Flipping at an Open-Enrollment College

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Abstract

The flipped classroom is a blended, constructivist learning environment that reverses where students gain and apply knowledge. Instructors from K-12 to college level are excited about the prospect of flipping their classes, but are unsure how and with which students to implement this learning environment. However, there has been little discussion regarding flipping the classroom with students who are less academically prepared specifically those students at open-enrollment colleges. Many students at the open-enrollment college did not perceive the flipped classroom favorably. This differed from the perceptions reported by instructors in Advanced Placement high school chemistry classes or chemistry at competitive colleges and universities. Students reported that the technology used to deliver content and the overall flipped structure hindered their learning and suggested that the flipped classroom was the reason for lower than expected grades. This study compared class rank (academic preparedness) and mathematics level to overall course grade in a lecture, flipped class, and stealth flip class learning environment. The focus of this paper is to provide the reader with insights about flipping a general chemistry class at an open-enrollment college where the mathematics level and academic preparedness are much different from students at competitive universities. The author will provide student comments on the flipped classroom as well as revisions to the flipped class structure that provided students with more structure and autonomy support.

Introduction

The basic definition of the flipped classroom is a learning environment where content knowledge acquisition is moved outside the classroom and knowledge construction and problem-solving are moved into the classroom. The flipped classroom can be considered a blended learning environment (Strayer, 2012) and a practical application of constructivism (Felder, 2012). A blended learning environment infuses technology into the learning space and allows knowledge acquisition to occur in a differentiated manner (De George-Walker & Keeffe, 2010) . With the increased availability of the Internet and electronic devices, instructors have slowly integrated technology into the practice of teaching and learning (Strayer, 2012). Ideally, content acquisition via technology has the potential to free up face-to-face (F2F) class time for more meaningful learning experiences. Blended learning restores the focus of the classroom to the learner and learning as opposed to teaching (De George-Walker & Keeffe, 2010). However, the focus is not about the actual technology, but how the individual learner uses the technology the acquire knowledge. The learner is provided choices of how and when to learn and given the opportunity to construct knowledge in a social constructivist learning environment with the teacher as a facilitator.

Motivation and Academic Preparedness

A student's motivation to learn increases when perceived value and meaning in the learning tasks increases and the student is able to take an active role in his or her learning (Baeten, Struyven, & Dochy, 2013; Tuan, Chin, & Shieh, 2005). Blended, constructivist

learning environments like the flipped classroom provides autonomy support, as well as active and differentiated learning. Students' motivation to learn is found to be more important to learning science than cognitive processes (Ning & Downing, 2012; Tuan et al., 2005). Motivational factors include self-perceived ability, self-regulated learning processes, self-efficacy, goal orientation, test anxiety, and learning strategies (Baeten et al., 2010; Ning & Downing, 2012; Tuan et al., 2005 others). These factors are strongly influenced by the type and quality of motivation (Niemiec & Ryan, 2009; Ryan & Deci, 2000).

The self-determination theory (SDT) purports that different types of motivation influence why and how a person orients themselves to a task (Ryan & Deci, 2000). A student is said to be intrinsically motivated to learn when the learning is out of inherent interest and the student learns for the sake of learning. However, when a student learns for the sake of obtaining a grade or external outcome, the student is said to be extrinsically motivated. Finally, an amotivated student is not motivated to learn for any reason. Simply, the student lacks the desire to learn. The reasons students learn content can be regarded as a student's goal orientation. Goal orientation is related to the level of motivation in that students who exhibit intrinsic motivation and mastery-orientation are focused on becoming proficient in how knowledge is acquired through an increase in skill and understanding compared to their previous performance (Ning & Downing 2009;). Those students who exhibit extrinsic motivation and performance-oriented learning are concerned about how knowledge is acquired in comparison to others (Ning & Downing, 2009). Students with high levels of both intrinsic and extrinsic motivation were found to have the strongest academic performance in high school (Wormington, Corpus, & Anderson, 2012). Therefore, one can conclude that students graduating in the top third of their high school class have higher levels of quality motivation.

The Flipped Classroom

The flipped classroom is a subset of a constructivist, blended-learning environment (Felder, 2012). The flipped classroom capitalizes on technology that delivers content that can be assimilated by a student using surface approaches to learning such as recall and memorization. In class, the students are given instructor guidance and peer-support to solve problems and organize content in a meaningful way. While there is no prescribed method of flipping a class, students are generally required to come to class prepared to actively participate (Bergmann & Sams, 2012; Lancaster, 2013; Smith, 2013).

