3	.43	.986	
		4	1.05*	.042	1>4
	2	3	.80	.869	
		4	1.41*	.060	2>4
	3	4	.62	.921	

Notes: * = The mean difference is significant at the .05 level; ** = The mean difference is significant at the .01 level.
1, 2, 3, 4 stand for group1, group2, group3 and group4 respectively.

The results indicate that (1) both the half-flipped PI and the traditional PI have priority over the PI without EI in students' interpretation of English 3rd person singular present tense, and the significant facilitative role of the two treatments can last two weeks; (2) the effect of EI in the half-flipped PI group is different from that in the traditional PI group in that EI plays a relatively greater role in the half-flipped PI group; (3) the greater effect of EI in the half-flipped PI group didn't last after two weeks.

Discussions

First, let's come to the discussions of the effect of EI in PI. It is of significance for us to consider these findings in relation to the previous related studies. Different from the majority of the studies that confirmed the causal role of SIA for the PI effects (VanPatten &

Cardierno, 1993b; VanPatten, Collopy, & Qualin, 2012), the results of the present study parallel to that of Farley (2004) and Fernandez (2008) that indicated that EI played a facilitative role for the effect of PI in speeding up processing for certain structures. In the present study, the fact that both the half-flipped PI group and the traditional PI group have priority over the PI without EI group in students' interpretation of English 3rd person singular present tense adds evidence for the attributive role of EI in PI.

The nature of the task structure as well as the processing problem seemed to make a difference in the effects of EI. L2 morpheme studies (Ellis, 1994) suggest that English 3rd person singular -*s* is among those morphemes that are relatively easy to be understood but more problematic to use accurately and fluently. Besides, consciousness-raising can vary, depending on the degree of explicitness of the instruction (Shardwood-Smith, 2015). In the present study, both the half-flipped PI group and the traditional PI group are more explicit than the PI without EI. Since between the ages of 6-7 and 16-17, everybody loses the mental equipment required for the implicit induction of the abstract patterns underlying a human language (DeKeyser, 2000), and explicit rules can serve a useful purpose in the early stages for it can make the learners more sensitive to input (VanPatten, 2004), it is easy to comprehend that students in the more explicit treatments performed a little better than the less explicit ones. However, due to the rather mixed findings concerning the effect of EI in PI previous studies, additional researches in this line are needed.

What interests me more is the different role of EI in the half-flipped PI group and the traditional PI group. The present study shows that the effect of EI in the half-flipped PI group is relatively greater than that in the traditional PI group. The features of the half-flipped PI treatment may be the attributive factors for the differences. In the half-flipped group, the EI provision is shifted to off-the-class so more in-class time can be used to deal with the toughest part in learning characterized with more student engagement, in time teacher feedback and intensive interaction. Besides, the formative assessments that pay more attention to the students' effort instead of their correctness can also increase students' learning autonomy and responsibility (Jenkins 2015). Also, when EI is presented after the SIA, it might be much easier for the students to reconstruct their stored knowledge due to the significant role of sequence in recognition (Baralt, Gilabert, & Robinson, 2014; Granena, 2013). Therefore, the present result, to some extent, provides more evidence to the facilitative role of flipped class in promoting students' cognitive gains in line with the previous researchers in flipped classes like Katharine (2016), Peterson (2016) and Wilson (2013).

Apart from the above mentioned, the different roles of EI between the immediate post-test and the delayed post-test also need our attention. The results of the present study showed greater EI effect in the half-flipped PI group in comparison with the traditional PI group on the immediate posttest. However, the differences between the two groups disappear in the delayed post-test. The difference between the immediate and the delayed posttest in the present study adds to the complexity of the EI effect in flipped PI to some extent.

A careful examination of the present study reveals that the participants might be one of the causal factors for the differences. The participants in the present study are primary school six graders. According to Saville-Troike (2006) and Muzoz (2006), older and younger L2 learners use very different mechanisms for (second) language learning with the elders using largely their analytical abilities and the children using their specific learning

mechanisms and universal grammar. Thus, we might conclude that although half-flipped PI treatment was more favorable for the students, it couldn't change the nature of EI which tend to be more boring and complicated to the younger learner.

Additionally, time and frequency might also play a role in the effect of EI for the flipped class is only once. It needs more time for the explicitly learned knowledge to be restructured and internalized into the learner's implicit knowledge (Ellis, N., 2015), and the intensity of practice can affect the learning of a grammatical structure (Ellis 1994). If this is the case, more flipped classes might be needed to help the students to strengthen the interface between implicit and explicit knowledge.

Conclusion

The present paper investigated the effect of EI in half-flipped PI in comparison with the traditional PI. The results show that both treatments have priority over the PI without EI and the effects can last two weeks, which echoes that EI might speed up processing for certain structures. Besides, the greater effects of EI in the half-flipped PI group in comparison with the traditional PI group indicates that flipped PI can be a better approach to boost the reconstruction and internalization of EI to some extent though delayed effect were not found.

Despite the significance, the present study also has its limitations. First, although students in half-flipped PI were instructed to do the activities first before referring to the EI off the class, there is no guarantee that some of them referred to the EI first. Second, it is said that apart from the cognitive gains, flipped classes can promote students' affective gains as well. However, due to the regular time schedule of the primary school, the present study hasn't probed the participants' affective gains. Hence, much more scientific design should be developed to investigate participants' cognitive and affective gains in the future studies. Finally, it is worth noting that flipping a class is not for all faculties and possibly not for all classes, especially not for those who are used to the traditional approaches and not prepared to design new course materials (Wilson, 2013). Therefore, it is suggested that pedagogical materials and practices on grammar teaching for primary school students in China should make a thorough survey before trying flipped PI approach.

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