

# Closing the Achievement Gap Means Transformation

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**Chris Colgren**

**Neil E. Sappington, Chair**

*Illinois State University*

NCPEA Editorial Advisor: Dr. George Moore

Educating students in public schools has never been at a higher priority. As our nation enters the informational-based economy public schools are going to be required to educate far more students at a higher and more rigorous level. As Schlechty (2005) argues, this is something that public schools were never designed to do. Data from Economic Policy Institute indicates that the earning potential of high school dropouts has dropped significantly since 1970. Individuals with advanced degrees earned twice as much as high school dropouts in 1970. Today that earning gap has increased to individuals with advanced degrees earning three times as much as high school dropouts (William, 2011). Data indicate that policy reform efforts at the federal level can make a difference. According to Darling-Hammond (2010), federal policies enacted in the 1970s had a positive impact on student achievement.

These investments began to pay off in measurable ways. By the mid-1970s urban schools spent as much as suburban schools and paid their teachers as well; perennial teacher shortages had nearly ended; and gaps in educational attainment had closed substantially. Federally funded curriculum investments transformed teaching in many schools. Innovative schools flourished, especially in cities. Improvements in educational achievement for students of color followed. In reading, large gains in Black students' performance throughout the 1970s and early 1980s reduced the achievement considerably, cutting it nearly in half in just 15 years...However, this optimistic view of equal and expanding educational opportunity, along with the gains from the "Great Society" programs, was later pushed back. Most targeted federal programs supporting investments in college access and K-12 schools in urban and poor rural areas were reduced or eliminated during the Reagan administration in the 1980s. (p. 18)

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Boykin and Noguera (2011) asserted in today's society White students have access to superior programs both at school and outside of the educational setting. In addition to the racial divide, the effects of children living in poverty continue to create challenges for public schools. Edmonds (1979) was one of the first researchers to emphasize this point in his *Effective School* research.

Inequity in American education derives first and foremost from our failure to educate the children of the poor. *Education* in this context refers to early acquisition of those basic school skills that assure pupils successful access to the next level of schooling. If that seems too modest of a standard, note that as of now the schools that teach the children of the poor are dismal failures even by such a modest standard. (p. 15)

Kirp (2013) reported how these statistics have recently increased. Using data from the National Center for Educational Statistics (NCES) he showed that between 2007 and 2011 students living in poverty increased from 17% to 21%. "Add in the near-poor, those barely scraping by, and that figure nearly doubles. For Black and Hispanic youth, poverty is a double whammy" (Kirp, 2013 p.6). Given this background, the study addressed in the paper sought to analyze the quality of academic programming that was available to White students as compared to students of color and offerings available to low income students versus non low-income students. According to Marzano (2003) this exposure to high quality programming has the largest impact on student achievement.

Inspired by theories of educational equity, the study discussed henceforth sought to explore the problem that not all students in Illinois public schools are achieving at high levels. In doing so, secondary data from the Illinois State Board of Education (ISBE) was used to assess the differences between students who have completed Advanced Placement (AP) courses and those who have not in traditional Illinois public high schools. Specifically, the researcher examined the course placement and standardized test score performance of students across the state of Illinois.

The data set included information on 145,560 Illinois high school students eligible to complete the ACT during the 2012-2013 school year. Alongside participation in AP courses, students' socioeconomic status and race were considered in analyzing the data. Among students included in the data set 80,939 (56%) were identified as White; 29,437 (20%) were identified as Latino; 24,953 (17%) were Black; 6,302 (4%) were identified as Asian; 3,426 (2%) were identified as Two or More Races; 377 (less than 1%) were identified as American Indian; and 123 (less than 1%) were identified as Native Hawaiian or other Pacific Island. Among all students included in the sample 87,223 (60%) did not participate in the National School Lunch Program and 58,337 (40%) participated in the National School Lunch Program. Participation in the National School Lunch Program was used to define low-income status for the purposes of the study. As intended, the findings may contribute to the closing of achievement gaps identified by socioeconomic status and race, and potentially lead to increased high school graduation and college enrollment rates. Accordingly, the results are of practical significance to researchers and practitioners interested in pursuing achievement equity in public education.

## **Pursuing Achievement Equity**

Achievement equity is not currently a reality in American public schooling. This problem is perhaps most visible as a result of achievement disparities across racial and socioeconomic backgrounds (Boykin & Noguera, 2011; Howard, 2010; Darling-Hammond, 2010; Muhammad, 2009; Wagner, 2008). For example, data from the National Assessment of Educational Progress (NAEP), a congressionally mandated measure of student achievement that has been administered by the National Center for Educational Statistics since 1969, indicated striking gaps in academic achievement between Black and Latino students and their White counterparts. A gap is similarly witnessed between students, regardless of race, who come from low-income backgrounds and their peers who come from middle-class or affluent backgrounds (Howard, 2010).