The questions that arise most when teachers consider implementation of the flipped classroom are: (1) Are students more successful (course grades) in the flipped classroom? (2) Do all students prefer the flipped classroom?, and (3) What are considered the best practices for flipping a class taking into account the characteristics of the student population?

Discussion

Overview of Class Structure. The focus of this discussion will be the General Chemistry classes of Fall 2012, Fall 2013, and Spring 2014, where each class will be labeled Lecture class, Flipped class, and Stealth Flipped, respectively. The Lecture and Flipped classes had the same textbook, semester tests, and final exams. The Stealth Flipped class used a different textbook and different semester tests. A new textbook was selected based upon agreement between the chemistry instructors. The new textbook had a supplementary site called Mastering Chemistry.

It was decided that Mastering Chemistry would provide students with greater visuals and tutorials.

The idea of and term "Stealth Flip" is attributed to the Turn to Your Neighbor blog. About 80% of the students taking General Chemistry are Pre-Physician Assistant majors. Other majors taking General Chemistry include general studies (with intentions of transfer), Plastics and Polymer Engineering Technology, and Civil Engineering Technology. To be admitted into the Physician Assistant major, students must maintain at least a 3.0 mathematics/science GPA and a 3.5 overall GPA. General Chemistry is considered a "gateway" course for this major where the focus for most students is "getting an A".

The Fall 2012 Lecture class was split between two physical classrooms; one section had 30 students (divided into two lab sections) and the other 15 students (one lab section). The 30 student section was taught in a computer lab and the lectures were recorded live using MediaSite. Students in both sections were able to access these recorded lectures after class. Assessments included chapter quizzes, three semester tests, and a final exam.

The Fall 2013 Flipped class was not divided between two sections and had 43 students in one physical classroom. The students were asked to view the recorded lectures (vodcasts) from the Fall 2012 class and/or complete a reading assignment prior to coming to class. Links to these recordings were found in the course learning management system (LMS). The class began with the instructor answering student questions from the vodcast or reading. After the question/answer session (sometimes up to 30 minutes in length), a vodcast quiz was administered. While taking the vodcast quiz, students could use their notes from the vodcast or reading. Further assessments included chapter quizzes, three semester tests, and a final exam.

The Spring 2014 Stealth Flipped class was divided into two physical classrooms where each section had about 16 students each. Each section also had a lab component similar to previous students in the Lecture and Flipped classes. Students were asked to complete a lesson prior to coming to class. An example of a Lesson can be found in Figure 1 below.

Figure 1. Example of Lesson Activity in Stealth Flip Class

Lesson 4

View Vodcasts: Resonance(a little silly), Ch. 4 L4 Resonance, Ch. 4 L4 Resonance mp4, Ch. 4 L4 Formal Charges, Ch. 4 L4 Formal Charges mp4
Reading sections: 4.9-4.10
Virtual Lecture: Drawing Resonance Structures, Calculating Formal Charges
Before Class problems and Gate Check: 4.18-4.22 and Gate Check Ch. 4 L4

Students were instructed to complete the lesson in the order given where the vodcasts and readings were considered "knowledge acquisition", the Virtual lectures "guided instruction",

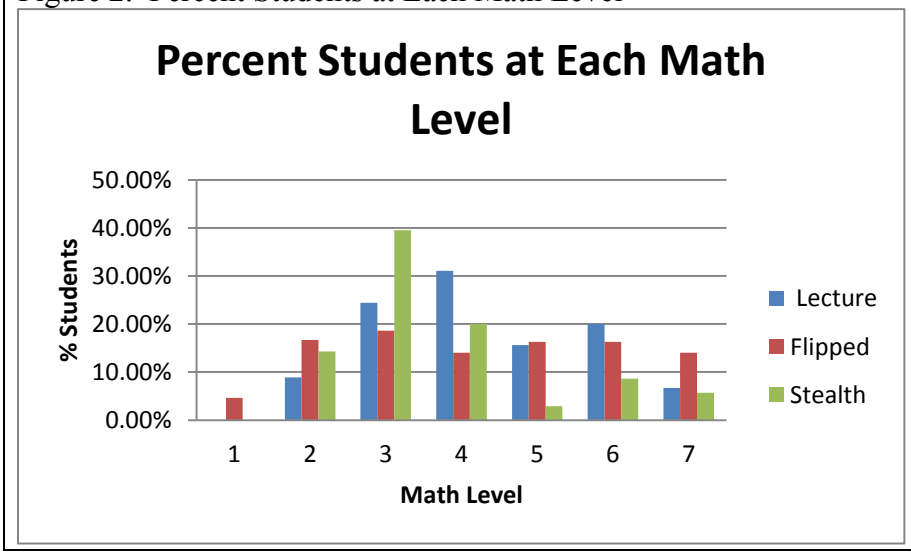
before class problems "try it yourself", and the Gate Check "self-assessment". Students completed the Gate Check and were given credit by entering a personal ID code. The instructor began each class with a review of the Gate Check. Misconceptions and "muddy points" were clarified at this time. This took about 10 minutes at the beginning of each face-to-face class session depending on the content. This was a decrease in review time from the Flipped class and due to the Gate Check. The responses on the Gate Check were used to focus the review as opposed to individual student questions posed in the Flip Class.

