Differences in ELA and Math Test Score Outcomes: Comparing Urban, Rural and Suburban Schools

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MAT 498 – Domino

May 2015

When entering a child into a new school, parents hope that this school will provide their child with the best education possible. Unfortunately, different schools can provide a different education to students based on their location. There have been differences between urban, suburban and rural schools in New York. Data from recent testing suggests that these differences are in ELA and Math test scores. Since all schools in theory should provide an equal opportunity education to all students, there must be some factors that affect these test score outcomes and the overall education that a child receives. New York State has realized these differences and is trying to come up with solutions that will give all students an equal chance to a great education despite the location of the school. However, these changes made by the state to improve education among all schools needs more effort to help children who are struggling because the schools that they are attending may not be the best schools in which to receive an education. After examining all the factors that make schools different, administrators need to decide what important changes need to be made. After all, the children are our future so the state needs to invest in them in order to benefit the world.

Factors that Affect Education

Many researchers found that there were differences among urban, rural and suburban schools. They each assessed a different factor that caused the differences. By looking at these different studies, enough evidence was shown that that there were differences among the urban, rural and suburban schools and their test score outcomes in ELA and Mathematics.

Money Funded by Government

All schools need funding from the government. The funding pays for the materials and the salaries for all the teachers and staff at the schools. The more funding a school has, the

more supplies it can buy and also the better teachers it can hire because the school can offer more pay. The National Center for Education Statistics [NCES] (1995) looked at how much schools spend on each individual child. The amount that they spend on the child, whether it is school supplies, utilities to keep the school open and the pay the teachers and staff receive to educate the child, is divided up based off of all the funding and grants the school receives.

NCES examined the data values for funding provided per student based on the poverty level of the student or if the student had any disabilities. They also compared the funding per student based on the metropolitan area and even on a regional scale. NCES evaluated the actual amount that the students received and then reported the cost and need. The cost and need gives a better idea of the difference and actual amount a student would receive. Cost and need includes factors such as teacher salary, cost of equipment, technology and school utilities. By including these factors into their data values, it makes the data a lot more accurate and relatable. Based on poverty level, the NCES found that that students on average who were less poor were more likely to receive more funding per student. According to their data, if less than 5 percent of the students were in poverty, the school received on average $4,528 per student but if there were about 25 percent or more students in poverty, then then each child only received about $4,219 (NCES, 1995, p. 17). NCES believes this difference is unreasonable because if the students are poorer, then they should receive more help in school. According to many popular beliefs, everyone should get an equal chance to an education, but clearly if the same amount of money is not spent on each student, then there is reason to state that each child is not receiving the same education.

Also, based on NCES' findings, schools that have more students with special education needs, students who are limited in English proficiency and many students who are at risk, tend to receive more funding than schools that have fewer students with those needs (NCES, 1995, p. 18-23). Unfortunately, because these needs tend to require extra equipment and teachers, this is not true. The cost and need of these services requires more money and therefore a school that has many students with special needs tend to receive less funding per student than a school that has students without many needs. This is truly upsetting because these students are the ones who do struggle in school and because of the services they need, they actually receive less funding towards their education.

NCES also examined the funding given on average to rural, urban and suburban schools. According to their findings, rural schools were given more funding when taking into account the cost and need adjustments. On average, rural schools received $4,408 per student, the urban schools received $4,218 per student and suburban schools received $4189 per student (NCES, 1995, p. 29). NCES stated that the possible factors as to why rural schools received more funding were district size and lower costs in the area.

Additionally, on a national level the NCES compared the four different geographic regions based on average funding. Here they found that when comparing the regions based on cost and need, the Northeast region received more funding overall than the Midwest region, the South region and the West region. The Northeast region on average received $5,293 per student, the Midwest region received $4,383 per student, the South region received $4,047 per student and the West region, on average, received $3,632 per student (NCES, 1995, p. 31). This shows that students are not receiving equal funding and therefore this could be a factor as to

why the test score outcomes are different in the various regions because each student is not being invested in equally.

Also, according to the NCES, from 2000 to 2011, funding by the local, state and federal governments have changed over time with the exception that the state funding has stayed relatively the same over the 11 years (NCES, 2014, p. 84). Fortunately, the federal government has increased its funding by about 25 billion dollars and the local government on average has increased its funding by about 50 billion dollars. This shows that the federal and local governments have realized that education is becoming more important as the years go by and thus their funding to the schools has increased.

Resources in School

Dr. Dale Ballou, a professor from the University of Massachusetts, looked at the resources available for each school and compared the urban, rural and suburban schools (Ballou, 1996). He included findings about the money that the state and federal granted to schools. By looking at the funding, it can be then determined if schools receive enough money to spend on many resources such as technology, hiring many teachers to create a low student-teacher ratio and other resources such as books and supplies. First, he examined how the schools allocated the funding given to them by the government. He split the allocated funding into three categories: instruction, support services and non-instructional services. The rural, urban and suburban schools spent an average of 61 percent of their funding on instruction (Ballou, 1996, p. 67). Based on this data, the rural, urban and suburban schools placed more importance on instruction over support services and non-instructional activities. However, the

suburban schools tended to spend more funding on support services while rural schools tended to spend more funding on non-instructional services.

