

**SHEPHERD POVERTY ALLIANCE CAPSTONE**

**NARROWING THE ACHIVEMENT GAP IN HIGH-SCHOOLS**

**by Veselin Pisarev**

Washington and Lee University

## **I. DEFINING THE ACHIEVEMENT GAP**

The achievement gap in education has been well documented by the National Assessment of Educational Progress (NAEP), a national organization that tracks the proficiency of American students in different subject fields since 1969. NAEP's data shows that in 2004 the white-black achievement gap was about 27 points in math and 25 points in reading skills. Although the Hispanic-white gap follows similar patterns and magnitude, it will not be discussed separately from the black-white gap. The gap has been closing since the 1970s, when the difference was about 40 points for math and 45 for reading. Despite such promising start, the beginning of the 90s started a period during which the gap has failed to close. Another alarming pattern emerging from the observed data is that the gap seems correlated to age; the oldest cohort observed (17-year-olds) experience the greatest gap in both math and reading. This could suggest increasing inequality of higher education for blacks and whites or illustrates "stacking" effect of years of inferior education.

How is the racial divide in achievement an issue of poverty? The 2005 NAEP assessment of math skills in eight graders showed that only 13% of poor children achieved proficiency, compared to 40% of non-poor children. A whole 49% of poor children have scored below the threshold for basic competency, compared to 21% of non-poor children. Clearly low-income students are at high risk of falling behind their peers. Studies have found that school achievement (especially in math) is a good predictor of later market outcomes. Thus, the education gap is an issue closely related to both current and future states of poverty.

The achievement gap is also observed in terms of high school graduation rates – whites are twice as likely to graduate on time compared to blacks and Hispanics. Graduation is also a good market-effect predictor – high school graduates have earned about \$15 per hour in 2005, while high-school dropouts' wages were a third lower – about \$10. The cited data shows an existing achievement gap along both racial and socioeconomic lines that creates an underclass unable to successfully compete in the market economy, thus propagating poverty and limiting social mobility. Many scholars hold that narrowing the education gap is crucial for achieving social equality and racial integration.

This paper relies heavily on the fact that “narrowing the achievement gap” and “education” can be used interchangeably. In other words, in the further stages of this paper it is assumed that education can and will narrow the achievement gap. This conclusion stems from the fact that Pisarev considers the education gap a product of three environmental forces – the neighborhood, the family and the school. If the inequality effects in one of these areas (this paper discusses the school) are eliminated, clearly the gap will be smaller by the amount of these previously existing inequalities. In order for any further discussion to be relevant, one has to briefly prove that the achievement gap is indeed influenced by environmental forces.

Historically, resistance to desegregation gave validity to the explanation that racial difference is rooted in the environment. After the educational programs for disadvantaged children in the 60s failed to close achievement scores, the environment explanation lost credibility. In 1969 Arthur Jensen published an article stating that the gap must have a big genetic component. This article laid foundation for books such as

*The Bell Curve* by Herrnstein and Murray. The book argues that whites are genetically superior to blacks based on the facts that 1) IQ is 60% heritable within the white population and 2) there is a stable 15-point difference between average IQs of whites and blacks. Since IQ scores are based on a standardized test, it is safe to state that Herrnstein and Murray's claim suggest that the achievement gap is caused by genetic factors rather than environmental ones.

This opinion is not shared by the rest of the scholastic community, however. Several studies have shown that the IQ gap is much more dependent on environment than race. In one study, black and mixed-race children who were adopted by white families scored at least ten IQ points higher than their black peers who remained in their families. When tested in their late teens, however, this advantage had virtually disappeared. The obvious conclusion: the environment rather than race was responsible for the IQ difference. As to why the scores got equalized later - the adopted children had moved from their adoptive parents homes' into less favorable environments and neighborhoods. Speculatively these were environments that they felt more comfortable in, ones composed of their own race.

