

THE EFFECTIVENESS OF A FLIPPED CLASSROOM VERSUS A TRADITIONAL  
CLASSROOM

Approved: \_\_\_Dale Henze\_\_\_\_\_ Date: \_August 26, 2016\_\_\_\_\_

THE EFFECTIVENESS OF A FLIPPED CLASSROOM VERSUS A TRADITIONAL  
CLASSROOM

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A Seminar Paper

Presented to

The Graduate Faculty

University of Wisconsin-Platteville

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In Partial Fulfillment of the

Requirement for the Degree

Masters of Science

in

Education

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by

Jay Freerking

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## Abstract

### THE EFFECTIVENESS OF A FLIPPED CLASSROOM VS A TRADITIONAL CLASSROOM

Jay Freerking

Student learning and teaching is changing on a daily basis. There are many ways of teaching students within the classroom. Two of those include teaching a class in the traditional method or teaching a class in a flipped method. The traditional way of teaching includes the instructor giving notes and the students working on homework after school. A flipped classroom is one in which the students take notes at home but work on assignments in class where the teacher is a facilitator for the needs of the students. There have been multiple studies completed on the effectiveness of a flipped classroom versus a traditional classroom. The results from this study show that there is no difference in test results. However, there are many qualitative effects of a flipped classroom that a traditional classroom does not offer.

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## **CHAPTER I: INTRODUCTION**

My research focussed on the effectiveness of a flipped classroom versus a traditional classroom in two geometry classes at Cuba City High School. A traditional classroom is an environment in which the teacher spends the majority of the class period lecturing and students take notes. Then, the students work on assignments outside of the class period. A flipped classroom is an environment in which the students take notes from a video or book outside of the class period. Once class starts, the students then spend the entire class period working on activities or assignments and the teacher's role is a facilitator.

There have been studies that compared flipped classrooms to traditional classrooms. Clark (2015) found that student improvement is the same when comparing the two different formats. However, Clark's study was only conducted over a seven-week period. Fulton (2012, June) reported about a school in Byron, Minnesota, that completely flipped all of the math classes in the high school. Their data showed that students' mastery level on the Minnesota Comprehensive Assessment went from 65.6% in 2010 to 73.8% in 2011.

### **Statement of the Problem**

I hypothesized that, during the first semester of the 2015-2016 school year, the results on regular classroom assessments will improve more in a flipped geometry class than in a traditional geometry class.

### **Definition of Terms**

**Flipped Classroom:** A classroom in which students take notes at home using their textbook or watching an instructional video created by the instructor. During the class periods students use their time participating in activities or completing assignments. The teacher's role is moved from a lecturer to more of a facilitator (Clark, 2015).

**Traditional Classroom:** A classroom in which the students take notes during a lecture or demonstration during the class period. At home, the students then complete the assignment that coincides with the lecture or demonstration (Clark, 2015).

**Independent Sample *t*-Test:** This is a test that shows if the means of two different samples are significantly different (Independent Samples *t* Test, 2015).

**Multivariate Analysis of Variance (MANOVA):** This is a test that determines if the differences in means on multiple dependent variables are due to the independent variables or if the change would have happened on its own. It allows the user to eliminate any difference at the start of the study (French, Macedo, Poulsen, Waterson, 2015).

**Covariate:** A variable whose influence the user wishes to eliminate at the beginning of the study (French et al., 2015).

### **Delimitations and Limitations of the Research**

There were two limitations to the research done at Cuba City High School. First, the students were not randomly assigned to classes. The students were already placed in their geometry courses before the decision to conduct research was made. Second, the sample size is only 14 in the traditional classroom and 14 in the flipped classroom.

