EDTECH 505

An Evaluation of the Flipped Classroom

Submitted to: Dr. Ross Perkins

Christi Camel
8/1/2011
# Table of Contents

Learning Reflection ......................................................................................................... 3  
Executive Summary ........................................................................................................ 4  
Purpose of the Evaluation ............................................................................................... 5  
  Central questions to be answered .............................................................................. 5  
  People most impacted by the results .......................................................................... 6  
Background Information ............................................................................................... 7  
  Origin of the program ................................................................................................. 7  
  Goals of the program ................................................................................................. 8  
  Previous programs ..................................................................................................... 9  
  People involved with the program ............................................................................ 9  
Characteristics of the Program ..................................................................................... 10  
Description of Evaluation Design ............................................................................. 12  
  Existing Data ............................................................................................................ 12  
  Surveys ..................................................................................................................... 12  
  Interviews ............................................................................................................... 13  
  Categories Assessed ............................................................................................... 13  
Results & Discussion ................................................................................................. 16  
  Student Responses .................................................................................................. 16  
  Teacher Responses ................................................................................................. 27  
Conclusions and Recommendations .......................................................................... 29  
  Immediate Conclusions ......................................................................................... 29  
  Long-Range Planning ............................................................................................. 29  
  Evaluation Insights ................................................................................................. 30  
References .................................................................................................................. 31  
Appendix A: Student Technology Survey ...................................................................... 32  
Appendix B: Student Classroom Survey ....................................................................... 34  
Appendix C: Teacher Interview Questions & Responses ............................................. 40  
Appendix D: Evaluation Program Description ............................................................. 45  
Appendix E: Timeline ................................................................................................. 47
Learning Reflection

Coming in to this course, I had no idea the amount of time and planning that goes in to a comprehensive evaluation of a process or product. The planning of the evaluation alone is extensive and its implementation and reporting even more so. However, I have also seen how important it is to critically evaluate the programs that are present in schools. So often decisions based on anecdotal evidence collected as you’re talking by the water cooler or reading in a journal are made and the data piece is missing. It is now obvious to me that for every program that is put in place to improve student achievement, an evaluator needs to be present from the beginning. It is so helpful to have outside input to flush out the true goals of the program and then to have someone develop tools that can get meaningful data on those goals. Then decisions can be made about the long term effects and future of the program.

As I was designing and completing the project, I mostly felt overwhelmed by the sheer magnitude of it. To get really good information, an expert definitely needs to be hired! I’m grateful that I got to see the process of data collection from this side as I am often on the receiving end. It gives me a whole new view on where this information comes from and how it is collected. I know that when I see my next PowerPoint highlighting the latest greatest program, I will be able to look at it critically and will be able to ask questions about its design in order to make my own decisions about it.

I will say that after this class, I do realize the importance of a well structured and extensive evaluation program, my heart is still in the classroom. I can see myself including more data gathering in my own class however so that I can analyze the effectiveness of the smaller “programs” I institute. I don’t see myself doing this as a career in the future, but I am really glad I got to experience it. It makes me a more informed analyzer of the programs I do see as well as the data that is presented to me.
Executive Summary

This reports details the results of an evaluation of Niles Township District 219’s implementation of The Flipped Class Model in eight science classes taught by two science teachers during the 2010-2011 school year.

The purpose of this evaluation was to assess Niles Township District 219’s usage of the Flipped Classroom Model to increase homework completion, improve student attitudes towards homework, increase differentiation in the classroom, simplify the process of learning material after an absence and produce independent, responsible and invested students. Questions for students and teachers were divided into categories based on these goals and a background section on availability of technology was also added. Participants were given the opportunity to provide feedback on their experiences using scales, multiple choice and open ended questions.

An analysis of the results indicates that students have access to the necessary technology both in the school setting and at home. The district goal of increasing homework completion and improving student attitudes towards homework was met using the Flipped Classroom Model. Simplifying the process of learning material following an absence was also met as was the goal of increasing the ability to differentiate within the classroom. The goal of creating independent, responsible and invested students was met though this is difficult to analyze in a survey format.

The Flipped Classroom meets all of the goals set forth by the district and is therefore recommended for implementation in the larger school setting. Training and technology support are necessary to move forward, and teachers must be willing to give up their ownership of the classroom and the material so that students can take in upon themselves.
Purpose of the Evaluation

This evaluation addresses the use of a Flipped Classroom Model in science classes. “Flip your instruction so that students watch and listen to your lectures... for homework, and then use your precious class-time for what previously, often, was done in homework: tackling difficult problems, working in groups, researching, collaborating, crafting and creating. Classrooms become laboratories or studios, and yet content delivery is preserved” (Truss, 2011). With a decrease in science classroom contact minutes on the horizon, teachers and administrators are looking for ways to deliver the required amount of content while allowing students to have authentic experiences in the classroom. The school district is interested the overall effect the Flipped Classroom Model has on both students and teachers. Concerns include student responsibility, lack of access to technology and increased time in preparing lessons.

Central questions to be answered
As teachers and administrators in District 219 began researching the Flipped Classroom Model, several objectives were established. These objectives include determining if students have access to the materials necessary in the Flipped Classroom Model, improving homework completion rates and attitudes towards homework, allowing for differentiation in the classroom, minimizing the effect of both teacher and student absences and creating students who are responsible for their own learning. Those objectives led to the following central questions to be evaluated after the first year of implementation of the program:

1. Do students have access to the technology necessary to participate in a Flipped Classroom?
2. Has homework completion and attitude towards homework improved as a result of the Flipped Classroom?
3. Have alternative learning opportunities (i.e. authentic research, peer-to-peer tutoring, class discussions, teacher-to-student tutoring) been provided for a truly differentiated experience?
4. Has the Flipped Classroom changed how re-teaching information due to absences (both teacher and student) is handled?
5. Does the Flipped Classroom Model create more responsible and independent students who are in charge of and invested in their own learning?
People most impacted by the results
A variety of stakeholders exist including teachers, students, school administration (Director of Science, Director of Instructional Technology Services, Software Applications Trainer), district administration (Assistant Superintendent for Curriculum and Instruction, Chief Technology Officer, Director of Programming and Application Services, Operations & Network Coordinator, Director of Operations and Networking Services), and the school board.

Current teachers and students exposed to the Flipped Classroom on a daily basis will be impacted the most. Both groups will deal with questions of access to technology, homework completion, attitude towards homework, planning class time to meet individual student needs, absences and student responsibility. Other teachers and students in the district will also be interested in the results as more and more classes move to a Flipped Model. Technology related specialists at both the school and district level will need to be prepared for technology issues that may arise from the storing of large vodcasts, multiple students accessing files at the same time, incompatibility issues and distribution of hardware. Administrators at the school and district levels as well as the school board are interested in the success of this model to improve the academic achievement of every student.
Background Information

Niles Township District 219 is a two high school district with 4600+ students and 350 full time teachers located in a suburb of Chicago, IL whose mission statement is to “ensure a student-focused learning environment where every student succeeds” (NTSD 219 website). In order to improve the academic achievement of every student, the school board has proposed an anywhere/anytime learning initiative. This initiative includes the distribution of netbooks to all incoming freshman as well as encouraging teachers to utilize technology in their own classrooms. The district prides itself on being on the forefront of technology, providing both teachers and students with hardware (netbooks, SmartBoards, etc.) software (Moodle, Jing, Google docs, etc.) and training (Tech 1, Tech 2, Advanced Tech Topics, external conferences) so that technology can be used effectively in the classroom.