Another study also suggests that the reason for the gap is environmental rather than genetic. The study found a positive correlation between skin lightness and test scores in mixed-race individuals. To rule out the claim that higher concentration of "superior" genes is the answer, the scientists calculated the percentage of white genes in each individual; no correlation was found. Thus, it was not the genetic composition but how the individual was treated (the environment) that resulted in higher scores. Clearly, when

dark skin factor was eliminated, the mixed-race person received much better treatment and was allowed greater access to social goods.

These studies strongly suggest that the achievement gap (IQ and other test scores) was caused largely by environmental factors (social treatment); no evidence was found to link genes (race) and achievement scores. In today's society the three most influential environmental factors for a young individual are considered to be the family, the neighborhood and the educational institution. There is vast body of literature pertaining to each of these factors; this paper will discuss how the educational institution explains part of the present education gap.

Washington and Lee University

## II. EFFECTS OF THE GAP

The education gap is linked to numerous effects that can be divided into market and non-market effects. Market effects pertain to the market value of an individual, as measured by yearly wage. The correlation between levels of education has been observed as early as 1964, when Philip Cutright published a study observing the wage-gap as a function of Armed Forces Qualification Test scores. Cutright found that, on average, a black man earned 57.5% of what a white man earned. Higher achieving blacks (ones above national average) earned 64.5% of what whites earned.

Such difference might seem small, but one has to keep in mind the study was conducted in the mid-60s, when racial polarization was much stronger than today's. Yet, in 1993 blacks earned only 67% of what whites earned. However blacks who scored between the thirtieth and forty ninth percentile the number rose to 84% and for blacks above the average level, the number was 96%.

This statistic shows two forces in action – one of them is the racial depolarization of the US society, illustrated by the closing of the average salary gap. Another force that is illustrated is the increased social mobility for minorities. In 1964 above average scores translated very little in market terms by closing the gap by mere 7%. In the 1993 study, above average scores led to gap decrease of 30%. Although complete market equality has not yet been achieved (that would have been illustrated by wage equality given the same achievement scores), such increased wage mobility provides much greater incentive to attain higher achievement scores and education. The data shows that there is incentive to achieve equal achievement scores. Such equality has been demonstrated to achieve market equality along racial lines.

Numerous studies have observed the non-market effects of decreased achievement gap. Particularly well documented is the link between higher education of the parents and the next generation's "quality." Haveman, Dawson and others have concluded that high parental education increases the child's probability to attain higher future earnings. Children's health is also improved. Highly educated mothers are less likely to indulge in harmful habits and are more likely to rely on vaccines. This significantly reduces the number of low-birth babies and babies with birth-defects among highly educated mothers (Berhman and Wolfe 1987). Education also reduces the likelihood of teenage pregnancy and out-of-wedlock births, which are correlated to lower socioeconomic status (SES) and poorer health.

Along with positively affecting future generations, higher education improves the life prospects of the contemporaries as well. Grossman and others have linked higher education to better health, increased life expectancy and health-conscious lifestyles.

In their review of non-market outcomes of schooling, Wolfe and Zuvekas list many more beneficial outcomes of higher schooling. These outcomes include: increased efficiency in consumer spending habits, improved labor market search skills and better management of savings. Moreover, highly educated people are less likely to divorce or commit crime and more likely to give to charity.

In conclusion, both market and non-market effects of higher schooling (and thus closing the achievement gap) are desirable both for the individual (ex. better health, salary) and socially (ex. better family planning, lower crime rates).

### **III. REASONS FOR THE GAP**

Since the passage of the Elementary and Secondary Education Act of 1965 (ESEA), the government has been providing funds to improve the education of disadvantaged children. The funds were distributed based on a formula that puts weight on disadvantaged pupils. The last reauthorization of ESEA – the No Child Left Behind Act of 2001 (NCLB) instituted standards-based educational reform by annually testing 3-8 grade students on their reading and mathematics skills. The act expects schools to show adequate yearly progress (AYP) under threat of corrective action and, ultimately, school reconstitution.