Another important factor that leads to students receiving a better education is a student-teacher ratio. This resource that the school can hopefully provide by having a smaller student-teacher ratio benefits all students. Based on Dr. Ballou's findings in secondary schools, the student-teacher ratio is highest in suburban schools (18.5), the urban schools have a ratio of 17.1 students per teacher, while rural schools have a student-teacher ratio of 16.4 (Ballou, 1996, p. 72). Although the difference between the suburban, urban and rural schools is two students, this can cause a difference in the students' education due to the fact that the teacher is able to focus on a fewer students per class time. Every few years, NCES submits a digest of education statistics summarizing the differences among the years to determine if the student-teacher ratio is improving (NCES, 2013). The NCES looked at the change in student-teacher ratio during the past 50 years. From 1960 to 2010, the overall pupil-teacher ratio has decreased (NCES, 2013, p. 69). This means that over the years students are receiving more one-on-one attention which is good for the students' education.

Another important resource to have in school systems is to offer a wide range of courses that pertain to the learning interests of all learners. It is also recommended that these courses are challenging and push the students to work harder. NCES in their recent study compared the percent of students who took challenging Math and Science courses (NCES, 2014). They found that overall, between 1990 and 2009, the number of students who took challenging Math and Science courses has increased. For example, in 1990, 54 percent of students took an Algebra 2/Trigonometry course while in 2009, 76 percent of students elected

to take Algebra 2/Trigonometry (NCES, 2014, p. 134). This shows that students are furthering their education and challenging themselves more in math nowadays. These results are similar for Science courses as well. Students who took Biology, Chemistry and Physics courses have increased their presence in these courses from 19 to 30 percent of students over time (NCES, 2014, p. 134). This shows that more schools are offering these courses and more students are electing to take them. If the students push themselves and take more challenging courses, this will better prepare them for transitioning into college. Offering more challenging courses to students is a great resource to provide to students in order to overall improve their testing scores and knowledge.

Teacher Effectiveness

Having effective teachers in a school is essentially very important in order for a school to be successful. A school can have all the technology and supplies it wants, but if the school does not hire the teachers who know how to utilize these resources, then the resources become ineffective. Also, the students' main source of learning comes from the teacher. If the teacher is new or not qualified, then the students will not learn as easily or well and that will impact their test score outcomes.

Researchers from the University of New Hampshire examined schools that hire new and beginning teachers. They wanted to know if having these new teachers affected education (Gagnon & Mattingly, 2012). The researchers examined the percentage of beginning teachers that were hired by schools in poor districts. They grouped the less poor districts as the top (first) quartile and the poorer districts were in the bottom (fourth) quartile. It turned out that the districts which were more impoverished tended to hire more beginning teachers. The

percentage of beginning teachers, on average, in the poorer districts was about 19 percent, while the less poor districts only had about 3 percent of their teachers who were beginning teachers (Gagnon & Mattingly, 2012, p. 2). This is a problem for the poorest schools because it means that more teachers at these schools were inexperienced in creating lesson plans, classroom management and assessment strategies. These weaknesses can cause a problem with effectively teaching the students.

The researchers also looked at the percent of new teachers based on urbanicity. They found that it was more likely for the city schools to have more beginning teachers than rural and suburban schools. City schools had about 11 percent of beginning teachers in their schools, suburban schools had about 8.9 percent of beginning teachers and rural schools had 9.7 percent of beginning teachers in their schools (Gagnon & Mattingly, 2012, p. 3). The main problem with hiring too many beginning teachers is that there needs to be more teacher development. Also, another factor that affected the overall quality of teaching was the turnover of teachers. Teachers tended to leave a district for more pay, a less challenging environment or to be close to their family (Gagnon and Mattingly, 2012, p.3).

NCES looked at teacher quality in the schools (NCES, 1999). One aspect that they found important in teacher quality was the college degrees that the teachers obtained. They understand the importance of teachers earning all their certifications and the experience that comes along with earning their degree. NCES looked at the percentage of teachers in grades 7-12 who obtained a degree in the field that they taught. The data was split up based on subject and location. They found that in the urban schools, 82 percent of teachers who taught ELA had a degree related to English, 81 percent of teachers who taught math had a math related degree

and 79 percent of teachers who taught science had a science related degree (NCES, 1999, p. 19). In rural schools, 88 percent of ELA teachers had an English related degree, 83 percent of Math teachers had a math related degree and 91 percent of Science teachers had a science related degree. These percentages for urban and rural schools are fairly low considering that all schools should hire teachers who have certifications in their field of study. Therefore, some students are receiving an education from a teacher who does not have a degree in the specific field that they are teaching. If the teachers do not have the higher education experience related to their subject matter, then most likely those teachers are not effective teachers. Having a non-effective teacher could affect test score outcomes because the students are not being taught by a qualified teacher.

