

# Final Proposal

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## Focus and Rationale

The issue of class size is a hot button issue for student achievement. Several classes, such as special education and bilingual, have “caps” to keep the class size small. While the reasons are logical, research has been done to see if benefits of smaller classes span to other subject areas. In the U.S., society is realizing that today’s student is lacking academic proficiency, especially in mathematics. As budgets decrease teacher staffing is reduced leaving fewer teachers with the burden of increasing enrollment. While I understand the issue of salary budgets, researchers have found several ways to creatively save money. Teaching 40 students within 55 minutes directly affects student achievement and teacher morale which leads me to the question: *How does class size affect teacher morale and overall student achievement?*

This question is significant for teachers across the curriculum. Particularly, English and Mathematics teachers hold a great deal of burden in regards to high-stakes testing, also known as standardized state tests. The audience for this proposal would be administrators, counselors, union representatives, and the district. Counselors and administrators work at the end of each year to build master schedules involving the number of teachers for each subject. Using this meeting to present the study could shift the focus on keeping core curriculum areas on the lower class size. In addition, the study could be shared with union representatives as additional references when discussing contractual agreements with the district. While these professional occasions are more on the implementation of the studies’ findings, sharing the information with my co-workers at professional development and department meetings are just as important.

The sources I will be using for the proposal project include websites with articles about the effects of class size on the learning environment. First, some sources are from teacher organizations discussing the connections between smaller classes and frequency of student feedback. Second, University resources share conducted probabilities comparing achievement scores of large and small classes. My final sources are done by individuals comparing the programs implemented in states such as California, Wisconsin, and Tennessee. I believe the combination of these resources will provide me with multiple views of class size to give me a well rounded study to exhaust all possible outcomes.

## Literature Review

### Introduction

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The topic of class size, or student-teacher ratio, has been a hot debate for decades among policy makers, teachers, and parents. However, instead of searching for articles that promote class size reduction, I wanted to learn how class size affects teacher morale and student achievement. My research question being, *“How does class size affect teacher’s morale and student achievement?”* I have found several articles that discuss the positive effects and negative consequences for districts, students, and teachers when changing class sizes. What I discovered is class size is just one variable of teacher morale and student achievement that affect many other outlying issues in school including resources, finances, professional development, and workload. The following information is a brief description of the information I have gathered on the topics of perspectives, pedagogy, and assessment regarding class size.

### Perspectives

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There are many perspectives and opinions on the issue of class size. Does class size affect student achievement? Are the benefits of class size reduction worth the cost? Does class size help students socially, as well as, academically? Does teacher morale increase with smaller class sizes? Does teacher morale affect student achievement? The answer to all of these questions is yes. However, such a short answer does not begin to incorporate the reasons or points of view from the stakeholders in class size reduction.

The first perspective is weighing the costs. As Chingos (2011) states, class-size reduction is a popular idea for teachers, parents, and the general public. So several states, including Tennessee, Wisconsin, and California have implemented reduction programs. However, even though class-size reduction programs are in place, Sparks (2010) points out that the evidence for increased student achievement is not substantial enough to balance out the expenses of those programs. District budgets in today’s economy cannot support the addition of classes and teachers needed to implement the reduction programs, like the one in Tennessee. On the other hand, Achilles (2005) critiques reduction programs could be funded with current resources using the complete knowledge of the budget and creative thinking. Unfortunately,

creative thinking includes cutting funding to extracurricular programs. So, we need to weigh the costs of class size if it means removal of current programs without guarantees.

The second perspective is the effect of class size on overall student achievement. According to Bascia and Fredua-Kwarteng (2008), “parents of children attending smaller classes rate their children’s educational experience more highly” than children who are in larger classes (p. 32). Students receive more frequent feedback and parents claim more contact with the teachers. Through my readings there is an overall consensus that students who have small classes in their early years of education (K-3) tend to perform better throughout their educational career and beyond. Achilles (2005) discusses class size reductions increased high school graduation and college entrance rates for students who were apart of the program. Consequently, successful students turn into well-informed and involved community members for the next generation.