NCLB is a cornerstone document in educational policy; it creates incentive for the schools to pay attention to students who have been historically off the radar (NCLB has provisions for poor students, students of color, students who do not speak English well and students with disabilities). However the accountability system instilled has some major flaws.

NCLB's goal is for all students to reach scores of proficient and above by 2014. This means that adequate yearly progress cannot be achieved even by the fastest progressing schools. An overly demanding system will send the wrong incentives to schools. Skilled teachers might start leaving schools with high proportion of poor or low-achieving students, which are the schools that need skilled teachers the most. Others may start teaching with focus on how to pass the exam as opposed to aim at narrowing the knowledge gap. What is more, since the majority of schools, no matter how well-progressing, are classified as underperforming, legislators will find it hard to redirect resources to the schools that are actually failing.



Another set of problems stems from the fact that each state designs their own test and decides what the passing score is. This fact, combined with the pressure to meet AYP, provides another undesirable incentive – unchallenging exams with low passing grades, which provides no incentive on the part of disadvantaged students to better themselves and narrow the gap with their peers. For example, in 2003 77% of fourth grade students in Alabama showed proficiency on the state exam versus only 22% proficiency on the NAEP exam.

Another outcome NCLB fails to regulate properly is the high-school graduation rates. The US Department of Education allows states to measure graduation rates in variety of ways and does not require for schools to measure graduation rates within subgroups such as minorities or poor students. As a result, high-school graduation rates do not account for closing the achievement gap; they are often meaningless with respect to race and poverty, since schools will calculate such rates to show the most favorable result. In short, the accountability system that NCLB tries to institute fails to hold schools actually accountable and provides incentives opposing its initial goal.

Federal public policy is often blamed for the existence of the gap in school funding. The constitution of each state requires a public system that ensures some form of “basic education”. The states set levels of financing for all school districts, which is presumed to provide enough to achieve the “basic” level of education. Unfortunately, the calculation of the foundation level of funding is often criticized. Currently, most states decide the amount it plans to allocate to schools based on past budgets and spending, without considering if they were adequate in the first place. Such budget-based decision

on spending does not necessarily fulfill the requirement for providing enough to ensure basic education.

Recently, other ways to determine spending levels have been considered. The most promising of them, the so-called “successful schools approach” bases funding on schools or districts with above-average achievement scores, ensuring that schools receive funds at levels at which students’ success was proven possible. In the context of this paper, this approach will favor school districts with below-average funding; however it will hurt schools that cannot translate funds into improved outcomes. Such “inefficient” schools are more likely to be in troubled neighborhoods, have sizeable classes and number of special need students and are unable to attract good teachers. In other words, according to the successful schools approach, many schools that do not have enough funds to provide basic education will be deemed inefficient and see even further cuts. Needless to say, new spending school formulas will have to be adjusted for several factors to avoid such injustice. Ways to adjust for such negative factors will be discussed in latter section of the paper.

In the 1990s a new theory came into prominence – the gap is explained not only through inadequate funding but also unequal distribution of resources between white and black students. First of all, spending among states is extremely diverse, ranging from \$4,500 per Utah student to \$10,300 per New York student (1995-96). Clearly, the sizeable black minorities in the rural south states such as Mississippi (\$4,700 per student) and Alabama (\$5,100) mean that black students, on average, receive less funding per year than white students. Within states, different school districts also vary greatly in their spending habits. A study on sources of funding for schools states that school districts

with low property values do not have the same ability to raise taxes (Howell and Miller). Census data states that the median black household income is \$32,000 and the white household income is \$50,600 (2006 data); one can conclude that the districts that have trouble funding schools locally have overrepresentation of minorities in its demographics. The situation is exacerbated by the fact that low-income, low-education families are less able to control their desired family size, which increases the need for facilities and decreases taxes available per student.