Origin of the program
The concept of the Flipped Classroom was first widely pioneered by Aaron Sams and Jonathan Bergmann in addition to Karl Fisch. In the Flipped Classroom Model, students are assigned to watch vodcasts at home which frees up time during class for inquiry based learning, collaboration, homework, etc. (Overmyer). Teachers can create these vodcasts themselves, collaborate with other teachers to create them, or use resources already available on the web. With the districts implementation of one-to-one computing in the 2010-2011 school year, school issued netbooks can be used to view these vodcasts.

Two years ago, six teachers, two department directors, the Chief Technology Officer and the Director of Instructional Technology Services attended the iNACOL Virtual School Symposium where the Flipped Classroom Model was presented. Two teachers spent the 2009-2010 school year researching the model, collaborating and creating materials then implemented it in their classrooms the following school year. As interest in the model has grown, the district sponsored Tech 2 course added a lesson on the Flipped Classroom.
Goals of the program
The goals of the program are as follows:

*Goal 1: Increase the rate of homework completion.*
Teachers have voiced concern that over the past 5 years, the rate of homework completion has drastically decreased. Teachers continue to place emphasis on how important it is to practice what you have learned, but the rate is still decreasing. What are the reasons students are doing less homework?

*Goal 2: Improve student attitudes towards homework.*
Anecdotal evidence presented by teachers in the district and results from a survey distributed in homeroom during the 2009-2010 and 2010-2011 school years, indicates that students feel homework is too time-consuming, unnecessary, difficult and merely a way to gain points towards their grades. How can schools change the way students feel about homework?

*Goal 3: Provide a differentiated learning experience for students.*
Some students require a different timeline and set of experiences to be successful. In a traditional classroom setting, students are all working at the same pace with the teachers attempting to challenge accelerated learners while at the same time help struggling learners, generally being unable to service both groups with high levels of success. How can the district provide individualized instruction in a class of 30 students?

*Goal 4: Simplify the procedure for missed material due to absences.*
A problem that has always existed but has recently seen a dramatic increase (as evidenced by attendance records from the past 5 years) is that of student absences. When students are absent they miss material and must find common time outside of class with the teacher, read the book, scour the internet or rely on other students to get that missed content. This is problematic for both teachers and students with the increased demand on both student and teacher time. How can a class be structured to provide support for students that are absent? How can teacher absences not make learning material come to a halt?
Goal 5: Create responsible and independent students who are in charge of and invested in their own learning.

As a college prep district, the district wants to create lifelong learners who are self-efficient and prepared to continue on after high school. Part of this entails creating learners who are invested in their own success and able to make informed choices regarding their own education. How can the district create responsible and independent learners?

Previous programs
Throughout the district there are individual teachers who have created and posted videos for students to access, but there has been no widespread implementation of assigning lectures as homework. There have however been many teachers who have implemented a Mastery Learning approach where students are able to show mastery of a concept in a variety of ways and at different times. This program has shown success in goal 3, but has not been successful across all levels and classes in regards to goals 1, 2 and 4. Additionally, an Assessment for Learning Model has been adopted by a large amount of teachers in order to promote mastery learning and more responsible students. Depending on the class and grade level, this program has shown some success in accomplishing goal 5, but goals 1 and 2 showed a negative result.

People involved with the program
On a daily basis, the two teachers implementing the Flipped Model, their students, and technology personnel (Director of Instructional Technology Services, Software Applications Trainer, Information Technology staff) will be most involved. Teachers will be creating vodcasts, planning collaborative activities to do in class as well as monitoring student progress through both formative and summative assessments. Students will be accessing and watching vodcasts, participating in class activities and completing formative and summative assessments. The technology staff will need to be available to troubleshoot issues storing, obtaining, and playing the vodcasts, as well as hardware issues. The Technology Trainer will be available to teach teachers how to create and post vodcasts. The Director of Science will need to be available for teacher support and to answer questions from parents if necessary. District Administration (Assistant Superintendent for Curriculum and Instruction, Chief Technology Officer, Director of Programming and Application Services, Operations & Network Coordinator, Director of Operations and Networking Services) will be looking at the results of the program to see if it is meeting the objectives set forth by the district.
Characteristics of the Program
The idea of the Flipped Classroom Model is that students spend time outside of class viewing lectures at their own convenience and pace so that class time can be spent engaging in the material. This restructuring of what the classroom looks like along with the district investigating a new school day schedule has led teachers and administrators to look at the most effective use of classroom minutes. Currently, the schedule consists of an overlapped 8 period/9 period day. Students enrolled in a science class are exposed to 7 periods of science per week; a single 42 minute class period every day and a second 42 minute lab period two times per week resulting in 294 minutes of student contact time (see Figure 1). As changing the school day schedule is considered, a topic of concern is altering class contact minutes per day. One possibility that is being researched is changing to a straight 8 period day; each class 50 minutes in length (see Figure 2), significantly decreasing the amount of student contact minutes in a science class to 250 minutes (a reduction of 15%).

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gym</td>
<td>Gym</td>
<td>Gym</td>
<td>Gym</td>
</tr>
<tr>
<td>2</td>
<td>Science</td>
<td>Study Hall</td>
<td>Science</td>
<td>Study Hall</td>
</tr>
<tr>
<td>3</td>
<td>Science</td>
<td>Science</td>
<td>Science</td>
<td>Science</td>
</tr>
<tr>
<td>4</td>
<td>History</td>
<td>History</td>
<td>History</td>
<td>History</td>
</tr>
<tr>
<td>5</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
</tr>
<tr>
<td>6</td>
<td>English</td>
<td>English</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td>7</td>
<td>Math</td>
<td>Math</td>
<td>Math</td>
<td>Math</td>
</tr>
<tr>
<td>8</td>
<td>Foreign Language</td>
<td>Foreign Language</td>
<td>Foreign Language</td>
<td>Foreign Language</td>
</tr>
<tr>
<td>9</td>
<td>Elective</td>
<td>Elective</td>
<td>Elective</td>
<td>Elective</td>
</tr>
</tbody>
</table>

*Figure 1. Current overlapped 8 period/9 period day*
<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gym</td>
<td>Gym</td>
<td>Gym</td>
<td>Gym</td>
<td>Gym</td>
</tr>
<tr>
<td>2</td>
<td>Elective</td>
<td>Elective</td>
<td>Elective</td>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td>3</td>
<td>Science</td>
<td>Science</td>
<td>Science</td>
<td>Science</td>
<td>Science</td>
</tr>
<tr>
<td>4</td>
<td>History</td>
<td>History</td>
<td>History</td>
<td>History</td>
<td>History</td>
</tr>
<tr>
<td>5</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
</tr>
<tr>
<td>6</td>
<td>English</td>
<td>English</td>
<td>English</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td>7</td>
<td>Math</td>
<td>Math</td>
<td>Math</td>
<td>Math</td>
<td>Math</td>
</tr>
<tr>
<td>8</td>
<td>Foreign Language or Study Hall</td>
<td>Foreign Language or Study Hall</td>
<td>Foreign Language or Study Hall</td>
<td>Foreign Language or Study Hall</td>
<td>Foreign Language or Study Hall</td>
</tr>
</tbody>
</table>

