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Per Pupil Spending: How Much Difference Does a Dollar Make?

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Per pupil spending: how much difference does a dollar make?

Introduction

Education. The one thing everyone needs and no one thinks is good enough. Wherever students and policy makers turn there is the desire for something more, something better, coming out of the public education system. Over the years more and more funding has been poured into the education system in attempt to increase the student success rates and intellect of American students. However, American students are still behind internationally and more and more jobs are going to students from different countries. Is there a point when the money being funneled into education doesn't make enough difference in student achievement and success? When looking at education spending economically, is it a problem of diminishing marginal returns? Is there a better way to spend money in education? Through this analysis, it is hoped that a greater understanding of the diminishing marginal returns on per-pupil spending will be evident and that the issues, other than simply spending, will be brought to the forefront of the education reform discussion. Also through this analysis, a better understanding of school funding, the type of funding that schools are receiving and how they are using said funding, and how that funding might be more successful in educating America's children will be seen. It is not that the funding isn't necessary, it is that the current funding is not doing what it America's schools need.

Poverty, students that don't speak English as their primary language, and failing students are huge issues for American schools today. For the poor, underprivileged student the likelihood of graduating from high school is becoming smaller and smaller. But even in the wealthier schools students are not achieving what American students need to achieve in order to maintain the occupational needs of the country and to keep up with students from other developed

countries. These issues are not just pedagogical problems, but policy issues that should receive attention on a national, state and local level. What can policy do for schools? That is where the issue of spending comes in and why it is so crucial to the discussion of failing schools. Money is one thing the government has some control over when it comes to education and the programs that are instigated in the schools. Even with education policy such as NCLB (no child left behind), one of the ways the government controlled who followed the policy was by tying their implication of the policy to receiving federal funding. It is for this reason that spending is the focus of this analysis and discussion—does money really make all the difference in a successful education program versus a failing school?

Failing schools are all across America and many students don't have any other options than to attend a school that will leave them grade levels behind their peers from other schools. So many students and their families are continually being failed by the system. Some students feel that they will never have a chance at a good education, or that the chance for a good education, one that will prepare them for college and life, is like waiting for superman to come save them. Only, superman can't come, he doesn't exist. "One of the saddest days of my life was when my mother told me 'Superman' did not exist. Cause even in the depths of the ghetto you just thought he was coming.... She thought I was crying because it's like Santa Claus is not real. I was crying because no one was coming with enough power to save us" (Geoffrey Canada, *Waiting for "Superman"*, 15). How are the issues that face American schools shared with the nation and eventually conquered? For Davis Guggenheim it was to make a film documentary. And so, *Waiting for Superman* was born. This documentary focused on the lottery systems that many charter schools have in place to select the students who will be attending their schools. Many of the students they followed felt that getting into the school was their only chance to a

good future because the schools in their area didn't have the programs necessary or the opportunities for students to get ahead. Many even felt that the alternative, the public school in their area, would ruin their education, and the numbers clearly supported that.

The film followed these students, interviewed them and their families, and then watched as they either were selected to attend their dream schools or found saddened defeat as they were given the news that they, like so many others, would be attending the failing public school and not have the opportunity to attend the school of their dreams. Most of the students followed in the film were low-income students who are living in areas where the public schools have poor success rates, and these students will likely be another part of the number that don't graduate. However, even middle to upper-class students are being failed by the system. One of the students followed in the film was a high-income student who needed other options because at her public school, she would be placed on the lower end of a tracking system and would not have the collegiate options that she and her family were hoping for. In a country full of economic promise and the dream to become whatever you want to become, public schools that don't allow just that, are failing their students.

The film, and its companion book address many of the issues facing schools today. One of the large issues is keeping high quality teachers in the classroom, and how to reward them for their high success rates. Success rates were measured by student score increases, school assessment, teacher evaluations, and common assessments across grade level. Some of the research, done by Eric Hanushek (2010), found that on a continuum of bad to good to best as far as teacher quality goes, a "bad" teacher will lose half a year of learning compared to a good teacher, whereas a "best" teacher can yield a year and a half of learning. Unfortunately, finding

these “best” teachers is difficult and the teacher pool is not large enough to fill the vacancies that would exist from ridding the system of the “bad” or poor performing teachers.

The film tackles many issues that face America’s schools. Poor quality teachers being protected by teacher unions and tenured contracts lack of resources in the high-poverty areas, and unsafe schools and playgrounds are just a few. However, the film suggests that, given the right amount of funding, flexibility and leadership, all of these problems can be surmounted. While this seems ideal, it is unrealistic and, as Hanushek suggests, resources and funding are not all they may be cracked up to be. Simply pouring money into a school or district will not fix the problems of America’s failing schools.

Recently in the news and even on the *Oprah Winfrey show*, facebook founder Mark Zuckerberg donated \$100 million to the Newark schools in New Jersey. This is a huge amount of money going to a district that spends already \$22,000 per pupil. However, even with the money already being spent on the students in Newark, the graduation rate is still extremely low, right around 50%. Something isn’t working and even Zukerberg notices that something needs to change. However, the question remains, will the money make the difference needed in the Newark schools?

And so, the question remains, how much money is necessary to educate America’s children and why is it that while some states spend very little per student and others spend what may seem to be exorbitant amounts, there are still failing students and the differences in the quality of education are so varied? Does money make a key difference? Or does it simply allow schools to do the basics, hire teachers, build facilities and provide books—while the other issues are still not being addressed. Through this analysis, a deeper look into the literary debate on educational spending and the pros and cons related to that issue will be discussed. Also, a look at

the data available will show that funding is not the key issue in the failing American education system.

Literature Review

Spending in schools, both private and public, has drawn quite a bit of attention nationally and has been the subject of much debate. It has also been a large discussion point in news media and in the professional literature of both pedagogy and policy. The literary debate rages as to what would improve the public education system best, more spending, smaller class sizes, special programs, more college preparatory classes and exams the—list goes on. Eric A. Hanushek, an economical analyst of educational issues, has said of this issue, “Public opinion generally supports the conclusion that our public schools face serious problems. Common views... about poor performance of students, provide the backdrop for much of school policy” (2001). Likewise, in the news media many have taken their turn questioning why American schools are failing their students, especially when compared to their international counterparts. The American students are not as prepared for the hard sciences and engineering work as students from other countries (Weber 5). What are the schools doing wrong and how should they change? One need simply type the word ‘education’ into one of many online news media sources to uncover the myriad of conversations, investigations, and policy changes involving the current public education system.

However, discussing education is not an issue only for the mainstream media or professional literature anymore. Education has headlined in talk shows and other popular TV programs, such as *Oprah* and *Ellen*. And with such media attention, it is no wonder people are concerned about the state of the education programs here in America. A simple solution that

many offer to fix the problem of failing American schools is to add more funding to the current system—spend more money on education, pay teachers more, decrease class size, and finance programs that will enrich the lives of the students is what these sources seem to say, all amounting to spending more money in schools.

Hanushek continues, “in short, resources are the key, either directly to deal with the needs of schools or indirectly to compensate for the poorer preparation of students” (2001). All resources take funding. When dealing with spending in schools there is an abundance of literature to sift through, and many issues prevail as key in the discussion of what and how much money should or shouldn’t be spent. “Unfortunately,” He resumes, “these common conceptions—oft-repeated in the press, in legislatures, and even in courtrooms—are for the most part simply wrong. Resource support for schools has been high, and the problems of performance—which are real—result from other forces” (2001). Is Hanushek correct? Are other forces really the culprit of the education system? And if so, what forces? One of the common arguments is parent involvement and education level. If parents are reading and working on homework with their students, and even home when their students arrive home from school, students statistically do better in school. There are both scholastic and behavioral factors due to parent involvement and support. Another possible factor is poor teacher quality. Much of the literature suggests that teachers are not being held accountable to their students’ success. Other factors are also considered to be problematic in student achievement besides simply the funding available. Many disagree with Hanushek and his seeming disregard for spending. They feel that funding is crucial because of the programs and supports that are made available to the students. And so the debate of funding and whether it can really make the difference continues.

Hanushek opens his argument by discussing the ways in which education has changed in America in the last one hundred years. In the beginning of the twentieth century, America felt that it was important to begin educating all of their children. At that time, only about 6 percent graduated from high school (2001). By the 1950s that number had risen to fifty percent and increased steadily until about the 1970s. It has held fairly steady since that time. After laying the backdrop of America's push for more education, Hanushek discusses that after graduation rates grew and remained fairly steady in the U.S., the focus shifted to the quality of education the students were receiving and simultaneously, focused on spending.. Spending has increased steadily over the years since 1970, and after controlling for inflation, the national average per-pupil spending doubled between 1970 and 1995. "Over the long period, three factors have pushed up the spending per pupil. First, pupil-teacher ratios have fallen. Second, teacher salaries have risen. And, third, expenditures for other than instructional salaries have grown more than proportionately" (2001). Since the large push to educate America's youth beginning in 1970, these numbers have continued to rise. In 1970 the pupil-teacher ratio was 22.3. In 1995 it had fallen to 17.3. The percentage of teachers with a masters degree or more in 1970 was 27.5%, whereas in 1995 it had risen to 56.2%. In 1970 the median teacher experience was 8 years. In 1995 that number had risen to 15 years. And finally, the real expenditures per pupil (real representing that the numbers have been controlled for inflation) in 1970 were \$3,645 and in 1995 had risen to \$6, 434. This is, according to Hanushek, a substantial change in spending and improvements for America's education.

Yet, amidst all of this increase, there is still concern because the spending is an average and there continues to be major disparities between different areas of the country, of states and even within the school districts. "Although the previous discussion highlighted the level of

average spending, there is wide variation around the average. And considerable concern and policy attention have focused on the distribution of spending” (2001). Policy makers and educators are attempting to equalize the quality by redistributing the funding in hopes that it will make the high poverty areas more profitable. Hanushek’s depiction of the variation between areas is focused primarily on the difference of across-state spending and the lack of proportionate federal funding in those areas that have the greatest need for that added spending. Still, Hanushek claims that despite the variations, “[t]here is...reason to believe that overall levels of spending have little impact on student outcomes, and this might reasonably be thought to generalize to the results of changing the spending patterns within states. The little evidence that does exist confirms this: there is no reason to believe that equalizing expenditures also tends to equalize student performance” (2001). Consequently, the concern with the equalization of spending/funding, in Hanushek’s mind, leads to varied returns and limited success—perhaps due to some of the other factors he previously mentioned. As he states in his conclusion, “The puzzle of why resources do not systematically affect performance remains” (2001). There must be more considered in the realm of educating America’s students than resources and funding if they are going to catch or stay on par with their international counterparts.

One of the largest issues in school spending in the last thirty years has been class size. Class size does not simply entail hiring more teachers, but finding more facilities in which these classes can meet, making sure that the teacher is highly qualified and given the training necessary to be successful, and determining which grades benefit most from the implementation of smaller class sizes.

Seventeen-year-old Marika Malkerson figures she was one among 500 freshmen when she started high school three years ago in North Carolina. When

she began failing classes a few months later, Malkerson recalls, no one besides her own family even noticed.

Her academic fortunes improved, though, when she moved to Chicago and enrolled in Perspectives, an intimate, 150-student public charter school in the heart of downtown. With no grade lower than a B now, Malkerson doesn't need to be convinced that, when it comes to learning, school size matters. She knows from experience (Viadero, 2001).

How many students like Marika Malkerson struggle in traditional public high school classes? What programs can and should be implemented to support these students and allow them the chance to succeed, just as the smaller class did for Malkerson? As noted in the article “Running schools—and improving them—cannot take place without the proper resources” (“School Finance” 2007), “while some school reformers are concentrating on getting more money for schools and spreading it around more equitably, others are concentrating on another question: Are schools spending their money intelligently?” This is a pivotal issue surrounding school funding and especially issues concerning class size reductions and other similar classroom implementations. What programs and other spending are intelligent and profitable in education and how should they be implemented?

Even Bill Gates, the co-founder of the Bill and Melinda Gates Foundation, knows that not all charter schools are successful and that many times, a poor charter school will do worse than a public school because they are not tied to the same funding and union ties as the public schools are. "If the low-performing schools stay open — or if schools with lax standards are given new charters - then your movement will be putting the interests and ideologies of adults above the needs of students...and putting students first was the reason you got started in the first place"

(Clarence 2010). Even the education changing charter schools are not foolproof and can be detrimental to student achievement and learning.

Class Size Reductions, also known as CSRs, became widely popular beginning in the 1980s with Tennessee's STAR program and similar programs that were initiated in California and Wisconsin. In her article, "Class Size Reduction and Urban Students", Wendy Schwartz discusses a large amount of research that suggests that "class size reduction (CSR) can result in greater in-depth coverage of subject matter by teachers, enhanced learning and stronger engagement by students, more personalized relationships between teachers and students, and safer schools with fewer discipline problems". All of these improvements are excellent outcomes in education and if they happen primarily because of class size reduction then it is a change well worth making and funding. She feels CSRs are crucial to student success and explains, "about half of the states have begun to reduce the size of their kindergarten through third grade classes, the grades shown to be most sensitive to the positive affects of small classes.... One of the main goals of CSR is closing the achievement gap between white middle-class students and poor students of color". And, according to some research, these CSRs are working. It is possible that some of these CSRs were put into place because of the Equalization Act and because of their great success in improving student achievement, disadvantaged students are receiving the instruction and support they need.

Wendy Schwartz isn't the only one who has found class size to be vital to students achievement. In the Ed.gov article, "Reducing Class Size: What Do We Know?", the group discusses that "in 1997, Wenglinsky published research findings concerning the relationship between class size and student achievement based on his analysis of data drawn from three national level databases. The study was designed to investigate the relationship between

spending in education and student performance, and combined data from three different databases generated by the National Center for Education Statistics”. They found specifically that “at the fourth-grade level, lower student/teacher ratios are positively related to higher mathematics achievement. At the eighth-grade level, lower student/teacher ratios improve the school social environment, which in turn leads to higher achievement” (“Reducing Class Size” 1999). Real returns can be found in smaller class size according to their findings, especially as seen on the national test scores (NAEP) as recorded by the National Center for Educational Statistics (NCES).

While appearing to be wholeheartedly in favor of reducing class size, there is also a large supporting group of research suggesting that class size reduction, while very pleasing to parents, teachers, and policy makers, is not as effective as thought and not cost-effective as they don’t yield the returns to prove they are making the difference (Hanushek 2006, Hanushek 1999, Chester Finn & Michael Petrilli 1998, & Nina Shokraii Rees & Kirk Johnson — writing as representatives of the Heritage Foundation 2000). While some states have seen great improvements in their student achievement, Hanushek discusses that simply making class sizes smaller, without ensuring that the teachers are highly qualified and that the instructional techniques are fitted to the class dynamic is ineffective. The opposition to CSRs as a means in itself also suggests that in the states that have seen gains in their student achievement while implementing CSRs cannot demonstrate a causal relationship. This is especially true in some states where major CSRs have been initiated. It is problematic that many of these states did not begin with proper baseline data, and many implemented other programs simultaneously with their CSR programs. Therefore, the affects of the change cannot be correlated completely to the CSRs.