There were three delimitations to the research done at Cuba City High School. First, the only groups of students that participated in the study were the groups of students that were enrolled in the second and third period geometry courses. There was also a sixth period geometry class. Geometry was also just one math course out of the eight total math courses offered at Cuba City High School. Second, the students enrolled in these classes were a mixture of freshman, sophomores, juniors, and seniors. This means that there was a mixture of ability levels within the classes. The different abilities levels meant that each student had to be brought

up to the same knowledge level as everyone else so that the new teaching strategy could be implemented successfully. Third, some students did not have access to an internet connection at home. This could have caused those students not to be fully engaged in the study due to the issue of finding a place to watch the videos provided.

### **Method of Approach**

I measured the effectiveness of the teaching methods based on the average scores on chapter/unit tests, and the semester I final exam. The IRB protocol provides further details and is attached as Appendix A. Project data collection materials are attached as Appendix B.

## **CHAPTER II: REVIEW OF THE LITERATURE**

### **Research Question**

A flipped classroom is an approach to teaching which requires the students to take notes outside of the classroom. During the class period, the students then use the time to complete activities and assignments. Even though this method of study has been given mixed reviews, there has not been a study that compares the effectiveness of a traditional teaching method to a flipped classroom teaching method over a long period of time in a high school math class. The question I addressed was whether the teaching method of a flipped classroom in a geometry class at Cuba City High School would impact student learning more significantly than the traditional teaching method in another geometry class.

### **Discussion of Prior Research**

Mok (2014) explored the effects of flipping a collegiate computer programming class. Mok required his students to watch previously recorded instructions on their own time and be prepared to discuss those instructions the next day in class. The daily routine in class was for the students to work in groups to complete activities. Mok believed that this would increase student achievement. The students did not think that the flipped classroom changed their outcomes on the course. However, the students did say that they were more open to new ways of learning and interacting with groups because of a flipped classroom allowing time for the activities and new ways of learning. A set-back from Mok's study was that he did not compare his information to a previous class that was taught using a traditional method. This information is valuable, even with the drawbacks, because it shows that there is positive qualitative information that can come from flipping a classroom. This positive information about students showed me that the students in the geometry classes would be open to a new way of teaching and learning.

Another study that flipped a collegiate classroom was conducted by Strayer (2012). Strayer did not get as successful of results as Mok (2014). The students in Strayer's study said that the method of having a flipped classroom did not help them learn the material. In fact, some of the students said that having a flipped classroom did not allow them to learn as much as they could have if the information was taught in a traditional manner. Strayer's students did agree with Mok in the fact that they were more open to new ways of learning and group work. While neither Strayer nor Mok provided significant information on student performance, they did provide important qualitative information that can be translated to a high school classroom. Strayer and Mok both found that students were more engaged during the lessons, students were more open to finding new ways of learning, the structure of the classroom provides better learning opportunities, and many more possibilities to implement new activities.

One of the drawbacks to Mok's and Strayer's studies was that they were conducted on collegiate students. Fulton (2012, Oct) wrote about the qualitative results of a flipped high school classroom in Byron, Minnesota. Byron High School flipped all of the math classes in 2009. The qualitative results of this procedure were: students could move at their own pace, doing "homework" in class gave teachers better insight into student difficulties and learning styles, teachers could customize and update the curriculum and provide it to students 24/7, classroom time was used more effectively and creatively, parents had a window into the coursework, and the use of technology was flexible and appropriate for 21<sup>st</sup>-century learning.

Fulton (2012, June) wrote about the quantitative results of flipping all of the math classes at Byron High School. In 2010 the students' mastery level on the Minnesota Comprehensive Assessment (a standardized test in the state of Minnesota) was 65.6%. In 2011 the mastery level of the students rose to 73.8%. This increased followed one full year of having the entire set of

math classes completely flipped. The problem with the data is that, with no control group, there is no way to determine if the students would have improved the same if they had been taught using a traditional method.

Clark (2015) conducted a study in which a traditional high school algebra class was compared to a flipped high school algebra class. Clark found that there was more student engagement in the flipped classroom compared to the traditional classroom. Clark also found that student scores in each class did not differ at all. The problem with these results is that Clark conducted the study for only seven weeks. This does not give enough time for a teaching strategy to be fully implemented.