The abundance of data indicating achievement disparities across racial and socioeconomic backgrounds presents a problem that has not gone unrecognized in contemporary education. In fact, over the past few decades, discrepancies in educational outcomes between various student groups have compelled schools to provide greater attention to the educational needs of poor and disadvantaged children; students with learning disabilities; recent immigrants and English language learners; and African Americans, Latinos, Native Americans, and other students of color (Boykin & Noguera, 2011). Many of the recent school reform measures have been initiated in response to what is commonly referred to as the “achievement gap.”

Making achievement equity a reality for all children, however, will require far more than transactional reform efforts. To illustrate this concern, consider the academic performance of the students of Illinois on the 2013 ACT, a curriculum- and standards-based educational and career planning tool that assesses students' academic readiness for college. The ACT is administered in all 50 states and accepted by all four-year colleges and universities in the United States. This assessment, which is taken by more than 1.6 million high school students every year, consists of four multiple-choice tests: English, mathematics, reading, and science (ACT, 2013).

Fewer than one quarter of the Illinois students who completed the ACT in 2013 did so having participated the most rigorous coursework available to them at their respective high schools. The students who did participate in Advanced Placement courses, however, scored significantly better on the ACT than those who did not. Advanced Placement, or AP, courses are accelerated courses created by the College Board to offer college-level curriculum and examinations to high school students. These courses are audited by and receive the AP designation from the College Board.

Using a cross-sectional survey design, the study used secondary data from the Illinois State Board of Education indicating high school students' socioeconomic status, race, placement in AP courses, and ACT scores to answer five research questions that reflected a general understanding of tracking policies and practices as currently employed in American public schools. Specifically, the study addressed the following questions:

1. What are the differences in ACT scores between students who completed at least one AP (English, mathematics, science, and/or social studies) course and those who did not?
2. What are the differences in ACT scores between (a) Black students and White students who completed at least one AP (English, mathematics, science, and/or social studies) course when income is accounted for, (b) Latino students and White students who completed at least one AP (English, mathematics, science, and/or social studies)

course when income is accounted for, and (c) Black and Latino students who completed at least one AP (English, mathematics, science, and/or social studies) course when income is accounted for?

3. What are the differences in ACT scores between (a) Black students who completed at least one AP (English, mathematics, science, and/or social studies) course and those who did not, (b) Latino students who completed at least one AP (English, mathematics, science, and/or social studies) course and those who did not, and (c) White students who have completed at least one AP (English, mathematics, science, and/or social studies) course and those who did not?
4. What are the differences in ACT scores between low-income students and non low-income students who completed at least one AP (English, mathematics, science, and/or social studies) course?
5. What are the differences in ACT scores between (a) low-income students who completed at least one AP (English, mathematics, science, and/or social studies) course and those who did not, and (b) non low-income students who completed at least one AP (English, mathematics, science, and/or social studies) course and those who did not?

The statistical technique known as analysis of variance (ANOVA) was used to examine the relationship and differences between students who completed AP courses and those who did not in Illinois public high schools. ANOVA is a hypothesis-testing procedure used to evaluate mean differences between two or more treatments. The goal of ANOVA is to determine whether a treatment effect exists. Treatment effects are said to cause variance when the differences between treatments are significantly greater than can be explained by chance alone (Gravetter & Wallnau, 2007). An effect size between 10% and 25% suggests a medium strength treatment effect. Anything below 10% is considered to have a small effect, and anything above 25% suggests a large effect (Cohen, 1988).

In the case of the second research question, where there are three treatments, post hoc tests were conducted following the ANOVA to determine exactly which mean differences are statistically significant and which are not. Specifically, Tukey's HSD test was conducted to compare the individual treatments two at a time. This comparison is possible through the calculation of the honestly significant difference (HSD), which represents the single value that determines the minimum significance between treatment means that is necessary for significance (Gravetter & Wallnau, 2007).

ACT performance of students who participated in AP courses is compared to that of their peers who participated in less rigorous courses in Table 1.

Table 1  
*Differences in Students' ACT Mean Scores by Content Area*

	N	M	SD
English			
Participated in AP English course(s)	24,500	25.89	5.87
Participated in lower track English course(s)	119,941	18.49	6.11
Mathematics			
Participated in AP mathematics course(s)	22,204	28.08	4.75
Participated in lower track mathematics course(s)	122,360	19.12	4.36
Science			
Participated in AP science course(s)	20,657	25.82	4.91
Participated in lower track science course(s)	123,827	19.35	4.97
Reading			
Participated in AP social studies course(s)	37,255	24.13	5.98
Participated in lower track social studies course(s)	107,241	17.98	5.51

Of the students who completed the ACT, 24,550 (17.0%) participated in AP English classes, earning a mean score of 25.89; 22,243 (15.3%) participated in AP mathematics classes, earning a mean score of 28.08; 20,686 (14.3%) participated in AP science classes, earning a mean score of 25.82; and 37,329 (25.6%) participated in AP social studies courses, earning a mean score of 24.13.