Wendy Schwartz continues her discussion of CSRs and how they can be initiated and positively utilized. She combines research that suggests the following steps. First, CSR should not be put into practice alone, but should be combined with other “school reforms, including standards-based policies”. Also, school districts or states must look at the possible costs, both direct and indirect, that are involved in implementing CSR and ensure that the costs won’t damage other programs and resources currently working for the schools. Third, the number of needed teachers, and qualifications of those teachers, as well as physical space should guide the implementation decisions. Fourth, CSR should not be taken on as a large-scale undertaking, but first should be implemented as a trial in selected schools or districts, preferably where low-income or large minority students are in higher concentration. Next, in answer to some of Hanushek’s concerns, “instructional strategies and classroom organization practices that work best in small classrooms should be identified, and CSR teachers should receive appropriate professional development to ensure that students receive the full benefits from CSR”. Sixth, additional funds should be set aside for low income and minority students, possibly placing them in even smaller classes so they can have the benefit of more one-on-one instruction. And finally, “strategies for program evaluation, which should include use of a data management system, should be developed as part of the implementation plan” (Schwartz 2003).

Although this list is exhaustive and appears to take care of any possible failings that might occur with an initiation of a CSR, the model is not foolproof and there are still many issues to be discussed and worked out. As was seen in California, if a CSR is not implemented slowly and with the proper training and support for teachers, the program will be less successful than the status quo. Unfortunately, many times a program or pedagogical practice works in one area and so catches on rapidly without the proper research, shaping and implementation to be

successful in other schools and areas.

Other problems with spending arise because the focus is on redistributing funding from wealthier states, districts, and schools to higher poverty areas and also because of the difference between state and district funds that are available. Many states, even those who have had school district court cases concerning equalizing education opportunities in the recent past, do not share the funding equally across districts. This causes a major disparity between those districts that are able to fund their portion of students with a high property tax and those districts, while already impoverished, that find themselves in a cyclical battle of poverty encouraging more poverty. They do not have the necessary funds to educate their students and provide the opportunities that might keep them in school and lead to high school graduation (School Finance Redesign Project, Paul T. Hill & School Size & Achievement- Gene V. Glass & “Persistent Funding Disparities”- Clearinghouse on Educational Policy and Management). It is key to lead these students to high school graduation, because even if they do not attend college and become the next leading engineers and doctors, a high school graduate is able to generate more income and aid a community in bettering the situation for all involved.

Then again, funding and resources are not everything, as stated by Hanushek. An important question was raised in Utah, the state that is continually ranked lowest on their per-pupil spending. A Utah Foundation Research Report found that Utah, although above the national average in test scores, was below five other states that the study had delegated as demographically similar to Utah. This report suggested that, although Utah seemed to be doing alright with their low spending, when compared with states that were most similar to Utah, the state was continually lower than its sister states (“School testing results 06-07”). National test scores for Utah are lower than the five states compared in the report and consequently,

educators and policy-makers in Utah are concerned about the education being offered to Utah students. In spite of this, critics suggest that this report was problematic because of the way the similar states were chosen. None had as high of an English Language Learner percentage, most had a higher median and mean income, and some, such as South Dakota, had a much lower percentage of students to educate. Comparisons among states, without controlling factors put into place, is problematic because of the diversity between states and the different cultures that prevail in the states. However, it appears that on the scale of all fifty states, these five were the *most* similar to Utah and so the best to compare.

In another study put forward by the Utah Foundation Research Report, they asked, “What can \$3,702 Buy?”. \$3,702 dollars because that is the amount spent per-pupil in the state of Utah. The report covered many issues from class size reductions to test scores, and, although a seeming proponent of more spending, the report repeatedly turned to research that suggests that spending does not equate to student achievement or success (“What can \$3,702 buy” 2008). The report suggests that not all funding is created equal and that some spending, which is not happening in Utah, may be unnecessary. “Researchers with the School Finance Redesign Project (SFRP), which is part of the Center on Reinventing Public Education and funded by The Bill & Melinda Gates Foundation, state that ‘there is reason to fear that without changes in the way funds are spent, Americans could end up with a more expensive, but not necessarily more effective or equitable, system of public education’” (2008). Simply increasing funds, the report suggests, will not make the needed and necessary changes. It is in the way those funds are allocated, the programs that are instigated, and the training that comes from that funding that matters most.

Finally, as Hanushek is one of the primary nay-sayers in the realm of increased educational spending, an interesting debate took place via the media in which Hanushek

discussed the case, *Campaign for Fiscal Equity (CFE) v. New York*, which had reached the court of appeals. He suggested that “this judgment is, however, unlikely to be the final statement. If the legislature must come up with an incredible sum of money close to the more than \$5 billion currently on the table, it may well balk, precipitating a true constitutional crisis” (2006). The main question of the court, according to Hanushek, was determining what the adequate cost of education might be. He suggests that the court relied primarily on poorly collected data that was presented by the plaintiff and was unsatisfactory in the realm of educational literature and studies. Hanushek even goes as far as to propose “there is no reason to expect student achievement in New York City to improve if such a spending policy were enacted” (2006). Spending that amount of money is simply not the answer to the problems facing education in New York City. Programs and ill-spent funds could easily be replaced or removed to make the spending more effective.

Conversely, in his article, “It’s Elementary”, John Yinger argues that “this statement mischaracterizes both the court decisions and the scientific evidence. No court involved in this case has ever said that the state of New York must ‘simply provide more money’ to New York City” (2006). There is much more at play in the situation, according to Yinger, and the education needed in New York is different than other areas of the U.S. He further describes that the scientific evidence, not only discussed in this case, but elsewhere, suggests that more money is necessary to educate youth in poverty stricken areas, such as many of the areas in New York City. Yinger feels that Hanushek’s arguments suggest he has never visited a high-poverty school.

He has not seen the extra spending required for remedial programs to make up for the fact that many of the students’ families cannot afford books or computers or high-quality pre-school programs. He has not seen the extra nursing

expenses that arise because so many children lack health insurance and do not make regular visits to the doctor. He has not seen the inability of high-poverty schools to attract the best teachers because the wages they can pay do not come close to compensating teachers for the poor facilities and the difficult working conditions (2006).

Yinger concludes his discussion by suggesting that there are obviously sides to the discussion of spending that Hanushek has not explored and that these issues, especially those of high poverty schools and the extra programs and staff that are necessitated by such poverty, need to be addressed and backed by scientific evidence. Undoubtedly, spending can make a difference if it is utilized in the right type of programs. But which programs are those and how would Yinger decide how to utilize the funds in areas such as New York City?

Clearly the issue of spending in schools is crucial in the policy decisions and pedagogical decisions that face schools today. It is not enough simply to hope that the schools will get better and the status quo will work. Something must be done. The question remains however, does simply putting more money into the system yield the necessary returns? Obviously not, but what more must be done than simply fund schools and their current programs? Will simple CSRs do the trick or is it important to put more money into the areas that have traditionally had less to spare for their education, areas such as New York City? It is evident that these questions are central in the education funding debate and that many professionals sit on both sides of the argument. Yet, it is important to identify if the spending that is currently occurring is creating the student achievement that students and their families both desire and deserve. And if not, then something needs to change because that is money misused for a country in dire need of financial help. If the spending currently being used is being so misused there are possible other programs

and venues, within education, that would yield higher student achievement and it is the policy makers and educators responsibility to find those programs and areas and put them into play for America's students and families.

Hypothesis & Theory

What difference does money make in schooling today's children? At what point does the money spent stop making the desired difference in student achievement? What type of spending in today's public education system makes or would make the most difference for children beyond providing them with a school, books, and a good teacher? It is hypothesized that there is an amount that is necessary to student success and that there comes a point after that where diminishing marginal returns is theorized to begin. This initial amount of spending, which can't be given a specific dollar amount is assumed to be the amount that is necessary to create a facility, provide a teacher, and then provide the basics necessities, such as texts, supplies, and a chalk board or something similar for the teacher to use. It is also hypothesized that what will make the difference after the initial spending are programs that have been proven to be effective with those groups of students who have continually been neglected through the traditional public education classroom, primarily the ELL and low-income students. These programs might take the form of after-school programs, in-class tutors, smaller class sizes, better instruction for ELL students, bilingual education opportunities, and more one-on-one instruction time.

States such as Utah and other low-spending states show relatively student achievement when measured by graduation rate and national test scores. While Utah may not score extremely high when compared to other states with similar demographics, they are consistently above the national average suggesting that their level of spending is adequate even if it's not preferred.

Data, such as the data from Utah, suggest that student achievement and success can be realized

with smaller amounts of funding. Is it ideal? Perhaps not. Is there more states such as Utah can and should do? Probably. But is it an economical way to educate the students? Yes.

The literature on the subject of student achievement and education spending is varied and arguments for more or less spending are made. But, whether more spending, or better spending is desired is not the issue, it is instead whether or not the funding is economically sound and if the returns on the spending are meeting the amount spent. This analysis seeks to show that not only is it not economically sound, but that the spending should possibly be channeled into different programs than the current programs and spending that are occurring.

Qualified: What has been omitted and why

Research suggests (NIEER and kids count) that a level of Pre-K funding and education not only prepares students for greater success in the K-12 programs, but can also diminish the funding needed to educate the children properly because they were able to get ahead through the Pre-K program. However, the funding each state may or may not spend on Pre-K education has not been included in this analysis as it is primarily an analysis of K-12 spending. On the other hand, it would be interesting to take a closer look at the outcomes of an effective Pre-K program on later needed spending. A closer look at which states have successful, long-standing Pre-K programs and how it has affected their later spending in especially K-3 classes would be critical to understanding how educators and policy makers can utilize some of these programs to better serve America's children.

Another added measure of spending that has been excluded from the discussion in this analysis is special education funding. The data on this funding across states is vague and varied to an extent that it could not be included in this analysis in a meaningful way. In an ideal situation special education funding would be taken out of the per-pupil amounts discussed in this

analysis but the data available did not make that possible. It is also important to take into account that this analysis deals with the idea of diminishing marginal returns on the spending in education. Clearly in a special education situation the amount of money spent would yield very low student achievement per dollar but that in no way makes the funding spent on special education illegitimate or unnecessary. Because of the nature of special education and the spending required to operate those programs it was not included in the discussion. Still, further analysis and implications for special education funding, especially for the mild/moderate students will pose critical to raising student success and finding those programs which will aid low-achieving students, even if those returns are very small, they can mean the world of a difference for that student or their family.

Unit of Analysis

For the purpose of this study, the unit of analysis will be spending by U.S. state and their subsequent returns through measures of success in student achievement. This success will be measured primarily based on graduation rates and national test scores at the fourth and eighth grade level. Graduation rate is defined in this study as: those students who graduate at the expected time for their class and not those who receive a GED or extension to their time measure graduation rate. It is assumed that a state's poverty rate will be affected greatly by the amount of their population that graduate from high school. Revenue is generated for the state or locality by various modes of employ, whether that is through vocational labor or professional labor. This analysis is based on the states as a whole because of the vast diversity among U.S. states in the realm of education. Various school districts within each state and even schools within a certain district might have varying degrees of spending and student success rates, however, for the purpose of this study; the state was the most feasible option.

As in any analysis, certain variables needed to be controlled and taken into consideration for the analysis to be of worth. The specific variables that are key to those differences were, English Language Learners (ELL), Socio-Economic Status (SES) in the form of the median income for each state, single parent families, and class size. Other variables that are usually considered valuable in education discussions are race and the education level of the parents. The other variables should include other characteristics to include those demographics without specifically controlling for them.

Operationalization of Concepts & Methodology

The data collected for this analysis comes primarily from the National Center for Educational Statistics (NCES) and the various state departments of education. These data sources were utilized because of their reliability and their high focus on accuracy. It was also important that the data collected was the same across all fifty states so that there was not a large disparity between the data collected allowing a true analysis could be made.

As was previously discussed, there are a number of variables that make up the analysis of this study. First, it was important to decide how to measure student success. This was done primarily through graduation rates, which were rates based on graduating on time, as expected, and national test scores, specifically the National Assessment of Educational Progress (NAEP). Graduation rates display quite a bit about a student's education and their success. Not all students take tests well, even when they know the information and could give the information in a different format. And, even then, graduation from high school is an enormous accomplishment. Students who are given enough support to graduate and do not drop-out have succeeded and found a certain amount of achievement. The NAEP scores also take the states and compare their earlier achievement for students and a combination of test scores with graduation rate combined

a greater measure of student achievement. The NAEP scores were reported in four areas: math, reading, science, and writing. They were also reported for grades four and eight respectively. The other variables that were weighed against these measures of success were: per-pupil expenditures, as reported by states (some variance is likely), average class size, number of single parent homes, the median income of each state, and the percentage of ELL students in that state.

A statistical significance rate of .05 or 95% has been established for the purpose of this study. This rate is a standard rate of significance and is accepted widely as a good measure of significance.

These data sources were run through a basic regression model to detect the relationships between variables and the possible diminishing marginal returns associated with funding in schools while controlling for other factors. These other factors were also run against the student success variables to determine if there were significant inferences that could be made about student success rates and the remaining variables.

To check for collinearity and multicollinearity a bivariate test was run on the different variables to ensure that, although closely related, none of the variables were perfectly related to another. Also, a check on variance inflation factors for multicollinearity was done to show that the degree of standard error was not overly excessive for this study.

Causal Mechanism

In this analysis spending clearly affects educational achievement, but to what point? What other factors have similar consequences and when does spending stop being as heavily correlated with student achievement and success? There is a common misconception that because schools need funding to run and the current school system is not helping America's students achieve as they should that more funding will increase the student achievement.

However, based on actual examples in schools today and in the analysis of this study, spending does not equal student success. There are times, of course, when increasing the funding will increase student success, but there is a noticeable disparity between funding and success. Thus, it is key to note when an increase in spending will merit and show an increase in student achievement. Unless the spending is directly correlated with the specific needs for student success, it is not a causing factor. This study will attempt to find the correlation between funding and student achievement and assess when that correlation is not a strong and the funding isn't tied to the achievement with quite the same strength.

Findings/Data Analysis

The issue of spending in the classroom is so critical, especially as more and more money goes into schools and school districts and less and less is seen coming out as is seen in the research by Hanushek. The money invested in a school should be making a difference in student outcomes. Because of this issue, a regression model was run with key variables to infer whether or not the money going into schools is making the desired differences. The dependent variables in this analysis were those variables that helped to distinguish student success in the educational system. Graduation rate was the first key dependent variable with the four different National tests (NAEP math, reading, science and writing) in both the 4th and 8th grades as another measure of academic success. These variables were then run against different factors that may affect the turnout of these success rates. Other independent variables that were run against the measures of success were class size, single parent families, median income, and the percentage of English language learners. The variables were chosen because of their possible impacts on student achievement as seen through various studies. Controlling for these different variables allows the

issue of race and education of parents to be included in the study without controlling specifically for those impacts.