After the Gate Check review, students were given a list of "in class" problems to complete. Each lesson had its own set of in class problems. Students could work on the in class problems together in their groups or on their own in class and the answers were provided in the textbook. The instructor roamed the room answering student questions and monitoring progress. If the instructor saw a common misconception or question, the instructor asked the students to turn their attention to the board where the problem was explained to the entire class. Any problems not completed in class were completed outside of class. All in class problems were collected upon completion of the chapter.

Summative assessments included chapter quizzes, four semester tests, and a final exam. The chapter quizzes were administered in the LMS and could be taken unlimited times up to the due date. The highest grade was recorded for each chapter quiz. This provided students with extra problem-solving practice on a relatively low-stakes summative assessment.

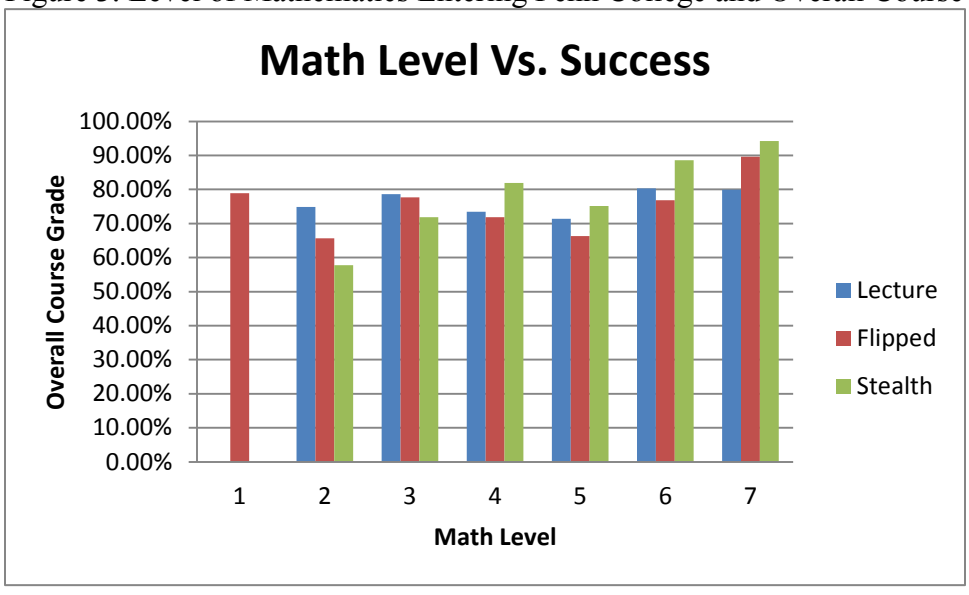
High School Class Rank and Mathematics Level. Since Penn College is considered an "open-enrollment", there are no minimum criteria such as SAT scores or high school GPA for a student to enroll. After applying to Penn College, a student must take placement exams in reading, English, and mathematics. The description of the mathematics placement levels are found in Appendix A. A student could place at the remedial level for mathematics (below College Algebra and Trigonometry I, Placement 3), take the remedial class, and register for General Chemistry. Of the students in the Lecture class, 29% entered Penn College at the remedial level. Of the students in the Flipped class, 40% entered Penn College at the remedial level and 63% of the students in the Stealth Flipped class entered Penn College below College Algebra. Figure 2 below illustrates the Math Level upon entering Penn College for each class.

Figure 2. Percent Students at Each Math Level



Mathematics ability entering college does seem to significantly influence course success (overall course grade) in general chemistry (However, the significance is not as great as class rank. This is most likely due to the fact that students remediate their math skills before taking general chemistry. When overall course grades were compared to the math level upon entering Penn College, mathematics preparedness upon entering Penn College did affect students' overall grades especially if a student entered at a Level 4 and above. These data are illustrated in Figure 3 below.