Another way to know if a teacher is an effective teacher is if the teacher continuously tries to improve his or her teaching skills by attending professional development meetings. In these meetings, teachers learn new ways to present information, how to use new technology in the lessons and ways to collaborate with other teachers in the classroom. These programs are very useful and all teachers should participate in them. NCES found that teachers were more likely to attend professional development sessions that dealt with state curriculum, technology integration and new methods of teaching. Fewer teachers attended professional development sessions that focused on students with disabilities and diverse cultural backgrounds. About 81 percent of teachers attended professional development lessons about the state curriculum, 78 percent attended technology integration sessions and 77 percent attended professional development sessions that introduced new methods of teaching (NCES, 1999, p. 23). However, when it came to attending a developmental session that addressed the needs of students with

disabilities or culturally diverse students, only 48 percent of the teachers attended the sessions about students with disabilities and 31 percent attended a session pertaining to students of different cultural backgrounds. This NCES study shows that most teachers care about learning more about their curriculum instead of learning more about the students' needs. This can be a problem because the teachers are not taking into consideration that students with certain needs need to be taught differently than other students.

NCES also determined that teachers were more likely to attend professional development sessions that taught them how to maintain discipline than the other sessions offered (about 68 percent) (NCES, 1999, p. 52). This shows that teachers care about maintaining an effective classroom. If the classroom runs well, then the students will have a better learning environment and therefore have better test score outcomes. Teachers should take more time to attend diverse cultural development sessions, which would help them learn how to apply these lessons to their students. However, it is beneficial that teachers are most likely attending professional development sessions that focus on technology integration and new methods of teaching because these sessions can be applied to the many ways that students learn. If the teachers can attend these developmental sessions and are able to apply what they learn to improve their teaching in multifaceted ways, that will help to improve their students' test score outcomes.

Teacher quality and effectiveness is a huge part of education. If teachers are less qualified or do not continue their education by attending professional developments, then their students are not likely to improve. If the teachers are not educated enough on how to teach students of various learning abilities, then the students are more likely to perform poorly on

tests. All schools need to focus on the professional development of all teachers whether they are beginning teachers or have been teaching for many years because education continuously changes and the teachers need to learn how to adapt with it as well.

Socio-Economic Status Affecting the Outcome of Education

NCES looked at the outcomes of education compared to the poverty rates for rural, urban and suburban schools on a national level (NCES, 1996). First, they evaluated the poverty level and the number of students receiving free or reduced lunch in the different areas. They found that in 1988, 30 percent of children younger than 18 faced poverty in the urban schools and that 22.2 percent of students in rural schools were in poverty as well. Suburban schools only had 15 percent of their students facing poverty (NCES, 1996, p. vi). The urban schools also had more children receiving free or reduced lunch than suburban and rural school children. At the over 40 level of poverty concentration, urban schools had 40.1 percent of their students receiving reduced lunch. Suburban schools at the same level had 10.2 percent of their students receiving reduced lunches, which is one fourth of the urban students receiving reduced lunches. The rural schools reported that 24.5 percent of their students at the over 40 percent level of poverty were receiving reduced lunch (NCES, 1996, p. vi). This indicates that students in the urban areas and even in the rural areas tend to be in poverty. Therefore, the only concern of these students when coming to school may not be about education, but may be about getting their next meal.

NCES also looked at the percentage of 8th grade students whose families were in the lower socioeconomic quartile. 32.6 percent of students in urban schools and 31.9 percent of rural students were in the lowest quartile, while only 19.1 percent of suburban students fell

into this category (NCES, 1996, p. 6). This shows that urban and rural schools tend to have more students who worry about the basic needs than suburban school students. NCES also looked at 8th grade average standardized test composite score outcomes based on the school poverty concentration for urban, rural and suburban schools. They found that at the over 40 level of poverty concentration, the students in the urban setting scored lower than suburban and rural students. Urban school students scored a 44 average composite test score, suburban school students scored 46 and the rural school students scored 47 (NCES, 1996, p. 27). This shows that the poverty levels of each school effects test score outcomes. NCES concluded that students in a high poverty concentration in an urban setting will most likely have a low outcome on tests. Thus, there is reason to conclude from this study that poverty effects the outcome of education.

Crime and Safety Problems Facing Schools and Students

The United States Department of Education [USDOE] (Robers, Zhang & Truman, 2012) examined crime and safety in rural, urban and suburban school locations as a factor effecting education. Having crime in a school effects students because they decide to not come to school due to a fear of being physically or emotionally harmed and it even causes distractions in class. Crime can even effect teachers not wanting to work at certain locations because they are worried about their safety. The USDOE found that teachers were more likely to be threatened in a city school than in a rural or suburban school, which was 10 percent compared to 6 percent (Robers, Zhang & Truman, 2012, p.22). Also, teachers were more likely to be physically attacked in a city school. This would cause teachers to not want to work in urban settings

because they fear for their safety. Therefore, some of the more qualified teachers would prefer to not apply to city schools.