As is seen in table 1.1, spending had a negative effect and was not statistically significant for graduation rate. This is key because it suggests that the more funding that is pumped into the system actually decreases the graduation rate. Does that mean funding should be decreased in order to increase graduation rates? Of course not, but it shows that funding won't make the difference and suggests that areas that do spend more are having less success with their student graduation rates than other areas. The only variables that had a significant affects on graduation rate were median income, which was not quite statistically significant, but close, and English language learners (ELL). ELL was an interesting piece of data as the spending *did* make a difference for those students and their graduation rates as well as their test scores on almost every NAEP test. This suggests that ELL students are not receiving the support or education necessary for them to succeed in the American school system. Not only are they not performing well on the NAEP tests, but they are not graduating at a similar rate to their primarily English speaking counterparts. Graduation rates were not affected by the other variables in the way that one might suppose. Not only was spending not statistically significant, but class size and single parent families also did not play as large of a role in graduation rates as is generally thought. However, the same cannot be said for the NAEP test scores. The only NAEP scores that weren't affected by class size were the science test, and the research shows that class size was extremely significant for the writing test. Writing is a more involved process and the instruction of writing takes more one-on-one time from a teacher. In a smaller class the teacher has more time to not only meet with the students and give feedback, but they have more time to grade and so the students can write more frequently and receive meaningful feedback, which will enhance their

writing skills. Median income was also very close to the significant level on the NAEP tests except for the science test. This suggests that high-poverty students do not do as well on these exams as their wealthier counterparts. This is not surprising as many who are wealthier have parents with higher education, more time to spend with their children on homework, and more local and school involvement. Also, the ELL numbers high on significance for the NAEP test scores except for the 4th grade writing test. This could be because the writing requirements for 4th grade are very basic and so it is still possible for someone with limited English skills to do fairly well. Overall, the areas that were affected in the national tests and their passing scores were the ELL students, lower income/poverty stricken students, and those students in larger classes.

The results are fundamental in the discussion because of the possible implications for both policies and in action taken at the district and classroom level, especially on the issue of spending. Spending is obviously important in education. A certain amount of spending is necessary to house schooling, provide teachers, books, and other basic needs. However, as many states and school districts begin to put significant amounts of funding into their schools and student success does not increase, something else must be done. Why isn't the funding that is going into schools making the difference that many would expect? Why are schools, such as those in the Newark, New Jersey area, spending exorbitant amounts and seeing very little in way of returns? Perhaps it is because after a certain point, unless the funding is put into programs for ELL students, poverty stricken students, or decreasing class size with the subsequent pedagogical changes necessary for smaller class sizes, the returns will not be seen to be as effective as the initial amount necessary to run a school and educate students to a certain level.

There is no doubt that spending does indeed matter and that with little to no spending, no measure of learning or schooling could possibly take place. However, some initiatives, such as a

computer for every student, although great in thought, do not equate students increasing their graduation rates, test scores, and even level of focus in the classroom. Many other behavioral and classroom management issues arise when teachers and students attempt to utilize technology or resources that they haven't been trained to use. Even simple teaching strategies, such as a new grammar program can be detrimental if the teacher hasn't been given the proper professional development training, support and practice.

Finally, to ensure the data's significance, reliability and validity a series of other tests were done. The first were a bivariate correlation between the variables to check for perfect or even very similar collinearity. The data is noted in table 1.3. It found that there was not perfect collinearity between any two of the variables and that, although similar in nature, each variable still was individual and independent enough to have a role on their own. In this table, it shows that the values are all greater than .9, suggesting that there is indeed a relationship, but not an issue of perfect collinearity. [A second test, a variance inflation factor, will be included at the time of the defense but we were unable to run the right model for this draft.]

Tables & Graphs

In these tables, the first corresponding number is the B Coefficient number showing the relationship between the two variables. The second number in the parentheses is the standard error, and the final italicized number is the statistical significance for the coefficient run through the regression model. As discussed earlier, the statistical significance that is being sought here is 95% or .05. Thus, in the discussion of statistical significance, that is the number being discussed. Each coefficient that was found to be statistically significant in the study is noted with an asterisk.

Table 1.1- Graduation Rates and NAEP 4th grade tests

	Graduation rate	Math	Reading	Science	Writing
Spending	-14.095 (12.413)	-8.148 (7.270)	-.827 (8.141)	1.195 (10.232)	-10.971 (9.326)
	.262	.268	.920	.908	.247
Class Size	-.661 (.475)	-.901* (.278)	-.934* (.312)	-.655 (.404)	-1.359* (.351)
	.171	.002	.004	.113	.000
Single Parent	.116 (.313)	-.206 (.183)	-.033 (.205)	-.267 (.269)	.283 (.228)
	.713	.268	.871	.327	.221
Median Income	.498 (.258)	.310* (.151)	.375* (.169)	.226 (.215)	.940* (.202)
	.060	.046	.032	.300	.000
ELL	-.328* (.141)	-.213* (.083)	-.268* (.092)	-.457* (.112)	-.107 (.102)
	.025	.013	.006	.000	.302
Constant	112.049 (57.073)	279.122 (33.427)	222.824 (37.432)	158.974 (49.196)	160.891 (41.672)
	.056	.000	.000	.002	.000
N	51	51	51	51	51
R-squared	.227	.469	.426	.401	.577

Table 1.2- NAEP 8th grade tests

	Math	Reading	Science	Writing
Spending	-10.118 (10.088)	-5.397 (8.024)	-36.615 (26.708)	-8.726 (7.813)
	.321	.505	.178	.270
Class Size	-.889* (.386)	-.704* (.307)	1.868 (1.054)	-1.077* (.297)
	.026	.027	.084	.001
Single Parent	-.258 (.255)	-.149 (.202)	-.845 (.703)	.129 (.195)
	.315	.465	.236	.512
Median Income	.408 (.210)	.326 (.167)	.159 (.562)	.661* (.163)
	.058	.057	.779	.000
ELL	-.307* (.115)	-.290* (.091)	-.667* (.293)	-.202* (.088)
	.010	.003	.028	.027
Constant	327.629 (46.384)	287.258 (36.895)	298.828 (128.418)	169.746 (35.882)

	<i>.000</i>	<i>.000</i>	<i>.025</i>	<i>.000</i>
N	51	51	51	51
R-squared	<i>.409</i>	<i>.404</i>	<i>.297</i>	<i>.548</i>

Table 1.3- Bivariate correlations-check on collinearity; per pupil (ln) against other variables:

Median Income- Pearson correlation	.240
Significance (2-tailed)	<i>.090</i>
N	51
Class Size- Pearson	-.371
Sig. (2-tailed)	<i>.007</i>
N	51
ELL- Pearson	-.183
Sig. (2-tailed)	<i>.204</i>
N	50
Single Parent households- Pearson	.135
Sig. (2-tailed)	<i>.345</i>
N	51

All of the variables are within the accepted statistical parameters for bivariate correlations when checking collinearity.

Table 1.4- Variance Inflation Factor- check on multicollinearity; all variables.

Variable	VIF rate
Graduation Rates	1.256
Class size	2.164
Single Parent Households	5.581
Median Income	7.722
ELL	2.046

All variables are within the accepted Variance Inflation Factor parameters.

Conclusions & Implications

Again, the issues to be addressed in this analysis were: Is there a point when the money being funneled into education doesn't make enough difference in student achievement and success? When looking at education spending economically, is it a problem of diminishing marginal returns? Is there a better way to spend money in education? And the hypothesis of the

study was that there is an amount of spending that is necessary to student success and then there comes a point when diminishing marginal returns begins and the spending no longer has the same affects on student achievement.

Clearly, there comes a point when the money spent on education stops being correlated with student achievement and success as much as it is initially. In fact, based on the regression models above, there comes a point when spending is not strongly correlated to student achievement as defined in this study. However, there are other variables in the study that were strongly correlated. Although they were not addressed in the hypothesis and theory of the study, it is not surprising that issues such as English Language Learners, income and SES of a student and the class size do make a difference. These issues lead to the question—what are the goals of education spending? If the goals are to increase student achievement and success then these issues need to be addressed through the spending that is available. Obviously there are programs and spending that are ineffective and are not making the needed difference for students. Education is not about keeping politicians happy or making sure that the bureaucracy is working. Education is about aiding students in their road to achieve and take on the jobs and roles that will be left to them in the future.

The data in this study suggests that in the issue of educational spending there are diminishing marginal returns. After a point, the amount of student achievement and success diminishes for every dollar spent. Clearly spending is crucial to beginning education and achievement. Without funding there would be no teachers, no buildings, no resources such as texts and computers to use. However, would making the lunchroom nicer improve student achievement? Perhaps. But the spending should not be given without backing for how and why the programs being funded will improve student learning. It is possible that improving a school's

lunchroom will increase student morale and by doing so improve their ability to learn. However, which would be more important—giving funding to a program to aid students who don't speak English well or building a new lunchroom? Decisions must be made on all levels about the type of spending that will take place and which programs are the most important in the realm of student success.

Because there comes a point when spending no longer yields the same returns in student achievement as it initially does, simply putting more money into the system will not produce the desired results. This may seem obvious, but certain types of spending are equated with doing just that. There are many areas within education spending that are wasteful and ineffective. Rather than point fingers and try to pinpoint which areas those are, it is important that states, districts and schools assess the spending they have, the programs, administrators, resources, etc. that are made available through that spending and then see that they are achieving the desired results through those different areas of spending.

Many possible pedagogical and policy implications can be drawn from the data in this study. It is obvious that many students in America's schools are being underserved. They are falling through the cracks of the traditional classroom and are in need of added resources or programs. Tutors, after school programs and smaller classes are just a few of the resources that students may need. Teachers and administrators must address their specific demographic and student needs separate from the rest of the nation. Policy makers may view this study and think they can simply cut education funding. This is not necessarily the case. Funding is necessary and the amount that is currently being used, while not efficient in an economic sense, may be what is needed. Policy makers must first focus on the underserved students. Which students are not succeeding in the classroom and why? What could policy do to affect that? Are there some issues

that should be left to the district or school level officials to decide or should the government step in and regulate how the spending is being given out? There will be as many answers to this question as there are political ideologies and parties, but the focus must remain on the students.

There must equally be a focus on the programs that have been tried and tested and proven to work for the given demographics and student samples. If there are ELL programs that are extremely effective and economically efficient, those are perhaps the programs that should be put into place. Perhaps those programs have not yet been found, but a greater effort to identify such programs ought to be undertaken. What about class size and programs that put into place CSRs? How is the funding for class size reductions going to work? How will teachers be hired and given the development and training necessary to be effective in that environment? It would be a good idea to look at the different states with successful CSRs, ELL programs, high-poverty programs, etc. and see how they have been able to succeed. Also, policy makers and educators alike should look at states or districts that have continually had lower spending and high levels of student success. What do they do or how is their demographic different? Implementing similar programs and spending strategies can only increase knowledge and student awareness.

Possible programs might be an after school program that increases the school day for those students who would be returning home to an empty house without the support that they might need would make a difference in high poverty situations. An ELL program that enlists research that has been tried and found to bring about success for students would be key to achievement for ELL students. Also, while Hanushek has discussed the ineffectiveness of simply reducing class size as a means for increasing student success, it is clear that there is a correlation between higher test scores and lower class sizes. Where does that difference start? After only 30 students to a class? Twenty five students? Or less? Is there an optimal size that is most effective

for student learning and social engagement? If so, this is the information that is needed and then needs to be incorporated into the classroom to increase student success.

It is also clear that more research is needed on both a political level and a pedagogical level. What are those programs that could make a difference? How could class-size make a difference, and at what point is the class small enough to make that difference? Then, how does a school or district make the necessary changes to put these programs into play? When politicians fight for education, they fight for more funding for our schools. Should they instead be fighting for better teachers, better programs to serve the underprivileged and better sources of assessment to see how their students are doing in the classroom? How do they then help make those changes happen? Also, more research is needed to see specifically what is holding ELL and high-poverty students back from success and then looking into the types of programs that will best address the needs of that student population.

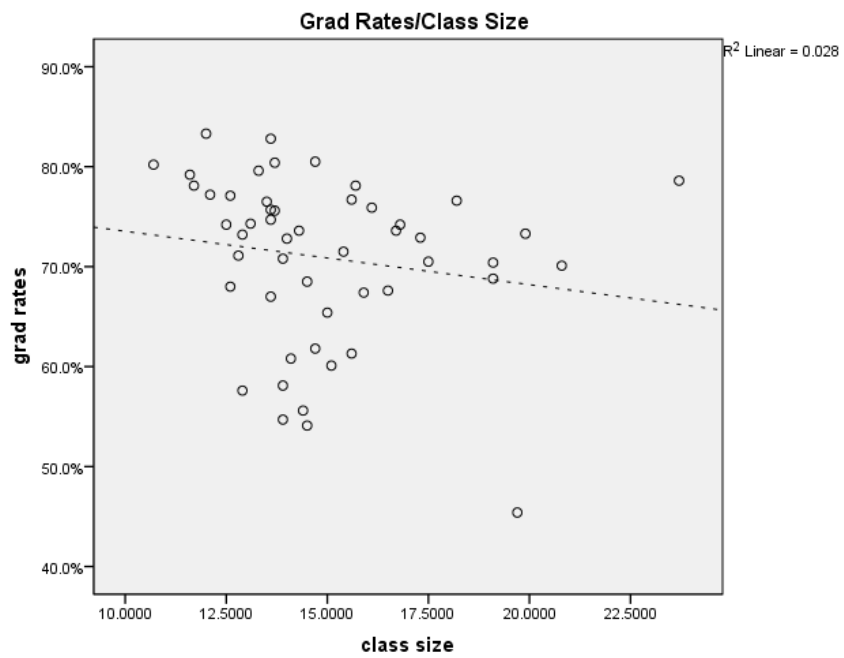
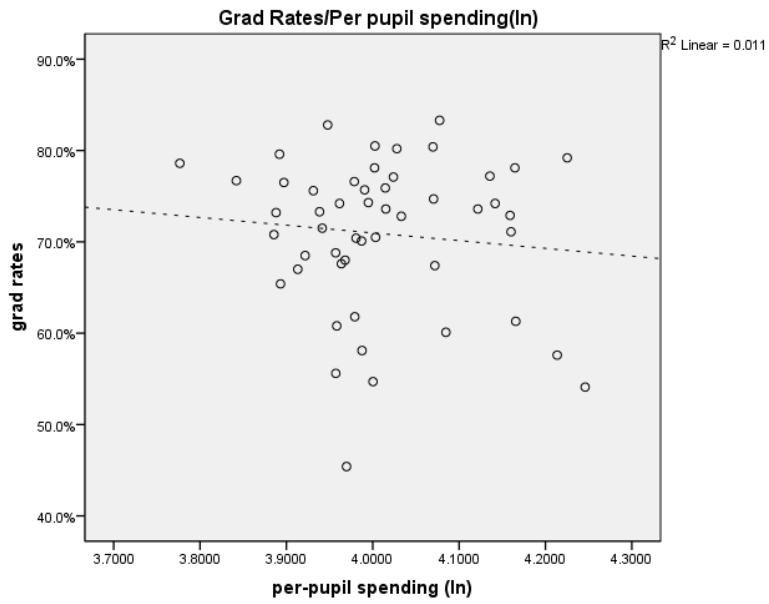
Money can matter if it is put into the correct programs to address the specific needs of the underserved students. Money can matter if the programs it funds will decrease the other spending necessary. Money can matter if it not only increases student success but again puts American students on-par with their international counterparts—a feat which has yet to take place in the recent years. However, simply adding more funding will not yield the desired differences. So while Superman isn't real and won't be able to save underserved students in America, educators, parents, policy makers and administrators are and they should be looking to find where education can utilize the funding to 'save' America's students from failing schools and a failing system.