The last perspective to consider is teacher morale. It is important that the students receive a fostering learning environment and the teacher exerts high morale. Diaz, Fett, Torres-Garcia, and Crisosto (2003) state, “Higher student-teacher ratios will tend to discourage teachers and students (p. 3). When teachers feel overwhelmed with student numbers and workload, their morale changes when teaching a class and dealing with behavior. When Mackenzie (2007) surveyed 101 teachers about ways to improve morale, over half of the participants stated reducing workload and stress caused by high student numbers in the classroom. Studies state that the learning environment is also affected by other factors, other than class size, such as teacher experience, training, and curriculum expertise. The point made by many authors including Mueller, Chase, and Walden (1988) is that smaller class sizes increase teacher morale in the classroom. Increased teacher morale directly affects the delivery of instruction and student-teacher interactions. Using the law of syllogism, it can imply that improved teacher morale increases student achievement.

## Pedagogy

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The implementation of class reduction programs was thoroughly researched by Tennessee, Wisconsin, and California. The differences in which the programs were

implemented are important to discuss in regards to the educational practices used. Tennessee's program called Student-Teacher Achievement Ratio (STAR) "implemented a randomized experiment to investigate the effectiveness of smaller classes" (Reichardt, 2001, p.1). California's Class Size Reduction (CSR) was a statewide approach to reduce class sizes to improve scores. Wisconsin's program, Student Achievement Guarantee in Education (SAGE) reduced class sizes in targeted schools with high poverty students. Each study showed similar and conflicting results which enhances the debate of whether or not class size is a factor for increased student achievement, specifically on test scores.

All three states showed improvement in student achievement at some level. However, the little improvement made in California shifts the discussion from class size to educational practices. In 2004, Education Week compared the class sizes and student performance of the U.S. to Japan and South Korea. Both countries are significantly outscoring the U.S. in reading and math and their class sizes averaged between 33 and 36. This is an opening for Bassett (2010) to state, "It is teacher quality, not class size, which matters most" (p.25). This idea of teacher quality instantly triggered a new dilemma of class size reduction. The National Council of Teachers of English (1990) point out, "Simply reducing class size alone does not necessarily result in improved achievement when instructional methods do not change" (p.1). California saw this issue during their implementation when they became desperate to hire emergency teachers to fulfill promises of reduced class sizes. The Center for Public Education (2010) found that teacher experience and preparation is a critical factor for class size reduction programs to be successful. When California created a program that required 50% new teachers in schools, their lack of planning resulted in disaster in student achievement regardless of the smaller classes. It can be said that Tennessee's and Wisconsin's approach to implement their programs with experienced teachers with proper training made the difference in their achievement scores.

## Assessment

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Assessing the effectiveness of the class reduction programs for Tennessee, Wisconsin, and California involved looking at standardized test scores, classroom behavior, and graduation rates. It is important to note both the short term and long term effects of small classes. All

three states implemented their programs for students enrolled in Kindergarten thru third grade. As end of the year standardized tests were taken, students showed improved achievement over students in the larger classes in all three states. The results in Wisconsin and Tennessee showed a larger gap in achievement than California. The difference in class size for California is a contributing factor to the lack luster results. Tennessee and Wisconsin reduced class size from 20 to 15 while California went from 30 to 20. Even though California had a larger change in class size, their insufficient planning caused more teacher quality issues.

Overall, the most significant changes were within a range 13 – 19 students per class and in specific content areas including math, English, bilingual and special education. Raudenbush and Shin (2011) concluded that subject specific test scores should the most improvement when implementing class size reductions. Johnston (1998) agreed that students who need specialized attention would benefit the most from smaller classes. When students had the opportunity to being their education in smaller classes, their chances of being successful in higher grades increased. The participants in Tennessee's STAR program had a significant rise in graduation rate compared to the participants in the larger classes.