The violence at schools seems to effect urban schools more than rural or suburban schools. The USDOE found that violent victimization occurred quite frequently in city schools. Eighteen out of 1000 urban students were victimized compared to seven out of 1000 rural students who were victimized (Robers, Zhang & Truman, 2012, p.12). They even found that bullying and gang related activity was higher in city schools versus suburban and urban schools. Twenty-seven percent of city schools reported that bullying occurred in their schools at least once a week while only 20 percent of suburban schools and 21 percent of rural schools reported bullying (Robers, Zhang & Truman, 2012, p. 32).

Gang activity was also higher in urban schools than in suburban and rural schools (28, 15, and 9 percent respectively) (Robers, Zhang & Truman, 2012, p. 32). Having bullying and gang activity during the school day is a problem. If students feel unsafe, then they are more likely to skip class or come to class late to avoid passing other students in the halls. If the students decided not go to are class, then they did not receive the best chance of an education because they missed the lessons. Absenteeism leads to poor results on tests.

Class disruptions can also cause a problem for students. About 40 percent of city school teachers reported that they generally have class disruptions caused by student misbehavior that interfered with their teaching. Only 32 percent of suburban teachers and 31 percent of rural teachers reported the same problem (Robers, Zhang & Truman, 2012, p. 52). Class disruptions makes it hard for the teachers to be able to give the students all of the required information before their tests. If the students do not obtain all of the information, they will

have a harder time doing well on the standardized tests. These factors found by the Department of Education shows that crime and safety is a problem in all schools but especially in urban schools and this factor attributes to the test score outcomes.

Parents' Education Status, Their Opinions and Involvement

NCES looked at the parent status such as the living situation that the students have, whether their parents have an above high school education and whether or not the parents worked full time (NCES, 1996). NCES asked the parents about their expectations for their child's education and the communication between the parent and child. They first looked to see if most children lived in a one or two parent home. NCES found that 67.7 percent of 8th grade students in urban households lived in a two-parent home. The percent for rural students was 79.6 and for suburban students the percent was 80.7 (NCES, 1996, p. 52). NCES also examined whether the parent in a one-parent household worked at a full time job. They found that in urban households 59.4 percent of the parents in one-parent households worked full time. In suburban households 71.3 percent of the parents in one-parent households worked full time and in a rural household, 64.6 percent of the parents worked full time (NCES, 1996, p. 54).

Also by examining the level of education that the parents have, it can be determined how financially stable the family may be due to the fact that the parents may obtain a better paying job. 20.4 percent of 8th graders in an urban household had a parent who obtained a four year degree. In the suburban household, 29.5 percent of 8th graders had a parent who obtained a 4 year degree and for the rural households, 18.6 percent of 8th grade students had a parent who had a four year degree (NCES, 1996, p.58). NCES stated that the results of this finding was that in a one parent household, if this parent does not work full time, then the parent is most

likely struggling to provide a stable and healthy environment for their child. However, if the parent has a higher education, then the family is more likely to have a better income. Also NCES pointed out that if the single parent worked too much, the parent may might not give enough attention to the child. Either case can cause the child to perform poorly on tests.

NCES also looked at the relationship between the parent and child. If the parent was involved in the child's education, then the child was more likely to have better test scores. NCES was also interested in the parents' expectations for their child and the communication between the child and parents. The expectations set by the parents demonstrate that they support their child and that the parents will make sure that their child will obtain the best education possible. NCES found that in urban households about 55.7 percent of parents expect their child to complete a four year college. In suburban households 60.2 percent of parents expect their child to complete a four year degree and in rural households 49 percent of parents expect their child to complete a four year college (NCES, 1996, p. 62). Since at least half of the parents hope that their child completes a four year college degree, it indicates that most of these students will receive support at home. However, they are more likely to receive more support in a suburban household than in a rural or urban household.

Next, NCES wanted to evaluate the communication between the parent and child. If there is good communication between the parent and the child, it will help the parent be informed about school issues and activities. NCES took a poll of 8th grade students to determine whose parents rarely talked to them about school. In an urban household, 24.9 percent of parents rarely talked to their child about school. In suburban households 19.6 percent of parents rarely had any communication with their child and in rural households, 22.5 percent of

parents rarely talked to their child about school (NCES, 1996, p. 64). The results of this data was to determine the parents' involvement with the child. The conclusion drawn from these results is that the more involved the parent was with the child, then the better the child will perform on tests.