*Figure 2. Proposed 8 period day*

If in fact the amount of contact minutes in the day decreases, science teachers will need to modify their teaching practices to cover the same amount of material as set forth by the district learning targets in a smaller amount of time. When the assigned homework becomes watching and taking notes on the lecture, class time can be used for individualized authentic research, peer tutoring, teacher tutoring, collaboration, labs, and class discussions among other activities. This leads to a truly differentiated classroom with each student receiving the amount and type of support they need.
Description of Evaluation Design

The evaluation model being used is a goal-based model. The district has a specific set of objectives found in the district’s mission statement as well as goals put forth by the administration and school board. The goals listed in the “Background Information” section were used to design the evaluation.

This evaluation addresses the Flipped Classroom Models effect on available technology, rates of homework completion, student perceptions about homework, differentiation in the classroom, missed content due to absences and opportunities provided to create responsible independent learners invested in their own future.

Existing Data
A survey was given in both the 2009-2010 and 2010-2011 school year that included one section dedicated to homework. Questions covered topics like how much homework students completed, how much homework was assigned on an average night, how much homework students were doing on an average night and student’s opinions on the purpose of homework.

Daily attendance records beginning with the 2006-2007 school were also used to look at trends in student daily attendance. Average daily attendance and amount of school days missed per semester were used.

Surveys
Two surveys were developed based on the goals set forth by the district. The first is the Student Technology Survey (see Appendix A) where access to necessary hardware and internet was assessed. Additionally, students are asked about familiarity with podcasts and/or vodcasts and about their thoughts on some issues in their own education using a Likert scale (strongly disagree through strongly agree). This survey was distributed to a random sample of students based on the school email list. Every fifth student (for a total of 924 students) was sent an introductory email which was followed by an email one week later with a link to the Google doc survey. No identifying information was taken from the students.
The second survey is the Student Classroom Survey (see Appendix B), designed to be answered by students who had been a part of the flipped classroom in the past school year. The survey is broken down into two parts; the first addressing experiences in a classroom not employing the Flipped Class Model and the second addressing experiences in a classroom utilizing the Flipped Class Model. Questions in both sections were grouped into the following categories; Class Lectures, Class Activities, Homework Completion and Absences. A variety of question types were used including Likert scales (strongly disagree through strongly agree), multiple choice interval questions and open ended comment sections. 177 students were eligible to participate in the survey. All 177 students were sent an introductory email followed by an email one week later with a link to the Google doc survey. No identifying information was taken from the students.

**Interviews**

The two teachers that employed the Flipped Classroom Model were interviewed in an unstructured interview format (see Appendix C). Questions were in categories according to the goals of the district. The two teachers were interviewed individually and the interview was video recorded in order to be reviewed later.

**Categories Assessed**

Surveys were written to address the five goals of the district as well as determine student access and district support of the necessary technology.

*Information: Technology*

One concern with implementing the Flipped Classroom Model on a large scale was technology. The district wanted to know what technologies students have access to that are useful in the Flipped Classroom Model. In the Student Technology Survey (see Appendix A) question 2 (Equipment) allowed students to state what hardware they have available to them and where and question 3 (Internet Access) allowed students to choose their ability to access the internet. In question 5 (Education Statements 1, 2, 3), students used a Likert scale to state their access to equipment and internet.
Goal 1: *Increase the rate of homework completion.*

Goal 2: *Improve student attitudes towards homework.*

After the results of the homeroom survey given for the last two school years, the district has placed emphasis on increasing student homework completion and attempting to change students’ attitudes towards homework to meet goal 1. In the Student Technology Survey (see Appendix A, Education Statements 4, 7, 8, 9), students were asked to rank on a Likert scale where homework is completed and why homework does not get completed. In the Student Survey (see Appendix B, Class Activities-NOT FLIPPED) frequency of time allowed to complete homework in class is addressed. Included in the Student Survey (see Appendix B, Homework Completion-NOT FLIPPED) are a ratio interval question about percent of homework completed, a Likert scale addressing reasons why homework is not completed, an informational question about where homework is completed and an open-ended comment section. The same questions are mirrored in the Flipped Class section of the same student survey.

Goal 3: *Provide a differentiated learning experience for students.*

Individualizing student instruction is the backbone of the district’s mission statement. Providing students with a variety of opportunities to learn material as well as opportunities to show learning in a different ways has been prioritized in the goals of the district. In the Student Technology Survey (see Appendix A, Education Statements 4 and 5), students were asked to rank on a Likert scale how they would like to use class time. In the Student Survey (see Appendix B, Class Lectures-NOT FLIPPED), individualized pacing for students is addressed through a Likert scale. In the Student Survey (see Appendix B, Class Activities-NOT FLIPPED), students can rank how often a variety of activities are done in class and also how often they would choose to do those activities in order to determine if students desire additional opportunities. An open ended-comment section is also included. In the Student Survey (see Appendix B, Video Lectures-FLIPPED CLASS), students are asked if they are individualizing instruction for themselves by choosing how often they “participate” in the video lecture experience. The Likert scale of class activities are mirrored in the Flipped Class section as is the open-ended comment section.
Goal 4: Simplify the procedure for missed material due to absences.
In light of the recent decline in daily student attendance and the effect it has on student learning and eventually on student grades, the district has set the goal of not only improving student attendance, but also simplifying the process for teachers and students both before and after an absence has occurred. In the Student Technology Survey (see Appendix A, Education Statement 6), students were asked to rank on a Likert scale how difficult catching up after an absence is for them. In the Student Survey (see Appendix B, Absences-NOT FLIPPED), students are asked to rank on a Likert scale how difficult catching up after an absence is for them as well as to indicate all the ways in which they attempt to get content that was missed in class. An open ended-comment section is also included. The same three questions are posed in the section for the Flipped Class.

Goal 5: Create responsible and independent students who are in charge of and invested in their own learning.
In order to create a community of lifelong learners, the district has made it a priority to develop responsible, independent students who are personally invested in their own learning. In the Student Technology Survey (see Appendix A, Education Statement 6), students were asked to rank on a Likert scale their level of control over their own education. In the Student Survey (see Appendix B, Class Lectures-NOT FLIPPED), students are asked to determine how often they ask questions during a class lecture. In the Student Survey (see Appendix B, Video Lecture-FLIPPED CLASS), students are asked if they are taking the material from outside of class and interacting with it, bringing questions back to the classroom and making sure they have mastered the material.
Results & Discussion

There were 4,626 students enrolled in the district for the 2010-2011 school year. All were eligible to participate in the technology survey. A total of 924 student technology surveys were went out through email (20% of the student body) with 387 responses, a response rate of 42%, for a representative sample of the district population. Of the 387 surveys that were returned, 32% were from freshman, 39% from sophomores, 22% from juniors and 7% from seniors. 177 students from eight science classes taught by two different teachers participated in a flipped classroom in the 2010-2011 school year and were therefore eligible to answer the Flipped Classroom Student Survey. A total of 177 surveys were sent out through email (100% of students) with 139 returned, a response rate of 78.5%. Of the 139 surveys that were returned, 79% were sophomores, 37% were juniors and 6% were seniors. Additionally, two classroom teachers were interviewed in person, with the interviews videotaped.