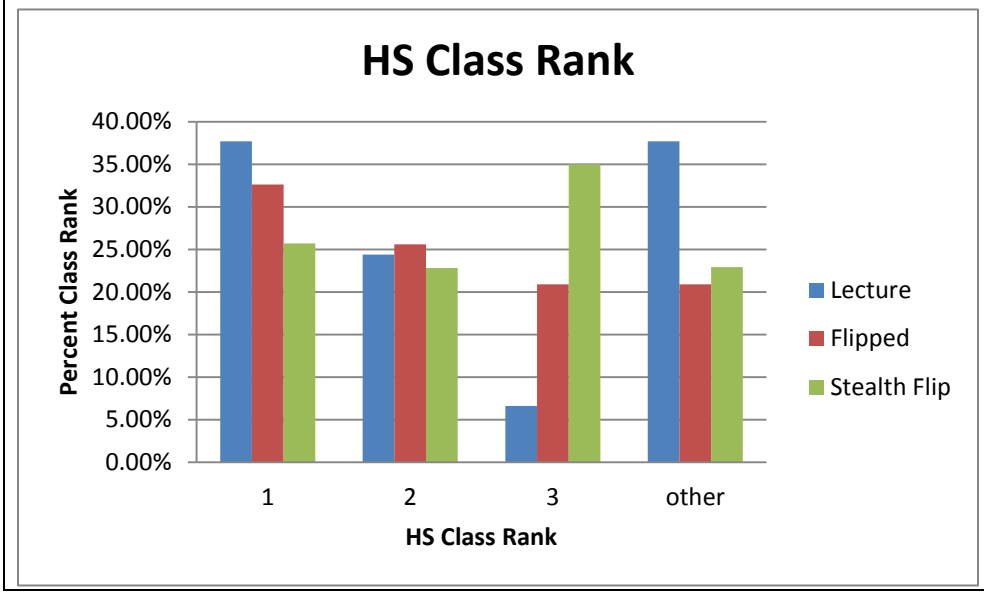
Figure 3. Level of Mathematics Entering Penn College and Overall Course Grade



Using SPSS software, a one-way analysis of variance (ANOVA) was conducted to determine if course grade (dependent variable) could be predicted from mathematics level entering Penn College (independent variable). Data from the "other" category as well as those students who withdrew from the course were removed in the analysis. The results of the ANOVA indicated that mathematics level explained 17.6% of the variance in course grade (R^2=.176, $F(1,84) = 17.131$, $p < .001$).

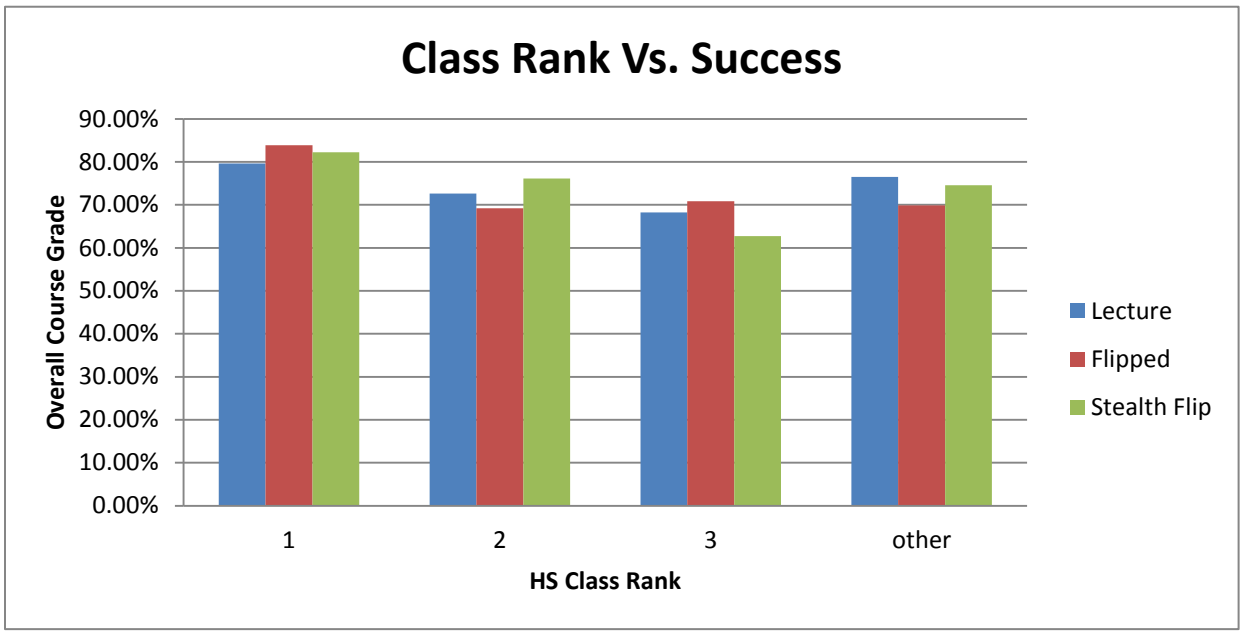
In addition to mathematics preparedness, success in general chemistry might also be influenced by academic preparedness. Even though SATs are not required for admission at Penn College, a GED or high school diploma is required. Most students' class ranks are listed as part of their demographical information where the College lists them as top third, middle third, or bottom third of their graduating class. If a student went to a private or preparatory school or is a non-traditional student, this information is frequently not provided. However, if a student received a GED, this information is available. Class rank data were aggregated for the Lecture, Flipped, and Stealth Flipped class. These data are illustrated in Figure 4 below.