Nation's Attempt to Fix Differences between Schools – Common Core

The nation has noticed that there are differences among urban, suburban and rural schools and that not all schools educate their students equally. In 2010, the National Governors Association and the Council of Chief State School Officers created the Common Core Standards (National Education Association [NEA], 2010). The main goal of the Common Core Standards was to establish an equal education for all students no matter what school the students attend. If a student grew up in the city and then moved to the suburbs, the Common Core Standards would make it so that the student can transition easily and receive the same education despite where the student lived. New York State has accepted the Common Core Standards into their learning standards and has now adopted them into every school. These standards were also developed to prepare the students for the world after school such as college or work (NEA, 2010, p. 2). The idea behind these standards is to use the progression technique. Students continue to build on the knowledge that they have. For example, in English the progression incorporates that the books they read become harder and involve more skills like abstraction and synthesis (NEA, 2010, p. 2). Basically, these standards state what goals students need to accomplish each year in order for the students to be on track for the beginning of the next grade. Once the students are able to accomplish all the goals in their grade, it is safe to say that they are ready to learn the goals for the next year. The reason that NEA approved this was so

that the states could collaborate and create an equivalent education nationwide (NEA, 2010, p. 4). Unfortunately, it was not mandatory for all the states to adopt the Common Core Standards, so there will be differences nationwide due to the fact that only a few states accepted the standards. These standards intend to provide simple and clear goals but these goals are truly rich and well planned (NEA, 2010, p. 5). Since the goals are clearly defined, it allows teachers to be able to teach in any way that they feel would accomplish these goals. The standards provide guidance and do not restrict the teachers on what they can do. They just ensure that the teachers' idea for the lesson will have a point and that the teachers will work towards achieving that goal. The Common Core Standards is a way to help the states be able to create a statewide curriculum that is effective. It will just take some time for the schools to adjust to this new way of teaching, but once they do the state hopes that this will improve the education of all students and help them to become world-ready citizens. Since New York State has adopted these standards into their curriculum, the hope is that these new standards will improve the students' test scores and that the students will be ready for the post-school world.

Research Questions

After examining all the factors that affect education and the creation of the New York State Common Core Standards to create equality in education, the question remains if there are still significant differences between the ELA and Mathematics test score outcomes of the students who live in either rural, suburban or urban schools. The question to test is if the differences of the means of the test scores are significantly different in the three different types of schools.

The hypotheses to test are:

1. Is there is a significant difference in test score means for ELA and Mathematics in 4th and 8th grades between rural and urban schools?
2. Is there is a significant difference in test score means for ELA and Mathematics in 4th and 8th grades between rural and suburban schools?
3. Is there is a significant difference in test score means for ELA and Mathematics in 4th and 8th grade between urban and suburban schools?

Methodology

In order to determine if differences exist in ELA and Mathematics test scores among urban, rural and suburban school, the most recent test score data from the New York State Education Department Information and Report Services under the Release of Data for 2014 Grades 3-8 English and Mathematics was examined (New York State Department of Education [NYSED], 2014). The test scores that were examined were from the New York State Local tests from grades 3 to 8 in the area of ELA and Mathematics that were administered in 2014. The data recorded represent all schools in New York State. In order to obtain a representative sample of the urban, rural and suburban schools, 15 school districts for urban schools, 15 school districts for rural schools and 15 school districts for suburban school for a total of 45 school districts were randomly selected and chosen to represent the schools' test score outcomes. One school was then randomly selected from each district. For each school, 4th and 8th grade test score outcomes for ELA and Mathematics and the number of students who participated in the tests were collected and organized into a spreadsheet.

A list of all the rural schools in New York State was found from the Rural Schools Association, which represents all the rural schools in New York State (Rural Schools Association, 2015). The list was then numbered 1 through 318. Using the random integer function on the graphing calculator (TI-83 Plus) a random sample of 15 schools districts was collected. Then the ELA and Mathematics tests scores for 4^{th} and 8^{th} grades were recorded into the spreadsheet.

For the urban districts, 15 schools were randomly selected based on the most populated cities in New York State. The US Census Bureau submitted a rank of the most populated metropolitan areas (as cited in Wikipedia, 2013). These areas are Syracuse, Poughkeepsie-Newburgh-Middletown, Albany-Schenectady-Troy, Rochester, Buffalo-Niagara Falls and New York City-Long Island. One urban school district was selected the Syracuse area, one urban school district was selected from the Poughkeepsie-Newburgh-Middletown, one urban school district was selected from the Albany-Schenectady-Troy area, one urban school district was selected from the Rochester area, two urban school districts were selected from the Buffalo-Niagara Falls area and lastly nine urban school districts were selected from the New York City-Long Island area. This ensured that all cities in New York State had proportional representation. Fifteen schools were then randomly selected from the districts and recorded in the spreadsheet.

To generate a list of the Suburban Districts, the Urban and Rural schools were removed from the Excel spreadsheet that contained the test score data provided by the NYSED. Fifteen suburban schools were then randomly selected from the remaining districts. In this manner, all the 45 schools' data was chosen to represent the urban, rural and suburban schools.

