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EDITORIAL
Christopher H. Tienken, Editor
*AASA Journal of Scholarship and Practice*

**Poverty Matters**

Recently, some state department of education bureaucrats such as commissioners, deputy commissioners, and state governors made remarks to the effect that poverty does not matter in terms of the achievement gap or student results on state mandated standardized tests.

These types of statements are, in part, because of the longstanding (e.g., Colman, et al., 1966) and large scientific knowledge dynamic that suggests otherwise.

The proclamations are also attention-grabbing because of the cavalier way some of the education bureaucrats and governors make them; as if scientific evidence has no place in education policymaking.

Poverty matters. However, poverty matters in different ways on different measures. Education bureaucrats who say poverty should not be an excuse for children “not learning” are technically correct.

Poverty is not an excuse, but it is part of an explanation for ultimate student achievement. In this article I provide a general overview of some of the research on the relationship between poverty and student achievement and I attempt to explain where comments like “poverty does not matter” originate.

**All Students Can Learn**

The results from several large studies suggest that students from environments of poverty do learn as much during a school year as their middle-class peers. But, that is different from stating that all students end in the same academic place in terms of achievement on a state mandated standardized test: They do not.

The influence of poverty on student learning appears to have the greatest influence on students at the highest and lowest achievement levels, especially during the summer months (Borman & Dowling, 2006). It is similar to the Matthew Effect: The rich get academically richer and poorer get poorer during the summer.

Wealthier students maintain or even gain a month of achievement during the summer recess from school whereas students from the lowest socio-economic backgrounds can lose up to two or three months of knowledge and skills (Cooper, et al., 2000).

When everyone returns to school in the fall, students from poverty can be up to three months behind their wealthier peers. Simple math dictates that if this happens for three or four consecutive years, some students will be one grade level ahead academically when they enter Grade 3 for example, whereas other students will be “behind” almost a full school year.
Of course the above calculation presupposes that all students were academically “equal” when they started kindergarten. Once again, they were not, due in part to poverty. Therefore the “gap” in achievement can be even greater by the end of Grade 3.

**Science Matters**
Scientists have known for some time that all students do not enter kindergarten or preschool with the same skills, knowledge, or academic background experiences (Hart & Risley, 1995). For example, children from middle and upper class environments who enter preschool at age 4 have heard approximately 45 million words compared to a child from a family on welfare who has heard only 16 million words during his first four years of life. Hart and Risely (1995) coined the difference between the language exposure of rich and poor children the 30 million word gap.

It is well documented that the “summer slide” (Borman & Dowling, 2006) affects students from poverty the most in the area of reading (Cooper et al., 1996). This is due in part to the word gap and life opportunity gap. The words and sentence structures spoken in wealthier homes are often more elaborate when compared to those used in homes of students whose families rely on welfare. This is known as the difference between speaking and hearing elaborate code and restricted code (Bernstein, 1971). So not only do children from poverty hear less words, the words they do hear can be less complex in nature and less academically stimulating.

When children hear 30 million less words and have fewer opportunities to engage in a wide range of out-of-school learning experiences they enter kindergarten with limited sight vocabularies. Sight vocabulary is one of the precursors to reading at an early age, albeit not the only factor. The 30-million word difference equates to approximately a 2.5 year difference in language exposure and that difference influences achievement.

The lack of language exposure and fewer out-of-school learning opportunities are two reasons the public schools receive students who do not know their letters or the sounds the letters make upon entering kindergarten.

**Power of Poverty**
Although results from scientific studies suggest that students from poverty will make one year or one-and-a-half year’s worth of growth during the school year, so will their working and middle class peers. Thus, the “achievement gap” will never close without a sustained national commitment to close the societal gap. While middle class peers spend their summers in more academically enriched environments and gain an extra month of summer learning, children from poverty lose up to three months of achievement. Thus, the gap can actually grow with time.

So, should anyone be surprised when students from poverty, as a group, do not score higher in terms of mean scale score, or in terms of percent proficient than their wealthier peers on any state tests, at any grade level in the country (Tienken, 2011)?

That’s the power of poverty.

It strikes me as a bit ironic when a commissioner of education or other state education bureaucrat proclaims that he or she is not convinced that poverty matters in terms of ultimate student achievement on state-mandated tests, or that he or she needs to commission a study to determine if poverty matters in ultimate achievement. There is no need to go through the charade and waste
taxpayer money on such a study because those studies already exist.

For example, Sirin (2005) reviewed 58 studies published between 1990 and 2000 about the influence of poverty on student achievement. The final sample of students was over 101,000 from more than 6,800 schools in 128 school districts. The average effect size difference in achievement at the individual student level between students from poverty and those not in that category was 0.28: Students from poverty scored lower.

At the group level, the level at which the quality of school administrators and teachers is determined, the effect of poverty was greater, 0.60, but as high as 1.25. Consider that an effect size of 1.00 is like the difference between students scoring at the 50th percentile on a norm-referenced test and a group scoring at the 84th percentile.

**Why Poverty Does Not Matter**

If there exists at least 45 years of empirical research that documents the connection between poverty and ultimate student achievement as measured by standardized tests then how can the latest crop of education bureaucrats declare otherwise? Relativism might play a role in the suppression of the truth about poverty and in the creation of the fairy tale known as Poverty Is Not the Problem.

Relativism is a set of beliefs that espouses that all truths are local (Baghramian, 2004). Similar to the idea that all politics is local, or it only matters if it happens here, relativists subscribe to the idea that there exist no absolute truths. Everything is open to interpretation: Everything is “relative” if you will. Meaning is made based on the maker’s worldview; it comes from how the maker of the meaning sees things.

Therefore, if an education bureaucrat does not want to acknowledge poverty as an inhibiting factor on student achievement, he does not have to acknowledge it because it is not true to him. If instead the bureaucrat feels that the public school system is the cause of the achievement gap, he need only say that and then it is true, to him. If the bureaucrat is the lead education policy maker in the state, then state policy might also reflect that worldview. Admittedly, this is a very shallow explanation of relativism, but I think it captures the general idea in terms of the current education policy debates about poverty.

**Linguistic Relativism**

When bureaucrats make public statements like “poverty does not matter” they engage in linguistic relativism (Niemeier & Dirvin, 2000). The bureaucrats know that language influences thoughts and they know from history that if they say something enough times, for a long enough period of time, they have a chance that a growing number of people will think it is true. Consider the 55-year mantra “public schools are failing.”

Although the data suggest otherwise, it is commonly accepted that the entire public school system needs to be restructured or even dismantled. This acceptance was not achieved because of scientific research, but more from the coordinated use of linguistic relativism. One can hear the statements about dismantling public education made regularly and they go unchallenged by from the public and even some educators agree with the statement.

Through the eyes of a relativist, poverty only matters if it matters to the relativist, not whether science demonstrated that it influences student achievement. It seems as if the sun revolves around the Earth once again although the evidence suggests otherwise.
The relativist view has advantages for policy makers. For example, if poverty does not matter to the policy makers, then policy makers no longer have to target funds for poverty, give special assistance to students because of poverty, or even consider poverty in their deliberations. Poverty simply disappears and all references and discussions about it are suppressed. If people attempt to bring it up, the relativist need only state that the dissenter is making excuses or has low expectations for children.

**Gentle Reminders**

Perhaps school administrators should demand their education bureaucrats provide evidence that their reform ideas actually address the root causes of underachievement—poverty—before demonstrating willingness to engage in a discussion about implementing reforms.

Maybe school administrators should stop attending state bureaucratic meetings unless honest discussions about the root causes of underachievement will take place. Perhaps some school administrators should not be so zealous in their compliance with state and federal mandates that do not have empirical evidence. At the very least they can feign compliance but do what it empirically based for students.

Children do not have a voice in the policy development process. Policy is thrust upon them and school administrators might consider acting as their voice.

School administrators already have enough work and do not have time to sit at meetings and listen to folk tales about how Superman defeated poverty.

Maybe it is time to stop listening and start talking, or at least start asking many more questions of the bureaucrats. Maybe school administrators need to take to the bully pulpit and begin to control the message.

The sun does not revolve around the Earth and school administrators do not have to accept that it does. We are engaged in a scientific profession.

Let us start using more science to inform our decisions and hold policy makers accountable to do the same.
References


Failure of U.S. Public Secondary Schools in Mathematics

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Abstract

Metaphors play a powerful role in arguments about education. It is common to say schools are broken, and that the school system is failing. Here I take the metaphor seriously and briefly review an historical episode where airplanes failed seemingly for no reason at the dawn of the jet age. The responses to these failures at first with public relations and eventually with science have lessons to teach about our complex system of schools. I review evidence, mainly in graphical form, that poverty is the primary threat to schools, as, a generation ago, cracks were the primary threat to airplanes.

Key Words

school reform, poverty, school failure
The loss of Yoke Peter and Yoke Yoke presented a problem of unprecedented difficulty, the solution of which was clearly of the greatest importance to the future, not only of the Comet, but also of Civil Air Transport in this country and, indeed, throughout the world. Lord Cohen, Civil Aircraft Accident, Report of the Court of Inquiry, 1955

The Problem

They say the U.S. public school system is broken, its failure an ongoing disaster for our students and country. Failure is not a metaphor to be taken lightly; it is a subject of intense scientific study. Cases in which deadly failures were studied and overcome have lessons for school administrators and education policy makers.

One of the most dramatic lessons comes from the dawn of jet aviation in the United Kingdom. Passenger planes started falling out of clear skies. Early theories to account for aviatinal failure were wrong. The problem was not quality of the pilots, as initially believed, but the quality planes themselves. The first jets were not flaw-tolerant systems and large stresses formed in rare locations on airframes. The British aviation authorities were too slow to understand the real causes for the crashes and they lost civil aviation for decades.

In the U.S. today, theories for why schools fail are wrong. The problem is not quality of the teachers. Schools fail under stresses of concentrated poverty. We stand to lose something larger than aviation -- technical leadership -- unless we understand and remedy the problems.

The Comet

In the middle of the twentieth century, Britain appeared poised to dominate the jet age. In 1952, the de Havillands Comet began commercial service, triumphantly connecting London with the farthest reaches of the Empire. The jet plane was years ahead of any competitor. gorgeous to look at, and set new standards for comfort and quiet in the air. Then things went horribly wrong.

No one can say the problems could not have been imagined. In 1948, Nevil Shute published No Highway, a best-selling novel about a fictional new aircraft with a defect that made it crash after 1440 hours of service. Jimmy Stewart and Marlene Dietrich starred in a film version released in 1951. The novel is filled with realistic details about aircraft design and safety because Shute was trained as an aeronautical engineer. In No Highway, a plane falls out of the sky and the crash is attributed to bad weather and pilot error. In 1953 a Comet fell out of the sky, and the crash was attributed to bad weather and pilot error. In the novel an engineer determines that the cause of the crash is fracture due to metal fatigue, and succeeds after great difficulties involving a child with a concussion, backstabbing politicians, and affections of a movie star and a stewardess to have the whole fleet of jets grounded and repaired. In 1954 two more Comets fell out of clear skies; their failure attributed to metal fatigue and fracture. In the real life case, the fleet was not grounded and saved. A whole plane was placed in a testing tank and stressed to failure to find the cause of disaster, resulting in a brilliant accident report. But it was too late.

The Paris Law

As the Comet accident report was being released in 1955, a little-known military contractor in the northwest corner of the United States was completing its prototype for a civilian jet airplane. The company’s engineers knew that cracks had brought down the Comet, and they had better understand them before they brought down the Boeing 707.
Boeing brought in a researcher, Paul Paris, a mechanical engineering graduate student. Paris knew nothing about fracture when he arrived, and eager to prevent his employers from discovering it, he read about 120 papers on the subject in a few weeks. None of them made sense to him or were of any use, except for papers by a researcher at the Naval Research Laboratories, George Irwin. They were not widely accepted. An expert commented at the time that Irwin's theory “could not be mechanics because it had dimensions never seen in mechanics.”