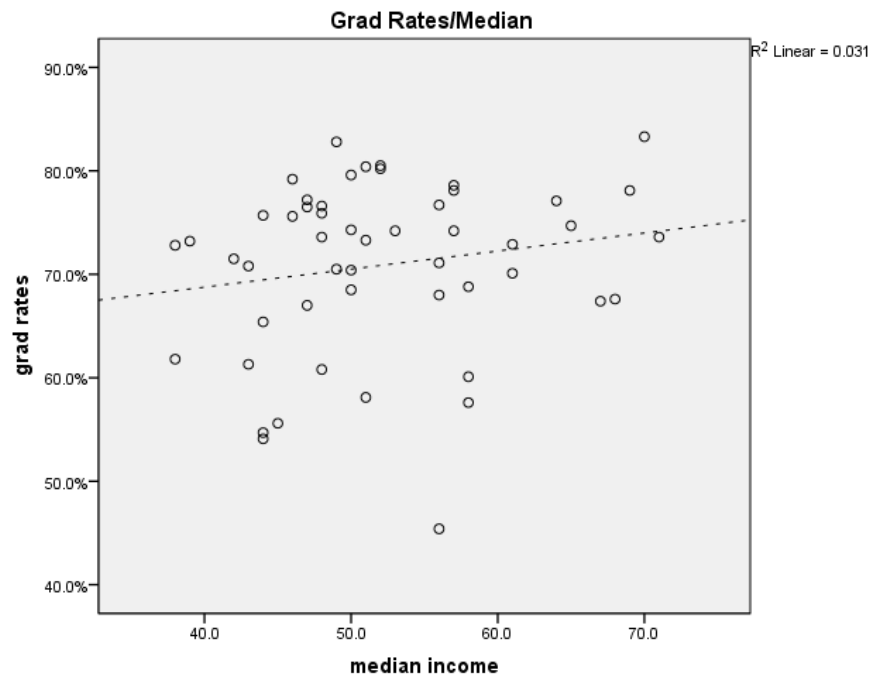
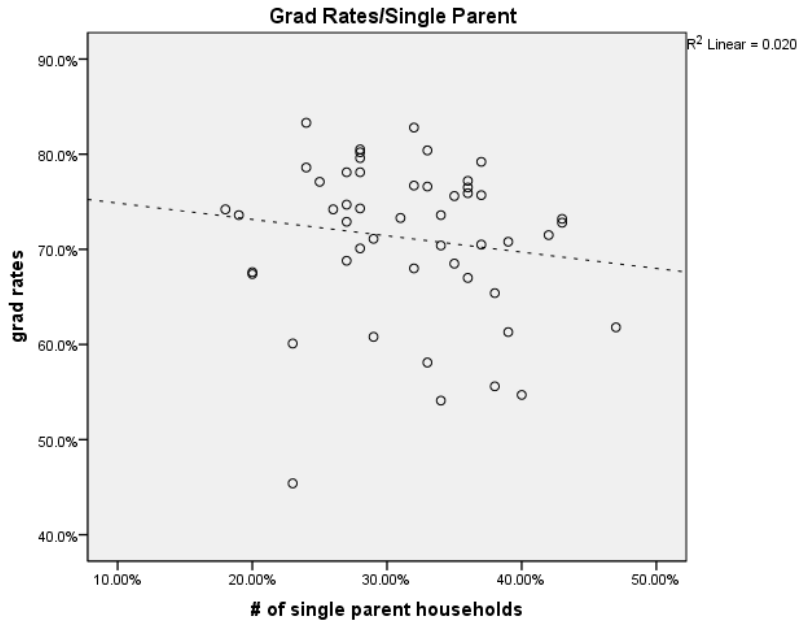
Opportunities for future study

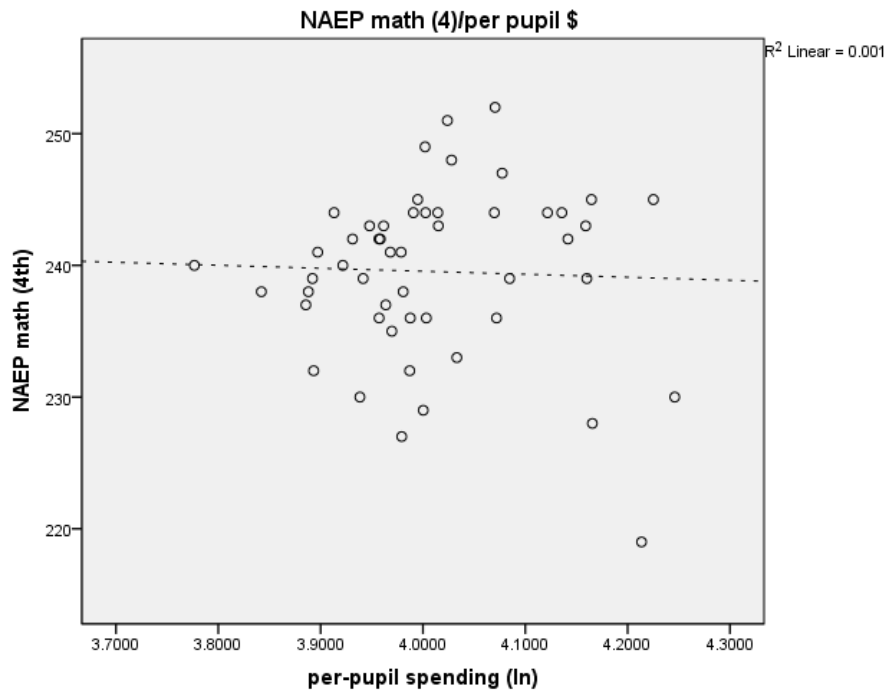
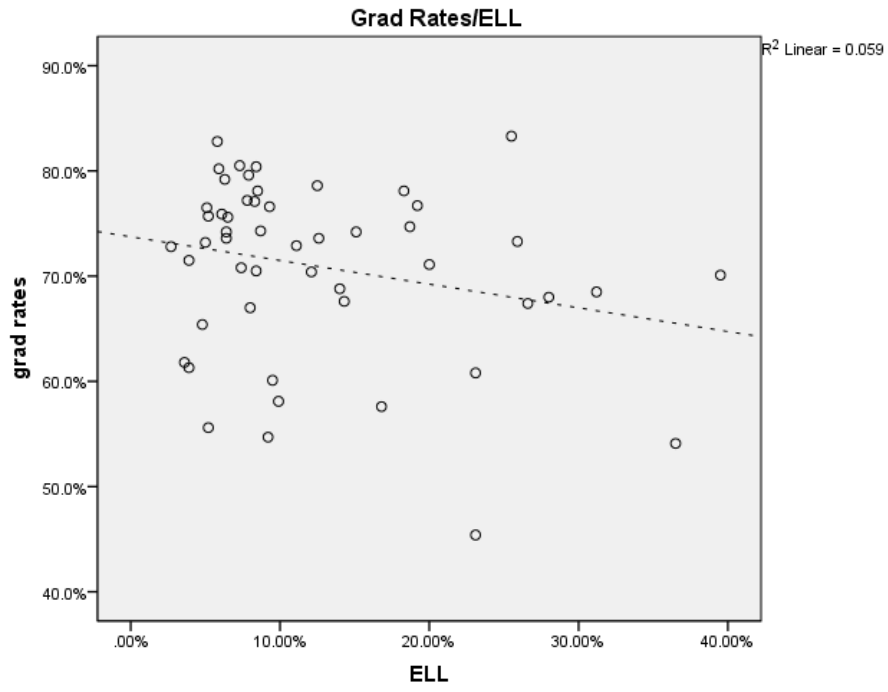
Because of time and resource constraints there are certain limitations to the information in the study. The first opportunity for further research and study is to do a longitudinal study

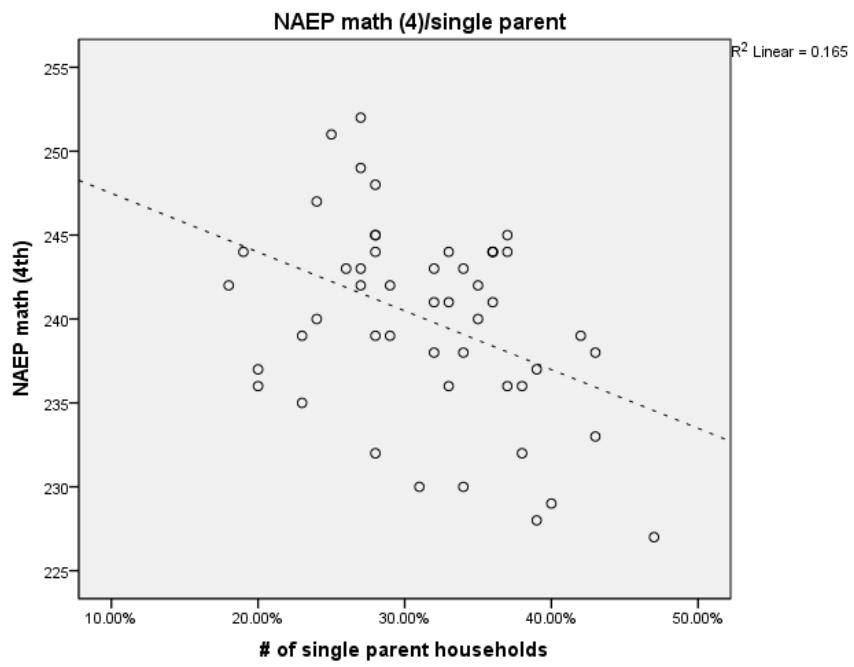
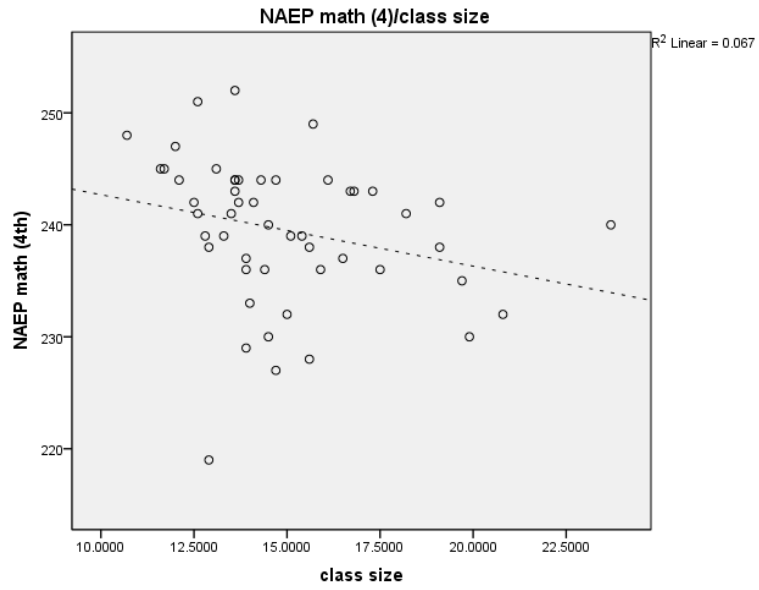
instead of a cross-sectional snapshot of spending across states. A longitudinal study allows for a more detailed picture of the spending by each state and the details of student achievement. It also allows for a better idea of trends that are not correlated to the spending that each state or district makes. Some states may make changes over time in effort to increase student achievement or increase spending on education. These changes would be monitored through a longitudinal study. Another opportunity for further research is doing a district-by-district study instead of the large-scale state by state study. Certain districts would have to be chosen to implicate the majority of districts in the state as not all districts can be studied in a viable research program. Within each state the district spending varies greatly and thus, it is problematic to utilize the state data as a blanket amount or achievement level when there are variances so great within the state. Finally, a check on reciprocal causation should be addressed to ensure that some of the given variables are not so closely related as to make no difference between the two. It would also control for the fact that the two variables might simultaneously influence each other. These future opportunities for further research would enhance the literature and give a greater understanding to the question of per pupil spending and its direct affects on student achievement and success. With the proper amount of time and funding, a greater look into the influences in student achievement can be gained.