### **Summary**

There has been much research conducted on flipping math classes. The one solid piece of information that they all provide is that student engagement increases in a flipped classroom and students are more open to new ways of learning. Where the research has conflict is in the fact that some have found that student scores stay the same (Clark, 2015) and others have found that student scores increased (Fulton, 2012 June). Clark had one limitation in the fact that his study was only conducted over a seven-week period. Fulton had one limitation in the fact that Byron High School could not compare results to a traditional classroom. What needs to be known is whether student scores would increase in a flipped classroom compared to a traditional classroom in the same school year when studied for a longer period of time.

### **Hypotheses**

I hypothesized that, during the first semester of the 2015-2016 school year, the results on regular classroom assessments would improve more in a flipped geometry class than in a traditional geometry class.

## **CHAPTER III: METHOD**

### **Participants**

Research was conducted at a rural high school in Southwestern Wisconsin. The district is comprised of two buildings: a 4k-8<sup>th</sup> grade elementary building, and a 9-12 high school building. The school district is 98% Caucasian and 2% minority. The students who participated in this study were enrolled in either the second period geometry class or third period geometry class during the first semester of the 2015-2016 school year. Their average age was 16-years-old. There were 16 boys and 12 girls.

### **Materials**

Students in both classes took regular classroom assessments that included a pre-test, chapter/unit tests, and a semester final exam. The results were recorded on a spreadsheet (Appendix B). The class average on the all of the assessments was then analyzed using a Multivariate Analysis of Variance (MANOVA).

### **Procedures**

The research process began by securing permission from the building principal and the parents to allow the students to be included. The students assent was then collected. Students first took a pre-test at the beginning of the semester. The second period geometry class began course work in the flipped method of teaching and third period geometry began course work in the traditional method of teaching. Throughout the semester, each class took the same chapter/unit tests and then at the end of the semester each class took the same Semester I Final Exam. The results of these assessments were then analyzed using a MANOVA.

## CHAPTER IV: RESULTS

The question being asked is if a flipped classroom at Cuba City High School impacts student learning more than a traditional classroom? The results were obtained first by using a t-test followed by using a MONOVA test.

A t-test was first performed on the pre-test variable that each student took at the beginning of the school year. The results of the t-test are shown below. This test was performed to determine if there was a difference in performance level prior to the class. The results showed that the traditional classroom had a mean score of 18.97 compared to the flipped classroom of having a mean score of 25.44. The variance of the traditional classroom was 66.80 while the flipped classroom had a variance of 89.93. Using 25df the t-test provided a t-stat of -1.93. Comparing this number to the t-critical value ( $\pm 2.06$ ), statistically speaking there is no significant difference between the traditional classroom and flipped classroom to start the school year.

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	<i>Traditional Classroom</i>	<i>Flipped Classroom</i>
Mean	18.97321429	25.4464286
Variance	66.80331387	89.9296016
Observations	14	14
Hypothesized Mean Difference	0	
df	25	
t Stat	1.934656628	
P(T<=t) one-tail	0.03221264	
t Critical one-tail	1.708140761	
P(T<=t) two-tail	0.06442528	
t Critical two-tail	2.059538553	

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Once it was determined that the two classes were statistically equal, a MONOVA test was performed and the results are included in the table below. According to Wilks' Lambda, the flipped classrooms resulted in a significance level of .323. This number is greater than the 0.05 significance level that was being tested at. Based on this result, the hypothesis that the flipped classroom has a greater impact on student learning than a traditional classroom must be rejected. This rejection is more acceptable when comparing the average scores at their face value. To start, the average difference between the flipped and traditional classroom on the baseline assessment was 6.47 points. The average difference between the flipped and traditional classroom on the final assessment was 6.76 points. Based on these numbers, the gap of knowledge between the two classes statistically did not change. Based on all of this information we can conclude that the hypothesis of a flipped classroom being more effective than a traditional classroom cannot be accepted as true.