The view of fracture that Paris brought to Boeing was dramatically different from the one that had guided construction of the Comet. Cracks were the centerpiece of the investigation. They could not be eliminated. They were everywhere, permeating the structure, too small to be seen. The structure could not be made perfect and it was inherently flawed. The goal of engineering design was not to certify the airframe free of cracks but to make it tolerate them. Part of the tolerance was achieved by eliminating points of stress concentration. The corners of the Comets' rectangular windows had been such points. Angular windows had been chosen for aesthetic appeal but it was a deadly mistake. At the corner of a perfectly rectangular hole in an airplane skin, stresses rise far above their values in other places, and a crack triggered at a window corner in fact felled the frame. This much had been determined during the Comet inquiry, but Paris went further. Every particular metal alloy chosen for use in the Boeing planes was tested according to a new concept of "toughness." Cracks were deliberately introduced into a metal sample of special shape and size, and the metal was stretched and shaken in specific fashion until it broke. Paris found that some types of metal sheet were much tougher than others, and that for some the toughness improved greatly as thickness increased while for others it did not. The goal was to make the airframe fail-safe, meaning if a large crack was introduced at any point and the maximum possible flight stresses applied, the crack would scarcely advance.

By 1957 the engineering work was done, and Boeing was ready. They produced a brief documentary film, *Operation Guillotine*. A steel blade the size of a shovel falls on a pressurized aircraft hull in a laboratory, the top bursts off, and it explodes. The message was not subtle. That was the Comet. Next the blade falls on a new Boeing hull which absorbs it, hull intact. It was the end of the Comet, the end of de Havillands, the end for a long time of British civil aviation.

The Educational System

Now we come to a system larger and more complex than an airplane, and more important to the United States than aviation: the public education system for our children. There is a theory of how and why the school system is failing that guides federal and state governments. We are in the position of the British in the wake of watching Comets fail. We carried out tests on an enormous scale to diagnose the situation. But the theory of failure is wrong, the repair regime misguided, and unless correct theories are rapidly developed and employed, schools will crash in growing numbers.

The dominant school repair program has three parts. The first is deregulation of public education through creation of charter schools, and promoting choice. The second is deregulation of teaching though creation of alternative pathways to teacher certification and weakening influence and control of unions. The third is accountability, measuring the performance of all students, and holding
teachers and administrators accountable for the educational results. These reforms reinforce each other.

The reforms are based upon concepts of why schools fail. Reformers say “[r]esearch tells us that teacher quality is the single-most important factor in determining student achievement … [T]he impact of a teacher (for good or for bad) is cumulative." "Looking at the range of quality for teachers within a single large urban district, teachers near the top of the quality distribution can get an entire year's worth of additional learning out of their students compared to those near the bottom …".

*Student achievement* means scores on high-stakes tests, such as TAKS in Texas, FCAT in Florida, or Regent's exams in New York. *Teacher quality* refers to whatever quality is possessed by teachers whose students obtain large gains in test scores. The argument is not circular, however. The assertion is that some teachers consistently get larger gains than other teachers when working with the same students.

Surprisingly, reformers say, good teachers cannot be identified by knowing which courses they took or workshops they attended or degrees they obtained; only when they actually teach can the strong be separated from the weak. In this view, the main problem with schools is that they have many inferior teachers, and if enough of the worst teachers were eliminated and replaced by much better ones, educational difficulties would be cured.

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**Math Performance in Third Year by Ranking after First Two Years**

![Graph showing the impact of teacher quality on student performance](https://example.com/graph.png)

*Figure 1: Classroom-level impact on average student performance, controlling for baseline scores, student demographics, and program participation. LAUSD elementary teachers with less than 4 years teaching experience. Gordon, Kane, and Staiger, 2006.*

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**The Teacher Quality Evidence**

Is teacher quality the main cause of failing schools? No more than pilots were the main cause of Comet crashes. Yes, the quality of pilots and teachers matters, but it is very hard to measure when failing vessels travel through turbulent weather.
The most persuasive and influential evidence for the persistence of teacher quality appears in Figure 1. This figure shows that if elementary school teachers have students with small mathematics score gains in two consecutive years, the odds are great their students will have small score gains in a third year. Conversely, for elementary school teachers whose students had large gains two years in a row, their odds of large gains the third year are high.

That is, there are good and bad teachers, and they can be identified by monitoring their students’ performance in as short a time as two years.

These findings do not settle the case for teacher quality. Some teachers might regularly do better than others because their classes are typically different. For example, one teacher might get a large number of struggling students every year. One teacher might mainly get students whose aggressive and supportive parents sought her out for their children. One might get students with scores so high to begin with it is hard for them to make significant gains.

To test whether teacher quality can be measured and that it does not depend upon the particular set of students teachers are given, assign them to random classes of students. It is hard to arrange, but Kane, and Staiger did it. They assembled data on 78 pairs of elementary
school teachers over four years, and then randomly swapped their classrooms at the beginning of the fifth year. The researchers predicted performance targets the teachers would reach. But as shown in Figure 2 the predictions were often off the mark. When value-added computations predict student performance, points hit the bullseye.

The more predictions are wrong, the further away points lie from the bullseye. Distance units are .25 standard deviations, which the authors suggest correspond to around a year of learning. The actual value of the predicted student learning difference is indicated by the angle around the circle.

Following the random switching, supposedly lower-quality teachers obtained better student performance than supposedly higher-quality teachers around one third of the time. On average, the teachers said to be better did get better student performance, but fluctuations in predictions were large.

A reliable measurement of teacher quality would need to hit the target most of the time. Rewarding or punishing individual teachers when the best measurements of their quality look like Figure 2 might improve schools on average, but it would be unjust.

Unfortunately, there are no more careful tests of the predictability of teacher quality than appear in Figures 1 and 2. Furthermore, these experiments concern elementary school, where the U.S. does not fare so badly in international comparisons. For secondary schools, where U.S. performance sinks by international comparisons, it is not clear how to measure teacher quality.

The Poverty Argument

![Figure 3: Texas Graduates Meeting SAT Criterion (2009)](image)
When Comets failed, the Royal Aircraft Establishment put an entire airplane in a testing tank. Persuaded its schools were failing, the United States put the whole public school system in a testing tank. Since 2002, public school students in the country were tested in mathematics and reading or language arts in Grades 3-8, and once in Grades 9-12. In states, such as Texas, (where these accountability laws originated) mathematics and reading have been tested every year in Grades 3-11. Data for student performance on these exams are publicly available for almost every school in the country on state education agency websites.

The collection of nationwide data do point to a primary cause of school failure, but it is poverty, not teacher quality. As the concentration of low-income children increases in a school, the challenges to teachers and administrators increase so that ultimately the educational quality of the school suffers. Challenges include students moving from one school to another within the school year, frequency of illness, lack of stable supportive homes with quiet places to study, concentration of students who are angry or disobedient, probability of students disappearing from school altogether, and difficulty of attracting and retaining strong teachers. Most people who see the connection between poverty and educational outcomes are confident that low-income students in a sufficiently supportive environment will learn as much in a school year as students in well-off communities.

The concentration of poverty in a school can be defined precisely, although not perfectly, by the concentration of students eligible for free and reduced-priced meals. Eligibility is determined by family income, and uniform data are available for every public school in the U.S. Many different measures of student performance are available and tell a consistent story. I will begin with a college-readiness indicator provided by Texas, which counts the fraction of students in each high school who take the SAT and score 1110 or
more or ACT and score 24 or more. In Figure 3 I plot the percentage of high school graduates meeting Texas’ SAT/ACT College Readiness Criterion as a function of concentration of poverty. Every disk is a high school, with the area of the disk proportional to the number of graduates. Colors indicate the percentage of minority students in school. Figure 4 depicts the percentage of Grade 11 students in Texas who receive Commended scores in mathematics as a function of concentration of poverty. The area of each disk is proportional to the number of 11th graders.\textsuperscript{vi}

The association between poverty concentration and educational performance is very strong. For example, among schools where less than 15% of the students are eligible for free and reduced meals, there are virtually none where fewer than 20% of the students graduate college-ready. Conversely, among schools where more than 85% of the students are eligible for free and reduced meals, there are none where more than 20% of the students graduate college-ready. In short, the least successful schools serving the wealthy do better than the most successful schools serving the poor.

The same data are available for 2006, 2007, and 2008 with very similar findings. If teacher quality were indeed the most important factor that impacts student achievement, logic would dictate that every Texas high school with more than 85% poverty concentration has retained a staff of largely inferior teachers for as long as data have been collected, whereas virtually every single Texas high school with less than 15% poverty concentration has managed to acquire superior teachers.

The SAT college readiness criterion in Texas brings out an especially high contrast between schools of well-off and low-income students because taking the SAT and ACT are not mandatory. The tests reflect hopes to attend out-of-home-state colleges. But all Texas students take a mathematics exam in Grade 11 and although obtaining a commended score (around 90%) is not as demanding as obtaining 1110 on the SAT, it sets a reasonably high bar and the results display a similar pattern.

Only a few schools where the poverty rates exceed 85% match performance of schools where poverty concentration is below 15%. Poverty concentration also strongly associates with fractions of students in schools simply passing mathematics exams (scores of better than around 60%, Figure 5). The graphs here are only a small sample from an abundance of evidence. In every state or year I examined to date, poverty is tightly connected to high school performance in mathematics.
The Evidence on Charter Schools

Adherents of the theory that “quality teachers are the key ingredient to a successful school and to improved student performance” place special emphasis on charter schools (“… schools that enjoy public financial support but that operate outside the controls that hamper traditional public school systems.”)\textsuperscript{vii}. Charter schools are supposed to provide laboratories in which to test new ideas. In Figure 6, I show the percentage of high school graduates who meet the Texas SAT/ACT College Readiness Criterion plotted as a function of concentration of poverty. Every disk is a high school, with the area of the disk proportional to the number of graduates. Charter schools are highlighted; non-charters are grey. Figure 7 shows the same, but for commended scores in eleventh grade mathematics.

Fourteen or 15 of the charter schools stand out positively, but the rest are comparable to regular public schools or worse.

Figure 8 displays passing scores at 11\textsuperscript{th} grade for Texas charters. Secondary charter schools in Texas are worse than those in some other states, but in no states do secondary charter schools look strikingly better than regular public schools. Plots of educational performance highlighting charter schools in various states appear in Figures 9-12. All data come from data sets available for public download. I chose the highest-level measure of mathematical performance I can find in each case. In every state educational outcomes depend strongly on the concentration of poverty in schools, and charter schools are either not distinguishable from other public schools (Florida, California), are too few to draw conclusions (New York) or are markedly worse (Texas, New Jersey).

The same achievement patterns are strong in New Jersey, a state in which the Commissioner of Education, Christopher Cerf has openly doubted that poverty provides a good way to identify students at risk.\textsuperscript{viii}
Figure 6: College Readiness of Texas Charter School Graduates

Figure 7: Concentration of Poverty and Commended Scores for Texas charter schools
Figure 8: Concentration of Poverty and Passing Scores for Texas charter schools.

Figure 9: California High School Student SAT Scores and Poverty, highlighting charter schools.
Figure 10 Florida Grade 10 Student Mathematics Assessment Scores and Poverty, highlighting charter schools

Figure 11  New Jersey Student Achievement in Mathematics Grade 11 and Poverty, highlighting charter schools
The Rising Bar for Public Schools
The comprehensive measurements of public school performance are accompanied with provisions intended to force their improvement. The provisions seem inspired by Milo of Croton who is said to have lifted and carried a calf every day as it grew to a bull so that Milo acquired superhuman strength. Applying progressive challenge to educational systems to improve them has a long history.