Table 2  
*ANOVA Summary Table*

	F (df <sub>b</sub> , df <sub>w</sub> ) <sup>a</sup>	F	p	ES
English	(1, 144,439)	30,317.65	< .001 <sup>b</sup>	0.173
Mathematics	(1, 144,562)	77,070.52	< .001	0.348
Science	(1, 144,482)	30,156.02	< .001	0.173
Social Studies/Reading	(1, 144,494)	32,975.08	< .001	0.186

<sup>a</sup> df<sub>b</sub> – degrees of freedom between groups, df<sub>w</sub> – degrees of freedom within groups

<sup>b</sup> Significant at 0.01 level of significance

Further, and as shown in Table 2, the results indicated that participation in AP courses produced a medium treatment effect in English (0.173), science (0.173), and social studies (0.186) and a large treatment effect in mathematics (0.348). Similar treatment effects were observed when students were compared to similar peers, indicating that students of color and low socioeconomic status benefit from participation in AP courses. The observed effect sizes suggested participation in AP courses is important in all students' educational outcomes and, thus, increasing student exposure to AP courses will likely improve ACT scores. Ultimately, none of this should be considered too surprising.

In addition to demonstrating the merits of participating in rigorous courses, data from the Illinois State Board of Education exposed common inequities related to students' access to AP courses. Low-income students and children of color across the state of Illinois were statistically underrepresented in AP classes during the 2012-2013 school year. For example, while 40.1% of the children studied were considered low-income, only 19.3 percent of the state's AP mathematics course participants were low-income students. Similarly, Black students made up 17.1% of the total student population in Illinois, but represented only 6.2% of the total AP mathematics course participants. And while Latino students made up 20.2% of the total student

population in Illinois, they accounted for only 13.0% of the total AP mathematics course participants.

Based upon these findings, one may assume that ameliorating achievement gaps based upon socioeconomic status and race is merely a matter of addressing inequitable course placements. In other words, the reason that low-income students are not performing at higher levels of proficiency like their more affluent peers is because they are not receiving equitable opportunities to participate in rigorous courses. In the same way, it can be hypothesized that White students outperform African American and Latino students because of their increased access to rigorous educational opportunities. Therefore, it can be reasoned that low-income students and children of color will achieve at higher levels if provided the opportunity to participate in more rigorous AP courses. In response, schools across the state and throughout the nation have undergone policy changes to increase participation in AP courses. In fact, over the past decade, the number of students who graduate from high school having taken AP courses has nearly doubled, and the number of low-income students taking AP courses has more than quadrupled. Between 2012 and 2013, representation of African American students in AP courses increased in 30 states, and representation of Latino students in AP courses increased in 28 states, including Illinois (College Board, 2014). Despite this progress, the gaps in academic achievement that adversely affect low-income students and children of color have remained static.

### **The Complexity of the “Achievement Gap”**

A more complete examination of the data reveals the true complexity of the “achievement gap.” Consider, for instance, the English ACT test performance of Black students in Illinois. Those who participated in AP English courses obtained a mean score of 20.61 on the English ACT test. Their performance was significantly better than the 14.91 mean score of Black students who completed less rigorous English courses. With a medium treatment effect of approximately 12%, it can be concluded that participation in AP English courses benefits African American students. When the academic performance of said students is compared to that of White students, however, there is considerable cause for concern. As it turns out, White students who did not participate in AP English courses obtained a mean score of 20.32 on the English ACT test. In other words, the performance of White students in less rigorous courses was comparable to that of Black students who participated in AP courses. And when White students participated in AP English courses, their mean score increased to 27.93, a full seven points higher than that of Black students in AP courses. Similar trends were visible across content areas and when Latino students were compared to White students and low-income students were compared to non low-income students.

As a result of these findings, one may notice inequity in educational opportunities is not simply limited to access to the most rigorous courses. Instead, it appears that the construct of traditional schooling, including the design of courses, may be particularly advantageous to select student groups. An examination of the mean differences between students who participated in AP courses and those who did not lends further support to this argument.