Each program's longevity of implementation was different. Konstantopoulos (2011) discussed the importance of consistency because schools and teachers were more successful with smaller classes over time. Student and teacher consistency of smaller classes improve class behavior and management. Authors agreed that teachers spent less time on discipline and more time on instruction and interaction. Pritchard (1999) predicts, "If teachers find teaching in a smaller class more personally rewarding, they may stay in the profession longer, decreasing the frequency of the need to hire and train new teachers" (p.10). Consequently, this could solve the fiscal issue for the district. The long term academic benefits and teacher retention could outweigh the costly initial implementation of class size reductions.

## Conclusion

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Creating my research question was a process involved around the original idea of reducing class size. First I wanted to find research proving that smaller classes improved academic achievement. Through my search of articles I noticed that class size is a controversial

topic with many variables. Class size can affect student achievement, teacher morale, fiscal responsibility, professional development needs, and re-evaluation of school programs. More importantly, class size is only as effective as its implementation. My original bias influenced the first few articles I choose to include in my literary review. However, as more evidence came to light, I had to abandon my original idea and change my direction to how class size affects two aspects of the learning environment: student achievement and teacher morale.

My two focuses helped me obtain 15 references discussing the positive and negative effects of reducing class size. Again, my bias had me focusing on the positive effects. But, the results and data from the California study were undeniable. When class sizes are reduced without teacher preparation, academic achievement will not increase. Bascia and Fredua-Kwarteng (2008) put it plainly, “class size reduction is not a magic bullet” (p.31). My initial thinking that class size could cure all issues was clearly incorrect. I plan on using this new information to drive my research design to look at large and small classes at my school with teachers who have common instructional practices. My end goal is to communicate that even though the secondary education districts cannot afford to reduce class sizes to 15 – 20 students; our 42 student classes are unacceptable for improving test scores based on teacher morale affecting student achievement.

## Research Design

### Research Questions

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As a mathematics teacher in the 21<sup>st</sup> century I have experienced classrooms from sizes 26 to 42. Given my successes and struggles with these larger numbers, I decided to research the results of class size reduction. Thus my research question is: *“How does class size affect students’ achievement (both academic and non-academic) and teacher morale?”*

### Procedures

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My literature review has provided me with a guide for correctly experimenting with class size reduction. It is important that my research design contains the following aspects: multiple teachers with both large and small classes, students placed at random, similar teaching strategies among teachers, and common assessments. The overall research design will be mixed with Quasi-Experimental and Explanatory methods. The Quasi-Experimental is the primary research design focused on student achievement (data) while the secondary is Explanatory focused on teacher morale (survey).

The experiment set up will contain both new and current school policies. First I will review the current policies. Teachers in the same content area have a common prep period to work together and collaborate on curriculum, strategies, and creating assessments. They are required to meet once a week to work together on those topics. In addition, all teachers attend two professional development sessions per semester to strengthen their instruction. In regards to student placement, classes have rosters containing 36-41 students. Those students are placed into classes randomly and strictly dependent on the needs of the student’s schedule.

The new policies will include teacher collaboration, training, and class size. First, teachers involved will continue to have their prep time, but will be required to meet twice a week. One meeting designated to the larger classes and the second designated to the smaller class. Second, teachers involved will attend an additional two trainings specifically for teaching smaller classes. Lastly, student enrollment will be capped to 20-24 students using the same criteria as the larger classes. The goal is to have the same classroom demographics throughout all the classes, regardless of size.

The reason for such a strict need of collaboration is based off the critiques from my resources regarding other programs implementing class size reductions. Teachers were unprepared to teach smaller classes and did not receive proper training; thus, the lack of training affected morale negatively. However, the question of over-training teachers will be considered when studying morale. My research design will focus on the area of training, collaboration, and implementation of proper classroom strategies to effectively use the smaller class size. In addition, teachers and students will be assessed every three weeks. Teachers will complete a survey based on their morale both in the classroom and during collaboration. Students will complete common assessments every three weeks to monitor their achievement compared to their peers. Also, behavior will be assessed at this time based on frequency of visits to the Assistant Principal or campus authority.