Student Responses

Information: Technology

When asked to indicate their level of access to a variety of pieces of equipment that could be used for watching lectures outside of the classroom, 97% of students had access to at least one piece of equipment in their own home. The remaining 3% had access to at least one piece of equipment outside of their home (school or other). The most prevalent pieces of equipment were cellular phones (specifically iPhones and other smartphones), desktops, netbooks and ipod touches. Laptops and iPads were the least accessible pieces. According to the data, it seems that students have access to the materials necessary to watch lectures outside of class. Figure 3 summarizes which pieces of equipment students have access to and where they have access to them. Students were also asked where they have access to the internet, with all students having some sort of access. Figure 4 summarizes where students have internet access.
Figure 3. Student Access to Equipment

Figure 4. Location of Student Internet Access
Goal 1: Increase the rate of homework completion.
Goal 2: Improve student attitudes towards homework.

In the Student Technology Survey, a Likert Scale was given for students to rank their feelings on a variety of statements related to their education. In the questions where homework was addressed, it was generally agreed that homework didn’t get done because students get “stuck” and they would like more class time to work on homework. Figure 5 summarizes students’ attitudes about homework.

![Graph showing educational statements related to homework]

Figure 5. Educational Statements related to Homework

In the smaller Student Survey, questions addressing the percent of homework that is completed and why homework remained uncompleted were addressed. Figures 6 and 7 summarize homework completion in a non-Flipped Class and a Flipped Class. The portion of students completing 80% or more of the daily homework assignments was 62.6% in their non-Flipped environment and 99.3% in their Flipped class.
When it comes to uncompleted homework, in the non-Flipped class, students felt that when attempting to complete homework outside of class (which is where 98% of students homework was done), they would have a small issue that didn’t allow them to complete the problem, or they wanted help but were unable to any. In the Flipped class, this wasn’t a problem with 86% of students completing homework in class. All other comments remained relatively the same. Figure 8 summarizes why homework remained uncompleted in the non-Flipped class and Figure 9 summarizes that information for the Flipped class.

Figure 8. Reasons homework was not completed in the non-Flipped class
From analysis of the survey results, it appears that in the Flipped Classroom Model, the goal of increasing homework completion and attitude toward homework was achieved.

**Goal 3: Provide a differentiated learning experience for students.**

In goal 3, the district hopes to provide a differentiated education for every student. In the Student Technology Survey, students were asked how they would like to spend their class time. Figure 10 summarizes student responses, with 99% of respondents wanting class time to get help on homework and 41% wanting that time to do individual research.
In the Student Survey, students were asked to use a Likert scale to describe how often different activities happened in the classroom versus how often they would like them to happen. In the non-Flipped Classroom, students would like to see less lecture and a larger variety of choices for class time. In the Flipped Classroom, students responses showed a greater spread of actual occurrences of activities and Figures 11 and 12 summarize the actual and desired occurrences in the non-Flip Classroom and Figures 13 and 14 do the same for the Flipped Classroom.

According to the results of the survey, it appears that students in the Flipped Classroom enjoyed a greater range of activities to complete and matched more closely with their desired occurrences. The goal of providing an environment for differentiation seems to have been met, but whether or not teachers are providing opportunities for students to show learning in a variety of ways on their own timeframe was not determined in this survey.
Figure 11. Actual occurrences of activities in the non-Flipped Classroom.

Figure 12. Desired occurrences of activities in the non-Flipped Classroom.
Figure 13. Actual occurrences of activities in the Flipped Classroom

Figure 14. Desired occurrences of activities in the Flipped Classroom
Goal 4: Simplify the procedure for missed material due to absences.
In the Student Technology Survey, 84% of students agreed that Catching up on missed material after an absence is very difficult. This was mirrored in the Flipped Classroom Survey, where 86% of students agreed that it is difficult or very difficult to catch up on material after an absence in a non-Flipped Classroom. In contrast, only 12% of students felt it was difficult or very difficult to catch up on material after an absence in a Flipped Classroom. Students also chose from a list of activities they did to try and learn material after an absence. In the non-Flipped Classroom, students relied on meeting with the teacher (60% of respondents) and copying classmates notes (83% of respondents) to catch up, with some students mentioning internet searches as another option. In the Flipped Classroom, over 94% of students relied on watching the vodcasted lectures and only 34% met with the teacher and 22% relied on copying from a classmate. Figures 15 and 16 summarize these activities in both the non-Flipped and Flipped Classroom.

![Figure 15. Resources used to catch up after an absence in the non-Flipped Classroom](image)

![Figure 16. Resources used to catch up after an absence in the Flipped Classroom](image)
In relation to the goal of making it easier to make up work after absences, the Flipped Classroom Model is successful.

**Goal 5: Create responsible and independent students who are in charge of and invested in their own learning.**

In the Student Technology Survey, students were asked to judge their agreement with statements pertaining to their responsibility in their own education on a Likert scale. 71% of students agreed that they have ultimate control over how successful they are in a class, while only 34% agreed that they are in charge of their own education. Figure 16 summarizes the responses to statements related to locus of control.

![Education Statements](image)

**Figure 16.** Students’ thoughts on control over their success and their education.

In the Flipped Classroom Student Survey, students were asked to judge their agreement with statements relating to behaviors during class lectures as well as how invested they were in learning as evidenced by how often they asked questions during lectures for clarification, etc. Figures 17 and 18 show students investment in their own education.
Figure 17. Behaviors during class lectures and ability to take meaningful and complete notes.

Figure 18. Participation in class lectures through questions.
In the Flipped Classroom Survey, students were asked how active they were when watching the vodcasted lecture and how often they took advantage of its more unique features (when compared to a traditional classroom lecture). During vodcasted lectures, 76% of respondents watch the lecture 2-3 times, 91% stop the lecture 3 or more times, 82% replay portions of the lecture three or more times and 74% take notes while watching the lecture. Table 1 summarizes student behaviors while watching a vodcasted lecture.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Once</th>
<th>2-3 times</th>
<th>3+ times</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watch a full lecture</td>
<td>0% (0)</td>
<td>11% (15)</td>
<td>76% (106)</td>
<td>13% (18)</td>
<td>2-3 times</td>
</tr>
<tr>
<td>Stop the lecture</td>
<td>0% (0)</td>
<td>0% (0)</td>
<td>9% (13)</td>
<td>91% (126)</td>
<td>3+ times</td>
</tr>
<tr>
<td>Replay portions of a lecture</td>
<td>0% (0)</td>
<td>4% (6)</td>
<td>14% (19)</td>
<td>82% (114)</td>
<td>3+ times</td>
</tr>
</tbody>
</table>

*Table 1. Behaviors while watching a vodcasted lecture*

In regards to responsibility, independence and investment, a higher percentage of students in the Flipped Classroom Model take a more active role in lectures than those in a non-Flipped Classroom.