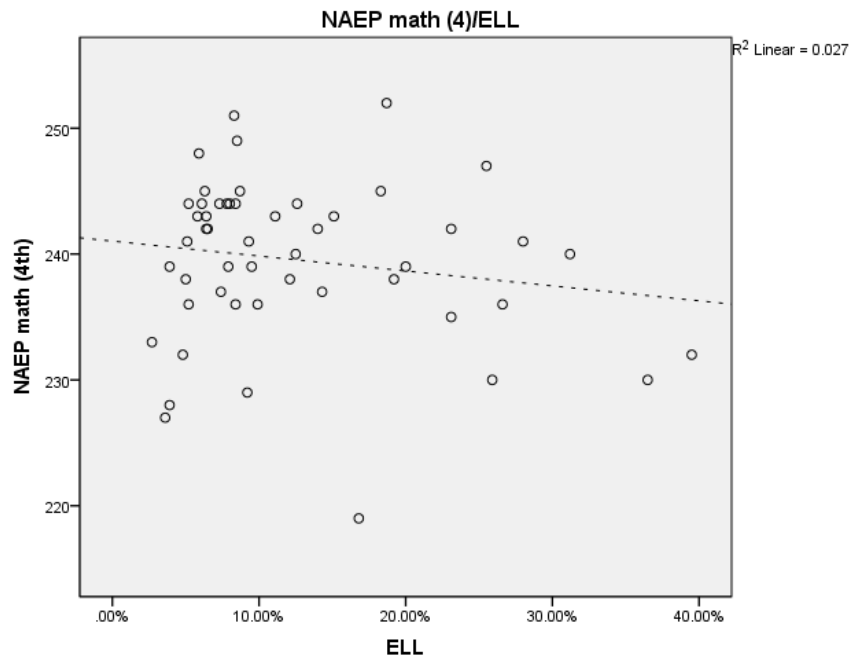
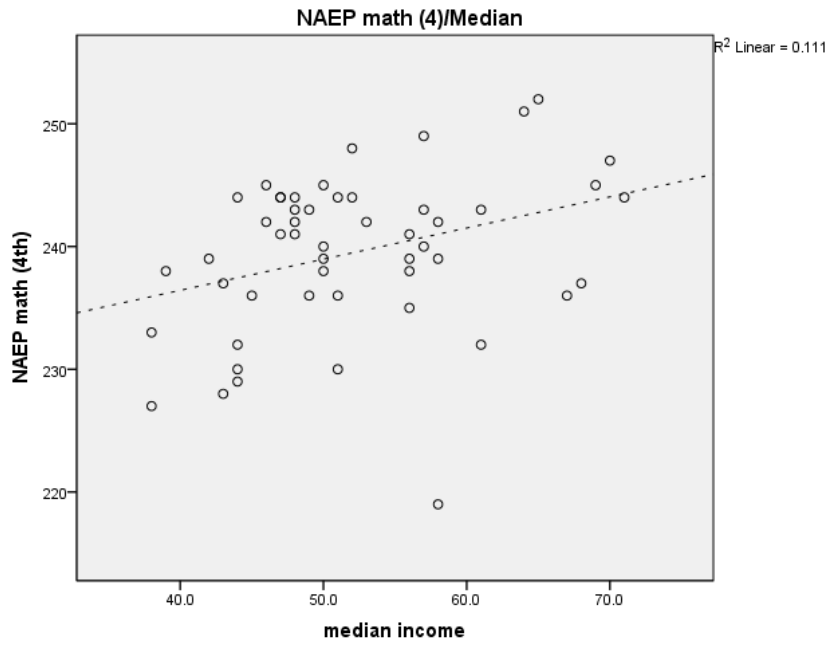
Appendix

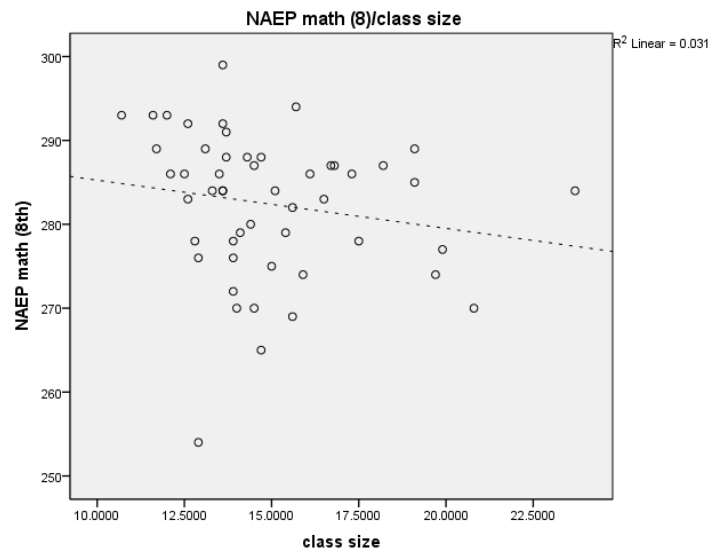
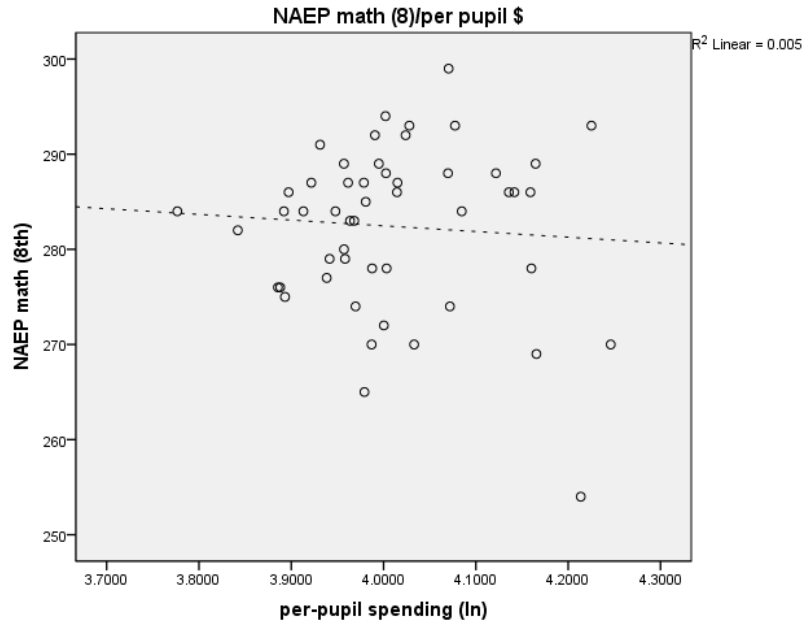


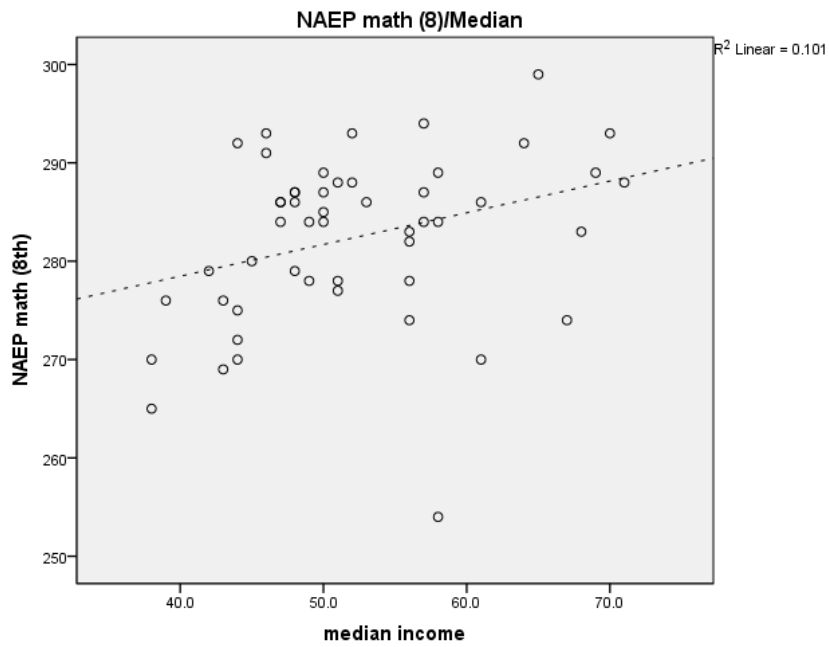
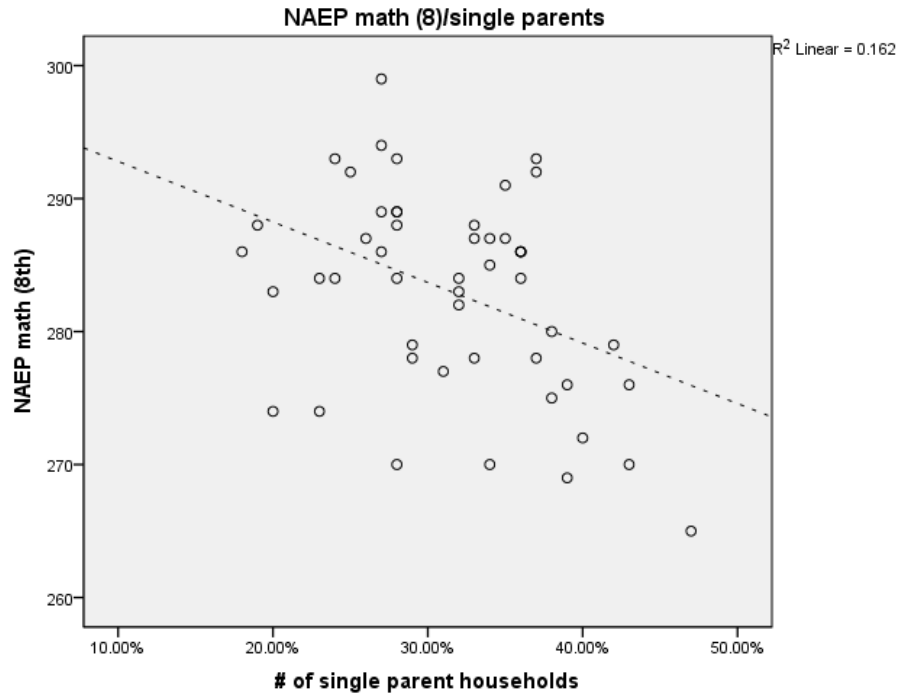


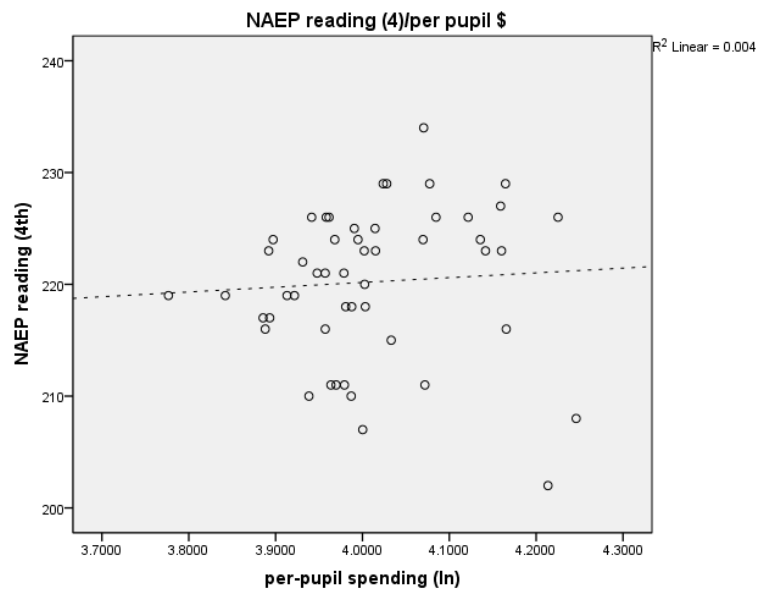
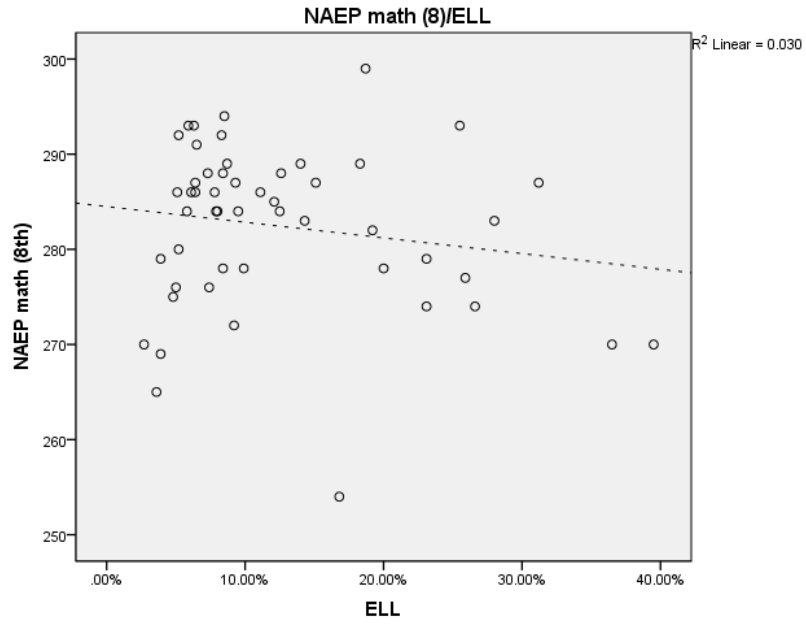


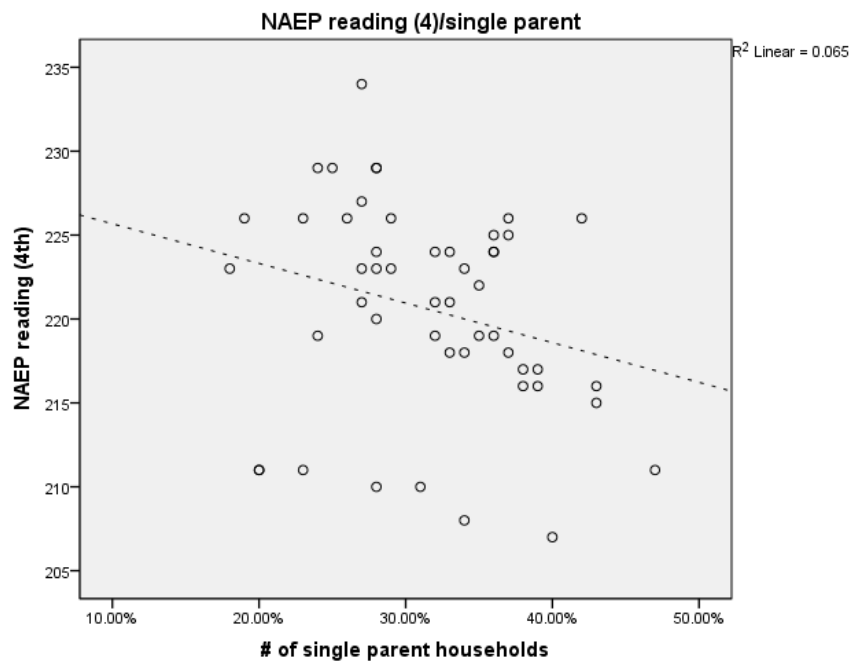
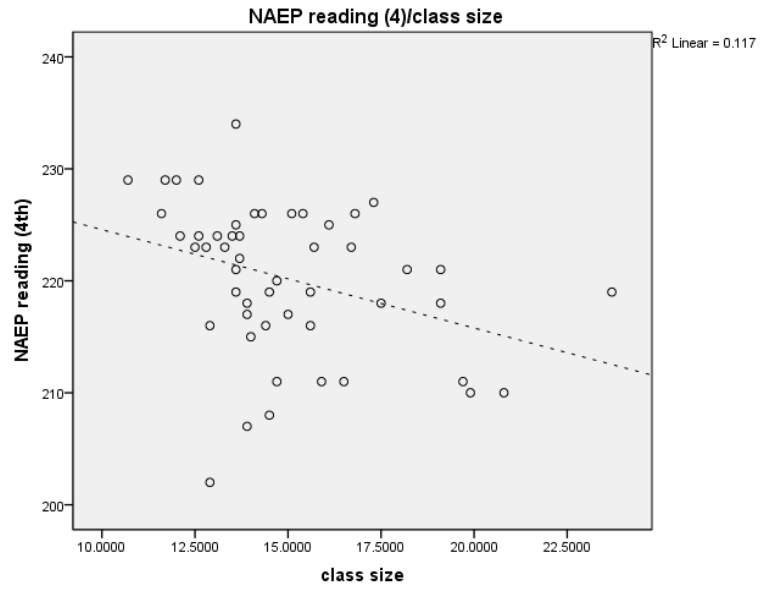