## Assessments

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The assessments used in the research design are focused on two areas: teacher morale and student achievement. Teacher morale will be assessed every three weeks with a survey using a Likert scale and a formal interview. Questions will range from personal effectiveness to work enjoyment per class. Students will be assessed on two different types of achievement: academic and developmental. Developmental achievement will be monitored through citizenship grades and frequency with authority figures. Academic achievement will be monitored through common teacher assessments, district assessments, and state standardized tests. All three components are necessary for validating the use of class size reduction.

The reason why I chose to separate achievement into developmental and academic is the discussion of overall improvement in students. Several authors in my literature review discuss the long term effects smaller classrooms have on students. These students are more likely to be successful students, form healthy relationships, achieve higher education, make better decisions, and contribute more to society. While students in larger classes have also achieved these levels of success, the percentage of students involved in smaller class sizes outnumbered those in larger class sizes. Thus, it is important that my program incorporate the behavioral achievement and growth with the academic. On another note, in one study,

teachers who had opportunities to work with other colleagues and share workloads showed increased morale compared to those who worked alone.

The kind of data that will be generated will be quantitative and qualitative. Teachers will provide explanation of their morale (interview) and percentages will be taken from the Likert scale (survey) completed. Students will have qualitative data based on information from authority figures regarding their overall behavior; their citizenship grades will give quantitative data to show increase, decrease, or stationary movement in behavior in other classes. Common, district and standardized assessments will provide quantitative data on achievement and proficiency in algebra. That data will be compared to students not involved in the smaller classes. All forms of data will provide me with information on how smaller classes affect teacher morale and overall student achievement.

## Design Rationale

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My plan is well suited to yield good data about my research question because it goes beyond the mathematical data and considers each participant as a whole person. Teacher morale is a compilation of home life, work load, curriculum team, preparedness, and classroom environment. Each component must be taken into account for teacher moral to be properly assessed. Secondly, students can achieve in two ways: academically and non-academically. My resources showed me the importance in considering the short term and long term affects class size has on students. While the class size may immediately affect test scores; smaller class sizes have the power to change a student's behavior that follows them through later classes. These non-academic benefits should not be ignored. However, what my plan incorporates that others fail to mandate is the necessity for teacher collaboration and training. My third component is the requirement for teacher training and collaboration throughout the week to create common strategies, instruction, and assessments. The excuse that the benefits of class size cannot be replicated will be shattered with this research design. My goal is to prove that with time and proper guidance, all teachers can achieve the same results- whether good or bad. My goal of the research design to is to show the effects of class size on teachers and students; and, how those effects can be replicated with multiple teachers.

## Annotations

Achilles, C. U.S. Department of Education, (2005). *Financing class size reduction* (ED-01-CO-0015) UNCG Publications Unit.

Achilles used Tennessee's STAR, Indiana's Prime Time, Wisconsin's SAGE, and California's CSR programs to discuss the difference in approaches and fiscal creativity to achieve reductions in class size. While he concludes the benefits outweigh the cost to the districts; the importance of budget knowledge and creativity are imperative to have such results. I used this article to compare the importance of extracurricular programs to the guarantees of reduced class sizes.

Bascia, N., & Fredua-Kwarteng, E. (2008). Reducing class size: promises and perils. *Education Canada*, 48(5), 31-33.

The authors' term "magic bullet" (p.31) makes the point that reducing class size is not the cure all for low student achievement in schools when teachers are not prepared. Both authors clearly state the positive effects of smaller classes: increased teacher interaction, engagement and individualized instruction. This article was used to push the need for teacher preparedness through effective training for teaching smaller classes.

Bassett, D. (2010). Bigger class sizes will help trim the fat. *The Times Educational Supplement*, (4884), 25-26.

Bassett implies that class size reduction is the reason why ineffective teaching exists. Raising class sizes, to those comparable to Japan and Southeast Asian countries, would help weed out ineffective teachers. The usefulness of this article is its discussion of class size having no effect on achievement- teacher quality is the most important aspect in the classroom and what schools' focus should be.