Even if one dismisses the inequality on state and school district level, there are gross differences between distribution of resources between predominantly black and predominantly white schools. Assuming that two hypothetical schools are in the same school district, they will receive comparable per-pupil resources. However, the distribution of these resources is unequal. Predominantly black schools would probably draw students from more problematic neighborhoods, increasing the share of students with behavioral and academic issues. They require smaller classes, special education teachers and thus consume more resources than the average student, who is left with a diminished per pupil spending. Due to budget constraints, black pupils who lack special problems would probably have bigger class sizes and less devoted and skilled teachers than their white peers. Studies suggest that these two resources – class size and teacher involvement/ability – are influential factors in the education process and, consequentially, on the achievement gap.

Grissmer reports the importance of class size. In the Tennessee STAR and Wisconsin SAGE experiments K-3 students were placed in large and small classes. It was estimated that the smaller classes showed improvement in achievement by 0.15-0.25

standard deviations in the Tennessee experiment and 0.1-0.3 in Wisconsin. Moreover, the gap between small and big classes increased with every year of the experiments. This could explain why by the time they graduate from 8<sup>th</sup> grade, students from minority dominated communities are months and years behind their peers, depending on subject.

Another sad reality of predominantly black schools is their inability to attract adequate number and quality of teachers. A simple economic model will illustrate this point. The supply of good teachers a district may hire will depend on a number of factors including working conditions, wage and conditions in alternative occupation. Predominantly black schools are more likely to be in neighborhoods with higher crime rates. The working conditions in this school can be hampered by students with special needs, lack of funding, etc. Even if the neighborhood and the school are on par with the employee's expectations he can still choose to become engineer or scientist (for math teachers). In order to attract a desirable teacher, a district will have to provide extra incentive to compensate for all these factors, usually in the form of cash. This means that neighborhoods in this predicament and limited resources end up with hard-to-fill positions that only sub-par teachers with no other prospects are willing to take. Not only their abilities are insufficient to begin with, but they might feel like they are being forced into the undesirable position and end up resenting the job and performing even worse than usual.

Boyd et al.'s paper suggests that both experience and teacher's certification exam score are predictive of student's achievement. Albeit, experience is considered the weightier variable, data from NYC and North Carolina suggest positive correlation between test scores (especially math) and the teacher's certification exam grade. The

higher achievement could be caused by a more determined teacher rather than his higher exam score; however such a teacher is more marketable. Many districts with hard-to-fill positions cannot afford to attract certified teachers and have resorted to special programs that circumvent such requirements. Such districts will not benefit from determined high-testing staff.

Washington and Lee University

#### **IV. NARROWING THE GAP**

The following section discusses suggested and already implemented reforms that seek to narrow or even eliminate the portion of the education gap caused by the school environment.

The recent trend to reexamine the formulas of financing school districts endangers to increase inequality in spending. As mentioned, “Inefficient” school districts are likely to be as such due to factors that are also related to overrepresented black student body and low income – neighborhood, teacher availability, etc. Such school districts might already receive the amount of funding at which “successful” schools operate, or at least be close to the amount. Spending unadjusted for factors that cause inefficiency could widen the achievement gap instead of narrowing it; schools in favorable areas that are able to efficiently spend resources would receive the same amount as schools in unfavorable areas (provided they are in the same school district), increasing the disparity of per pupil spending.

The literature recognizes several ways to promote equality spending among districts. One of them suggests weighting pupils differently based on their drawbacks, an approach used since the passing of ESEA. A normal student would have a weight of 1, while a student who qualifies for free lunch could weight 1.25 or a special education student might weight 2.5. The rationale is to equalize funding by providing district with higher concentration of poor students extra funds to compensate for the higher associated costs. Pupil weighting has the disadvantage of grouping students together in broad categories that may or may not reflect their individual expenditure needs.

Another alternative to equalizing funding is through categorical funds, dispensed for a specific purpose. However, such funding could work either towards or against equality spending. Ladd gives the following example: textbook purchases are provided for on per-pupil basis, disregarding district wealth (case against equity). On the other hand, federal funds under title I is based on the number of poor students in the district (case towards equity).