**Teacher Responses**

Two science teachers who were exposed to the Flipped Classroom in 2009 and spent the rest of that school year researching and preparing lessons implemented the Flipped Classroom model in the 2010-2011 school year. Both teachers were interviewed in an unstructured format using the interview questions found in Appendix C. Questions were related to the goals of the district and the interviews were videotaped and answers summarized (See Appendix C for interview responses). Teachers agreed that goals 1 and 2 were met for a large portion of the students in their sections. Completion of and attitudes towards homework have increased, partially due to the students' ability to complete homework in class and get immediate help and feedback. In regards to goal 3, teachers agreed they had the ability to allow students to proceed through the material at their own pace, providing support and resources to ensure students are successful. Interactivity is high in the classes even though students are at different points in the unit.
Goal 4 was also met with both teachers agreeing that absences were less disruptive with this model. The impetus has been placed on students to learn the material but they can do it at a time that is convenient for them. Goal 5 is harder to measure, but both teachers commented that there are students that are successful and students that struggle, but generally students take a more active role in their own learning.

Overall, both teachers felt that the Flipped Classroom Model has improved their teaching and was beneficial to students. However, both pointed out that there was a lot of prep work that needs to be done and it would be helpful to have teachers work with a partner or in a team to create materials. One teacher also mentioned it is difficult and uncomfortable to give up being the leader in your classroom, though the results were worth it.
Conclusions and Recommendations

Immediate Conclusions

- Both teachers and the majority of students feel that the Flipped Classroom is more beneficial to student learning than a traditional classroom setting. This was however done on a small scale including only 8 science classes taught by two teachers. Teachers pointed out that support needs to be given to students who are struggling to set their own timelines.
- The district should proceed with encouraging and providing support for more teachers to use a Flipped Classroom Model.
- The five goals of the district have all been met to some extent, though goal 5 is hard to measure quantitatively.
  - Goals 1 and 2 have been realized using this model but there is always room to improve attitudes towards homework and rate of completion.
  - Goal 3 has been realized using this model allowing teachers to work with individual students and allowing students to choose their own pace. It opens up the classroom for more authentic learning experiences and immediate feedback for students to modify their learning.
  - Goal 4 has been realized using this model by making students responsible for work missed due to absences. It is easier for both teachers and students.
  - Goal 5 was hard to quantify but teachers and students both seem to be more active and involved in the learning process using the Flipped Classroom Model.
- The model is ready for implementation immediately in a wider range of classes with more teachers involved.

Long-Range Planning

- Teachers will need to be given instruction on how to structure a Flipped Classroom. This can be provided through the current Tech 2 coursework, but may also be a standalone class. Instructors can be current teachers using the model or additional teachers will need to be trained in order to teach the course.
- Teachers will need to be given ample preparation time with colleagues to prepare lessons to implement in the Flipped Classroom. Weekly common release time should be planned for so teachers of similar courses can work on developing materials.
• Technology to record lectures should be researched, evaluated, and purchased. Training will need to be provided by the tech department so that teachers can learn how to use the programs and on-going support should be available.

• The Flipped Classroom Model is not a “one size fits all” solution and may not be suitable for all teachers, students, courses or levels. Teachers should be allowed to choose whether or not to use the model after being giving information on its' structure.

Evaluation Insights
Further study needs to be conducted on the appropriateness of the model in different subject areas and with different levels of students. The necessary technology should also be studied to determine the most cost effective way to record and store the vodcasted lectures. As an additional study, mastery learning may also be evaluated as a standalone program or as a supplement to the Flipped Classroom. Additionally, the district will need to look at the effect of the Flipped Classroom Model on the structure of the common final exam.

Most student results aligned with teacher anecdotal evidence, though in the future interviews with students will also be beneficial. Additional analysis of answers by grade level may also be beneficial as well as analysis of results by teacher. In the future, a larger sample size will also give more data to make data driven decisions about the future of the program.
References


Appendix A: Student Technology Survey

Student Technology Survey
Please answer the following questions.
* Required

Which best describes you in the 2011-2012 school year? *
- Senior
- Junior
- Sophomore
- Freshman

Equipments: *
Look at the following pieces of equipment and choose the statement from the drop down menu that best describes its availability to you.

- Desktop
- Laptop
- Netbook
- iPod touch
- iPod
- iPhone
- Cell phone
- Smartphone
- Other handheld device suitable for playing videos from the internet

Internet access *
Please choose ALL of the statements that describe your personal access to the Internet.
- I have internet available to me at school.
- I have internet available to me at home.
- I have internet available to me outside of my home (library, coffee house, bookstores, etc.).
- I have internet available to me on my cellular phone or another handheld device (iPad, iPod touch, etc.) through a data plan.
- I do not have internet available to me.

Podcasting/Vodcasting *
Please choose ALL of the statements that describe you.
- I have never heard of the words podcasting and/or vodcasting before.
- I have heard of podcasting and/or vodcasting.
- I have listened to a podcast and/or watched a vodcast FOR FUN.
- I have listened to a podcast and/or watched a vodcast FOR A CLASS.
- I have created my own podcast and/or vodcast.
- Other
<table>
<thead>
<tr>
<th>Education Statements</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would watch a recording of my teacher lecturing outside of class.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I would watch a recording of my teacher lecturing outside of class if it meant freeing up class time.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I have access to equipment and the Internet to watch a lecture outside of class.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I would like more class time to get help on homework.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I would like more class time to do individual research.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Catching up on missed material after an absence is very difficult.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Homework is difficult to do because I often miss material during class lectures.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I dread having to complete homework on my own.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I often have questions while completing homework that stop me from finishing assignments.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I am in charge of my own education.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I have ultimate control over how successful I am in a class.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Appendix B: Student Classroom Survey

Student Survey
* Required

Grade Level *
Which best describes your status during the 2010-2011 school year (the one that just ended)?
- Senior
- Junior
- Sophomore
- Freshman

Not the Flipped Classroom
Please think about a class that WAS NOT FLIPPED as you answer the following questions.

Class Lectures - NOT FLIPPED *
Please agree or disagree with the following statements:

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>During class lectures, the pacing was too slow so I get bored and was unable to take meaningful and complete notes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During class lectures, the pacing was adequate so I was able to take meaningful and complete notes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During class lectures, the pacing was too fast so I was unable to take meaningful and complete notes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During class lectures, I am distracted by other students in the class.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During class lectures, I have a difficult time listening and taking notes at the same time.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Class Lectures - NOT FLIPPED *
How often do you ask questions during a class lecture?
- Never
- Once per semester
- Once per month
- Once per week
- Multiple times per week
- Every day
- Multiple times per class period

Class Lectures - NOT FLIPPED
Please add any additional comments about Class Lectures in a class that is NOT FLIPPED.
Class Activities-NOT FLIPPED
How often are each of the following activities done in class? Please choose one option from the drop down menu under each activity.