Figure 4. Percent of Students in Top Third, Middle Third, and Bottom Third of High School Graduating Class in Each Class



The differences in mean course grades are not significant when comparing the overall course grades in the Lecture, Flipped, and Stealth Flip classes (R^2=.005, $F(1,84) = .220$, $p = .803$). However, the overall course grade in the Lecture, Flipped, and Stealth Flip classes did not take into account the differences in high school class rank. To explore the hypothesis that academic preparedness influenced success in general chemistry, overall course grades were compared to class rank in the Lecture, Flipped, and Stealth Flipped classes. These data are presented in Figure 5 below.

Figure 5. Percent of Students in Top Third, Middle Third, and Bottom Third of High School Graduating Class Versus Overall Course Grade in Each Class



Using SPSS software, a one-way analysis of variance (ANOVA) was conducted to determine if course grade (dependent variable) could be predicted from class rank (independent variable). Data from the "other" category was removed in the analysis. The results from the ANOVA indicated that class rank explained 20.965% of the variance in course grade (R^2=.208, $F(1,84) = 20.965$, $p < .001$). In other words, the higher the student's class rank in high school, the higher the overall course grade.

In summary, students graduating in the upper third of their high school class were 4.3% and 2.6% more successful in terms of overall course grade in the Flipped and Stealth flip class respectively than the Lecture class. Students in the middle third of their graduating class were more successful by 3.6% in the Lecture class than the Flipped Class. The middle third students in the Stealth Flip class were 3.4% and 6.8% more successful than the Lecture and Flipped Class respectively. However, students at the bottom third of their graduating class were more successful by 2.6% in the Flipped class than the Lecture class, but were 5.0% and 8.0% less successful in the Stealth flip class than the Lecture and Flipped Class respectively.

From the math level and class rank data, the Stealth Flip students were not as academically and mathematically prepared as the students from the Flip class and much less so than the Lecture class. Even so, the cumulative course grades for all three groups were not statistically significant from each other ($p = .803$); in fact, the overall course grades were almost identical. As a result, the structure of the Stealth flip class did not show any significant decrease in student achievement, and indicates that the new structure is as equally successful as a traditional classroom

Overall, the average student (middle third) was more successful in the Stealth Flip class than both the Flipped and Lecture class. Students with a class rank "not given" and the non-traditional students comprised the "other" category and were removed from the statistical analysis. Considering the graphical data only, these students appeared to be more successful in the Lecture and Stealth Flip classes than the Flipped class. Non-traditional adult learners are generally more focused on their academic pursuits and have high quality motivation (Pew, 2007) and expressed more favorable reactions to the flipped classroom learning environment.

Class Rank and Perceptions of Flip Class. Learning environment in the Flipped class was measured using modified items from the College and University Classroom Environment Inventory (CUCEI) with Likert-scale response choices (Fraser, Treagust, & Dennis, 1986; Strayer, 2012). Following these survey questions, students were asked to comment about their perceptions of the flipped classroom and how this changed their study habits. The information in Appendix B provides a snapshot of their responses.

The more academically prepared and non-traditional adult student responded favorably to the flipped classroom. Even those who "hated" the flipped classroom noted a change in study habits. Ironically, many said they had to learn how to find information on their own and learn on their own. Although they did not think this was positive, it is in fact what college learning is all about.

In both the Flipped and Stealth flip classes almost every non-traditional student made comments that the ability to learn the material at his or her own pace was extremely beneficial. These same students also commented on many of their classmates' inability to stay on task during class. The instructor also made similar observations. Because of high percentage of students with low academic and mathematics preparedness, many in class sessions deteriorated into social hour in the Flip Class due to the large (N=43) class size. A similar situation arose in the Stealth Flip class, but because of the small class size (N=16 each), the instructor was able to keep students on task to a greater extent.