No doubt, the schools suffering the most from the unequal redistribution of resources are the ones in areas of concentrated poverty. Such schools cannot rely on local funding to meet their needs – according to a study the wealthiest school districts spend 21% per student above the national average while the poorest districts spend 11% below the average. Ladd notes that successful schools in the poorest districts have all required substantial initial funding for planning and teacher training. He proposes that “to improve student outcomes, schools serving concentrated populations of low-income students should have access to high-quality technical support and sufficient funding for planning and focused staff development” (11). To achieve fuller equality he insists that US and state funding also adjusts for persons in need for special education and intensive English courses, since their education costs more.

On the local level Ladd envisions a voluntary higher-quality program funded by local taxes. To provide incentive for poorer communities, the government would match the so collected funds up to a reasonable point.

Another consideration of equality Ladd considers is building expenses for new facilities. The reasoning is that these expenses, which range between \$6.5 and \$13 million, are 80% covered by local taxes and, as already noted, there is huge disparity in

the ability of districts to raise funds. He suggests that this disparity be flattened by increasing heavily taxes in low-property-value districts. Again, the funds will be matched by the government up to a certain point.

Another major cause of the achievement gap is differences in teacher quality, thus some scholars have explored ways to provide adequate teachers to all students. The previous section provided a simple economic model to explain why certain districts would have trouble attracting sufficient amount of adequate teachers. The model suggested that in order to compensate for undesirable working conditions, the school has to increase incentive by increasing teacher salaries. On theory the solution is simple, however there are budget constraints – schools cannot afford to provide enough incentive to attract quality teachers, sometimes even any teachers.

It is highly unlikely that legislation will ever match the needed incentive in the current market system. Inability to attract qualified teachers is rooted in the industry's inability to keep up with the rising productivities in other industries. Replacing man labor with machine labor and implementing new methods and discoveries reduces costs and increases productivity in many industries, allowing for increased wages. The education industry's specifics (and for that matter the medical industry) do not allow for automated education and new teaching methods increase productivity by small margins. People who could have been teachers and even current teachers opt to switch to more lucrative fields, thus decreasing the teacher pool and raising the needed compensation to attract teachers. To keep up with other industries, lawmakers will have to raise teacher salaries by magnitude that will be quite politically unpopular. Moreover, such measure will seem unjustified to the public – such raises are usually accompanied by increased productivity



or sharp increase in living costs. Given the unpopularity of increasing salaries to provide enough teachers, the simplistic economic model leaves one other solution – simply increasing the pool of available teachers, thus pushing the needed compensation down.

Boyd et al. studied the outcomes of programs with tight and loose teacher certification programs. The study suggests that while programs that have high requirements produce better prepared teachers, experience seems to be much more important. Alternative certification program teachers achieved student outcomes comparable to those of normal teachers after only two years on the job. Certification requirements limit the pool of teachers, while the study does not find that they affect outcomes. Boyd concludes that the evidence is limited to affect policy, however, reducing certification requirements might prove to increase the teacher pool, thus decreasing teacher compensations needed.

A direct consequence of increased teacher availability would be the school's ability to decrease class size, another factor associated with achievement scores. D. Grissmer observes the Tennessee STAR and Wisconsin SAGE designs and notes statistically significant improvements in math and reading scores. Both designs used predominantly poor and minority students. Although the designs were created to observe the effects of class size reduction they are clearly aimed at closing the gap by providing similar educational service in the future. Grissmer observes that the improvements were observed up to 3 years after the end of the experiment and the improvement was much larger for minority students over their peers who attended normal schools. These optimistic results however are subject to self-select bias (minority students who stayed until the end of the experiment are clearly more concerned about their studies and

probably put more effort than their peers) and high drop-out rates. Grissmer concludes that lawmakers should think twice before implementing the STAR or SAGE designs – their cost is extremely high and they are virtually irreversible. Grissmer calls for more reliable research and cost research before this option is seriously considered.