After the data was collected, the mean and standard deviation was found for the 4th grade and 8th grade ELA and Mathematics test score outcomes for the urban, rural and suburban schools. Therefore, there were 4 scores for each district. In order to determine differences among rural, urban and suburban schools a t-test for independent means was conducted. The t-test was performed using the TI-83 Plus calculator to determine if there were significant differences between the two data sets. The t-values and the p-values were recorded into a table. If the p-value was less than .05, then the difference is significant and the conclusion can be drawn that there enough evidence with $\alpha = .05$ level of significance that there is a difference between the two test scores. If all four of the test scores were considered significantly different, then there is reason to conclude that there is an overall difference between the two different school classifications. The rural school test scores will be compared with the urban school test scores and also with the suburban school test scores. The urban school test scores was compared with the suburban school test scores. This ensured that all the schools were compared to each other and that all four test scores for each classification was compared.

Results

First, the 45 schools' test scores were organized into tables. Each school was recorded and the test scores were separated based on grade level, either 4th or 8th grade. Table 1 shows the 15 rural schools selected for 4th grade ELA and Mathematics. The number of students that took each test from each school is recorded as well as the mean test scores. It was found that for the 4th grade ELA test, 1031 students scored a mean of 298.2 with a standard deviation of 7.3. For the 4th grade Math test in rural schools, 1022 students had a mean score of 304.3 with

a standard deviation of 7.0. In Table 2, the 8th grade rural scores were recorded for ELA and Mathematics. For the 8th grade ELA scores, 1130 students had a test score mean of 269.9 with a standard deviation of 11.2. The 8th grade math score data showed that out of the 15 schools selected 918 averaged a score of 289.3 with a standard deviation of 11.4.

Table 1
Rural School Districts 4th Grade Test Outcomes (2014)

	4th Grade ELA		4th Grade Math	
Name of School	Number of Students	Mean Test Score	Number of Students	Mean Test Score
Afton Central	35	284	35	295
Attica Central	92	298	93	313
Canisteo-Greenwood Central	56	300	53	303
Chenango Forks Central	106	291	106	310
Franklinville Central	51	295	49	305
Gilbertsville-Mount Upton Central	29	311	29	312
Hancock Central	26	292	26	299
Liberty Elementary	83	289	80	292
Yorkshire-Pioneer Central	180	298	178	314
Salem Central	33	303	32	296
Town of Webb	10	308	11	310
Waterville Central	62	302	60	298
Waverly Central	114	299	115	303
Wyoming Central	15	306	16	308
Cobleskill-Richmondville Central	139	297	139	307
	N = 1031	$\bar{X}$ = 298.2 SD = 7.3	N=1022	$\bar{X}$ = 304.3 SD= 7.0

Table 2
Rural School Districts 8th Grade Test Outcomes (2014)

	8th Grade ELA		8th Grade Math	
Name of School	Number of Students	Mean Test Score	Number of Students	Mean Test Score
Afton Central	29	290	27	285
Attica Central	107	288	89	282
Canisteo-Greenwood Central	87	293	66	279
Chenango Forks Central	140	314	109	295
Franklinville Central	54	304	54	304
Gilbertsville-Mount Upton Central	40	302	26	291
Hancock Central	19	307	15	294
Liberty Middle	110	278	78	265
Pioneer Middle	172	301	144	301
Salem Central	44	312	32	295
Town of Webb	24	304	26	306
Waterville Central	48	293	31	287
Waverly Central	138	292	115	281
Wyoming Central	13	276	13	276
Cobleskill-Richmondville Central	114	300	93	299
	N = 1139	$\bar{X}$ = 296.9 SD = 11.2	N=918	$\bar{X}$ = 289.3 SD= 11.4

The 15 urban schools' data from 2014 was collected and recorded. Table 3 shows the test scores for 4th grade ELA and Mathematics. The ELA test scores show that from the 15 urban schools selected, 2145 4th grade students had an average test score of 291.5 with a standard deviation of 16.5. A total of 2178 students completed the 4th grade Mathematics test and their average score was 296.4 with a standard deviation of 18.6.

Table 3

Urban School Districts 4th Grade Test Outcomes (2014)

	4th Grade ELA		4th Grade Math	
Name of School	Number of Students	Mean Test Score	Number of Students	Mean Test Score
Roberts K-8	78	295	81	295
Maple Hill Elementary	151	293	149	285
Abram Lansing	57	292	57	306
School 33-Audubon	142	269	141	284
Stanley Makowski	124	275	125	275
Harry F Abate Elementary	93	290	93	289
PS 20 Anna Silver	65	300	65	300
PS 108 Assemblyman Angelo Del Toro	58	284	58	281
PS 49 Willis Avenue	99	271	101	276
PS 46 Edgar Allen Poe	222	275	230	285
PS 58 The Carroll	141	329	142	336
PS 176 Ovington	227	317	230	334
PS 123 Suydam	138	286	141	291
PS 16 The Nancy Debenedittis	313	297	314	307
PS 95 Eastwood	237	300	251	302
	N = 2145	$\bar{X}$ = 291.5 SD =16.5	N=2178	$\bar{X}$ = 296.4 SD= 18.6

Table 4 presents the urban 8th grade test scores for ELA and Mathematics. For the 8th grade ELA test scores, 2929 students scored an average of 289.9 with a standard deviation of 16.7. Then the 8th grade Math scores were recorded. 2437 student participated in the test and the urban school 8th grade test score mean was 286.2 with a standard deviation of 18.9.