Abraham Flexner in a survey of medical education at the start of the twentieth century noted approvingly that *The state of Texas has taken a sound and yet conservative position. Beginning with 1909, it has decreed a gradual annual rise of standard that will shortly result in making its four-year high school the legal basis of medical education. Cautious elevation thus avoids all danger of breaking with the school state system.*

This same principle decades later became part of the Texas public school accountability system and then was exported to the rest of the United States with the signing of No Child Left Behind in 2002. The law requires larger and larger fractions of students to achieve acceptable scores until by 2014, 100% of students are proficient in language arts and mathematics.

Each of these subjects must be tested at least once in elementary, middle, and high school. Since 5% of students can be exempted from testing, that means 95% of students are supposed to pass the exams. In Texas, 60% of students had to pass mathematics in 2010, and to reach the goal of 100% proficiency by 2014 as the law requires, the passing standard will need to rise on average 10% each year after 2010.
When a required fraction of students fail to pass the exams in any given year, the school is labeled Academically Unacceptable; if it remains unacceptable for 5 years strong remedies are required, usually dismissal of administrators and teachers. As the standards rise towards the demand of 95% proficiency, what is likely to happen?

Figure 13 provides a rough estimate of which Texas secondary schools may be declared Academically Unacceptable because of mathematics year by year as standards rise; unacceptable schools are depicted in red. It underestimates the difficulty of rising above Unacceptable. Students not only have to score well in mathematics, but in language arts, and to meet graduation targets. Subgroups of students such as low-income students or African American students have to achieve good scores. The estimates of school performance were produced by measuring the rate at which passing fractions of students increased for every school from 2008 through 2010, and by assuming that the rate of increase will continue (although leveling off at 100%) until 2014, when the mandatory achievement bar hits 95%. A difficulty in making these predications for Texas is that the current state exam has just been replaced by another. But the new exam is supposed to be more difficult.

The hero of No Highway finds himself in the sky—in an airplane that he himself has predicted will fail within a few hours. The failure of the public school system is scheduled to begin in two years. There is still time to set the plane down. It is almost taken for granted that the Federal law mandating schools reach 95% levels of proficiency will change before too many schools are affected. Congress will have to agree and vote to change the law.

Should necessary consensus not be reached in time, an unprecedented wave of dismissals will begin to sweep through the public school system, largely affecting teachers in schools of low-income children.
Inspecting the data on charter schools, it is natural to conclude that because of their low scores they will be among the first to close. Interestingly, in Texas, this is not true. Texas has two accountability systems: the standard system by which most public schools are judged, and an Alternative Education Accountability system.

As shown in Figures 3-8, the mathematics scores produced at charter schools fall below the level at which regular public schools would be rated unacceptable. However most Texas secondary charter schools are judged by the second system with lower standards. Thus it is possible that the accountability system could force large
numbers of conventional public schools to close and put the children into charter schools where the levels of performance are lower.

The Future
The purpose of an accident report is to determine the root cause of an accident. Looking back at Lord Cohen's investigation of the Comet, this task was accomplished brilliantly. The least successful portions of the report are those making specific recommendations for the future. Cohen hesitantly suggested that planes could be made safe by stressing them prior to use in such a way as to permanently deform the skin in areas of stress concentration.

The correct engineering solutions turned out to be quite different. Poverty, and not teacher quality, is the main element connected to low student performance. The reform program brought to bear so far in charter schools shows no signs of providing superior education in secondary mathematics except in rare cases. Although appropriate solutions are not as clear as the problem, I close with a few remarks.

School reform cannot succeed if policies do not recognize that poverty is a significant factor. Poverty permeates schools as cracks permeate planes. The schools must be made fail-safe enough to tolerate it. Finding effective and affordable combinations of factors, such as parent education, health care, housing policies, advising, discipline, improved instructional models, and better teachers calls urgently for experimentation. Saying teacher quality is not by itself enough to reform schools does not mean that teacher quality does not matter.

Sudden structural collapse of the Comets could never have been remedied by a program of holding pilots accountable. However the very first Comet that crashed did so due to bad weather and pilot error. Once planes are structurally sound, the pilots matter very much. Similarly, once problems associated with poverty in schools are addressed, outcomes associated with teachers should become easier to measure and relatively more important to affect.

Correctly defining the problem was the most important task accomplished by fracture mechanics developers such as Irwin and Paris. A major error in certifying the Comet came from errors defining material strength. Defining teacher quality exclusively through rises in student test scores is similarly flawed as a concept. Unfortunately there is no general agreement on an objective replacement. In some cases credentials are a legitimate measure of teacher quality. For example, physics teachers should have studied physics, preferably as a major or minor. No one advocates assigning randomly chosen teachers to physics or biology on the grounds that whether a person has studied science has no bearing on the ability to teach it.

In physics, chemistry, computer science, and engineering there is such a shortage of secondary teachers that schools avoid offering classes. A program of reform based on testing and accountability offers few answers to questions about how new people will be attracted to teach in shortage areas.

For the short term, preparing teachers in mathematics and science is a wise and useful step toward improving schools. As quickly as possible, we must understand the link between poverty and educational outcomes in the U.S., devise solutions, and finally test and implement them. Britain briefly tried to substitute public relations for aircraft safety and paid with the loss of its commercial aviation sector. I hope the U.S. can avoid a similar error. I hope that
proponents of teacher quality and charter schools will recognize the weakness of a single-minded approach before it is too late, and that we will not damage public education, let down our most vulnerable students, and lose technical leadership we take for granted.

**Author Biography**

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Endnotes

iFrank McClintock, Irwin Symposium volume, p. 9, Chan editor (TMS, 1997).


vi[Texas Education Agency, Academic Excellence Indicator System].

viiLesley Chilcott, Waiting for Superman.


xThe Secretary of Education has indicated the possibility of waivers from the law, provided the reform policies questioned in this paper are put in place.
Interlacing Mission, Strategic Planning, and Vision to Lean: Powerful DNA for Change

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Abstract
The authors’ purpose for this article is to describe a K-12 public school district’s journey to internalize and actualize it mission, strategic planning and vision as one coherent engagement using Lean principles and tools. Lean jointly comprises an organizational philosophy and management toolkit prominent in private, government, and nonprofit sectors. Lean is of interest to schools because it enhances organizational ability to implement continuous improvement organically by realigning paradigms and examining processes. The school district presented in this case study encountered a leadership change, difficult budget reduction decisions, and challenges for improvement. Through the use of Lean principles and tools, the district achieved progress by gauging efforts to align with mission for authenticity, developing plans founded in root cause analysis to promote accountability, and formulating vision by identifying benchmarks for the future.

Key Words
lean, strategic planning, mission
As agents of transformation, superintendents must straddle the worlds of managing the quality of current operations while they envision and pursue performance gains and pathways toward a future vision. This is a complex responsibility that requires superintendents to engender prevailing practice and norms with the need to revise paradigms and processes (Marzano & Waters, 2009). Second order change is a relatively new arena of challenge for school leaders, as Kotter (1996) asserted, “… history has simply not prepared us for transformational change” (p.18).

This article follows a K-12 public school district’s journey of Lean continuous improvement through three phases: (1) internalizing mission to foster organizational authenticity, (2) focusing strategic planning to foster accountability, and (3) transitioning into a clearly articulated vision to foster benchmarking.

First, a brief explanation of the history and theory of Lean is provided in conjunction with a review of literature and evidence-based practice pertaining to Lean theory and organizational development involving mission, strategic planning, and vision.

Understanding Lean, Continuous Improvement and Organizational Transformation

Lean is a body of knowledge and practice that evolved from “waves of improvement” (Womack, 2010) over centuries of development (Robson, 1991; Slater, 2007).

The roots of Lean originated in industrial organizational models, and specifically in product manufacturing. Lean theory and practices have been adapted and re-contextualized across many industry sectors, including services, healthcare, government, and education through topics such as Lean Engineering, Lean Management, Lean Construction, Lean Healthcare, Lean Green, Lean Six Sigma and Lean Supply Chains. The concepts of Lean are longstanding, but the term “Lean” emerged as the result of a study conducted in 1988 by the Massachusetts Institute of Technology (MIT), funded by a $5 million grant that identified best practice from the international automotive factory floor.

The researchers dubbed their findings Lean, representing a focus on enabling employee-based problem solving to deliver optimal value without wasting resources (Womack, Jones & Roos, 1990). Emiliani (2008) described Lean leadership as the engagement of two weighted principles; the first was respect for people and the second was continuous improvement.

The goal of obtaining organizational transformation through continuous improvement emanates from Lean theorists. Lean’s method of enacting continuous improvement was established by W. Edwards Deming’s (Dennis, 2006) Total Quality Management (TQM) initiative. Deming’s work influenced organizations in all sectors, including schools (Kelley, 1997; Hackman & Wagman, 1995; Sallis, 2005). Womack and Shook (n.d.) asserted, “Effective lean transformations involve equal parts of Social/People and Technical/Process,” and indicated that the job of leadership is to continually balance and align purpose, people, and process/systems (Lean Enterprise Institute, online).

Researchers from MIT outlined Seven Principles of Lean Enterprise Thinking (Massachusetts Institute of Technology, Lean Advancement Initiative, n.d.) for successful lean enterprise transformation: (1) Adopt a holistic approach to enterprise transformation; (2) Identify relevant stakeholders and determine their value propositions; (3) Focus on enterprise
effectiveness before efficiency; (4) Address internal and external enterprise interdependencies; (5) Ensure stability and flow within and across the enterprise; (6) Cultivate leadership to support and drive enterprise behaviors; and (7) Emphasize organizational learning.

Continuous improvement strategies essential to Lean transformations are exclusive to and fully dependent on organizational protocols for stakeholder empowerment, engagement, and application (Liker & Hoseus, 2008).

In addition, Lean requires a deep understanding of customer value and enables strategies, behaviors, and thinking driven by continuous improvement, among other elements. Bhasin and Burcher (2005) emphasized that to be successful, Lean must be developed as corporate sense-making and stated, “While lean is concerned about reducing waste, it is also about changing corporate culture” (p. 58). Bhasin and Burcher viewed continuous improvement as one of twelve organizational practices for Lean manufacturing.

Broadly defined, Lean theory and practice represents eras of thinking and tool development that advance employee engagement and organizational performance via continuous improvement and cultural transformation. Lean is certainly not the only widely successful management system today. Agile systems (Kidd, 2000; McGill, Slocum, Lei, 1992; Pham, Ebrahim, Shamsuddin, Barton, Williams, 2008) and chaordic (Hock, 1996) systems are also used to improve organizational effectiveness.

Lean theory and approaches provide a useful organizational philosophy and administrative toolkit bundle that are gaining interest in education (Stecher & Kirby, 2004; Barney & Kirby, 2004; Pawley Lean Institute Website, 2010; Balzer, 2010). “In its 2004 study, Organizational Improvement and Accountability—Lessons for Education from Other Sectors, the Rand Corporation concluded that Lean process improvement offers educators a powerful improvement and accountability model to meet the challenges of the 21st Century” (Ziskovsky & Ziskovsky, 2007, p.5).

Although Lean is a business concept, initially used to drive TQM in production (Womack, Jones, Roos, 1990), it has been translated with success for K-20 education initiatives such as Lean Thinking for Schools™ (Pawley Lean Institute, Rochester, MI, USA), Center for Lean Systems and Management from De La Salle University (The Philippines), Lean Enterprise Research Center (Cardiff University, Wales), Lean Enterprise Institute (UK and USA), the Graduate School of Business of the University of Cape Town (South Africa), and Warwick Business School (United Kingdom).

The overarching ideas, tenets, and applications of Lean used by these schools enhanced organizational approaches to transformation and offered new tools and leadership approaches to mitigate barriers to improvement.