- Lecture
- Demonstrations
- Labs
- Homework
- Individual Research
- Peer Tutoring
- Teacher-Student Tutoring
- Enrichment Activities
- Class Discussions

Class Activities-NOT FLIPPED
How often would you like to participate in each of the following activities done in class? Please choose one option from the drop down menu under each activity.

- Lecture
- Demonstrations
- Labs
- Homework
- Individual Research
- Peer Tutoring
- Teacher-Student Tutoring
- Enrichment Activities
- Class Discussions

Class Activities-NOT FLIPPED
Please add any additional comments about Class Activities in a class that is NOT FLIPPED.
Homework Completion - NOT FLIPPED

What percent of assigned homework did you complete in a typical week?

- 100%
- greater than 80% but less than 100%
- greater than 60% but less than 80%
- greater than 40% but less than 60%
- less than 40%

Homework Completion - NOT FLIPPED

Please agree or disagree with the following statements:

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I did not complete homework assignments because I was unable to take meaningful notes during the class lecture.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I did not complete homework assignments because I had a simple question that kept me from completing the homework.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I did not complete homework assignments because I wanted help with the assignment, but was unable to connect with someone.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I did not complete homework assignments because there were not enough examples were provided during the class lecture.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I did not complete homework assignments because I understood the examples given during the class lecture and did not need additional practice.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Homework Completion - NOT FLIPPED

In a class that is NOT FLIPPED, where was your homework completed?

- At home
- In class
- In study hall
- Other: 

Homework Completion - NOT FLIPPED

Please add any additional comments about Homework in a class that is NOT FLIPPED.

Absences - NOT FLIPPED

How would you rank the ease of catching up on missed material from an absence?

1 2 3 4

Very easy 0 0 0 Very difficult

Absences - NOT FLIPPED

Please choose all of the following you do to catch up on missed material from an absence.

- Met with the teacher outside of class to be taught the material.
- Read the textbook.
- Copied notes from someone in class.
- Nothing.
- Other: 

Absences—NOT FLIPPED
Please add any additional comments about Homework in a class that is NOT FLIPPED.

Flipped Classroom
Please think about the class that WAS FLIPPED as you answer the following questions.

Video Lecture—FLIPPED CLASS *
How often do you watch the video lectures?
- Never
- Once
- 2-3 times
- More than 3 times
- Other: ________________________________

Video Lecture—FLIPPED CLASS *
On average, how often do you stop the video lecture?
- Never
- Once
- 2-4 times
- 5-7 times
- More than 7 times
- Other: ________________________________

Video Lecture—FLIPPED CLASS *
On average, how often do you replay portions of the lecture?
- Never
- Once
- 2-4 times
- 5-7 times
- More than 7 times
- Other: ________________________________

Video Lecture—FLIPPED CLASS *
Do you take notes during the video lectures?
- Yes
- No

Video Lectures—FLIPPED CLASS
Please add any additional comments about Video Lectures in a class that is FLIPPED.
Class Activities - FLIPPED CLASS

How often are each of the following activities done in class? Please choose one option from the drop down menu under each activity.

Lecture

- Demonstrations
- Labs
- Homework
- Individual Research
- Peer Tutoring
- Teacher-Student Tutoring
- Enrichment Activities
- Class Discussions

Class Activities - FLIPPED CLASS

How often would you like to participate in each of the following activities done in class? Please choose one option from the drop down menu under each activity.

Lecture

- Demonstrations
- Labs
- Homework
- Individual Research
- Peer Tutoring
- Teacher-Student Tutoring
- Enrichment Activities
- Class Discussions

Class Activities - FLIPPED CLASS

Please add any additional comments about Class Activities in a class that is FLIPPED.
Homework Completion - FLIPPED CLASS
In a class that is FLIPPED, what percent of assigned homework did you complete in a typical week?
- 100%
- greater than 80% but less than 100%
- greater than 60% but less than 80%
- greater than 40% but less than 60%
- less than 40%

Homework Completion - FLIPPED CLASS
Please agree or disagree with the following statements:

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I did not complete homework assignments because I was unable to take meaningful notes during the video lecture.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I did not complete homework assignments because I had a simple question that kept me from completing the homework.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I did not complete homework assignments because I wanted help with the assignment, but was unable to connect with someone.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I did not complete homework assignments because there were not enough examples provided during the video lecture.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I did not complete homework assignments because I understood the examples given during the video lecture and did not need additional practice.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Homework Completion - FLIPPED CLASS
In a class that is FLIPPED, where was your homework completed?
- At home
- In class
- In study hall
- Other: ________________

Homework Completion - FLIPPED CLASS
Please add any additional comments about Homework in a class that is FLIPPED.

Absences - FLIPPED CLASS
How would you rank the ease of catching up on missed material from an absence?
1 2 3 4
Very easy 0 0 0 0 Very difficult

Absences - FLIPPED CLASS
Please choose all of the following you do to catch up on missed material from an absence.
- Met with the teacher outside of class to be taught the material.
- Read the textbook.
- Copied notes from someone in class.
- Nothing.
- Others: ________________

Absences - FLIPPED CLASS
Please add any additional comments about Absences in a class that is FLIPPED.


Appendix C: Teacher Interview Questions & Responses

The following are responses from the two teachers to questions about the Flipped Classroom.

General
- How would you describe your role as a teacher in the Flipped Classroom?
  - I am no longer the lecturer in the classroom. I am now a support person who surrounds students with resources and then provides individualized help for students to be successful.
  - Now I get to manage 24 students per class at all different points in a chapter! I spend most of my time helping individual students or small groups and hardly any time at all lecturing in front of the classroom.
- On a scale of 1 to 5, 1 being very negative and 5 being very positive, how would you rank your experience with the Flipped Classroom Model?
  - 4. It is a very time consuming task to flip the class and requires huge amounts of support from the technology department and other teachers who have already flipped their own classes. The results are great for the most part though. All of my problems haven’t disappeared, but they are distinctly less than they were before I flipped the class. Some students respond very well and some really don’t like the freedom so modifications need to be made per student.
  - 4. I have to be much more organized and it was really hard to give up control to the students. It’s also pretty uncomfortable to have students doing all different things. There is a benefit to letting them help each other though. I do think it’s worth it, but you can’t do it alone. You definitely need to find a partner to help with the work load.