In the Flip Class, the instructor had to spend too much time with each student due to their lack of preparation before class. Students in the Flip Class resented the fact that they had to learn outside of class and were very vocal when expressing their sentiments. Those students who wanted to concentrate had to use ear buds to drown out neighboring conversations. Anecdotally, non-traditional adult learners expressed satisfaction with the flipped classroom learning environment to a greater extent than the traditional student. Top third traditional students also expressed little discontent in the Flipped Class. Students who were less academically prepared and had a lower level of mathematics ability were most vocal in expressing their discontent in the Flipped Class.

Interestingly, only two students in the Stealth Flip class cited discontent with the learning environment. Both students called the learning environment the "flipped class" when expressing their displeasure. Of these students, one did not graduate from high school but instead earned a GED. One student who was in both the Flip and Stealth flip class expressed much more satisfaction with the structure of the Stealth flip class. She said it was more organized and "easier to follow". She also described the short vodcasts as "much better and not as long and boring" than the MediaSite classroom recordings.

Personal Discussion on Changes to Flip Classroom.

I now consider myself a "Stealth Flipper". No need to call attention to the learning environment. This is the way this course is taught because it is best for the student. In addition, by not labeling the learning environment as a "flipped classroom", students who are not performing optimally do not have the excuse of "not being able to learn in the flipped class". Interestingly, the negative comments received this semester from students about the learning environment used the term "flipped classroom" when addressing the question about the learning environment.

Structure of the Stealth flip Pre-class Lesson. In the Stealth flipped class each chapter consists of 3-8 lessons. Each lesson will include a series of vodcasts, virtual lectures, section reading, before class problems, and a Gate Check. This is a lot of work, but students are reminded that a 3 credit class = 1 hour in class/2 hours outside of class. Each lesson in the Stealth flip class includes the following:

1. Instead of MediaSite Classroom captured videos, short vodcasts from a variety of sources (Bozeman Science, Tyler Dewitt,Socratic.org) as well as instructor-made vodcasts. Personal vodcasts were recorded using a pdf annotator, Wacom tablet, and Camtasia Relay. Links to these are provided in the Lessons section within each module.

2. In addition to the vodcasts, the new textbook includes Mastering Chemistry. Mastering Chemistry provides short video clips of problems being solved on a whiteboard. These short tutorials were included as part of each lesson and were labeled as "virtual lectures".

3. A few problems were assigned for students to attempt BEFORE class. These are called "before class problems". These problems were straight forward and the instructor-made vodcasts often solved at least one of these assigned problems.

4. Finally, students complete a Gate Check BEFORE class. Google forms were used as a method to assess whether students viewed the vodcast lessons. Within the Gate check, students were asked to write their muddy and clear points on the Gate Check. Each class began with a review of students' anonymous, aggregated, responses. This provided the opportunity to focus on the content that is most confusing. Students enter their own confidential ID so that student completion of the Gate Check is confirmed. At this time, Muddy Points were addressed without reviewing all information. This is aligned with the "Just-in-Time" teaching techniques outlined by Eric Mazur at Harvard (Mazur, 2009).

Following the Gate Check review, students work on problems in groups from the text. All "problems" are done in class. Midway through the semester, the group work was modified so that it was less like a study hall and more collaborative. This modification has worked, but it has also made some students (pre-PAs) disgruntled (students voiced their displeasure and noted it on the end-of-course survey). Those who do not complete them in class need to do so at home and were collected for a grade. In class problems were not collected in the Flipped Class as I **ASSUMED** college students would complete them. I was reminded that unless an activity is graded, some students will not complete it.

After the content was complete, students are given several days to take the chapter quiz (quiz due date on LMS calendar). This is administered in the LMS. The quiz consists of 10 multiple choice questions taken from a pool of 50-100 questions. Each student's quiz is different. There is a time limit, but each student has up to unlimited attempts to take the quiz. This has made this previous "high stakes assessment" more "low stakes" and a good learning tool. However, about 33% of the students either did not take the quiz or only made one attempt.

Stealth Flip class observations. Many students complete the Gate Check and did not view the vodcast. In fact, several students in the Stealth Flipped class are completing the Gate Check and skipping class. Students who followed the directions, viewed the vodcasts, and took notes, earned a C or better. Students who did not prepare for class earned a D or lower. In future flipped classes I plan hold students more accountable for pre-class preparation than simply filling out a form. However, I do not want to lose class time policing whether students completed the lesson prior to class. Students will be required to keep a Lesson notebook with notes from the vodcasts and readings as well as before class problems. I plan on collecting these unannounced and periodically.