The application and re-contextualization of business theory and organizational improvement models to educational settings warrants thoughtful consideration to avoid exploitation (Boyles, 2001). Larabee, 1997; Finn, 2002). Larabee (1997) cautioned educators against value shifts occurring under political and market-driven forces. Finn (2002) examined four definitions of educational accountability and warned against, “outside-the-system accountability.” (p. 50) as subject to the influences of the private sector.
However, notable examples of organizational improvement theory and practice between the business and educational sector can be identified in the literature. Busch (2001) highlighted that business influences can benefit schools, for example. Other management organizational frameworks, such as Senge’s systems thinking (1990), Collins organizational improvement philosophies (2005), and Baldridge’s National Quality Program Education Criteria for Performance Excellence (2010) have been prominent in the educational landscape.

An example of evidence-based practice of a K-12 public school district’s Lean journey of intertwining initiatives of mission, strategic planning and vision is presented next (Figure 1).
Figure 1. Lean continuous improvement phases of organizational development.
This conceptualization is symbolized by an interlaced spiraling relationship, much like a DNA double helix structure, between strategic planning and lean improvement organizational strategies. The organizational attributes of authenticity, accountability, and benchmarking are spiraled in the leadership work of mission alignment, strategic planning, and articulating vision.

This framework is supported by theorists such as Spiro (2009) who advocated for understanding organizational development as, “something different than the current state, a departure from the status quo, a continuous process, and as a series of destinations that lead to further destinations” (p. 1). Further Dolan (1994) noted, “… when you look at a school or school district from an organic perspective, you see a whole system with deeply interconnected sub-systems” (p.4), reinforcing the conceptualization of organizational learning systems.

As Fullan (2008) said, affirming the work of Senge (1990), regarding the need for a systems approach in public education, “Perhaps the best way to view leadership is as a task of architecting organizational systems, teams, and cultures—as establishing the conditions and preconditions for others to succeed” (p. 118).

**A Lean Case Study of Mission, Strategic Planning and Vision Casting**

This case exemplifies one school district’s intentionality and acumen to bridge the gap between theory and practice, a necessary step as Fullan (ibid) observed that long-living organizations “lace the culture with a theory that will travel over time, in which leadership manifests itself at all levels of the organization” (p. 109). In this case, the superintendent and executive team catalyzed the systemic re-culturalization of the District based on the theories of Lean.

The Lean journey of a respected and successful Midwestern K-12 public school district of 10,000 students and 570 teachers began in July 2010, when its board of education appointed a new superintendent with the charge to update the school district’s strategic plan. Using a systems-based approach, the superintendent and executive team worked with various overlapping activities of mission, strategic planning and vision casting protocols.

**Internalizing Mission to Foster Organizational Authenticity**

Hargreaves (1994) regarded that the first phases of planning focus on internalization of mission to foster organizational authenticity, as opposed to contrived congeniality. Authenticity is a characteristic of ethical behavior that strives to reconcile theory with reality through collaboration and mission-driven results (Sweetland, 2001).

Further described as a state of congruence between what is commonly envisioned and talked about with what is corporately implemented and carried out (Argyis &Schon, 1978), authenticity is also elegantly defined by King (2002) as “the everyday acts of people who take responsibility for improving teaching and learning in the entire school community.” (p. 61). Cappennelli and Cappannelli (2004) advocated that organizational authenticity should be flaunted as a systemic coherence of core mission and ethics.

The district embarked on internalizing its mission to foster organizational authenticity through two initiatives: (1) substantial stakeholder engagement in environmental scanning/summits and (2) intensive Lean professional development training.

The superintendent closely aligned his executive team first and then convened informal focus groups to broadly explore what kinds of
strategic planning processes had worked in the community in the past, what had not, and which stakeholders should be involved in the process.

In September 2010, the superintendent presented a strategic planning initiative proposal to the school board. The process proposed to be highly visible and transparent, focused on engaging the community, parents, staff, and students in a series of summits and required media such as a web hub of resources and updates, podcasts, and other forms of communication. The process timeline included a current and future scan, community-based summits facilitated by a research consultant, and a launch phase facilitated by the executive team.

What was not immediately evident in the first steps of this journey is that while it appeared that the journey began with strategic planning, the strategic planning could not be carried out until the district deeply internalized its mission. Mission work, therefore, spiraled with the strategic planning work, reflective of an organizational learning system and of the attribute of authenticity, building DNA.

A series of summits convened from November 2010 through March 2011 including over 150 community leaders, 1000 parents and many educators who came together to explore questions important to strategic planning, but fundamentally related to mission: What do we value about the district today?; What does the district need to do to prepare our children for the future?; What do our schools need to offer as a regional asset to the community?; What do we think our children will need to be successful in the future? The summits were supported by a menu of research services that included: a community survey, parent and staff surveys, and focus groups to better understand stakeholder perspectives to the preceding questions.

The results of quantitative and qualitative study from the environmental scan and summit efforts drove a focus on the district mission, explicitly described as:

1. All stakeholders cared about the instructional core, expressed as student-centeredness, understanding the value stream of students, and providing support for this core function.

2. Most stakeholders acknowledged the need for and valued 21st-century skills and relevant literacy sets, expressed as competencies needed for the knowledge economy.

3. All stakeholders were influenced by pending budget cuts expressed as a very real uncertainty about state funding levels and their impact on local funding levels and pending program cuts, possible layoffs. In addition, concerns about the strategic planning process itself were discussed.

At this stage of the Lean journey, the district sought to internalize the mission and express organizational authenticity. Fullan and Hargreaves (1996) described this as building organizational capacity, sustainability and coherence through organizational activism. The superintendent introduced another significant change initiative that tightly aligned the internalization of mission in December 2010 through Lean training.

The Lean training initiative was not as highly visible as the community summits. The training initiative was a response to the superintendent’s interest in building capacity.
within the district for continuous improvement by using Lean approaches.

Throughout the fall of 2010, the superintendent’s interactions with school principals, administrative leaders, and his executive team became increasingly seasoned with new words and phrases like “Gemba walks,” “value stream maps,” and “kaizen bursts.”

Although this encouraged district leaders to explore Lean thinking, the superintendent directed the executive team to develop a Lean training initiative that would introduce a pilot group of administrators to Lean continuous improvement principles and tools. Initially, staff reactions across the informal communications grapevine were tinted with mild cynicism and suspicion regarding the superintendent’s Lean lexicon and endorsement.

The proposed change was a departure from the status quo and not too far off from an unfortunate phenomenon of school systems that churn through reform strategies incoherently with every new leadership change. ‘Flavor-of-the-month’ fatigue fostered survival skills and ‘wait and see’ attitudes that did not embrace change. However, in his prior position a similar training took place, and the superintendent asserted that organizational transformation was supported at that school district by this undergirding of Lean training. Therefore, the first of three Lean cohorts were formed and prepared for training.

Prior to the Lean professional development training, the cohort completed preparation and completed a pre-training survey to identify paradigms of concern.
Table 1

*Most Highly Ranked Leadership Paradigms of Concern*

<table>
<thead>
<tr>
<th>Paradigm</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocating scarce resources</td>
<td>72.2%</td>
</tr>
<tr>
<td>Analyzing root causes of problems</td>
<td>33.3%</td>
</tr>
<tr>
<td>Attending to group dynamics</td>
<td>16.7%</td>
</tr>
<tr>
<td>Building coalitions</td>
<td>33.3%</td>
</tr>
<tr>
<td>Clarifying roles and responsibilities</td>
<td>33.3%</td>
</tr>
<tr>
<td>Confronting ambiguity</td>
<td>22.2%</td>
</tr>
<tr>
<td>Defining success</td>
<td>11.1%</td>
</tr>
<tr>
<td>Distributing power</td>
<td>22.2%</td>
</tr>
<tr>
<td>Instilling vision</td>
<td>33.3%</td>
</tr>
<tr>
<td>Launching new initiatives</td>
<td>44.4%</td>
</tr>
<tr>
<td>Managing conflict</td>
<td>27.8%</td>
</tr>
<tr>
<td>Marketing schools</td>
<td>38.9%</td>
</tr>
<tr>
<td>Maximizing communication</td>
<td>50.0%</td>
</tr>
<tr>
<td>Measuring outcomes</td>
<td>27.8%</td>
</tr>
<tr>
<td>Networking political alliances</td>
<td>11.1%</td>
</tr>
<tr>
<td>Planning strategically</td>
<td>61.1%</td>
</tr>
<tr>
<td>Restructuring administration</td>
<td>5.6%</td>
</tr>
<tr>
<td>Taking moral action on ethical beliefs</td>
<td>5.6%</td>
</tr>
<tr>
<td>Wooing community support</td>
<td>27.8%</td>
</tr>
<tr>
<td>Other</td>
<td>5.6%</td>
</tr>
</tbody>
</table>

Based on perception data from administrators who responded to the survey, the top paradigm of concern was Allocating Scarce Resources (72.2%). As this paradigm of concern was examined deeply through Lean thinking, core questions of mission were explored, such as “Why are we concerned about allocation of scarce resources?” and “Are we allocating scarce resources per our mission?”
Similar processing by the Lean cohort occurred around the most highly ranked leadership paradigms and processes of concern throughout the Lean initiative.

Throughout the training, district administrators applied and revisited an array of Lean tools and processes and continually discussed that most solutions in Lean transformations tend to rely mostly on social capital. This was actualized through activities that involved interactive fishbowl conversations, condensed elevator pitches and in depth learning conversations which enabled a deeper understanding of lean tools and concepts, such as, the five why’s and root cause, the A3 improvement tool and continuous improvement, the value stream map and customer value, the kaizen huddle and zero-defect thinking, and the 5S process and leader standard work. The training required 50 hours workshop and 50 hours of Lean improvement project work.

Through the district’s internal wiki, Lean teams posted and shared their projects that enabled convenient access to learning conversations in progress. As the training progressed, the Lean cohort coalesced around four shared measures of performance: Changes in Silo Views, Use of Time, Customer Satisfaction/Frustration, and Return on Investment of Lean Training. The teams initiated an ongoing array of multiple Lean projects (micro and macro), such as consolidation of food services, implementation of elementary world language, improvements to online instruction and authentic pedagogy, streamlining service requests for interpreters, improving reading achievement, eliminating warehousing of supplies, and reducing non-value add paper communications from school-to-home.

Each project required a constant examination of mission followed by identification of the customer, the value proposition to ensure customer satisfaction, and ensuing improvements. On March 15, 2011, an initial cohort of administrators completed a Lean professional development training certificate program. Additional Lean cohorts resulted in over 90 trained staff in the school system by December 2011.

Through gradualism and incremental change via a multitude of Lean projects at all levels and functions, the district demonstrated authenticity by connecting the “talk” and the “walk” of mission. A systems view of interactive stakeholder environmental scan/summits and the Lean professional development initiative is a change process similarly described by Kotter (1996) in his eight-stage change process as, “changing anything of significance in highly interdependent systems means changing nearly everything” (p. 143). This indicates that internalizing the mission will impact strategic planning and vision casting.

The interdependence of mission, strategic planning and vision as a system of organizational schema was a core finding in this district’s lean journey. Concurrent change initiatives are not uncommon within public school systems. But there is a need for school leaders to connect the dots and communicate the big picture to create more coherent frameworks as described as, “Change knowledge is not about the greatest number of innovations, but rather achieving new patterns of coherence that enable people to focus more deeply on how strategies for effective learning interconnect” (Fullan, Cuttress & Kilcher, 2005, p.57).
Focus Strategic Planning to Foster Accountability

As pointed out earlier, the presence of mission internalization spiraled with strategic planning preparation. Kotter (1996) specifically observed, “to change strategic planning, you find that you also have to alter training programs, modify information systems, add or subtract staff, and introduce new performance appraisal systems” (p. 141). The need to foster accountability in strategic planning was in play during this phase. Just as mission internalizing and strategic planning are related, so are organizational authenticity and accountability.