Multivariate Tests<sup>a</sup>

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power <sup>c</sup>
Intercept	Pillai's Trace	.917	37.065 <sup>b</sup>	6.000	20.000	.000	.917	222.392	1.000
	Wilks' Lambda	.083	37.065 <sup>b</sup>	6.000	20.000	.000	.917	222.392	1.000
	Hotelling's Trace	11.120	37.065 <sup>b</sup>	6.000	20.000	.000	.917	222.392	1.000
	Roy's Largest Root	11.120	37.065 <sup>b</sup>	6.000	20.000	.000	.917	222.392	1.000
PreTest	Pillai's Trace	.221	.945 <sup>b</sup>	6.000	20.000	.486	.221	5.671	.286
	Wilks' Lambda	.779	.945 <sup>b</sup>	6.000	20.000	.486	.221	5.671	.286
	Hotelling's Trace	.284	.945 <sup>b</sup>	6.000	20.000	.486	.221	5.671	.286
	Roy's Largest Root	.284	.945 <sup>b</sup>	6.000	20.000	.486	.221	5.671	.286
Classroom	Pillai's Trace	.273	1.251 <sup>b</sup>	6.000	20.000	.323	.273	7.504	.377
	Wilks' Lambda	.727	1.251 <sup>b</sup>	6.000	20.000	.323	.273	7.504	.377
	Hotelling's Trace	.375	1.251 <sup>b</sup>	6.000	20.000	.323	.273	7.504	.377
	Roy's Largest Root	.375	1.251 <sup>b</sup>	6.000	20.000	.323	.273	7.504	.377

a. Design: Intercept + PreTest + Classroom

b. Exact statistic

c. Computed using alpha = .05

	Pre-Test Average	Overall Average
Traditional Class	18.973214	65.4631847
Flipped Class	25.4464285	72.2210543

## CHAPTER V: DISCUSSION

The teaching style of a flipped classroom and a traditional classroom are very different. The role of the teacher changes from being a direct instructor to a facilitator of the students' needs. Based on the test results there is no statistical evidence to prove that a flipped classroom has greater impact on student learning than a traditional classroom. These statistics were based only on the test scores from the chapter tests and final exam. Even though the evidence shows no difference in test scores between the classes there are many other qualitative experiences that have been the result of a flipped classroom including a better use of time for meaningful hands on activities, better differentiation for students, and allowing the teacher to work with the students more one on one (Albanese, 2015).

Starting a flipped classroom is the toughest part of the transition. Students have to be taught how to teach themselves. There is a lot of independence when working in a flipped classroom, and the students have to be taught how to learn on their own. The other part of flipping a classroom that is difficult is holding students accountable. A system of accountability was used by uploading videos to edpuzzle.com. This website provides students with their own accounts and records if they have watched the videos or not. This website also allows for quizzes to be implanted within the videos to assess the knowledge of students. Once these factors were overcome, then the flipped classroom ran smoothly.

When comparing the qualitative results of a flipped classroom to that of the traditional classroom, the flipped classroom provides many more opportunities for student learning. The flipped classroom allows for more differentiated learning than a traditional classroom. Students can work at their own pace and not be left behind. The videos are always there for students to watch. The flipped classroom is also more adaptable for students who miss class for extended

periods of time. Finally, the flipped classroom allows for students to interact with the teacher on a more regular basis when they have questions. Students do not have to wait for the teacher to be done teaching before they ask questions. The teacher is always available to conference with the students.

A traditional classroom still has its benefits. One of the major benefits of a traditional classroom was being able to teach tougher material to students. It is easier to have informal assessments to find if the students understand the material. The pacing is controlled by the teacher in a traditional classroom. The students in a traditional classroom have a routine that they follow on a daily basis. The students in a traditional classroom know what is coming next, and the work load required to be ready for the assessments. This is beneficial for students who cannot learn on their own.