Table 4

Urban School Districts 8th Grade Test Outcomes (2014)

	8th Grade ELA		8th Grade Math	
Name of School	Number of Students	Mean Test Score	Number of Students	Mean Test Score
Roberts K-8	75	285	49	295
Middletown Twin Towers Middle	239	298	220	297
Cohoes Middle	121	289	122	287
East High	277	253	280	256
Waterfront	110	272	117	266
Gaskill Prepatory	234	288	199	279
Tompkins Square Middle	110	312	107	321
PS 108 Assemblyman Angelo Del Toro	90	287	90	291
JHS 162 Lola Rodriguez De Tio	121	280	129	267
Thomas C Giordano Middle	298	289	242	271
JHS 88 Peter Rouget	324	297	241	297
JHS 201 The Dyker Heights	520	316	315	315
JHS 291 Roland Hayes	192	276	191	268
PS/IS 113 Anthony J Pranzo	113	314	83	303
PS/MS 138 Sunrise	105	293	52	280
	N = 2929	$\bar{X}$ = 289.9 SD = 16.7	N=2437	$\bar{X}$ = 286.2 SD= 18.9

Finally, the Suburban Schools Districts 4th and 8th grade ELA and Mathematics test scores were recorded in Tables 5 and 6. By summing up the total amount of students who took the 4th grade ELA exam it was found that 1333 student took the exam (Table 5) and had a mean score of 314.4 with a standard deviation of 8.7. For the 4th Grade Math test, 1247 students took the test and had a mean score of 322.8 with a standard deviation of 11.1.

Table 5

Suburban School Districts 4th Grade Test Outcomes (2014)

	4th Grade ELA		4th Grade Math	
Name of School	Number of Students	Mean Test Score	Number of Students	Mean Test Score
Saddlewood Elementary	58	310	58	319
Chancellor Livingston Elementary	65	316	67	309
Country Parkway Elementary	125	328	123	337
Paddy Hill Elementary	97	305	97	312
Stratford Avenue	142	325	139	335
Westmoreland Elementary	79	310	80	325
Enders Road Elementary	96	331	94	342
Cornwall Elementary	122	322	121	334
Lakeview Elementary	85	307	79	312
Lawrence Avenue Elementary	94	309	92	315
Birchwood Elementary	41	304	41	319
Sylvan Avenue Elementary	74	305	71	315
Todd Elementary	103	316	103	336
Clarence Center Elementary	75	316	75	321
Guggenheim Elementary	77	312	79	311
	N = 1333	$\bar{X}$ = 314.4 SD = 8.7	N=1247	$\bar{X}$ = 322.8 SD= 11.1

The final scores that were recorded were the 8th grade Suburban district ELA and Mathematics test scores. The data was recorded in Table 6. For the 8th grade ELA test scores, 3112 students took the test and scored an average of 315.4 with a standard deviation of 10.1. Then the 8th grade Mathematics test score outcomes were recorded. 1940 students participated in the test and had a mean score of 308.1 with a standard deviation of 11.8.

Table 6
Suburban School Districts 8th Grade Test Outcomes (2014)

	8th Grade ELA		8th Grade Math	
Name of School	Number of Students	Mean Test Score	Number of Students	Mean Test Score
Lisha Kill Middle	168	303	98	286
Bulkeley Middle	101	319	81	315
Transit Middle	244	327	124	318
Athena Middle	293	299	201	291
Garden City Middle	303	332	117	317
Westmoreland Middle	70	304	52	291
Eagle Hill Middle	170	326	95	323
Cornwall Middle	269	311	188	312
Mahopac Middle	237	305	133	294
A A Kingston Middle	83	314	74	311
Iroquois Middle	188	324	117	315
James Wilson Young Middle	152	308	113	313
Briarcliff Middle	130	324	72	316
Clarence Middle	368	315	231	303
Carrie Palmer Weber Middle	366	320	244	316
	N = 3112	$\bar{X}$ = 315.4 SD = 10.1	N=1940	$\bar{X}$ = 308.1 SD= 11.8

After all the data was gathered, the hypotheses could then be tested. The results were recorded in Table 7. In the first hypothesis, comparing rural and urban schools test results, there was no significant difference between the rural and urban school test score outcomes for 4th and 8th grade ELA. There was also no significant different between the scores for 4th and 8th grade Mathematics. In other words the 4th and 8th grade test score outcomes for ELA and Mathematics were the same for rural and urban schools.