Accountability is described here more globally beyond standardized testing and pedagogy, contracted work agreements, and the reliability of educational traditions geared toward consistency and efficiency (Flumerfelt, 2006). Accountability is founded in shared, cascading, and collaborative concern for organizational performance. In other words, accountability is a collective trust engaged in specific measures of the quality and quantity of improvement work.

Elmore (2006) reaffirmed this notion as:

One does not ‘control’ school improvement processes so much as one guides them and provides direction for them, since most of the knowledge required for improvement must inevitably reside in the people who deliver instruction not in the people who manage them. (p. 58)

The superintendent concurrently formed a strategic planning steering committee comprised of community leaders, staff, and parents. Over the course of the school year, the committee met monthly and developed data-driven and plausible future scenarios for the district based on an enhanced understanding of the current state and the potential of the mission. Two key activities formed the basis of this phase that fostered accountability in strategic planning: (1) an analysis of stakeholder influence and involvement (Table 2) and (2) the development of a succinct one-page strategic plan (Figure 2) using Lean thinking and tools.

The stakeholder analysis examined how to promote meaningful engagement and shared learning to build productive relationships and sustained performance improvement. Theorists argued that the complex process of school improvement will be successful only if it involves everyone throughout the organization (DuFour & Eaker, 1998; Fullan, 2001; Lieberman & Miller, 2001). The Stakeholder Analysis (Chevalier, 2001) was used because it stressed the overlap and interplay of the variables of power (ability to influence actions of other stakeholders), legitimacy (appropriateness of stakeholder to the specific project or planning focus), and urgency (attention-resource getting capacity and sustained interest over time) in eight typologies (Change Management Toolbook, 2010) based on inquiries such as, “Who can provide or withhold resources?” and “Who can negatively impact, derail, or obstruct the change process?”
Table 2

*Stakeholder Analysis for Strategic Planning and Fostering Accountability*

<table>
<thead>
<tr>
<th>Degree of Influence</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong></td>
<td><strong>Definitive:</strong> Superintendent Administrative Team / Executive Team School Board</td>
</tr>
<tr>
<td></td>
<td><strong>Medium</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Low</strong></td>
</tr>
<tr>
<td>Commitment to Implementing Strategic Plan or Lean Improvements</td>
<td><strong>Go</strong></td>
</tr>
</tbody>
</table>

*Note: Stakeholder map was developed using a template discussed by Brian Pritchard, Queens University Industrial Relations Centre regarding stakeholder engagement (Pritchard 2010)*
The findings indicated that it was possible to influence the executive team and school administrators to encourage participation of teacher-leaders, schools, and department staff across the district. A tactic of providing stakeholder “on ramps” and “off ramps” and feedback protocols for participation in vision work was identified to allow for a balancing of influence and involvement such as, sharing of ideas, concerns and questions.

Concurrently, the strategic plan design was formulated based on two change portfolios. The first portfolio fostered continuous improvement of what was valued and needed improving. The second portfolio of change included projects of innovation, with a focus on core learner competencies and new program creation, instructional paradigms and resources. These two portfolios are theoretically endorsed by Marzano and Waters (2009) as they cited Gladwell (2002).

The strategic planning process unfolded with a community-based strategic planning committee using three tools. The first two tools were force field analyses and “scenarioing,” whereby the most probable future rests based on two restraining forces: scarcity of resources and government mandates. The second tool required groups to compare the current and future states to better understand where continuous improvement was needed. Based on the driving forces for the future, the committee felt these five strategic thrusts should be taken to mitigate the effects of restraining forces and intensify the momentum of driving forces:

1. Develop new structures for instructional delivery.
2. Develop new structures for delivery of operations.
3. Develop new uses for instructional technology.
4. Utilize performance-based, authentic measures to develop and demonstrate growth.
5. Deeply connect with the community resources.
Table 3

Force Field Analysis for Strategic Planning

<table>
<thead>
<tr>
<th>DRIVING FORCES</th>
<th>RESTRAINING FORCES</th>
<th>STRATEGIC PLAN and VISION TARGET / FUTURE STATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Support and Collaboration:</td>
<td>Scarce Resources: Reduces District’s ability to provide flexible learning options for students and professional growth opportunities for teacher. Could hamper teachers passions, limit students experiences.</td>
<td>Vision Statement Every learner will reach his or her potential in an engaging, inspiring, and challenging environment.</td>
</tr>
<tr>
<td>Willingness to make use of “own backyard resources” (people, partnerships, etc.) Capital bond support</td>
<td>Fatigue: Years of budget reductions and doing more with less leads to overload and shutdown – impedes innovation and engagement.</td>
<td>Mission Statement Through actively engaged local and global communities, students will inspire</td>
</tr>
<tr>
<td>Momentum of Early Wins: Innovative instructional strategies now being taken to scale (instructional rounds, cultures of learning, smaller learning communities, Lucy Calkins). Lean improvement projects underway</td>
<td>Unfunded Mandates: New Core Standard, Increased State Requirements, State incentives for additional funding takes energy / distracts from pursuit of innovation.</td>
<td>District will inspire students to achieve:</td>
</tr>
<tr>
<td>Window of Settled Contracts: District has settled labor contract for the next two years, and other collective bargaining groups have contract agreements for the next year.</td>
<td></td>
<td>Academic excellence, Productive citizenship, Global competency, and Healthy and innovative skills for life-long learning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value Proposition/Brand Promise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Families will choose District because we engage each student in the most inspiring, supportive and challenging learning experience.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Superintendent, August 8, 2011)</td>
</tr>
</tbody>
</table>
The Force Field Analyses zoomed in on how countervailing forces of change could impact the success of the strategic plan and the veracity of the intertwined Lean framework. In a meeting with the executive team in August, 2011, the superintendent presented an example of a one-page strategic plan (see Figure 2).
**Figure 2.** One page strategic plan 2011-2016.

<table>
<thead>
<tr>
<th>Core Values</th>
<th>Purpose</th>
<th>Focus Areas</th>
<th>Focus Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vision Statement</strong>&lt;br&gt;Every learner will reach his or her potential in an engaging, inspiring, and challenging environment.</td>
<td><strong>Value Proposition</strong>&lt;br&gt;Families choose our school district because we engage each student in the most inspiring, supportive and challenging learning experience.</td>
<td><strong>Learner Outcomes</strong>&lt;br&gt;- Problem Solving&lt;br&gt;- Self Motivation&lt;br&gt;- Strong Communication&lt;br&gt;- Courtesy and Respect&lt;br&gt;- Adaptability/Innovation&lt;br&gt;- Learn from Mistakes/Resiliency</td>
<td><strong>Resource Support</strong>&lt;br&gt;- We will create fiscal and operational structures that support entrepreneurial, non-traditional, and creative district initiatives.&lt;br&gt;- We will provide fiscal and operational structures for current, successful district initiatives.&lt;br&gt;- We will align ongoing and comprehensive capital planning to support any time, any place, any way teaching and learning.&lt;br&gt;- We will ensure positive employee morale.&lt;br&gt;- We will ensure all staff positively impact student achievement.</td>
</tr>
<tr>
<td><strong>Mission Statement</strong>&lt;br&gt;Through actively engaged local and global communities, our school district will inspire students to achieve:&lt;br&gt;- Academic excellence,&lt;br&gt;- Productive citizenship,&lt;br&gt;- Global competency, and&lt;br&gt;- Healthy and innovative skills for life-long learning.</td>
<td><strong>Goals</strong>&lt;br&gt;We will become a destination district; families and organizations will choose to move to our community to be a part of our schools.&lt;br&gt;1. We provide the strongest academic and extracurricular programming; anywhere, any time, any place.&lt;br&gt;2. Our students achieve the highest student performance per educational dollar invested.&lt;br&gt;3. All community members have a genuine and dynamic relationship with our school district.</td>
<td><strong>Instructional Effectiveness</strong>&lt;br&gt;- We will develop innovative programs to leverage current success and meet the future needs of our students:&lt;br&gt;- International Baccalaureate&lt;br&gt;- Sci-Ma-Tech Academy for Primary&lt;br&gt;- Fine Arts Academy for Primary, Montessori, USCG Virtual School, and Writers' Academy&lt;br&gt;- Our teachers will achieve mastery level performance&lt;br&gt;- All students will have the opportunity for a quality preschool experience&lt;br&gt;- All students will graduate and enroll in post-secondary education.&lt;br&gt;- We will embrace local talent.&lt;br&gt;- We will increase the number, depth and breadth of community-based service learning opportunities.</td>
<td><strong>Global Competency Commitment</strong>&lt;br&gt;Our graduates will be able to learn, adapt, live and work well in our global economy and society.&lt;br&gt;- Problem Solving&lt;br&gt;- Self Motivation&lt;br&gt;- Strong Communication&lt;br&gt;- Courtesy and Respect&lt;br&gt;- Adaptability/Innovation&lt;br&gt;- Learn from Mistakes/Resiliency</td>
</tr>
</tbody>
</table>
As a result of the lean training, the executive team understood the significance of the one-page strategic plan as a visual management approach that greatly increases opportunities for accountability and peer-to-peer monitoring of value-added thinking and behavior. The plan contains succinct, clear, and essential instructional and operational goals that aim at building both portfolios of continuous improvement (mission) and innovation (vision). As the strategic plan is implemented and merges into vision casting, the district’s Lean toolbox will continue to be used.

**Articulate Vision to Foster Benchmarking**

In the fall of 2011, the district’s work evolved into a third integrated phase: articulate vision to foster benchmarking. At a retreat with district administrators, the superintendent presented the strategic plan. Action teams were launched based on the four focus areas of learner outcomes, instructional effectiveness, resource support and community connections in the strategic plan.

The action teams comprised staff and community stakeholders. An executive team member, an administrative team member, and a departmental/building level staff member chaired each team. Benchmarking the vision was an expectation of the action teams.

In the future they are expected to use the Lean approaches and tools for continuous improvement, such as a plan, do, check, adjust process and the A3 tool for the development, execution, and documentation of ideas, root cause analysis, and action plans. When the work of the action teams culminates, the district has made provisions for more defined and sophisticated benchmarking by increasing evidence of improvement and meeting demands for accountability (Cochran-Smith & Fries, 2001) through Lean tools.

**Looking Toward the Future**

Because the third phase just started, it is not yet known what the practice-based evidence will produce, but there is great anticipation as to what is possible. To proactively plan for “implementation dips” (Fullan, Cuttress & Kilcher, 2005, p.56) that will occur during the deployment of all three phases of Lean organizational development, it is essential to consider the “personal transitions” of stakeholders (Marzano and Waters, 2009, p.112). Recognizing that this encompassing systemic transformative initiative will impact everyone in some way, it’s important to think about opportunities to connect everyone into the process so that adequate mentoring and preparation prepares the employees to carry on. This aim aligns with the overarching big ideas of this initiative and of the core tenets of Lean. Further, research supports distributive approaches to leadership, stakeholder involvement, and collaborative strategies. These long-term, people-intensive, approaches have been found to promote organizational success, rather than individual success (DuFour and Eaker, 1998). Leaders of strategic change need to monitor which stakeholders has an observable ‘dog in the hunt,’ and to be sensitive to inequities of power and voices among stakeholders and deploy methods that can “serve multiple interests and permit dialogue across class boundaries” (Chevalier, 2001, p.11).

**Conclusion**

Rotberg (2005) points out that although political rhetoric about school reform is commonplace; it is often not well understood. The costs and consequences of reform need more consideration as well as the social context of what reform is possible given the societal values, financial means and goals of education.

This school district’s engagement of a three-phase system of Lean approaches of organizational development was highly
contextualized and has increased the capacity for organizational authenticity, accountability, and benchmarking across the district.

The intention of this deep and wide systemic initiative is to bring about both incremental and innovative transformation that flows from mission, through strategic planning and into the future.