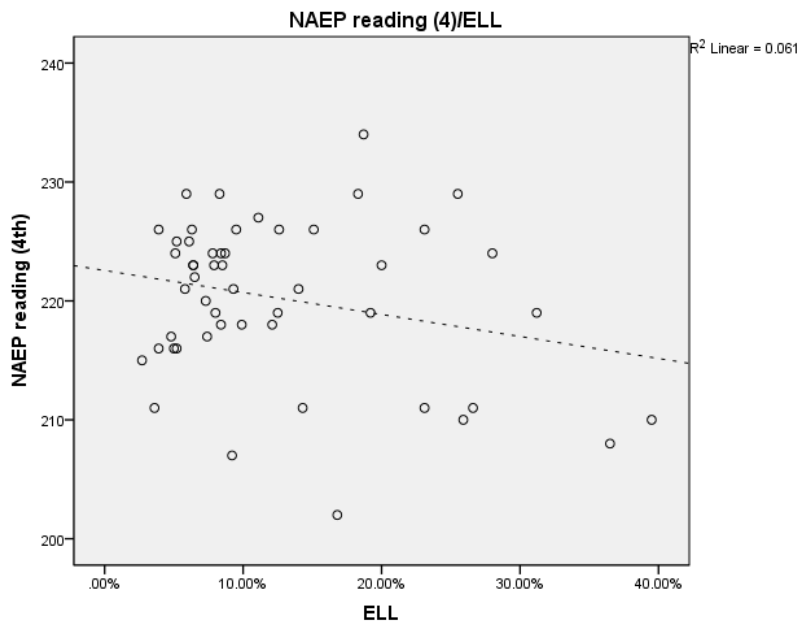
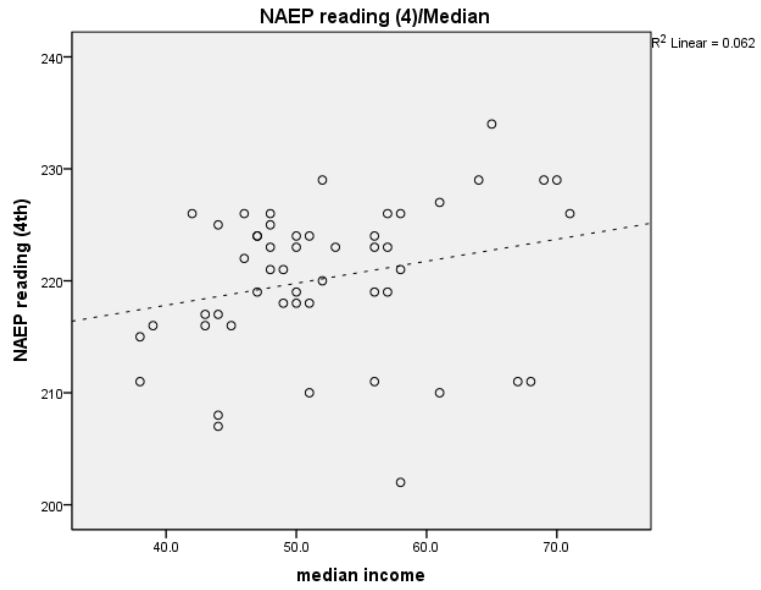


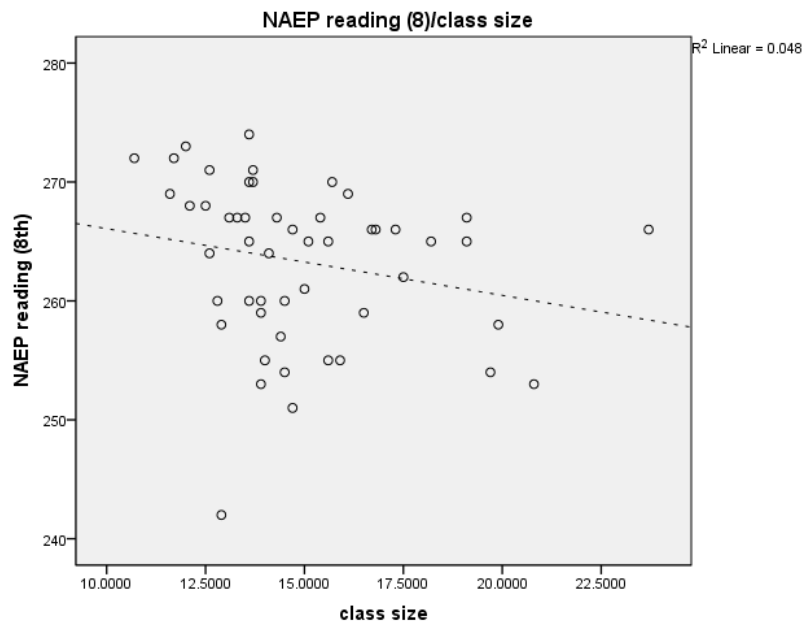
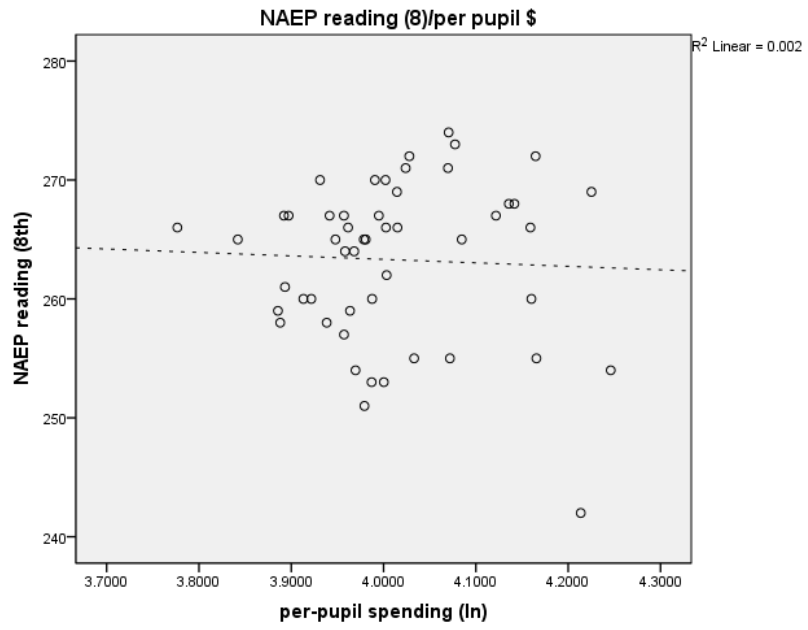


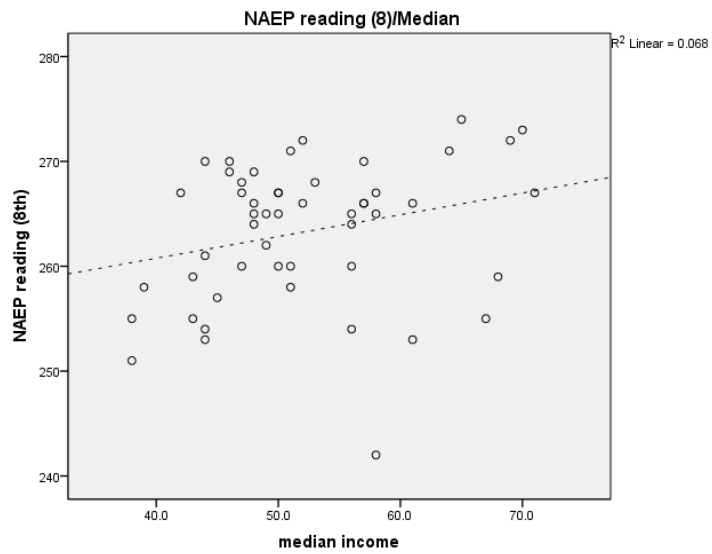
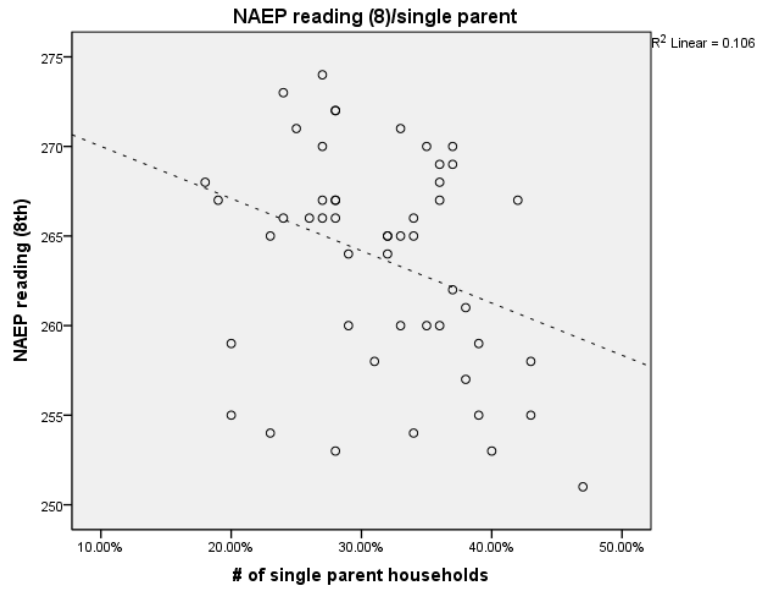


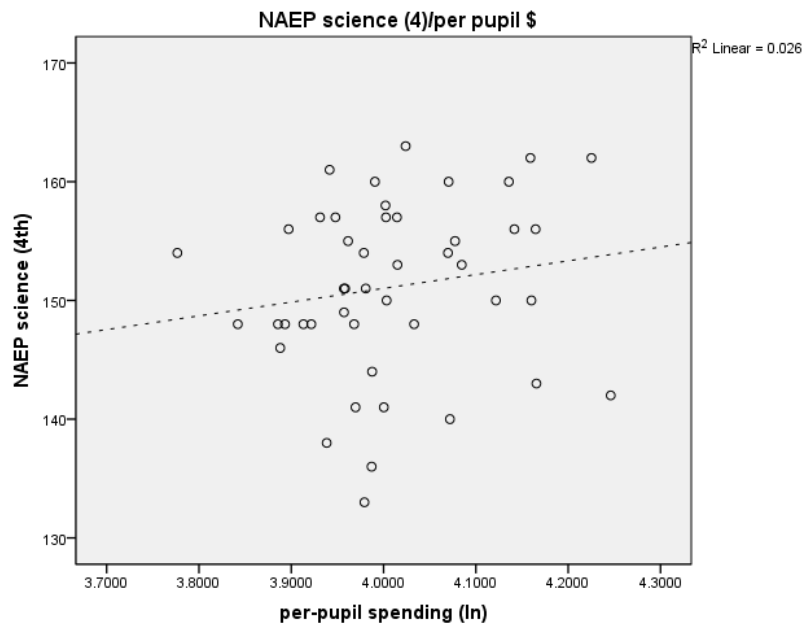
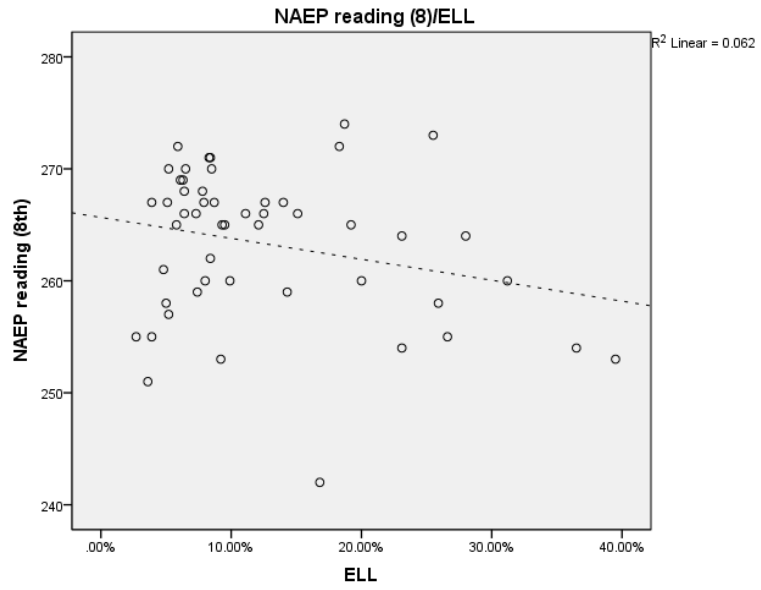


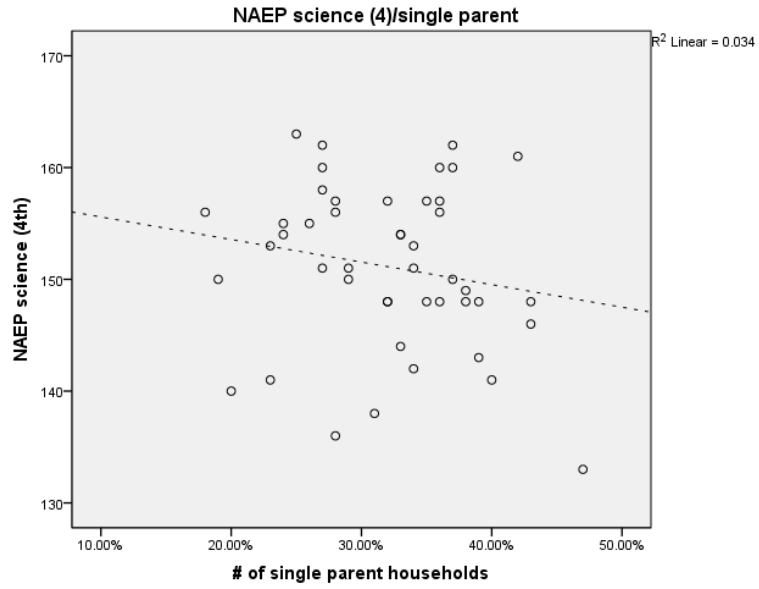
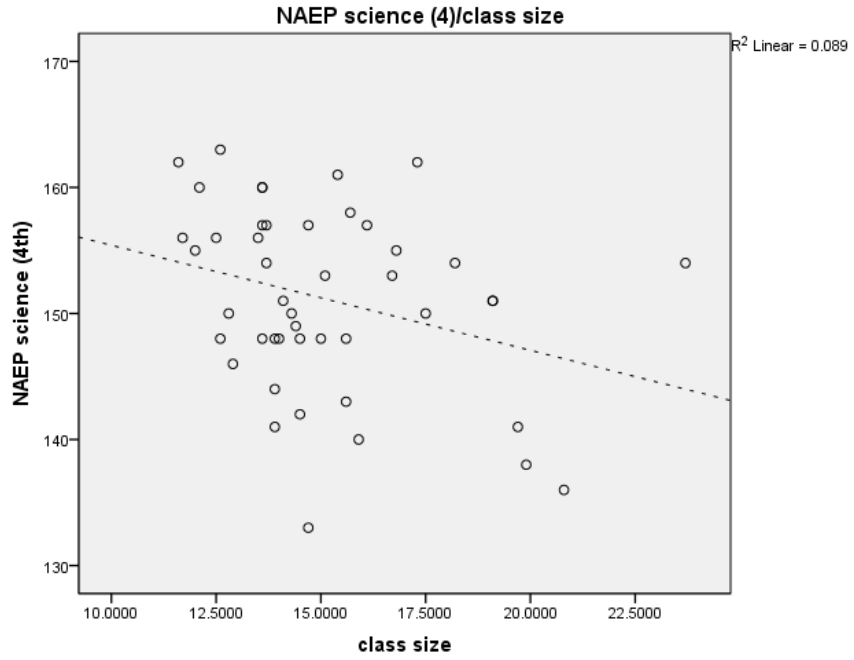