Some scholars call for even more radical reconstruction of schools to combat the achievement gap. One such option is charter schools - public schools with minimal control and supervision from the school district. Many charter schools have a special focus that is in line with the efforts to narrow the achievement gap – many of them are designed for the need of students at danger of failing high-school, students from low-income homes or racial minorities. Very few data has been gathered on voucher school students, since these schools have become popular only recently.

Another more unorthodox notion is the voucher system – public stipends for low-income students to attend private schools. The system tries to narrow the achievement gap making the more efficient (providing higher achievement) schools available to wider range of students. Another rationale is the introducing low income students among more affluent pupils in the hope that peer effect will introduce certain values and provide a challenging environment; studies on the consequence of peer effect on outcomes suggest that there is positive effect, however its magnitude is controversial. The observed data suggest that African-American students under the program do a good job to catch up with their privately educated peers. This is especially true in Catholic schools. Ladd suggests that this could be the case since Catholic schools provide rigid system and support that was lacking in the pupil's family environment, once again proving that the achievement gap has multiple components – the neighborhood, the family and the school. Since

vouchers are not distributed but one has to apply for them, again the study suffers from a self-select bias.

On paper, a voucher program will narrow the education gap simply by providing all students with access to adequate education. However, several models suggest that instituting a large-scale voucher program can actually hurt them. First of all, as the able and ambitious students who put high value on education leave the inefficient public schools, they leave behind pupils with no positive influence left; the school's performance level drops and so does funding. If the school closes down some of these students might be forced to visit voucher schools and end up struggling to pay the tuition fees.

Washington and Lee University

## **V. COURSE OF ACTION**

Increasing school funding to “effective school” levels, increasing teacher salaries across the industry or decreasing class sizes are all very expensive. According to Grissmer, a nationwide reduction of class size to 20, 18 and 15 in grades 1-3 under one set of policy rules would cost \$2 billion, \$5 billion and \$11 billion respectively. Unfortunately no estimates as to the costs of the other reforms were found but they are substantial as well. Most of the reviewed studies request further research on the area, since conclusions are based on thin evidence. Murmane and Steele admit that many approaches to attracting and retaining high quality teachers have been tried but their effectiveness remains unknown.

In another article, Murmane argues for a program to reduce the achievement gap caused by school-related factors. The whole set of reforms would cost approximately \$2.5 billion – much cheaper than the few other estimates encountered in the literature. One of the big advantages of Murmane’s suggestions is the fact that he does not rely on any major reform in US education policy, thus making them highly executable in practice. He utilizes the legislative frame of the NCLB act that has already been set up and avoids more radical experiments such as vouchers.

Although Murmane’s program’s goal is to eliminate inequality later in life, he aims to achieve this by improving education for disadvantaged students. He does not reason with respect to narrowing the achievement gap, but his policies imply that; after all eliminating future inequality would be result of the elimination of earlier educational inequality – the achievement gap. His suggestions are most viable in the current legislative and political framework of the US.

One of Murmane's major concerns of scholars today is that NCLB does not provide a system of accountability although it has been created with that same goal in mind. As discussed, the adequate yearly progress (AYP) provision that aims for 100% proficiency by 2014 is unattainable by majority of schools, providing incentive to design unchallenging tests and low passing scores. Robert Linn proposes a more universal and less diverse proficiency standard by setting it equal to the median score of students who took the exam in 2002 (the first year after the instatement of NCLB). He further proposes universal AYP - 3% more of the students should pass the exam compared to last year's percentage; by 2014 the required proficiency level would be 86% - still ambitious but more realistic goal than the current proposition.