The class size of 16 per section has been a huge benefit. I am able to spend quality time with each student. The Stealth Flip class students are less academically and mathematically prepared than the Lecture and Flipped classes therefore each student needed more attention and guidance. I also teach the lab sections for the Stealth Flip class as opposed to Lecture and Flipped classes where I only taught one section and no lab sections respectively. Teaching the lab component for the Stealth Flip class has also allowed me to get to know the students better and work one-on-one with them in a more relaxed environment. Most of the Stealth class students are respectful and thoughtful. They are curious and not as focused on earning an A. To that end, the Stealth class students are a joy to have in class and as a result, I am much less uptight and anxious around them. I do not think this pleasant environment is solely due to the Stealth flip structure; rather, it's just the luck of the draw to get a nice, respectful group of students.

Many have reported to me that they love the vodcasts and really like working on the problems in class. These are the revisions I plan for the Fall 2014 semester.

1. The class size will be approximately 48 students. I solicited volunteer teaching assistants from previous semesters. Several responded and are excited to help me.

2. Students will record all Lesson activities in a one-subject spiral bound notebook. The Lesson activities will be checked periodically (unannounced) and graded according to completion. The notebook will be organized as Chapters and Lessons and include notes from the assigned vodcast and/or textbook readings, demonstrated problems from the vodcast, and assigned problems to try on their own. The inclusion of the Gate Check questions will be optional. Essentially, the Lesson notebook will serve two functions. It will provide me with more insight about what each students does to prepare for class. The Lesson notebook will also provide opportunities for discussion about note taking and self-regulated learning. Many students do not know how to learn and by collecting the notebook, I hope to guide them in this process.

Adult learners and the Flipped classroom. In all iterations of the flipped classroom, the adult learner responded more favorably than the traditional student. Although the flipped classroom is thought to be favorable environment for the Millennial student (Bergman & Sams, 2012; Lancaster, 2013), the adult learner may be more successful and perceive it more favorably due to the andragogical underpinnings of the flipped classroom (Pew, 2007). Suggestions for future research include determining the differences in course grade in and perceptions of the flipped classroom between traditional and non-traditional learners.

Concluding thoughts. Flipping in any educational setting is not a native process for either the teacher or the student. Much consideration must go into the process before implementation. Student characteristics such as academic preparedness and motivation to learn should be considered when designing the flipped class structure. Candid conversations about methods that do not work and student perceptions should continue so that instructors who are interested in flipping their classrooms are fully aware of the best practices for their particular student population. Students who are less academically and mathematically prepared should have a very structured learning environment with continual instructor feedback and prescribed pre-class activities.

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Appendix A

PENNSYLVANIA COLLEGE OF TECHNOLOGY ACADEMIC SERVICES AND FIRST YEAR PROGRAMS
www.pct.edu/firstyear

Placement Into Mathematics Curriculum

The goal of the placement process is to identify the initial placement into the mathematics curriculum that will facilitate the student's success in college mathematics. Multiple measures are considered by a placement committee of mathematics faculty to determine a student's placement. Those measures include:

- Scores on mathematics and reading placement exams
- High school math courses completed and level of success achieved
- SAT/ACT scores, if available
- Time lapse since completing last math course
- Motivation and attitude, as determined by an affective survey
- High school rank

The committee assigns students to one of the following placements:

Placement One
Students have a weak current working knowledge of basic arithmetic. Students will need to complete prerequisite, develop-mental course(s) before attempting any certificate or degree-level mathematics course. Typically, students assigned to this placement have experienced difficulty with mathematics throughout their education or have been away from mathematics for an extended period of time.

Placement Two
Students' basic arithmetic skills are adequate, but current working knowledge of elementary algebra, required for success in all degree-level mathematics courses, is weak. Students will need to complete prerequisite, developmental course(s) before attempting any degree-level mathematics course. Typically, students assigned to this placement have not taken an algebra course, have experienced difficulty with algebra, or have forgotten algebra concepts because they have not used algebra for a significant length of time.

Placement Three
Students' elementary algebra skills are adequate and current working knowledge of intermediate algebra is sufficient for success in some college math courses, but not adequate for the College Algebra I level and above. Typically, students who receive this placement have taken at least two high school algebra courses, but may have experienced difficulty with those courses or may have forgotten some algebra concepts because they have not used algebra for a significant length of time.

Placement Four or Five

Students' current working knowledge of intermediate algebra is sufficient for beginning college math courses up to and including the College Algebra I level, but not Pre-Calculus and above. Typically, students who are assigned to this placement have experienced success in high school Algebra I and II, may have taken a course(s) beyond the Algebra II level, and have usually scored well on the math portion of the SAT/ACT.

Placement Six
Students' current working knowledge of algebra is sufficient for all beginning college math courses below the level of Calcu-lus. Typically, students assigned to this placement have experienced success beyond the level of high school Algebra II, may have taken a trigonometry course, and usually have scored very well on the math portion of the SAT/ACT.