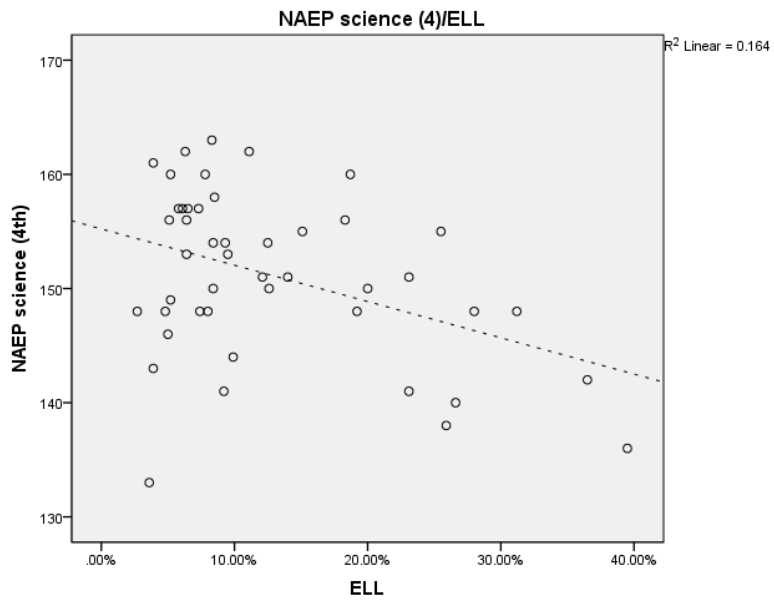
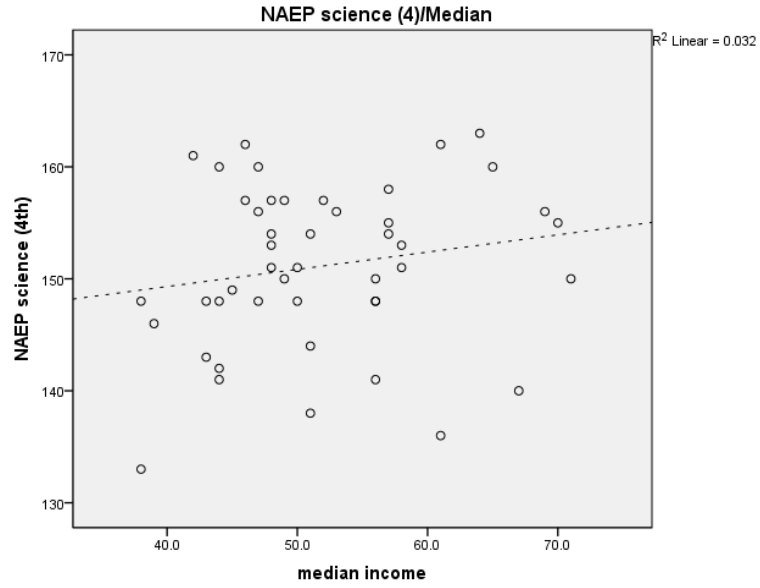


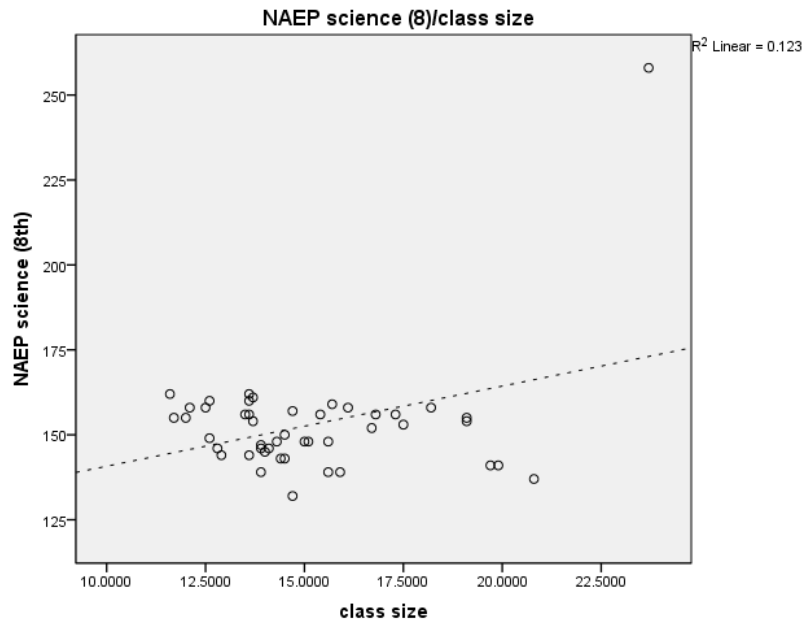
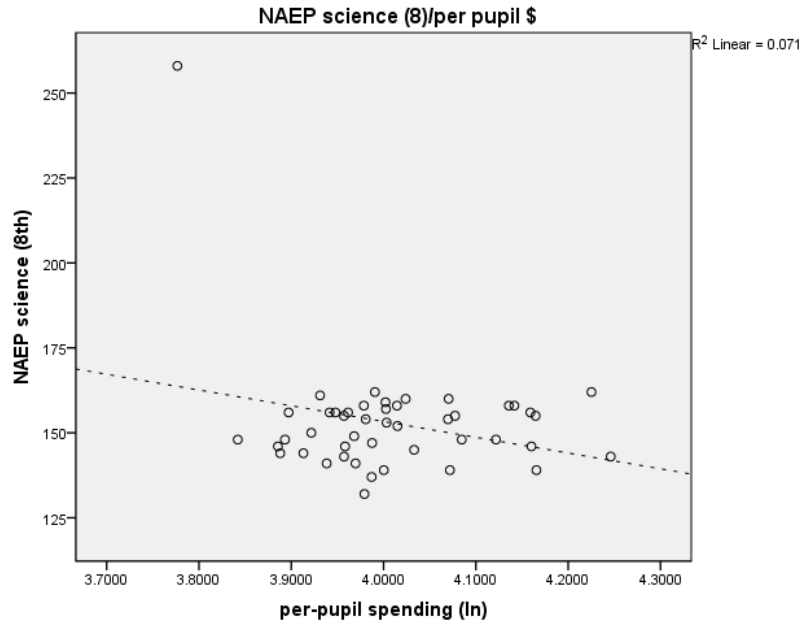


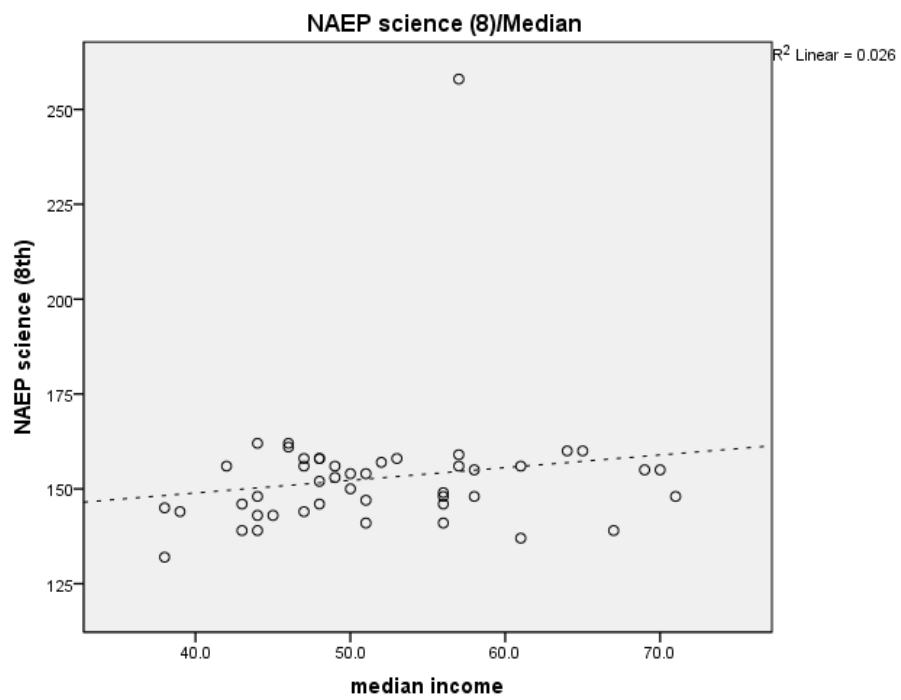
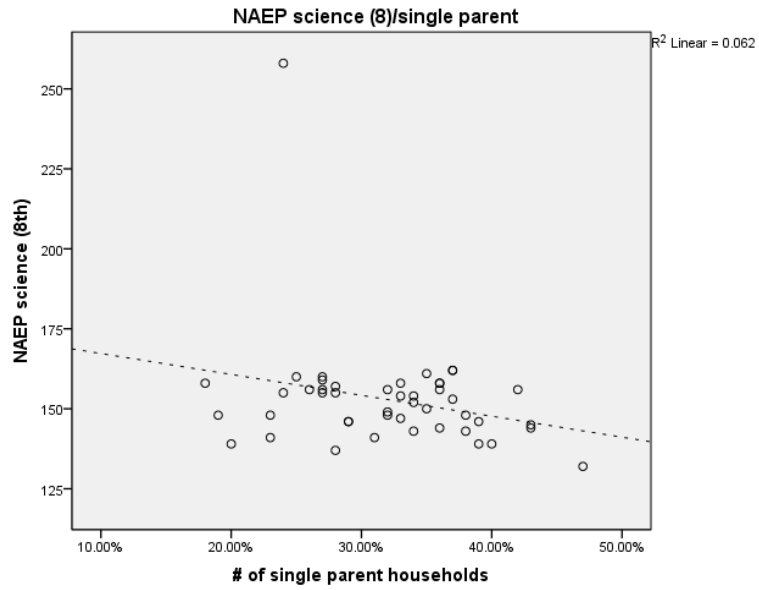


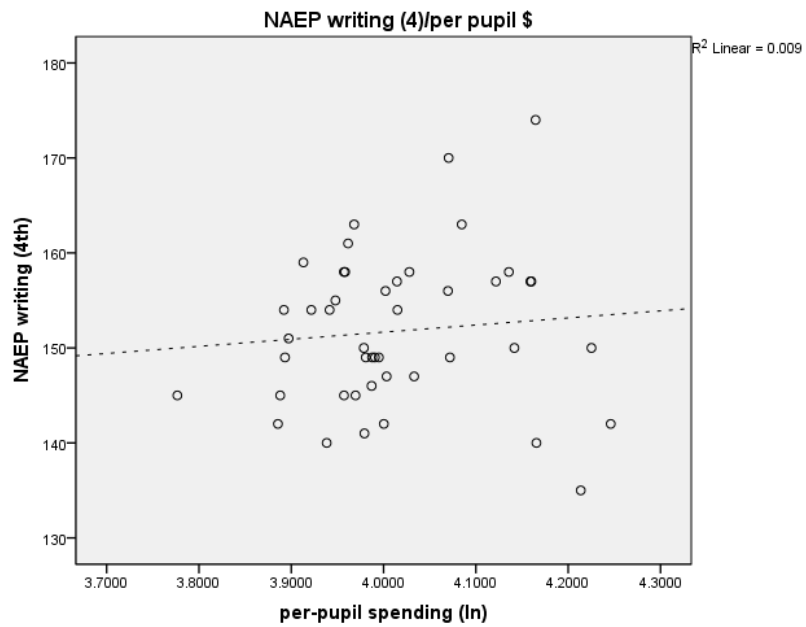
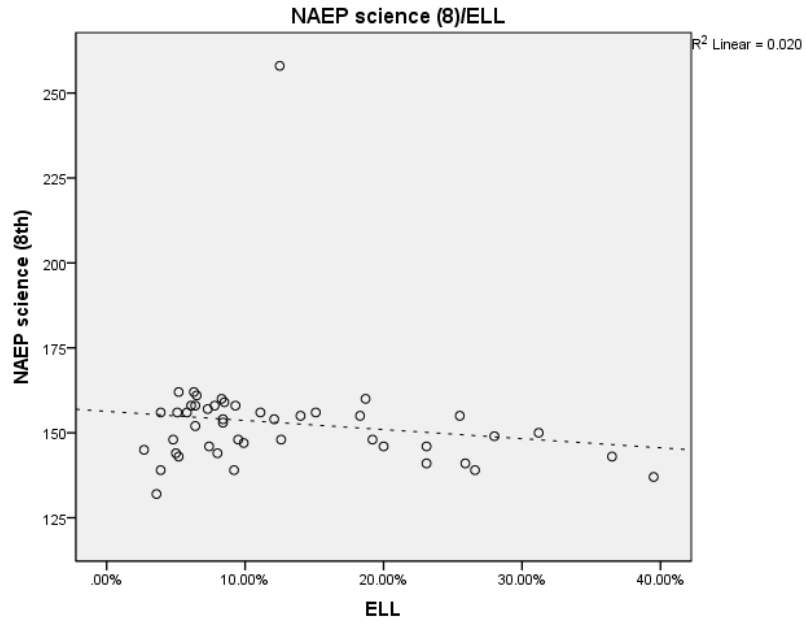