Homework
- How would you describe the rate of homework completion in past years versus this year? Please list reasons why this has occurred.
  - In the past I always had the students who completed homework all the time and those who hardly ever did it, though probably 80% of my students fell in the middle. Now since I allow for time in class to collaboratively work I see that the completion level is up. When students know they can immediately get help when they’re stuck they seem to be able to stick with it longer and not give up. They also realize that peers can be of value, especially when they have easy access to them.
  - Definitely higher since they have the option of doing the work in class with help from classmates. Students have said they like the lectures being homework because they know how to take notes but struggle if they get stuck on a problem. Now that they can work in class, there are more willing to complete the homework because it is less stressful.
• Do you feel that students are completing homework problems in a more conscientious fashion?
  o I think students are spending more time on homework. One thing I found myself telling a lot of students is that they need to try on their own and ask for help when necessary. This took them awhile to grasp. Towards the end of the year, I saw homework that was done with more purpose and students were realizing this was a great form of practice for the test.
  o They are. This is because they don’t give up after hitting a road block and leave it for the next day which may be 12+ hours later. Now they have to work through the issues and the result is better understanding and pride that even though it was challenging it was possible. I don’t think my students felt that way a year ago. I think they felt it was easier to give up and say “oh well, I don’t understand the problem so I’ll skip it”.

• How do you use homework in your class (what is its purpose)?
  o Practice for assessments. Even now that the homework is actually the lecture, I still see some students not listening to the lectures nightly though. There are still some of the same problems I faced before in terms of some students not wanting to do anything outside of class.
  o I use it to figure out which problems are giving students the most trouble, then I can call specific students in to a small group to go over those problems or I can work with the whole class clearing up issues. It really allows me to see where the problems are after students have tried a few ways to work through it on their own. That way the “lectures” are really tailor made to that specific group of students.

• Where are homework problems being done?
  o Depends on the student. Most work in class at least some of the time, other work at home or in study hall. Depends on how well they understand the material.
  o The lectures are mainly being watched outside of class, though some students do watch and take notes during class. The application homework is mostly done in class, with a handful of students doing them at home or in study hall. The majority however like to work on the homework in class.

• Have your students attitudes towards homework changed?
  o I don’t hear the complaints I used to anymore. I think the frustration level is down because instead of working in isolation at home, students have the opportunity to work in class if they want and get help immediately. They also have access to the lectures which include teacher worked examples as well as student examples any time they want in order to model homework problems.
  o Students see the value in watching the lectures so they can come to class with questions. I also think they don’t give up on homework as easily anymore. They see that it may be a challenge but it is doable.
Differentiation

- Please describe a day in your Flipped classroom in regards to what students are working on. Please list specific activities you use during class.
  
  - It depends on the student. Some are doing homework, some are in small collaborative groups tutoring each other on homework or practice problems, some are doing lab, some are getting tutored by me, some are doing their own independent research, some are taking assessments. It varies day to day and student to student.
  
  - It probably looks a bit chaotic because students are all over doing all different things. Some are on the computers or iPods watching the vodcasts and taking notes, some are working in small groups on homework, some are doing lab work, some are tutoring or getting tutored. They’re all over the place!

- What activities do you feel are the most beneficial to complete during class time? Would your students agree? If not, what would they say is the most beneficial?
  
  - I think whatever the student needs to get done is most beneficial to do during class so it depends on the student. My students probably appreciate being able to get help and do their homework in class.
  
  - Students really make that decision not me. They have a checklist of what needs to be done and they do it whenever and wherever is most beneficial to them. Obviously labs need to be done in class, but the tutoring is really helpful and so is time to practice and get immediate feedback on answers.

- Are your students learning more effectively? Can you describe how/where you see this happening?
  
  - I think they are. They take notes outside of class and write down questions they may have. Then they can come to class to ask the questions and apply the material while having access to other students and me for help. They are spending a lot of time teaching each other which is great for learning material yourself.
  
  - I think so but it can be hard to tell. I see students focusing more in class and staying on task since they are calling the shots on what gets done. Because I also employed Mastery Learning, students are required to perform at 75% or above on assessments so they keep relearning and reassessing until they reach that level. I have a better feel for each individual students progress though since I am always moving around.

- How would you rate the level of interactivity in your classroom while using the Flipped model?
  
  - It is very interactive but in smaller settings. Since students are at different places in the material, the form and reform groups to do work and get help. This allows me to float around and answer questions, making contact with more students more often.
  
  - Highly interactive, for both me and the students. I talk to a lot more students everyday than I ever did standing in front lecturing. Students are more engaged because they feel like they have more control over what they are doing in the class. This makes them more apt to stay focused and effective in the use of their class time.
Absences

- How much time do you spend with absent students outside of class? What is your current role in helping students catch back up after an absence?
  
  - I definitely spend less time than I did last year. I used to meet one-on-one with students during free time to “re-lecture” the material. It would take about half to three quarters of a period to teach the material to every student that missed class. It was hard to find enough time during the day, and I still had students that couldn’t or wouldn’t come in and ended up falling farther and farther behind. Now, I direct students to the online lectures and usually they will watch them during or even before their absences. Then I can help with homework problems in class and they can also work with their peers.
  
  - I still spend time giving extra help outside of class for students that miss, but the amount of time has decreased significantly. When students have absences, I remind them to watch the lectures and come to class prepared to ask specific questions. Since students are always at different points in the chapter anyway, this isn’t an interruption at all. They can usually find a student that is in the same place as they are to work with.

- On a scale of 1 to 5, 1 being very difficult and 5 being very easy, how would you rank the ease of catching students back up to speed after an absence?
  
  - 5. Students are in charge and have access to all the necessary materials wherever they are. I really don’t have a whole lot to do with it.
  
  - 5 for me and the students. They access the material whenever it is most convenient for them. Then they can spend some of their class time getting help if necessary. Makes it a lot easier on the kid who has little free time due to other commitments.

Student Responsibility and Investment

- How do you see students applying what they have experience in this class to their future?
  
  - This individualized pacing is more like a college course. Students will need to be able to be independent learners and this is great practice. Also, the small group work seems more applicable to the real world where problems are usually solved individually or in small group sessions.
  
  - Being able to set your own timelines and working with small groups is essential for whatever students choose to do with their lives. It is good preparation for college but also for the workplace where they will need to have good interpersonal skills. The technology piece also helps since they are emerged in a technology rich environment right now and it is likely that their job or education will have a technology component.
• Can you describe one student who is successful with this method? What are they doing? What are you doing?
  o The highly motivated student who can set timelines for themselves seem to like this method the most. They are watching the lectures and doing the homework ahead of time so they can manage their time for sports, other classes, jobs, etc. I’m guiding them as they attempt individual research and more difficult enrichment activities.
  o The most successful student is the self starter. They may not love the material, but if given the choice on when and where they will complete assignments, they can dive in and get it done. I give input and feedback on assignments and they can go at their own pace, deciding what is important at what time.