This descriptive case study illuminates how a mid-sized K-12 public school district is transforming a theory of action, steeped in Lean principles, into strategic performance improvement practices. By examining the dynamic process of K-12 strategic planning through the lens of lean, the case study can further enlighten research into Lean leadership approaches and their potential of driving transformational change in public schools.

Author Biographies

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An Exploratory Qualitative Study of Italian High School Students Who Receive Private Tutoring in Mathematics

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Abstract

My purpose for this exploratory qualitative research was to gain insights into the perceptions of high school students in Italy who receive private tutoring in mathematics, about their experience and expectations. Little prior research from the perspective of the students has been conducted. Results suggest that some students use private tutoring as a learning crutch. Although private tutoring might help prevent high school dropouts in Italy, more research is needed to determine its influence on high school completion.

Key Words

tutoring, high school mathematics, dropout
The official percentage of high school dropouts, known as "early school leavers," in Italy was 20.8% in 2006, and 19.2% in 2007, the last year that updated data were available (Ministero della Pubblica Istruzione, 2008). Italy has the highest national percentage of early leavers in Europe. In the region of Lazio, where this study was conducted and where the capital city of Rome is located, the percentage of early leavers was almost 10%. Private tutoring for public high school students is a growing practice in Italy. Some policy makers see it as a solution to the problem of early leavers.

I chose to focus the study on high school students who received private tutoring in mathematics. National reports demonstrated that the majority of students who drop out of the public school system do so more commonly after attending the first two years of high school. Mathematics seems to be especially challenging for those students. For this reason, it was thought that the sample of students should include those who received tutoring in mathematics in either their first two years of high school or those finishing their high school careers.

Problem and Purpose
Private tutoring, especially in mathematics, is a growing trend in Italy, yet little qualitative research exists from the perspective of the students about why they use tutors and what they gain from private tutoring. Their perspectives about tutoring for mathematics are especially interesting to Italian researchers because of the back-and-forth rhythm associated with the acquisition of math knowledge for some students.

For example, the rhythm of mathematical learning is progressive during school hours. The teacher follows the curriculum and presents concepts in a step-by-step manner. The concepts generally build upon each other and grow in conceptual difficulty and complexity. The teacher is available to answer questions and re-teach concepts to keep the class momentum moving forward.

However, the rhythm of learning can become regressive during the hours that the student studies math on his or her time; away from school and away from the support of a certified teacher. This is where some students can fall behind in their learning. This is also where the private tutor becomes involved in the education process of a growing number of students.

My purpose for this exploratory qualitative research was to describe the perceptions of high school students, who receive private tutoring in mathematics, about their experience and expectations. Little prior research from the perspective of the students has been conducted in Italy.

I plan to use the results from this study to build a larger sample to include students who receive tutoring in other subjects. Thus, the results should be interpreted as tentative. School administrators might use the results from this study to ask questions about how some of the students in their high school use tutors. The results should not be used for policy making as the sample is too small.

Sample
The exploratory study included voices from five students. The five students ranged in age from fifteen to nineteen years old (See Table 1). Note that in some European countries students can stay in school after the age of 18 and up to age 25. Although this is not common in the United States, it is common in Europe. All five of the students received private tutoring in mathematics for the same purpose: to fill the gaps in their school mathematics learning.
Table 1

Private tutoring: subjects, intensity and costs for five Italian secondary school students

<table>
<thead>
<tr>
<th>Age of students receiving tutoring</th>
<th>Schools</th>
<th>Subjects</th>
<th>How long?</th>
<th>Hours per week spent in tutoring</th>
<th>Cost per hour</th>
<th>Students receiving tutoring in your classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1 – 18</td>
<td><em>Liceo</em> classical studies</td>
<td>Math</td>
<td>5 months</td>
<td>≥ 1 hours</td>
<td>10 €</td>
<td>6/18 students</td>
</tr>
<tr>
<td>S2 – 19</td>
<td><em>Liceo</em> scientific studies</td>
<td>Math, English</td>
<td>5 years</td>
<td>≤ 4 hours/ Math 2 hours/ English</td>
<td>12 €/Math</td>
<td>10/21 students</td>
</tr>
<tr>
<td>S3 – 15</td>
<td><em>Liceo</em> scientific studies</td>
<td>Math, Italian</td>
<td>2 years</td>
<td>2 hours</td>
<td>10 €</td>
<td>10/27 students</td>
</tr>
<tr>
<td>S4 – 15</td>
<td><em>Liceo</em> scientific studies</td>
<td>Math, English</td>
<td>5 months</td>
<td>≤ 4 hours/ Math 2 hours/ English</td>
<td>12 €/Math</td>
<td>5/27 students</td>
</tr>
<tr>
<td>S5 – 17</td>
<td><em>Liceo</em> linguistic studies</td>
<td>Math</td>
<td>3 years</td>
<td>≥ 2 hours</td>
<td>10 €</td>
<td>6/22 students</td>
</tr>
</tbody>
</table>

Because mathematics is a particularly problematic subject in Italy and requires more private tutoring than do other subjects, the cases of students S2 and S4 are of particular interest. The two students are enrolled in the type of high school called scientific studies *Liceo* (*lee-chay-o*).

There are various types of high schools in Italy. Some are speciality schools, known as magnet schools in the United States, some academically-oriented schools known as scientific *Liceo* and there are other schools that would be labelled as trade schools. The school in this study, as the name suggests, considers math and science as the main subjects that characterize the core of the school’s curriculum.

For this reason a minimum of five hours per week are reserved for the teaching of math, and five hours for science, from the first year in high school to the fifth year. In the other high schools that were considered in this study the proportion was much lower (see Table 2).
Table 2

Weekly hours of math in the time table for the various high schools

<table>
<thead>
<tr>
<th>Grade (Age of students)</th>
<th>School</th>
<th>Subjects</th>
<th>Hours of math per week</th>
<th>Total hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1°-2° (14 -16)</td>
<td>Liceo scientific studies</td>
<td>Math</td>
<td>5 hours</td>
<td>27</td>
</tr>
<tr>
<td>3°- 4°-5° (16-19)</td>
<td>Liceo scientific studies</td>
<td>Math</td>
<td>5 hours</td>
<td>32</td>
</tr>
<tr>
<td>1°-2° (14 -16)</td>
<td>Liceo classical studies</td>
<td>Math, ICT</td>
<td>3 hours</td>
<td>27</td>
</tr>
<tr>
<td>3°- 4°-5° (16-19)</td>
<td>Liceo classical studies</td>
<td>Math</td>
<td>2 hours</td>
<td>31</td>
</tr>
<tr>
<td>1°-2° (14 -16)</td>
<td>Liceo linguistic Studies</td>
<td>Math, ICT</td>
<td>3 hours</td>
<td>31</td>
</tr>
<tr>
<td>3°- 4°-5° (16-19)</td>
<td>Liceo linguistic Studies</td>
<td>Math</td>
<td>3 hours</td>
<td>32</td>
</tr>
</tbody>
</table>

A student who attends a scientific Liceo and has serious trouble in math competence, such as in the case of S2, can suffer severe stress. Some students are constantly underprepared for the difficulty of the content. Some struggle to be promoted to the next grade-level because of their trouble in mathematics. Some students come to the Liceo behind in their mathematics knowledge and skills.

Because of this, one can imagine the difficulty that a student, already behind in the required math proficiency from earlier grades, faces upon enrolling in a scientific high school. In fact, in the scientific Liceo’s curriculum, there is substantial time invested for learning math. The students who enter the Liceo underprepared are the same students that carry out the back-and-forth learning pattern.

Methodology and Research Questions
I conducted individual interviews with students between April and June of 2011. The participants lived in the suburbs of the city of Rome and came from middle class families. The interviews questions explored four areas: (a) Private tutoring as a growing practice; (b) Student perceptions of their teachers; (c) Student attitudes toward school; and (d) Student commitment to studying.

I used ten questions to explore the areas.

1. What is, in your opinion, the point of private tutoring?
2. Why do you go to the private tutor?
3. What is your perception of the benefits of private lessons?
4. What are the subjects and how many times per week do you attend private lessons?
5. What is cost per hour of your private lessons?
6. What do you think of your classroom teachers?
7. What are your perceptions of your school?
8. What are the problems that don’t permit you to keep up with the academic program?
9. How much time you devote to studying a topic before saying "I don’t understand"?
10. Do you prefer the face-to-face relationship?

The overarching research question was:
What are student perceptions of private tutoring in mathematics?

Sub-questions included:

1. What are the students’ perceptions of their teachers?
2. What are the students’ perceptions of the quality of their school?
3. How do students perceive their commitment to learning?

A narrative inquiry approach structured the data analysis strategy. The qualitative approach gives voice to participants’ lived experiences of private tutoring. I scrutinized the interview material through lenses from the extant literature to help fully describe the students’ perceptions regarding the growing phenomenon of private tutoring and curriculum. Codes and themes were developed.

Results
Students’ perceptions of private tutoring
All the students described the main point of after-school private tutoring as a tool to help understand what was taught during the morning mathematics period in school. The students described private tutoring as a supplementary lesson that offered opportunities to review, with the help of an expert, the same content presented in the classroom.

The students described their reasons for engaging the services of tutor. S1 described a situation in which the teacher did not teach the material well, as perceived by the student, “[...] the teacher doesn’t explain well, and I cannot understand the points of the lesson. It is easier to understand the concepts when I work individually with the tutor.” S2 stated, “I'm going to private tutoring because I don’t have time to study; I play football [soccer]. Math is different. I don’t understand it.” S3 described, “I'm going to private tutoring because I have some insufficiencies in mathematics. I am behind in my knowledge and need to keep up.” S4 stated, “I haven’t been doing very well at school since the beginning of the year. I have been struggling in math especially.” S5 said, “[...] in the private lessons I do better. [...] I establish a closer relationship with the tutor. I can ask for clarifications. I can tell the tutor all my problems and she is always ready to re-explain until I understand. She has patience.”

The student voices describe various perceptions of the need for tutoring. Some of the students raise the issue of the back-and-forth learning process that takes place in mathematics, especially in terms of acquiring knowledge and the educational relationship between tutor and student. Both S1 and S5 maintain that private tutors keep them afloat in their math classes and the tutor helps them to move forward, not back. The professional tutor is able to lead them to a passing grade.
Another interesting facet of tutoring arose. Several students described the private tutor as someone with whom they can have a closer, individualized learning relationship as opposed to the classroom teacher. It is more of a face-to-face relationship if you will. Although not examined during this study, the influence of class size and the ability of the teacher to build personal relationships with students might be a factor here and warrants further study.

Off the hook?
Some students explained that in some ways they took school less seriously because they knew they had access to the private tutor. For example, S1 and S5 said they allow themselves more distractions during school time and do not pay as much attention as they know they should. It is evident that the schooling commitment, in cases S1 and S5 is lessened by the privilege to receive additional private lessons after school.

These students know they always have a second chance to learn. They perceived that it was not strictly necessary to engage in a deep understanding of the lesson explained by the teacher in the classroom. The student knew that the same subject matter was presented later in the comfort of their homes by another professional, with the advantage of simplification and individualization.

S3 and S4 had different perceptions of tutoring and their perceptions related to their struggles in mathematics. Those students stated that they worked hard during class but still struggled to keep up with the content. They perceived that the role of the tutor was someone who could help them recover subject content and skills that should have been attained in the previous grades.

It is in these cases that the discrepancy between the level of subject expertise of the students compared to the expected expertise of the specific mathematics courses presented itself. It seems that both S3 and S4 were simultaneously engaged in two classes of mathematics: their assigned courses and the courses they took with the tutor to remediate past deficiencies. They needed the tutor to help them internalize content from simultaneous math courses.

Benefits
A consensus returned to the responses of the five students in terms of their perceptions of the benefits of private tutoring. For example, S2 a nineteen-year-old boy who attends the last year of Liceo scientific studies described his private tutoring experiences. S2 stated he had gaps and misunderstandings in mathematics, and for this reason the help of a private tutor became indispensable. The other students echoed his sentiments.