Another of Murmane's proposals was adopted as a five-state pilot program. He suggested that instead of setting specific achievement levels, AYP should be measured via specified gains over the school year. Before students who have started far behind their peers penalized the school by not achieving AYP. Moreover, if there was no way for the student to reach the achievement level for the year, teachers might not "waste" time on him and concentrate on more "promising" students, abandoning the students who need the most teacher attention. The new program awards teachers and schools that have achieved significant progress over past achievement, even though the student is still below the achievement cutoff line.

The other major accountability issue was the fact that districts set their own ways to calculate graduation rates. High school graduation is extremely important predictor of both market and non-market outcomes. According to the Economic Policy Institute, in 2005 a high school graduate earned about 98% of what he has earned in 1973 (adjusted),

while a high school dropout earned about 84%. Non-market outcomes of high-school graduation include lower crime and divorce rates, fewer unwanted pregnancies and improved health and lifestyle choices. Given the importance of the graduation predictor, it is imperative that states, schools and districts come up with common requirements for improving graduation rates.

The Department of Education has already provided competitive grants to develop the required data system. Thirty-nine states are planning to report graduation rates based on a common formula. By making measurements of achievement universal throughout the country, scholars hope to introduce a level of accountability that will provide the right incentives towards educating disadvantaged students and narrowing the achievement gap.

A second big step that is required is to ensure narrowing the gap is to promote NCLB's option of school choice. According to the act, a school district must give a student the option to transfer to a more successful public school if his own school has failed to achieve the AYP for two consecutive years. Low-achieving children from low-income families are treated with priority. The rationale behind the option is similar to the one of the voucher system – to make successful schools accessible to more disadvantaged students.

The option, however, is rarely used right now. Successful public schools cannot accommodate all willing to transfer and the waiting lists are long and many schools do not inform parents about the NCLB option. Significant state funding would provide incentive for successful suburban districts to voluntarily educate children from failing urban ones. The METCO grant program currently enables 3,300 low-income students to attend schools in the suburbs of Boston and Springfield. St. Louis' grant program

educates 12,000 African-American students, most of whom are from low-income families, in suburban districts as well. The results from these programs are promising – urban students showed improvement in both math and English skills, thus narrowing the gap with their suburban peers. Of course if such programs are implemented, NCLB should adjust its AYP so as not to penalize suburban schools for taking in low-achieving students. Although such programs show promising results and would be easy to implement, they will most likely serve a small fraction of low-income students from urban districts; suburban districts would not have unlimited willingness and seats to accommodate urban students.

Thus, the most important step in closing the gap would be improving the schools in areas of high poverty concentration. Such efforts should concentrate on improving teaching by recruiting adequate teachers and administrators. From the previous discussion, it is clear that teacher positions in poor districts are hard to staff and only mediocre teachers are willing to fill them. The solution so far has been to provide monetary incentives. Many districts provide bonuses or pay premiums to teachers who fill in hard-to-staff position. These efforts however are independent of each other and are rarely well observed and documented for further reference. Murnane offers that the next reauthorization of NCLB should include targeted, competitive matching grants to support initiatives to attract high skilled teachers and administrators in high-poverty schools.

Murnane's proposal provides the right incentives to maximize both spending efficiency and the benefit to the disadvantaged students. "Targeted" refers to the fact that the grant will specifically be spent on improving the quality of teaching, as opposed to a "block" grant that can be spent as the school sees fit. Moreover, competitiveness will

spur creativity, which is needed to tackle the issue. Finally, “matching” will ensure that the school districts have financial incentive to make sure their plan succeeds. Murnarme also envisions a provision that will require these efforts to be scrutinized in order to build a reference base on what grant designs were successful. In short, Murnarme’s design will create grounds for experimenting, in which the most motivated and incentivized districts will participate, hopefully thus ensuring the development of a viable plan to increase teacher quality in low-income areas.

No matter what reform the government enacts, it is important to note that some of the related costs will be absorbed by positive effects created by them. The market and non-market benefits to the individual have already been discussed. Non-market effects to society also have been mentioned. For the ones that grudge efficiency solely on market outcomes, a brief discussion of the market effects to society is in order.