• Can you describe one student who is struggling with this method? What are they doing? What are you doing?
  o Unmotivated students continue to not do work outside of class. The student who struggles the most though is the student who loves structure. They want to be told what to do and when to do it. In their eyes the teacher is the primary information giver and sitting in class being told the material is what they are used to. They struggle to set their own timelines and find it easier to follow someone else’s. I direct these students to stretch their comfort level realizing that now I am even more available. I have sat down with students and helped create timelines to get work done early in the year so they can try doing it on their own later.
  o I would say the needy student struggles the most. Someone who just wants to be told what to do and when to do it may not be able to decide where to start. It can be overwhelming for them to do something this different. I will start the year giving a lot of input and model how to decide what to do when. Eventually I will back off and let students make those decisions. It is also hard for the student who has been really successful in the traditional classroom environment to have the “rules” changed on them. They have the “if it ain’t broke don’t fix it” mentality and may even resent the change. I spend time talking to those students about the successful strategies they have employed in the past (i.e. asking lots of questions during lectures for immediate clarification) and how they can modify and continue to use those strategies in the Flipped Classroom.
Appendix D: Evaluation Program Description

What, exactly, is to be evaluated?
We are currently in the beginning stages of investigating a new school day schedule and one of the topics of concern is changing class minutes/day. In the science department, we currently teach 7 periods of science per week; a single 42 minute period every day and a second 42 minute period 2x per week. One of the possibilities that is being researched is going from an overlapped 8 period/9 period day (which we currently have) to a straight 8 period day, significantly decreasing the amount of contact minutes the science department has in a week (a reduction of nearly 15%).

If in fact the amount of contact minutes in the day changes, teachers will need to modify their teaching practices to cover the same amount of material as set forth by the district learning targets. A trend that has recently been introduced to our school district is the idea of the flipped classroom. I will be evaluating the Flipped Classroom Model and its impact on homework completion and attitude towards homework, availability of alternative learning opportunities and differentiated instruction, simplifying the process of learning content after absences and the impact on student self-efficacy.

What is your major evaluation question (or questions)?
1. Do students have access to the technology necessary to participate in a Flipped Classroom?
2. Has homework completion and attitude towards homework improved as a result of the Flipped Classroom?
3. Have alternative learning opportunities (i.e. authentic research, peer-to-peer tutoring, class discussions, teacher-to-student tutoring) been provided for a truly differentiated experience?
4. Has the Flipped Classroom changed how re-teaching information due to absences (both teacher and student) is handled?
5. Does the Flipped Classroom Model create more responsible and independent students who are in charge of and invested in their own learning?
Who are the stakeholders? (Who stands to benefit from the knowledge gained through the evaluation?)
District Administration (Assistant Superintendent for Curriculum and Instruction, Chief Technology Officer, Director of Programming and Application Services, Operations & Network Coordinator, Director of Operations and Networking Services)
School Administration (Director of Science, Director of Instructional Technology Services, Software Applications Trainer)
Teachers
Students

What are your ideas regarding the collection of data? (What evidence will you gather? How?)
- Student surveys-Google survey including questions on the flipped classroom concept, experience with podcasting and vodcasting, computer & internet access, iPod ownership, etc.
- Technology interview-interview including questions on availability of storage for large media files, network load, netbook usage, etc.
- Flipped Model Teacher Interview-interview questions on the Flipped Classroom Model, technology concerns, benefit to student learning, the changing classroom “picture”

What challenges do you anticipate?
Being given in the summer time, I anticipate low return on the surveys since most teachers and students are on break. Hopefully they will still be checking their school email accounts!
# Appendix E: Timeline

<table>
<thead>
<tr>
<th>Proposed Date</th>
<th>Actual Date</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/21/2011</td>
<td>6/21/2011</td>
<td>Brainstorm evaluation project ideas</td>
</tr>
<tr>
<td>6/22/2011</td>
<td>6/22/2011</td>
<td>Brainstorm evaluation project ideas</td>
</tr>
<tr>
<td>6/23/2011</td>
<td>6/24/2011</td>
<td>Discuss project proposal with Phil Lacey, Director of Instructional Technology Services</td>
</tr>
<tr>
<td>6/27/2011</td>
<td>6/27/2011</td>
<td>Submit evaluation project proposal to Dr. Perkins</td>
</tr>
<tr>
<td>6/28/2011</td>
<td>7/6/2011</td>
<td>Work on developing surveys</td>
</tr>
<tr>
<td>6/29/2011</td>
<td>7/7/2011</td>
<td>Work on developing surveys</td>
</tr>
<tr>
<td>6/30/2011</td>
<td>7/8/2011</td>
<td>Work on developing surveys</td>
</tr>
<tr>
<td>7/1/2011</td>
<td>7/9/2011</td>
<td>Have survey proofed</td>
</tr>
<tr>
<td>7/2/2011</td>
<td>7/10/2011</td>
<td>Have survey proofed</td>
</tr>
<tr>
<td>7/3/2011</td>
<td></td>
<td>Have survey proofed</td>
</tr>
<tr>
<td>7/4/2011</td>
<td></td>
<td>Have survey proofed</td>
</tr>
<tr>
<td>7/5/2011</td>
<td>7/11/2011</td>
<td>Revise surveys as necessary</td>
</tr>
<tr>
<td>7/6/2011</td>
<td>7/12/2011</td>
<td>Send surveys to intended sample</td>
</tr>
<tr>
<td>7/11/2011</td>
<td>7/26/2011</td>
<td>Analyze collected data</td>
</tr>
<tr>
<td>7/12/2011</td>
<td>7/27/2011</td>
<td>Analyze collected data</td>
</tr>
<tr>
<td>7/13/2011</td>
<td></td>
<td>Analyze collected data</td>
</tr>
<tr>
<td>7/14/2011</td>
<td>7/21/2011</td>
<td>Write purpose and background section</td>
</tr>
<tr>
<td>7/15/2011</td>
<td>7/22/2011</td>
<td>Write purpose and background section</td>
</tr>
<tr>
<td>7/16/2011</td>
<td>7/27/2011</td>
<td>Write results section</td>
</tr>
<tr>
<td>7/17/2011</td>
<td></td>
<td>Write results section</td>
</tr>
<tr>
<td>7/18/2011</td>
<td>7/27/2011</td>
<td>Write discussion section</td>
</tr>
<tr>
<td>7/19/2011</td>
<td></td>
<td>Write discussion section</td>
</tr>
<tr>
<td>7/20/2011</td>
<td>7/28/2011</td>
<td>Write conclusions and recommendations section</td>
</tr>
<tr>
<td>7/21/2011</td>
<td></td>
<td>Write conclusions and recommendations section</td>
</tr>
<tr>
<td>7/22/2011</td>
<td>7/28/2011</td>
<td>Write summary section</td>
</tr>
<tr>
<td>7/23/2011</td>
<td></td>
<td>Write summary section</td>
</tr>
<tr>
<td>7/26/2011</td>
<td>7/30/2011</td>
<td>Revise</td>
</tr>
<tr>
<td>7/27/2011</td>
<td></td>
<td>Revise</td>
</tr>
<tr>
<td>7/28/2011</td>
<td></td>
<td>Revise</td>
</tr>
<tr>
<td>7/29/2011</td>
<td></td>
<td>Revise</td>
</tr>
<tr>
<td>7/30/2011</td>
<td></td>
<td>Revise</td>
</tr>
<tr>
<td>7/31/2011</td>
<td></td>
<td>Revise</td>
</tr>
<tr>
<td>8/1/2011</td>
<td>8/1/2011</td>
<td>Final Evaluator’s Program Description due to Dr. Perkins</td>
</tr>
</tbody>
</table>