Chingos, M. (2011, April). The false promises of class-size reduction [Online Forum Comment]. Retrieved from [http://www.americanprogress.org/issues/2011/04/pdf/class\\_size.pdf](http://www.americanprogress.org/issues/2011/04/pdf/class_size.pdf)

Chingos discusses the popularity, evidence, expense, and future thinking of class size reduction. While the majority of the stakeholders are in favor of the idea of class size reduction; evidence shows that it is not as effective as it seems. Chingos' conclusion to

his evidence is that smaller class sizes are only worth the cost when done in specialized classes such as bilingual and special education. This article was used to discuss the worth of class size reduction programs.

Class size. (2004). *Education Week*, Retrieved from <http://www.edweek.org/ew/issues/class-size/>

This article reports the benefits and alternatives to class size reduction. The article points out that reducing class size is only one method to increase student achievement; and the most costly. Comparing multiple programs implemented by different districts showed that reducing class size does not guarantee improvement in student achievement. This article was used to discuss non-academic student achievement.

Class size and student achievement: research review (2010). [Online Forum Comment]. Retrieved from <http://www.centerforpubliceducation.org/Main-Menu/Organizing-a-school/Class-size-and-student-achievement-At-a-glance/Class-size-and-student-achievement-Research-review.html>

Curriculum rigor, staff development and accountability measures are seen as more important than class sizes. These three elements will affect achievement regardless of how many students are in the class. In conclusion, the lack of direct correlation between class size and student achievement has researchers moving onto different theories. This provided me with the focus on professional development for teachers.

Diaz, K., Fett, C., Torres-Garcia, G., & Crisosto, N. (2003). *The effects of student-teacher ratio and interactions on student/teacher performance in high school scenarios*. Manuscript submitted for publication, Department of Biological Statistics & Computational Biology, Cornell University, Ithaca, New York. Retrieved from <http://mtbi.asu.edu/downloads/Education.pdf>

The authors discussed the correlation between teacher and student morale based on class size. Their studies on discouraged, reluctant, and motivated teachers and students showed results linking the improvement of morale to lowering class size. Thus, the number of students in a classroom greatly affects the performance of both the teacher

and the student. This article focused my research on the importance of teacher morale in the classroom.

Johnston, H. R. *Class size. Report: ED429349.79pp.may 1998*, Retrieved from <http://ezproxy.msu.edu/login?url=http://search.proquest.com/docview/62447432?accouacco=12598>

Johnston discusses the missing links the implemented programs, STAR and SAGE.

Johnston also points out that both of these programs were missing some information including nature of the students, teacher personality, instructional methods, and the subject matter. The question of “how” recurs throughout the paper emphasizing scores are not the final story. These questions pushed my research into the many elements of teacher morale outside of school.

Konstantopoulos, S. (2011). How consistent are class size effects? *Evaluation Review, 35*(1), 71-71-92. Retrieved from <http://ezproxy.msu.edu/login?url=http://search.proquest.com/docview/864938810?accountid=12598>; <http://dx.doi.org/10.1177/0193841X11399847>

This article takes a statistical approach to examine the results of the STAR program in comparisons to other schools. His analysis of the comparisons is based off the variability of school specific class sizes and the overall effect of the reductions. This study shared findings that program longevity had the biggest effect on student achievement.

Mackenzie, N. (2007, April). Teacher morale: more complex than we think?. *The Australian Educational Researcher, 34*(1), 89-102.

Mackenzie discusses the many aspects of teacher morale in a constantly changing work environment. The literature on teacher morale shows that teachers are greatly affected by multiple aspects of their career including workload. When teachers were surveyed on the most wanted change to improve morale, workload was number one. The use of this article will be to validate low morale with larger classes.

Mueller, D., Chase, C., & Walden, J. (1988). Effects of reduced class size in primary classes. *Education Leadership, 48*-50.

The authors look at the data for the Prime Time program implemented in Indiana. They shared that when student numbers decreased, the issues of class behavior, workload, retention, and teacher pressure still increased. While student improvement was apparent on standardized tests, the effects on teachers were detrimental leading to the future threat of teacher turnover. This is used for the discussion of lack of guarantees.