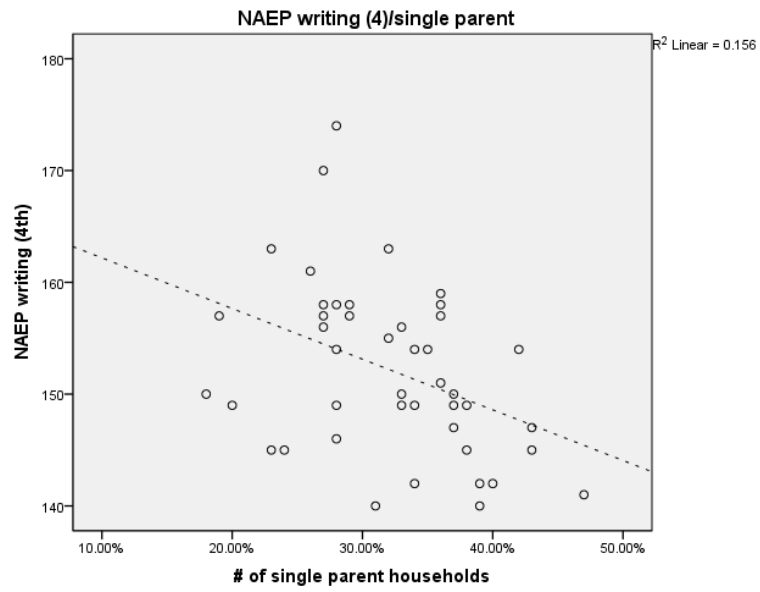
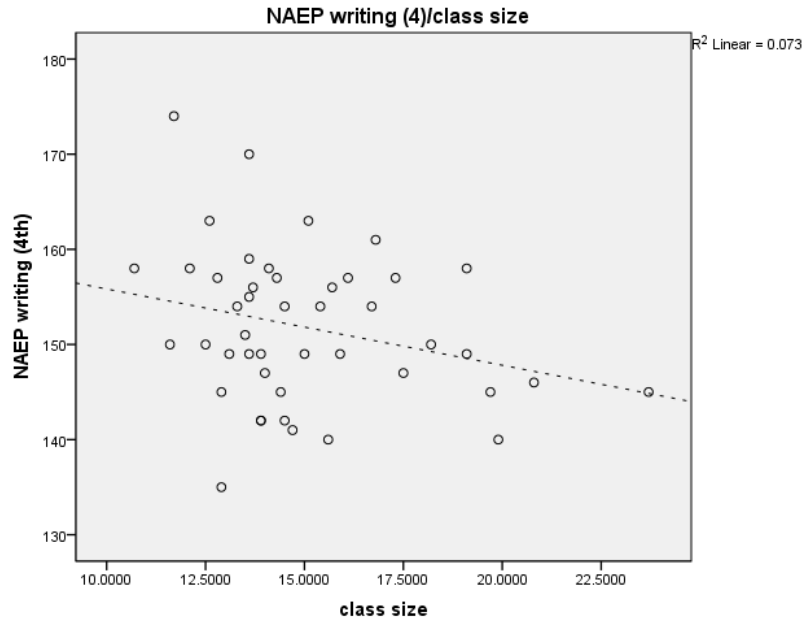


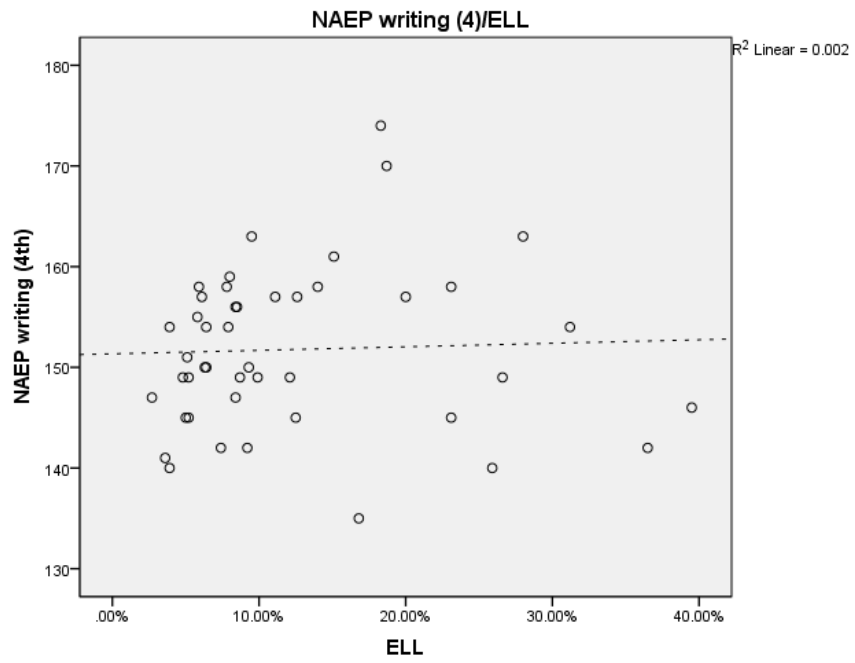
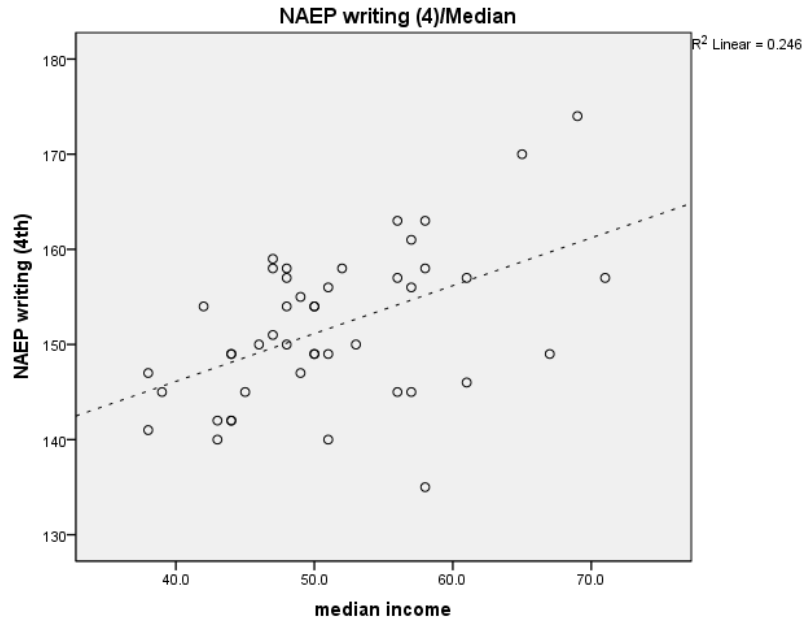


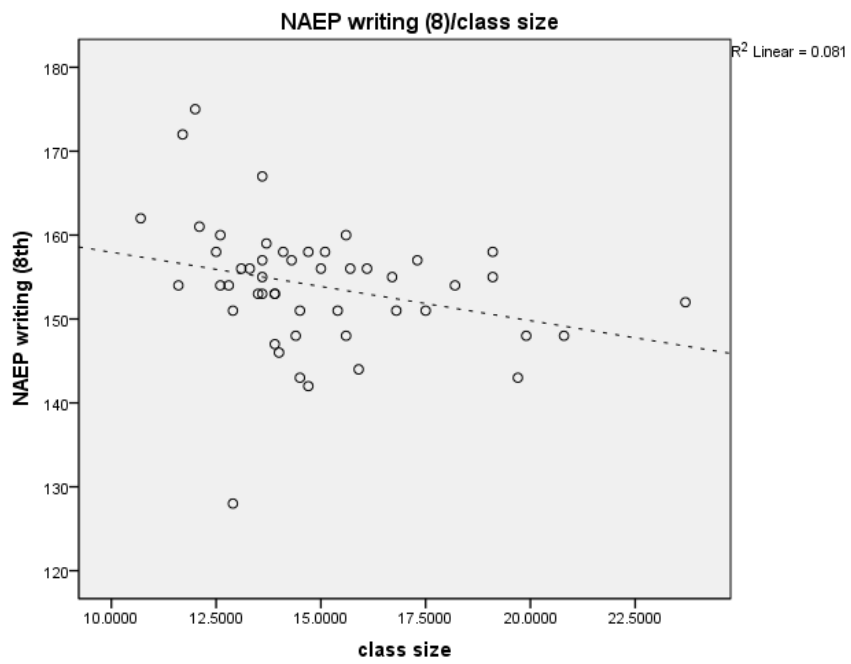
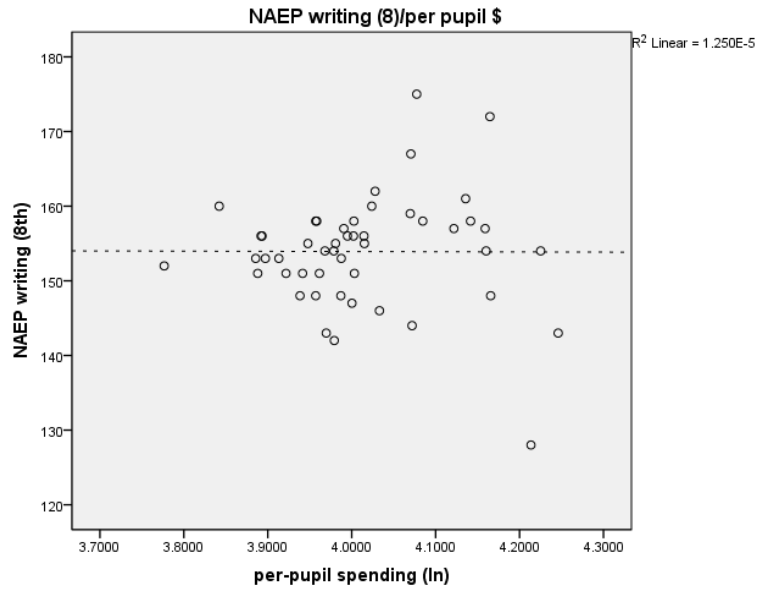


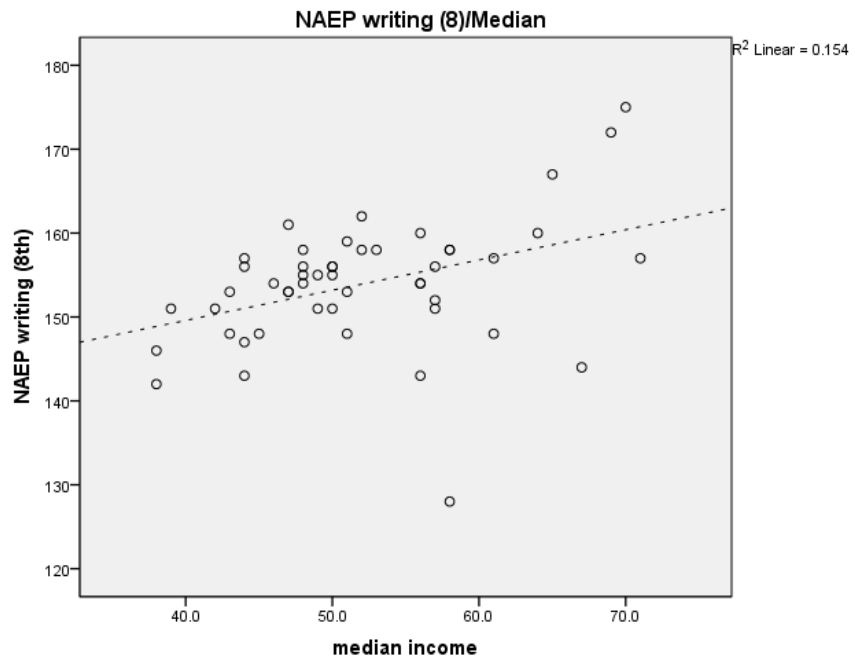
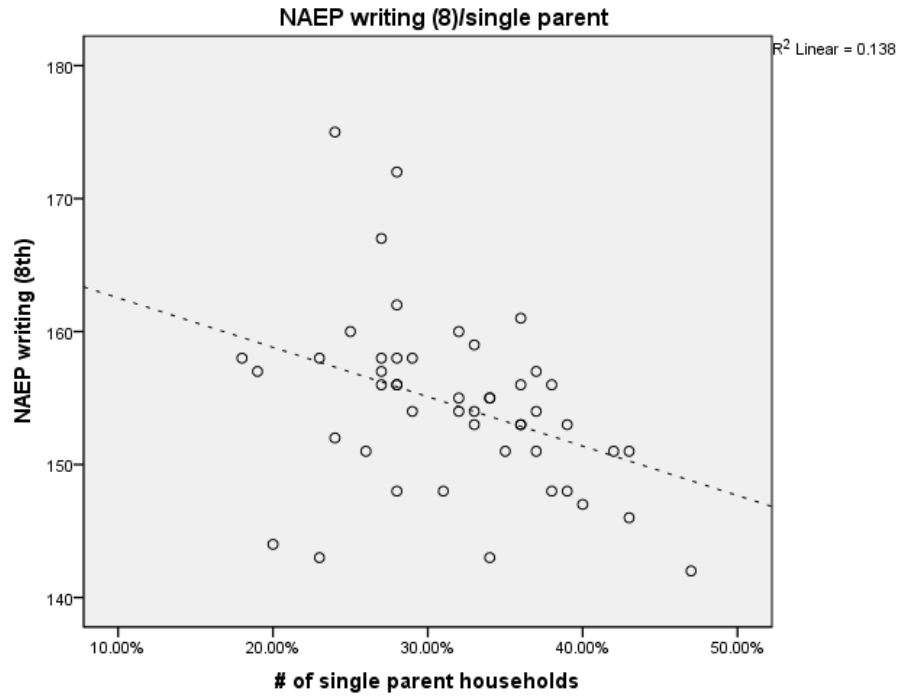


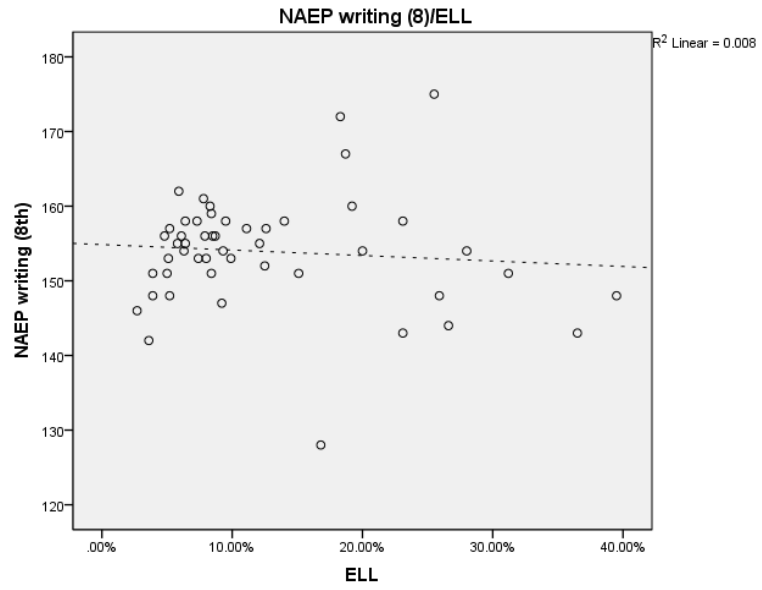












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