The five students seemed to perceive that their uses of tutors are responses to parental expectations and demands. That is, their parents expect them to do well in mathematics, and the students know they need to take advantage of the tutoring.

There are not any traces, in these five answers, of enthusiasm towards educational experiences in terms of personal growth. The students are not truly engaged in the learning process. External forces motivate them: parental expectations.

Most of the students do not seem to recognize that if they attended more to the lessons in school they would not have to engage a tutor and thus not force their parents to disperse private funds for the tutor.
Students’ idea concerning teachers and school
For the most part the students described respect for their teachers in terms of personality and professionalism. S4 stated, “My teachers have understood, from the beginning of the scholastic year, my situation. For instance, when I take an oral test and get a bad result, they try to help me to achieve a passing mark.” S2 said, “My teachers are well prepared. [...] They do a good job considering the poor tools and resources that the school gives them.” S1 explained, “I have very high esteem for several of my teachers.”

However, the interviews reveal more than a few hints of student disappointment with the teachers, especially in regards to teachers’ didactical competences. S1 explained, “[...] I have difficulties in math and the teacher is not always inclined to re-explain the content or she does not explain it in a way that is clear to me.” S2 said, “[...] Some of my teachers are academic and superficial. They don’t always go beyond the planned lesson to provide more examples or help.” S3 explained, “Some teachers aren’t willing to help us with problems if we do not get it the first time.” S4 said, “[...] Most of them [teachers] are pretty good, except the English teacher. Math is good but I still struggle.” S5 stated, “[...] Some teachers don’t consider that a student, everyday, has to study a lot of subjects besides the one she is teaching and they give us too much homework.”

More individualization needed
There was agreement among things the students wished their teachers would provide for them. For example, the students stated they desired more attention to individual learning needs. Such a request is well summarized by the words of S1. “In my opinion, the teachers could use a little more of their ability to give individual help to their students. There does not seem to be a lot of individualized attention available.”

There seemed to be a desire on the part of the students for a more individualized relationship with their teachers. The students seemed to yearn for more of a one-on-one relationship with their mathematics teachers. The students described their teachers as effective in terms of content knowledge but wanted them to be more of an authentic person instead of just a math textbook.

The students explained that it was not sufficient to be an expert of a subject without some pedagogical sensitivity to the individual needs of students. Students wanted authentic relationships to go along with the content expertise.

Bad choices
Part of my purpose for this research was to determine if students’ use of private tutoring was due to students making the wrong choice of a high school. That is, was there a mismatch between the type of high school program students thought they could handle and the program they could actually handle and was that the reason students engaged the services of a tutor? The responses indicated that was not the case. Choice of school was not the reason students engaged tutoring services.

For example, S1 said, “I would definitely choose the classical studies Liceo again, even if there are a lot of difficulties.” S2 stated, “I don’t mind … I appreciate the general preparation and enjoy the challenges.” S3 explained, “I would choose the Liceo again because my friends attend the school and it has a good program.” S4 explained, “I didn’t like my school [the Liceo], especially in the beginning of this first year. I got a lot of bad marks. Now, I have only two bad marks and I
like school more.” S5 stated, “Yes [I would choose to come here again]. I like the scholastic atmosphere, especially being with my classmates.”

**Commitment and autonomy in individual study**

In this section I present the students’ perceptions of how they approach their learning problems. Themes that emerged among the students were: (a) their gaps in previous knowledge, (b) inattentiveness during lessons, (c) managing excessive homework assignments, and (d) deficiency in understanding the lesson content.

The students explained they were unskilled in terms of managing the academic challenges and expressed they were dependent on the teacher and then the tutor to solve learning problems for them. They perceived the tutor as a learning crutch. In fact all of them, except S5, did not make any significant efforts to proceed independently when they encountered learning challenges.

The students sought help from the teacher before they tried to solve a problem themselves. Consequently, the interviewee explained that they preferred to deal with all the difficulties of their homework under the guidance of their private tutor.

It can be said that in the cases examined here private tutoring did not strengthen the ability of students to become autonomous in doing homework. The students stated that their preference was to complete assignments in the presence of their private tutor instead of attempting to complete them independently. This idea might explain why the students in this sample used private tutoring for more than one year.

**Conclusions**

Amongst the five interviewed students, a unanimous consensus emerged. The students affirmed that private tutoring promoted learning of academic content through a more individualized relationship.

All the students communicated that they were not particularly worried about their inability to carry out their assignments in the long-term because they have a tutor to provide the individual attention they need. Whether that attention fosters academic independence remains to be seen.

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References


Strategically Allocating Resources to Support Teaching and Learning

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Abstract
As the enduring economic recession forces state and local governments to cut education budgets, astute allocation of resources is becoming more important. The author analyses three basic categories of educational resources: money, human capital, and time before moving to a discussion of resources as a component of school reform. The author examines district-level resource allocation. Because of current strictures, district administrators are realigning district spending levels, supporting and motivating school reform, and redesigning district practices. In this article the author also investigates the impediments to that process. Finally, the author examines current models in resource allocation, including certain alarming trends. The paucity of evidence-based research before allocating resources is noted, as are the difficulties faced by personnel in schools in which minority students are in the majority.

Key Words
resource allocation, school reform, school budget
Allocating and developing resources to support improvement in teaching and learning are fundamental leadership challenges. Education policymakers must be informed about emerging resource practices and cognizant of the ways incentives can be used to create conditions that support teaching and learning.

Principals, district officials, and state policymakers are all concerned with three basic categories of resources:

1. Money. Activities at several levels of the system, typically occurring in annual cycles, determine both the amount of money available to support education and the purposes to which money can be allocated. No one level of the education system has complete control over the flow, distribution, and expenditure of funds.

2. Human capital. People, “purchased” with the allocated funds, do the work of the educational system and bring differing levels of motivation and expertise developed over time through training and experience.

3. Time. People’s work happens within an agreed-upon structure of time (and assignment of people to tasks within time blocks) that allocates hours within the day and across the year to different functions, thereby creating more or less opportunity to accomplish goals.

These resources are intimately linked. Each affects the other and they even depend on one another to achieve the organization’s intended purposes. An abundance of money and time, for example, without the knowledge, motivation, and expertise of teachers (human capital) does little to maximize desired learning opportunities created for students.

Furthermore, an abundance of human capital without money or time to distribute it effectively does little to alter practice in classrooms or to share expertise with others. From their position of influence over the acquisition, flow, and intended use of resources, school administrators undertake a massive attempt to coordinate and render coherent the relationships of the various resources to the goals they set out to achieve.

School-Based Control of Resources
As administrators begin to change the way they use human capital to support their unique designs, district administrative teams will find they need to move toward giving schools dollars based on the number of students in their school instead of allocating funds based on specific staff positions. This change is important for management and equity reasons.

Logistically, as more administrators want to change the way they use staff, it becomes confusing to keep track of all the trading in and converting of staff. Trying to free up specific funds for flexible solutions can create confusion and raise troubling equity issues (Miles, 2004). Giving school administrators more autonomy does not automatically guarantee improved achievement. Without incentives to improve student performance and an understanding of alternative possibilities for organizing resources, increasing school-level control over resources usually results in limited change (Wohlstetter, 1995).

Worse, the first changes that schools tend to make in the allocation of resources can have very little to do with improving the achievement of students, and more to do with the needs of adults.
As administrators move to create flexibility in the use of resources, they will need to ensure that schools meet legal and funding requirements. The administrator may, for example, encourage schools to combine staffing resources from special programs, including bilingual, special education, and Title I, in order to create a more integrated, individualized instruction for every student.

In order to support more comprehensive programs and still be able to ensure that schools are meeting the specific needs of special education students, the district will need to set up a dedicated system for accountability integration. School administrators will need proactive district action and guidance to make many of the more significant changes in resources and organization. In some cases, dramatic improvement in achievement will require school administrators to make difficult or large-scale personnel changes.

Gradual changes in staff due to attrition might not help a school implement new strategies quickly enough for them to notice desired changes in outcomes and improvements. It might prove necessary for administrative teams to alter the teaching staff mixture and hire more academic teachers and fewer non-academic teachers and support staff. Or they might decide to eliminate instructional aides and invest the dollars in professional development or certified reading instructors instead. It is extremely unlikely that a group of teachers will recommend changes that result in lost jobs without district directives and support.

Allocating Resources for Comprehensive School Reform

Across the United States, administrators looking for greater results in student performance need more funding to support four crucial requirements. First, they are in need of investment funding to allow the introduction of new curriculum and teaching practices. Second, districts need dollars to create time and purchase the expertise to support principals and teachers in planning and learning the new strategies. Third, they must find ways to maintain teacher salaries that will attract and retain powerful teachers.

Finally, they need to provide more individualized attention and time for students in academic subjects. Many districts will benefit from new dollars in increasing the standards of student performance, but not if they are added on top of flawed programs, practices, and structures. Comprehensive school reform involves an encompassing review of the whole school’s organization and methods. Because of this, school administrators must look closely at how existing resources such as time, staff, and dollars might better support new comprehensive school designs, improved teaching practice, and chosen academic priorities.

District-level administrators typically need to: (1) realign district spending levels and patterns to better support comprehensive school designs and academic priorities; (2) support and motivate schools in reforming their application of resources to boost their comprehensive school reform plans and important academic programs; and (3) redesign district practices to give schools and their principals more control over the use and organization of their resources.

When estimating levels of expenditure and trends, administrators need to address three questions: Is there enough money to support high-quality education? Does each school get its fair share according to the budget allocations? Does spending on district-level
activities focus on instruction and align with a comprehensive school reform/standards-based reform strategy?

First, school administrators need to articulate priorities and direct spending without concern over overall spending levels, but they must ensure that the community has sufficient funds in order to begin the task. It is difficult to ascertain how much money is enough, but there are some questions for the district to consider. These include: How does spending per pupil compare to other districts with similar student populations? How do teacher salary levels compare? How does the community’s tax rate compare to other similar districts? Second, administrators must be sure that each school has received its fair allocation of dollars to begin its redesign work (Roza, Guin, & Davis, 2008).

As administrators begin to realign their resources to fit their designs and goals better, they often request changes in staff or budget. The changes required are initially small, but districts must be aware of each school’s requirements. Administrators must ensure that transparent guidelines are established for school-level resources that enable them to address issues by fair and flexible means in each school.

If there is any uncertainty about how much of the district’s total budget is required to be allocated to each school, district administrators are in peril of confusing budget cutting with decentralization, and frittering away a school’s energy developing projects based on money that will not exist (Roza, Guin, & Davis. 2008).

Thus, despite apparently objective formulas, school-level administrators can end up with very different levels of resources. At the beginning of the process of implementing comprehensive school reform, it helps to see the bottom line in terms of dollars allocated as well as total staff. With the “how much” questions answered, the district can look at how the dollars are spent to aid the improved learning establishments. Adjusting district spending to meet a total school reform project is a two-stage process.

During the first stage, it is necessary for districts to find or free up funds to jump-start the introduction of a comprehensive school reform design. These funds support the purchase of new materials and the outside experts to work with teachers and principals as they learn the new practices.
In the second stage, districts must objectively review their organization of support to schools and teaching staff in upholding their work to reform practice. They should also examine whether resources match their stated strategy and academic priorities (Roza, Guin, & Davis, 2008).

**Impediments to Efficient Resource Allocations**

Critics of greater financing demands routinely highlight nationwide cases wherein major increases in spending were misspent, and provided little or no positive outcomes for student learning. For example, you have probably heard about Chester-Upland School District's (hereafter referred to CUSD) financial woes and the heart-felt story of its teachers agreeing to work for free, because the district's coffers were almost bare.