Pritchard, I. U.S. Department of Education, Office of Educational Research and Improvement. (1999). *Reducing class size, what do we know?* (SAI 98-3027). Jessup, MD: Education Publications Center.

Pritchard researched the data from both the STAR and SAGE project. Issues developed when witnessing discrepancies among state implementation. If states did not plan accordingly for additional hiring of teachers, the quality of teachers dropped significantly. Teachers were not adequately prepared to work in a new classroom environment and the idea of class reduction failed. This article is being used to push the need for mandatory collaboration in my research design.

Reichardt, R. (2001). Reducing class size: choices and consequences. *MREL Policy Brief*, 1-7.

Reichardt compared the SAGE, STAR, and CSR programs of Wisconsin, Tennessee, and California respectively. This article pointed out the shortfalls and highlights of each programs implementation policy and fiscal accountability. The side by side analysis shines a light on the necessary attributes needed to implement a successful class reduction policy. This article established a skeleton for implementing a successful research design.

Shin, Y., & Raudenbush, S. W. (2011). The causal effect of class size on academic achievement: Multivariate instrumental variable estimators with data missing at random. *Journal of Educational and Behavioral Statistics*, 36(2), 154-154-185. Retrieved from <http://ezproxy.msu.edu/login?url=http://search.proquest.com/docview/870284766?accountid=12598;http://dx.doi.org/10.3102/1076998610388632>

This article is a mathematical analysis of the STAR program from Tennessee. The mathematical formulas took into account class size, gender, location, achievement,

scores, and time of day for each class in the program. The idea was to point out the flaws from the claimed achievement by proving that missing data from the study proves no academic achievement at all. The lack of proof and duplication of achievement is a significant part of my design because on the missing data from previous programs.

Sparks, S. (2010). Class sizes show signs of growing. *Education Week*, 30(13), 1.

Sparks discusses the detrimental affects class size reduction has on other district and school programs. While she does not deny the evidence of increased engagement and attention in the smaller classes; the point made is that students were missing out on other important aspects of school in the process. The bigger picture being that student achievement is more than just standardized test scores; students need academic opportunities outside of the classroom. This is the focus for weighing the costs of spending budget money on reduction programs.

## Revision Summary

1. F&R: *Review math teacher journals.*

I went to NCTM to review the math journals and articles; however, I did not have access to any that discussed the issue of class size. So, I went to the website of the Counsel of English Teachers and found an article; as well as, other articles from teacher organizations.

2. F&R: *Specify qualities of the learning environment I am most interested in.*

To narrow the focus of my research questions I picked student achievement, both academic and non-academic, and teacher morale in the classroom.

3. LR: *Need to point to more research studies, less opinions.*

I restructured my review completely. Instead of discussing the perspectives of people (district, teachers, students, and parents), I changed the perspectives to weighing the costs, student achievement, and teacher morale. I believe changing the perspectives to topics instead of people removed the primary discussion off opinions and onto the research findings.

4. LR: *Annotations are largely missing.*

I did more research on how create an annotation online and reviewed the additional information provided from Dr. Wong. I revised my annotations by providing the citation for each reference before the summary. Each summary includes the main discussion, conclusion and how I found it useful for my research design.

5. RD: *Procedures- Is it possible to have class sizes that vary so much? What factors are considered when deciding which students go to each class? Will these factors impact your variable of interest – teacher morale? Also, teachers will be trained to teach smaller classes, but not the larger classes. I'm not doubting it, but this seems counter-intuitive. Finally, do you think these regular training meetings will have an impact on morale? If so, won't this make it a bit harder to determine the impact of class size on morale?*

In order to answer these questions I realized to needed to provide more information on how things are already done at the school. So, I created two paragraphs. The first discusses the current situation of placement, professional development, and workload. The second discussed the new policies put into place to achieve class size reduction program. The questions are answered throughout the procedures topic.

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Reichardt, R. (2001). Reducing class size: choices and consequences. *MREL Policy Brief*, 1-7.

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