There are some qualitative reasons why someone would prefer a traditional classroom over a flipped classroom. Some teachers do not feel comfortable giving up the control of the classroom because the students might not be able to work independently. Students not being able to work independently would cause a flipped classroom to fail. Another reason to stay within a traditional classroom is “a lecture on a video is still a lecture” (Wright 2012). This is a valid point if a student is looking to learn in a more creative way. If a teacher is still lecturing in the videos then there has to be a philosophical decision to make if the lectures are more valuable or the activities that follow the lecture. If the lectures are more important, then the traditional classroom is better. If the activity and follow up is more important, then the flipped classroom is a better option.

Implementing a new teaching and new learning strategies are always difficult. The strategies are especially difficult when the students have never worked within a flipped

classroom before. This means that are obstacles that had to be overcome throughout the way. Those obstacles included students not watching the videos at night, students not having internet access at home, students not being prepared for the activity the following day, and students not participating fully in the activities. I tried all of my strategies of motivation that I knew and researching a lot of other strategies. The best strategies included creating contracts for the students to sign about completing the process, implementing “jobs” for students in each group to complete in order for the activities to be considered completed, create time before and after school for students to use devices in the classroom in order to complete the notes ahead of time (Pfeiffer, 2015).

All in all, statistically there is no significant difference between a traditional classroom and a flipped classroom. Even though a flipped classroom environment does not have a statistical advantage over a traditional classroom, using a flipped classroom is more conducive to the math class environment at Cuba City High School. This style of teaching will continue to be used and adjusted to make the best possible learning environment for the students.

## CHAPTER VI: REFERENCES

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## APPENDIX A: IR APPROVAL LETTER

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UNIVERSITY OF WISCONSIN  
**PLATTEVILLE**  
INSTITUTIONAL REVIEW BOARD

8/28/2015

Jay Freerking  
Sponsor: Dr. Joan E. Riedle  
Department of Masters of Science - Education  
University of Wisconsin-Platteville

RE: IRB Protocol #2015-16-03

Project Title: The Effectiveness of a Flipped Classroom vs a Traditional Classroom

Approval Date: 8/28/2015  
Expiration Date: 8/27/2016

Your project has been approved by the University of Wisconsin-Platteville IRB via a Full Board Review. This approval is subject to the following conditions, otherwise approval may be suspended:

1. No participants may be involved in the study prior to the IRB approval date listed above or after the expiration date.
2. All unanticipated or serious adverse events must be reported to the IRB.
3. All modifications to procedures, participant selection, and instruments used (surveys, consent forms, etc) must be reported to the IRB chair prior to their use. Extensive modifications may require full board approval.
4. If the project will continue beyond the expiration date, then the researcher must file for a continuation with the IRB at least 14 days prior to the expiration date. If the IRB approval for this project expires before approval for continuation is given, then a new protocol must be filled out and submitted. Federal guidelines allow for no exceptions to this rule. Any data collected after the expiration date cannot be used in the study.

If you have any questions, please contact the IRB chair at the address below. Include your protocol # on all correspondence.

Sincerely,

A handwritten signature in cursive script that reads 'Dr Barb Barnet'.

Dr. Barb Barnet  
Institutional Review Board Chair  
Professor, Mathematics Department  
Gardner 451  
University of Wisconsin-Platteville  
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**B**