On top of that, as of March 2012, the Pennsylvania district holds about $85 million dollars in long term debt (Tavernise, 2012). Unfortunately, the scene is replayed year after year in America, and still, nothing changes. Usually, in this type of situation, one of three things are occurring. Either there are; mismanagement of funds, underfunding, or both. Since I am familiar with the story, I would say that the mismanagement of funds is the main culprit.

In addition to its financial shortcomings, the district's schools are failing to achieve academically. CUSD is in its 9th year of corrective action, and has a 51% graduation rate. In the CUSD, 16% of 11th grade students scored proficient or above in math and 25% scored proficient or above in reading during the 2010-2011 school year (Tavernise, 2012). Strong evidence exists suggesting that, without adjustments in the distribution of resources, their use, and accountability, Americans may get a more expensive, though not necessarily more efficient, public education system.

Although many district administrators do indeed worry about the role that resource allocation plays in improving student learning outcomes, crafting a district strategy for reform and managing an urban district’s mega-budget are treated as separate, albeit important, activities in practice. Whether recognized by public officials or not, the system of resource allocation is the very method by which administrators illustrate options about means and ends.

District administrators do not appear to fully recognize the means they employ to assign resources or their available alternatives. Thus, while it is apparent that many district administrators have become quite clever at articulating the objectives and protocol vision for enhancing student performance, such verbal descriptions often bear limited resemblance to the actual strategy decreed in resource allocations.

District administrators might think their allocation strategies are straightforward, but most don’t recognize the many different forces at play, and just how far beneath the surface of the regularly published district budgets the allocation policies, patterns, and decisions that influence the sharing out of resources in a school district are. Public education, similar to other public sectors, is a multilevel operation where funds are allocated to districts by the federal government and states.

In combination with other local incomes, these resources are re-budgeted and then separated into broad categories, such as education and administration, or possibly into
broad program types such as special education needs. A more helpful way of looking at district strategy is the next rung in the allocation process of dividing these large sums and then converting them into services, programs, and staff, and finally distributing them to determined schools and students (Roza, Guin, & Davis, 2008).

New Models and Trends in Resource Allocation
Many investigators have requested new methods to determine expenditures as a means for better understanding priorities, organizational investments, proposed strategies, and as a tool to quantify the deployment of resources across subunits. Completely new expenditure models have been pioneered by manufacturing theorists that include costs that are activity-and program-based, and that assist in forming fiscal data to further broaden its comparability to strategic decision-making.

In education, several authors of national reports demanded new methods of expenditure recordkeeping as a means to modify district strategy, mostly toward ensuring the real expenditure involved in individual schools, programs, or services is duly identified (Odden et al., 2003; National Forum on Education Statistics, 2003; Miller, Roza, & Schwartz, 2005; Coopers & Lybrand, 1994).

Though the models demonstrate some differences regarding the terms of the categories used, all of them propose assigning a larger percentage of costs to two specific types of students and schools. For those having an interest in resource data in relation to the context of educating students, it makes sense to review central and indirect costs that are associated with joint district resources, as well as resources that are typically school-based. Costs that have less relevance are associated with district leadership, other operations, and services of a non-educational category; for example, transportation, food services, school facilities, and maintenance systems.

Reforms relating to accountability placed a focus not only on performance inequalities between White students and students from minority backgrounds, but also between students having differing determinable needs that result from disability, poverty, or limitation in English proficiency. Many policymakers stress that the first stage in tackling these performance gaps is to align fiscal policy with student needs. But as policymakers refurbish their established funding formulas to fulfill the needs of different students, they do so without evidence. In the first instance, there is little explanation of the way resources are currently aligned to different subgroups.

Basically, for a state policymaker attempting to assign an allocation to particular student types, no baseline data exist on current expenditure in regard to each type of student within their own districts or other schools within other districts. School districts in most states do not fully track costs by student type or to the school level.

Even where these data are tracked, they are not accessible from published works for policymakers attempting to pin down answers (Roza, Guin, & Davis, 2008). Equally challenging is the difficulty in accessing comparisons from other states regarding spending. Accurate ways of defining or reporting expenditures influenced by student needs are not available, which makes it impossible to compare data between states.
Furthermore, policymakers have not yet determined how to flow funds from one level of government to the next, so that funds finally reach students. For example, funds may be designated by the federal government for students living in poverty, with the goal of enhancing expenditures at schools having high concentrations of poverty. However, by the time funds are dispersed through state and local allocation streams, they may not reach their intended target.

Finally, only limited documentation exists on different decisions for structuring assigned allocations and the way those decisions relate to policy aims. Put in other terms, allocations meant for students having limited English proficiency (LEP) might be realized as a fixed dollar amount per LEP student, reimbursements for the spending on bilingual education services, apportionment of staff full-time equivalents (FTEs) to high-needs schools, or as funds for other areas. Research has not yet delineated ways these different decisions influence either what is finally spent per pupil or how efficiently that funding reaches the intended students.

For districts wishing to commence anew with student-weighted allocation systems (whereby funds are allocated on the basis of student types), offering clear-cut guidance on what increments should be assigned to each student type is a crucial first step. However, a definitive response plainly cannot exist in the current state of fiscal allocation policy. The difficulty here is that currently there is no efficient resource allocation system whereby an answer can be reliably extrapolated.

Policymakers are consequently forced into determining fiscal policy without information relating to expenditure on student types. They are forced to do so with limited understanding of the workings of allocation policies at different levels (federal, state, and local) either together or in conflict.

Policymakers have little clarity on expenditure for different student types at the school level, nor awareness of the types of policies that would be more effective in guaranteeing that dollars reach students in the proposed ways.

School finance today works in opposition to the focused and effective utilization of resources that promote improved education of students. Just as an archaic computer can no longer function properly in a technological environment inundated with the latest software, this nation’s school finance system frozen by a combination of unrelated expenditure policies and administrative plans can no longer serve the needs of an educational system calling for reform. A new model is required to do one thing: Ensure that every child receives instruction for his or her needs in order to become an involved citizen having in this modern economy.

Current school finance systems fund programs, uphold institutions, and offer resources and staff employment so the school and district administrators can fully execute the multitude of laws and regulations that have become part of public education. However, the methods employed by today’s school finance systems such as deploying expenditure levels based on habit and not need, covering up funds’ actual allocations, supporting institutions whether they are viable or not, hypocritically addressing equity, attempting to make adults accountable by compliance and not by results...
confuses the links between resources and academic aims.

The school finance system evolved in a previous era in which programs were funded, and students passed or failed without much regard paid to the role of funding in student performance. This pattern was sustainable then, as jobs were available for people with low skills, and the vast majority of workers were not required to be well-educated in order to maintain a healthy economy. Unfortunately, that legacy has proven unworkable in today’s highly technological, information-based economy, where low-skilled workers cannot rise above poverty level and overseas workers are able to compete effectively in the market for skilled jobs, once available solely to Americans.

Concluding Remarks
The current finance system focuses on maintaining programs and paying adults, not on seeking the ultimate way to educate our children. It is essential that schools adapt within a fast-changing economy, but our system arranges funding for the very same courses and teaching methods developed by previous generations. Experiments by schools must be deployed with technologies that might alter teacher and student work, but the current financing system dictates that their money be spent on a predetermined set of factors, including organizations, programs, and people. Those realities severely limit our nation’s ability to effectively and accountably use resources in planned ways.

Our children require and deserve a proper education, and we must strive to provide them with the type of education that befits the stature of this country. It does not matter how much concern Americans take with regard to education; in reality, spending will always be finite, and schools will never achieve the luxury of affording absolutely every item that some educators might discover to use effectively.

Increasing costs and competition by way of other sectors, such as health care and public safety, will inevitably squeeze funds available for education. Even if we doubled or tripled expenditures on public education, it would still be crucial to ensure that every dollar counted or it would be forever true that Americans—including parents, taxpayers, and educator—would be offering less for our children than we could with the money available.

Therefore, whatever money is available for schools it must be utilized in the greatest, most effective manner possible.

Author Biography

Matthew Lynch is an assistant professor of education at Widener University. His scholarship is intended to make a theoretically- and empirically-based argument that genuine school reform is possible. Visit his website at www.drmattlynch.com for more information. E-mail: mlynch@mail.widener.edu
References


Mission and Scope, Copyright, Privacy, Ethics, Upcoming Themes, Author Guidelines & Publication Timeline

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Below are themes and areas of interest for the 2010-2012 publication cycles.

1. Governance, Funding, and Control of Public Education
2. Federal Education Policy and the Future of Public Education
3. Federal, State, and Local Governmental Relationships
4. Teacher Quality (e.g., hiring, assessment, evaluation, development, and compensation of teachers)
5. School Administrator Quality (e.g., hiring, preparation, assessment, evaluation, development, and compensation of principals and other school administrators)
6. Data and Information Systems (for both summative and formative evaluative purposes)
7. Charter Schools and Other Alternatives to Public Schools
8. Turning Around Low-Performing Schools and Districts
9. Large scale assessment policy and programs
10. Curriculum and instruction
11. School reform policies
12. Financial Issues

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Length of manuscripts should be as follows: Research and evidence-based practice articles between 1,800 and 3,800 words; commentaries between 1,600 and 3,800 words; book and media reviews between 400 and 800 words. Articles, commentaries, book and media reviews, citations and references are to follow the *Publication Manual of the American Psychological Association*, latest edition. Permission to use previously copyrighted materials is the responsibility of the author, not the *AASA Journal of Scholarship and Practice*.

Potential contributors should include in a cover sheet that contains (a) the title of the article, (b) contributor’s name, (c) terminal degree, (d) academic rank, (e) department and affiliation (for inclusion on the title page and in the author note), (f) address, (g) telephone and fax numbers, and (h) e-mail address. Authors must also provide a 120-word abstract that conforms to APA style and a 40-word
biographical sketch. The contributor must indicate whether the submission is to be considered original research, evidence-based practice article, commentary, or book or media review. The type of submission must be indicated on the cover sheet in order to be considered. Articles are to be submitted to the editor by e-mail as an electronic attachment in Microsoft Word 2003 or 2007.

Book Review Guidelines
Book review guidelines should adhere to the author guidelines as found above. The format of the book review is to include the following:

- Full title of book
- Author
- City, state: publisher, year; page; price
- Name and affiliation of reviewer
- Contact information for reviewer: address, country, zip or postal code, e-mail address, telephone and fax
- Date of submission

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AASA Resources

❖ **The American School Superintendent: 2010 Decennial Study** was released December 8, 2010 by the American Association of School Administrators. The work is one in a series of similar studies conducted every 10 years since 1923 and provides a national perspective about the roles and responsibilities of contemporary district superintendents. “A must-read study for every superintendent and aspiring system leader ...” — Dan Domenech, AASA executive director. See www.rowmaneducation.com/Catalog/MultiAASA.shtml

❖ **A School District Budget Toolkit.** In a recent survey, AASA members asked for budget help in these tough economic times. The toolkit released in December provides examples of best practices in reducing expenditures, ideas for creating a transparent budget process, wisdom on budget presentation, and suggestions for garnering and maintaining public support for the district's budget. It contains real-life examples of how districts large and small have managed to navigate rough financial waters and offers encouragement to anyone currently stuck in the rapids. See www.aasa.org/BudgetToolkit-2010.aspx. [Note: This toolkit is available to AASA members only.]

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✓ **Webinars: Building a Strong Principal Pipeline: Improving Student Achievement Through Leadership,** Monday, April 23, 2012, 3-4 p.m. EST and **Stopping the Summer Slide and Closing the Achievement Gap,** Friday, April 27, 2012, 1-2 p.m. EST

✓ **AASA Summer Leadership Institute,** Renaissance Baltimore Harborplace Hotel, Baltimore, MD, June 28-29, 2012

✓ **AASA Legislative Advocacy Conference,** Hyatt Regency Newport Beach, Newport Beach, Calif., July 17-19, 2012


✓ **AASA’s National Conference on Education,** Los Angeles, Calif., Feb. 21-23, 2013