In the second hypothesis, comparing rural and suburban schools test results, there was a significant difference between rural and suburban schools for 4th and 8th grade ELA. There was also a significant difference between the rural and suburban schools for 4th and 8th grade Mathematics. For each test result (ELA and Mathematics) in each grade (4th and 8th grade) the test scores were higher in the suburban schools than in the rural schools.

In the third hypothesis, comparing urban and suburban school test results, there was a significant difference between urban and suburban schools for 4th and 8th grade ELA and for 4th and 8th grade Mathematics. For each test result (ELA and Mathematics) in each grade (4th and 8th grade) the test scores were higher in the suburban schools than in the rural schools.

The evidence shows that suburban schools' test scores were significantly higher than rural and urban schools' test score outcomes for 4th and 8th grade ELA and Mathematics.

Table 7
t-Test Results – Determining Significance

	ELA Test Results		Math Test Results	
School Comparison	4th Grade	8th Grade	4th Grade	8th Grade
Rural and Urban	t = 1.4 p = .18	t = 1.4 p = .19	t = 1.5 p = .14	t = .55 p = .59
Rural and Suburban	t = -5.5 p = .00**	t = -4.7 p = .00**	t = -5.3 p = .00**	t = -4.4 p = .00**
Urban and Suburban	t = -4.3 p = .00**	t = -5.1 p = .00**	t = -2.6 p = .02*	t = -3.8 p = .00**

* $p < .05$
** $p < .01$

Summary

There are many reasons why there are differences among rural, urban and suburban schools. After taking all of the factors into consideration, there is reason to infer that these differences may explain the dissimilarities among the rural, urban and suburban test score outcomes.

The amount of funding that a school receives from the government is a factor that affects education. Schools received unequal funding from the government. Since the students are not getting the same amount of money invested in them, it will cause them to receive an unequal educational opportunity. Rural school students tend to receive more money per

student. Also it turns out that the federal and local government have increased their funding to the schools. The more funding a school gets, the more it can spend on the students.

When a schools receives funding, it is important to decide where to delegate the money. Schools tend to spend most of their funding on instruction. Also, if the student-teacher ratio is low, the students will have a better chance of an education due to more one-on-one instruction. Rural schools have the lowest student-teacher ratio. Also, it turns out that more schools today are offering advanced courses and students are taking these courses. That shows that students are challenging themselves and this will improve their test score outcomes.

Teacher effectiveness is probably the most important factor to consider in order to have a successful school. Urban schools hire more new teachers than rural and suburban schools. Meaning that students in urban schools may not receive the same education as students in suburban and rural schools. Since teacher effectiveness effects test scores, teachers should be hired who have the proper qualifications to teach their subject matter. In addition, teachers need to keep up with their education by attending professional developmental sessions. Effective teachers will ensure that their students perform well on the tests.

Another factor that was taken into consideration was the socio-economic status of the students. It turns out that more students in urban and rural schools faced poverty. This is a problem because these students may not focus on school because they are hungry or worried about their home life and this will affect these students' education. Therefore, the likelihood that the students will be able to focus on their education is lower. The less focus the students have during the school day, the more it will affect the test score outcomes.

Also, if there is crime in the schools, this will affect the test score outcomes. If there is more crime in a school, there is a likely chance that a qualified teacher would not want to work there. Also, if there is more violence and bullying in a school, students would be least likely to want to attend school due to the students being afraid of being harmed. Urban schools tend to have more crime and safety issues in their schools than rural and suburban schools. These factors would affect the test score outcomes due to both the teachers and the students being more concerned about their safety rather than learning.

Having parent involvement in schools is important for the success of the child. If a student lives in a one-parent household and that parent works full time, there is less likelihood that the parent will be involved and help the student. If the parent is not involved in the child's school or life, then the child tends to have lower test scores due to the little expectations set by the parents. Therefore, in order for students to be successful, having parent involvement is an important factor to take into consideration.

New York State has realized that these factors do affect education so they adopted the Common Core Standards for ELA and Mathematics into all of their education systems. Education administrators want to see a similarity between the rural, urban and suburban schools and they believe that the Common Core would help to create this equality. New York State's hope is that these standards will improve the education of all students.

By taking all of these factors into consideration, there is enough evidence to infer that there are differences between the rural, urban and suburban schools. The results of this study showed that there is a significance difference between rural and suburban schools and between urban and suburban schools. Overall, suburban schools have students with higher test

scores. Perhaps New York State needs to look at these schools and examine the factors that lead to their successes and begin to improve the conditions in other school systems. Also, the Common Core Standards help improve students' test score outcomes as well. All students need a chance to receive a good education that will challenge them and prepare them for the world outside school. With the Common Core Standards, this will happen and it will help the students.

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