## APPENDIX B: PROJECT MATERIALS

Traditional Geometry Class							
Students	Assessments						Semester 1 Final
	Pre-Test	Chapter 1	Chapter 2	Chapter 3	Chapter 4	Chapter 5	
A1	15.625	63.636363	72.093023	71.052631	70.370370	93.333333	80
A2	15.625	42.424242	53.488372	42.105263	40.740740	60	62
A3	21.875	45.454545	67.441860	60.526315	81.481481	76.666666	72
A4	9.375	39.393939	60.465116	39.473684	51.851851	56.666666	54
A5	6.25	57.575757	62.790697	47.368421	59.259259	66.666666	72
A6	12.5	72.727272	83.720930	71.052631	96.296296	73.333333	82
A7	18.75	57.575757	65.116279	65.789473	88.888888	73.333333	74
A8	18.75	47.222222	83.720930	71.052631	74.074074	76.666666	66
A9	34.375	33.333333	76.744186	52.631578	62.962962	73.333333	74
A10	25	63.636363	74.418604	63.157894	85.185185	76.666666	74
A11	21.875	72.727272	86.046511	81.578947	96.296296	83.333333	86
A12	9.375	72.727272	55.813953	68.421052	88.888888	66.666666	64
A13	28.125	48.484848	60.465116	52.631578	44.444444	63.333333	62
A14	28.125	30.303030	53.488372	39.473684	48.148148	66.666666	52
<b>Average</b>	18.973214	53.373015	68.272425	59.022556	70.634920	71.904761	69.571428

Flipped Geometry Class							
Students	Assessments						Semester 1 Final
	Pre-Test	Chapter 1	Chapter 2	Chapter 3	Chapter 4	Chapter 5	
B1	37.5	66.666666	62.790697	42.105263	77.777777	76.666666	66
B2	34.375	52.777777	62.790697	68.421052	92.592592	100	84
B3	37.5	61.111111	72.093023	39.534883	77.777777	63.333333	76
B4	15.625	77.777777	86.046511	78.947368	92.592592	96.666666	86
B5	34.375	77.777777	74.418604	57.894736	74.074074	76.666666	64
B6	12.5	72.222222	79.069767	31.578947	85.185185	56.666666	56
B7	25	38.888888	74.418604	47.368421	48.148148	66.666666	70
B8	21.875	47.222222	46.511627	42.105263	70.370370	53.333333	74
B9	28.125	66.666666	67.441860	63.157894	88.888888	96.666666	86
B10	15.625	72.222222	88.372093	89.473684	92.592592	90	88
B11	37.5	63.888888	74.418604	76.315789	81.481481	80	84
B12	25	50	76.744186	68.421052	66.666666	73.333333	46
B13	15.625	72.222222	72.093023	73.684210	85.185185	90	88
B14	15.625	75	90.697674	81.578947	96.296296	80	86
<b>Average</b>	25.446428	63.888888	73.421926	61.470536	80.687830	78.571428	75.285714

Appendix II

SCHOOL DISTRICT OF CUBA CITY  
CUBA CITY COMMUNITY HIGH SCHOOL



JIM BOEBEL, PRINCIPAL  
101 North School Street  
Cuba City, WI 53807  
Phone: 608-744-8888  
Fax: 608-744-2324  
www.cubacity.k12.wi.us



July 15, 2015

UW-Platteville Leadership Program,

I am writing this endorsement letter on behalf of Cuba City High School. Mr. Freerking has proposed a study involving the students in Cuba City High School. I fully support his plan to flip one class and compare it with a traditional class.

Your friend in education,

Jim Boebel  
High School Principal  
Cuba City School District



In accordance with WI State Statute 118.15, no person may be denied admission to any public school or be denied participation in, be denied the benefits of or be discriminated against in any curricular, extracurricular, pupil services, recreational or other program or activity because of the person's sex, ancestry, sexual orientation, race, religion, national origin, creed, pregnancy, marital or parental status, physical, mental, emotional or learning disability.

**PARENT/GUARDIAN CONSENT FORM FOR PARTICIPATION OF HUMAN PARTICIPANTS  
IN RESEARCH  
UNIVERSITY OF WISCONSIN-PLATTEVILLE & CUBA CITY HIGH SCHOOL**

**1. Purpose:** The purpose of this research is to determine if a flipped classroom is more or less beneficial to students learning mathematics. One of my Geometry classes will be randomly assigned to be taught using a flipped method (with students taking notes at home and using class time for practice and activities) and the other Geometry class is to be taught using a traditional method.