Placement Seven
Students' current working knowledge of algebra and trigonometry is very good. Their skills are sufficient for all beginning col-lege math courses including Calculus I. Typically, students assigned this placement have experienced success in high school algebra, trigonometry, and possibly high school calculus. They usually have earned high grades in these courses and have a strong SAT/ACT score in mathematics.

Appendix B

Class Rank	Grade in Class	Comments on Experiences in Flipped Classroom
1	B	It has been a bit of a struggle with how large the class is. I feel like the group as a whole gets side tracked because so many people have questions so the work that we are supposed to be doing in class doesn't get done.
1	A	It was a different and okay experience.
1	C	I did not enjoy this set up at all. I think that lecture is necessary. I struggled in this class purely because of the vodcasts. I put my time and effort in. I excelled in chemistry in high school and being in this class made me feel like a weak student, for a lack of words, dumb. For being such a large class, one teacher answering 40 students questions is difficult. Even when there was time to see the other students, I felt more time was spent helping the students with higher grades in the course for reasons I am not sure of. If this method were to work there would need to be either a TA or a smaller class size. However, if I am ever given the opportunity to take a flipped course again, I will be the first to not sign up for it.
1/NT/degree	A	I think its wonderful! i enjoy being able to pause, rewind if necessary. I like being able to have an "office hours"-like environment in the class room. its not like we're not getting any instruction bc we are. there isn't a second during class, or out of class that we're not learning something. Often times, in past experiences, i would struggle just to write down what the prof is writing on the board, then try to understand it later. Here, the flipped classroom allows me the opportunity to understand the material better during class bc i received instruction prior to, during a vodcast.
		The flipped classroom learning experience is not very successful in this class. The class is too large. The professor does not have time to go to each indivdual when they need help and give them the help they need. Trying to make up for that lack of time the professor tends to try to explain concepts on the board which some students do not pay attention to or listen to what she says during this time because some of them understand it from watching the vodcasts on their own time outside of class. In class the students were asked to do in class problems. Outside of class the students were required to watch vodcasts or read on top of doing assignments out of the book and on connect. This resulted in alot of time outside of class doing work and taking away from actual time to study material.
2	C	I personally was not fond of the flipped classroom method. I found it very difficult and ineffective for me. I'd prefer to be taught in the classroom.

2	F	I thought it was terrible it honestly didn't teach me a thing I learned nothing at all and in the classroom where we are supposed to be half the class has no idea what's going on. Terrible experience, don't think I should get a bad grade when I wasn't taught anything.
2	C	Enjoyed it, but still had to lecture in class
2	B	I do not like it. The vodcast are unclear. I would learn a lot more in a regular classroom.
3	C	I think it is a wonderful concept on paper and will benefit many students, however, for some students it does not work. More advertising of what exactly this class entails would be benefitial
3	C	Not my thing…. I got more of a chance to ask questions directly to the professor because of her not just standing and lecturing the whole time.
3	C	Flipped classroom although took quite a bit of getting used to is very beneficial with this type of learning
Non Trad/degree	A	I find it to be a good learning environment for the self-motivated student. If the student is not willing to put in time outside of class then they are not going to do very well.
Non Trad	A	The flipped classroom was trying at times. The downside to doing homework in class is that not everyone is willing to sit quietly and actually work on problems. This can be very distracting.
Non Trad/degree	A	I enjoyed and now prefer this style.
NG/transfer	F	Horrible experience, How can a person teach themselves new material when they dont understand it to start off?

Class Rank	Grade in Class	Changes in Study habits
1	B	I was more structed and didn't get behind as easily as I have in other courses.
1	A	I learned most of the information outside of class.
1	C	I study better from work not notes, so taking notes to study at home did not benefit me at all.
1/NT/degree	A	I used more outside sources to augment my study material
2	C	I now spend a lot more time preparing before class.
2	F	It didn't
2	C	able to rewatch vodcasts insead of reading book lessons; easier to understand so less time studying
2	B	I had to study more because I had to teach myself all the material, it created a lot more work than it could have been.
3	C	I found that studying is more difficult because there were no lectures that I can relate to a time and place (if that makes any sense).
3	C	Did not really change much, but the vodcasts did help with studying.
3	C	the time to watch the lessons because of know how long really let me schedule in the more appropriate time block for the out of class work.
Non Trad/degree	A	The flipped classroom forced me to use many other resources than just the book and the vodcasts. I used other internet resources to facilitate my learning.
Non Trad	A	This type of class taught me to be more independent and to figure things out on my own.
Non Trad/degree	A	Encouraged me to study in multiple ways.
NG/transfer	F	No comment