Robert J. Barro observes the effects of education and other variables on a country’s Gross Domestic Product (GDP), an index determining the size of the economy and economic prosperity in general. He concludes that there is a positive correlation between test scores and the economy’s growth rate. Particularly significant variable was the average starting number of years of education for males at the secondary and higher levels, the rationale being that educated workforce would better adopt new technologies that bring about efficiency and economic growth.

In order to increase the average years of education of the male workforce, one can invest in any cohort and achieve the same increase on average. However, Barro notes, the costs associated with educating further different cohorts are different. The law of diminishing returns, which states that in any production system beyond a certain point



each additional unit of variable input yields decreasing levels of output, is well documented in economics. In education, the rationale is similar and is illustrated with the increasing costs of education per year as one goes from secondary to higher education. This means that the most cost-effective way to increase the average years of education in the workforce is to invest in the lowest educated workers beyond primary level. The question becomes a matter of race when one makes the observation that blacks and Latinos are underrepresented in high school and even more so in college. In short, Barro advocates for increased schooling of a cohort of the population in which minorities are overrepresented (low educated workforce), as a way to boost the economy and GDP.

Washington and Lee University

## VI. CONCLUSION

On one hand, the education gap is a predictor of unimpressive future market and non-market outcomes. On the other hand, low-income and minority citizens are more likely to fall behind their wealthier peers. This creates a vicious cycle of poor education caused by poverty, which in turn translates into next generation's poverty, and so on. Thus, eliminating the education gap should be a priority of the US government.

This paper discussed numerous experimental programs and suggestions for future policy. Most of them either have a minor effect or affect a very small number of self-selected low-income students. The answer lies in improving the existing schools, not shipping students to alternative ones.

Murmane's set of policy suggestions seem to identify and meet all weak points of current legislature. He suggest increased accountability and goals that would provide the right incentives for students, teachers and school administrators. He also outlines a grant program that seems to be consistent with the goal of narrowing the achievement gap. His grant suggestions should become a base for a series of experimental programs; future research is key in figuring out what kind of legislature will provide the right incentives and environment to break the cycle of low-educated, low-paid US citizens.

## VII. WORKS CITED

- Barro, Robert J. Education as Determinant of Economic Growth
- Behrman, Jere and Barbara Wolfe. 1987. „How Does Mother’s Schooling Affect Family Health, Nutrition Medical Care Usage, and Household Sanitation?” *Journal of Econometrics* 36: 195-204
- Boyd, Donald, Daniel Goldhaber, Hamilton Lankford and James Wyckoff. The Effect of Certification on Teacher Quality, *The Future of Children*, vol. 17, no.1, Spring 2007
- Grissmer, David Waltz. Improving Student Achievement: What State NAEP Test Scores Tell Us. Rand Education, 2000
- Grossman, Michael. 1975. “The Correlation between Health and Schooling.” In *Household Production and Consumption*, ed. N.E. Terleckyj, pp. 147-211. New York: National Bureau of Economic Research.
- Jencks, Christopher and Meredith Phillips. America’s Next Achievement Gap: Closing the Black-White Test Score Gap, *The American Prospect*, Sep/Oct 1998; 40;
- Howell, Penny L. and Barbara B. Miller. The Future of Children – Financing Schools. vol 7, no. 3, Winter 1997
- Ladd, Helen F. School Vouchers: A Critical View. *Journal of Economic Perspectives* 26, Fall 2002
- Murnane, Richard J. Improving the Education of Children Living in Poverty. *The Future of Children*, vol. 17, no. 2, Fall 2007
- Steele, Claude M. The Black-White Test Score Gap. *The American Prospect*; Nov/Dec 1998; 41;
- Wolfe, Barbara and Samuel Zuvekas. Non-market Outcomes of Schooling. Institute of Research on Poverty Discussion Paper no. 1065-95, May 1995