**2. Procedure:** Data will be collected from each class including a pre-test, chapter/unit tests, and the Semester I Final Exam. PARTICIPATION IS VOLUNTARY AND YOUR CHILD WILL BE ASKED TO GIVE HIS/HER ASSENT. YOUR CHILD'S NAME WILL NOT BE RECORDED ON THE RESEARCH MATERIALS AND IT WILL NOT BE INCLUDED IN OUR DATA SET OR IN ANY REPORTS ABOUT THE PROJECT. All students will complete the instructional materials and assessments, but assessment scores will only be included in my research with your permission.

**3. Time Required:** Completing daily routines in class for the entire first semester of the 2015-2016 school year.

**4. Risks:** No short-term or long-term risks are foreseen. The only "cost" to the participants will be the time and effort required to participate in the study.

**Benefits:** Some students will be introduced to a new, hands-on approach to learning Geometry. There is also potential for students to perform better on standardized tests, specifically the ACT. Whichever method is more successful, flipped or traditional, could then be repeated with future students.

**5. Your Rights as the Parent of a Student Participant:** The information gathered in this study will be confidential. Data or summarized results will not be released in any way that could identify you or your child. If your child would like to withdraw from the study at any time, he/she may do so without penalty or repercussions. The information collected from your child up to that point would be deleted from my data set. At the end of the study results of the study will be shared with the students. If you have any questions afterward, please ask:

Jay Freerking, Researcher and Teacher at Cuba City High School  
School of Education, University of Wisconsin-Platteville  
608-744-8888 ext. 1226  
jay.freerking@cubacity.k12.wi.us  
Joan Riedle, Research Advisor, riedlej@uwplatt.edu

Once the study is completed, you may request a summary of the results by contacting the above researcher or Jim Boebel, Principal.

**6. If you have any questions about your child's treatment as a participant in this study, please call or write:**

Barb Barnet  
Chair of the UW-Platteville IRB  
(608) 342-1942  
[barnetb@uwplatt.edu](mailto:barnetb@uwplatt.edu)

or

Jim Boebel  
Principal, Cuba City High School  
608-744-8888  
[jim.boebel@cubacity.k12.wi.us](mailto:jim.boebel@cubacity.k12.wi.us)

I have read the above information and (check one):

DO give consent for my child to participate in the research.

DO NOT give consent for my child to participate in the research.

Please print your child's name (First, Middle, Last): \_\_\_\_\_

Please print your full name (First, Middle, Last): \_\_\_\_\_

Please sign: \_\_\_\_\_ Date: \_\_\_\_\_

Then return this completed form to \_\_\_\_\_ by \_\_\_\_\_

**STUDENT ASSENT FORM FOR PARTICIPATION IN RESEARCH  
UNIVERSITY OF WISCONSIN-PLATTEVILLE &  
Cuba City High School**

Dear Student,

We want to provide the best education possible to you and to future students. Therefore, we are conducting this research project. You are invited to participate in our study of the effectiveness of a flipped classroom compared to a traditional classroom. You are being asked to participate in this study because you, as a student at Cuba City High School, know what works for you.

Participation in this study will have absolutely no impact on your grades. The information gathered in this study will be used to help make the math classes at Cuba City High School better for the students.

Your parents have already given permission for you to participate in our research project and we are hoping that you will also agree to participate. If you do not wish to participate, please inform Mr. Freerking or Mr. Boebel. Thank you for helping us to better help you.

Sincerely,

Mr. Jay Freerking, Math Teacher  
University of Wisconsin-Platteville  
608-744-8888 ext. 1226  
jay.freerking@cubacity.k12.wi.us  
Joan Riedle, Research Advisor, riedlej@uwplatt.edu

Mr. Jim Boebel  
Principal, Cuba City High School  
608-744-8888  
jim.boebel@cubacity.k12.wi.us

If you have any questions about your treatment as a participant in this study, please call or write either of us or contact:

Barb Barnet  
Chair of the UW-Platteville IRB  
(608) 342-1942  
barnetb@uwplatt.edu