Table 3

*Mean differences between students who participated in AP courses and those who did not (compared by race)*

	Black	Latino	White
English	5.70	5.63	7.61
Mathematics	5.58	6.63	8.63
Science	4.46	4.69	6.16
Reading	4.40	4.89	5.91

As depicted in Table 3, across all four content areas studies (English, mathematics, science, social studies/reading), mean differences between students who completed AP courses and those who did not were considerably higher amongst White students when compared to Black and Latino students. These higher mean differences indicate that, while all students benefit from participation in AP courses, White students derive a greater benefit from participating in these courses than their Black and Latino counterparts.

As demonstrated in Table 4, similar trends were apparent when low-income students were compared to non low-income students.

Table 4

*Mean differences between students who participated in AP courses and those who did not (compared by socioeconomic status)*

	Low-Income	Non Low-Income
English	5.63	7.44
Mathematics	6.77	8.59
Science	5.05	6.03
Reading	4.57	5.84

Again, with higher mean differences, non low-income students derive a greater benefit than low-income students from participation in AP courses. This being the case, the Black/White, Latino/White, and low-income/non low-income achievement gaps cannot be eliminated by merely equalizing participation in the courses deemed most rigorous by traditional schools. Rather, the findings suggest that the design of these courses within the traditional construct of schooling benefits White and non low-income children and, therefore, an attempt to increase rigor within the current system augments this effect. In other words, if Illinois public high schools were to enroll every student in rigorous AP courses, the academic performance of all students would likely increase, but gaps in academic achievement would continue to exist because the performance of White students would increase more substantially than that of Black and Latino students, and the performance of non low-income students would increase more substantially than that of low-income students. This reality presents a complex challenge for schools aspiring to not only improve educational outcomes but also make achievement equity a reality for all students. In pursuit of this end, educators must recognize the important distinction between transactional and transformation change.

### **The Case for Transformation**

According to Schlechty (2009), in the context of recent school improvement efforts, reform generally entails making changes with the intent of improving the performance of existing operating systems. In other words, reform is aimed at making existing systems more effective at

doing what they have always done. Marzano, Waters, and McNulty (2005) use the term “first-order change” to describe incremental steps taken by a school or district pursuing improvement within the existing culture. Similarly, Heifetz and Linsky (2002) describe “technical change” as deploying existing competence in a different context. Frontier and Rickabaugh (2014) prefer the term “transactional change,” as initially coined by James Burns in 1978, to describe efforts to increase efficiency within the established system and culture.

Changes to AP placement policies and practices will predictably amount to transactional change. For example, if AP placement policies and procedures are revised to allow more students the opportunity to experience the school’s most rigorous courses, then student performance will likely increase. Under this scenario, the existing system becomes more effective in a manner consistent with the definition of transactional change. The reform effort will not, however, eliminate the gaps in academic achievement that already exist as a result of the traditional system and culture of schooling (Schlechty, 2009).

Accepting that the existing system and culture may perpetuate achievement inequity allows educators to embrace transformational change rather than settle for transactional change. Unlike transactional change, transformation involves repositioning and reorienting action through the adoption of radically different means of doing the work it has traditionally done. Whereas transactional change seeks to install initiatives that will work within the context of the existing structure and culture of schools, transformation necessitates altering the social structure and culture to support the needed change (Schlechty, 2009).

Many seeking transformational change in education have made a case that traditional schools are not intentionally organized to empower all students to achieve at high levels (Delpit, 2012; Schlechty, 2009; Sims, 2008). In support of this argument, it is contended that the American interpretation of schooling has been derived almost exclusively from the classical and popular cultural formations of the dominant society. In other words, traditional school culture is and always has been that of White middle class America (Delpit, 2012).

The fact that the courses most revered under the current construct of schooling did more to benefit non low-income and White students than they did to benefit low-income and Black and Latino students suggests that equality in educational opportunities is not limited to the access of particular courses, but also how curriculum and instruction are delivered within these courses. Accordingly, the pursuit of achievement equity must extend well beyond reforming students’ access to the courses traditionally considered to be the most rigorous. Rather, closing the “achievement gap” is a matter of transforming curriculum and instruction in a manner that better reflects the cultural inclinations of a pluralistic society. Such transformative action requires educators to undergo philosophical and pedagogical shifts in their thinking and practice (Howard, 2010).

To this end, educators must recognize that low-income students and children of color are marginalized as a result of traditional schooling practices. They cannot continue to allow the cultural formations of the students they serve to influence their judgments about the intellectual capabilities of these children, particularly those from families of low socioeconomic status and color. Further, they must challenge traditionally accepted notion of “rigorous” curriculum and instruction in favor of a more inclusive and culturally responsive approach to education (Delpit, 2012; Howard, 2010).

## Providing a Culturally Responsive Education

Culture can be defined as the lens through which people interpret life events (Boykin & Noguera, 2011). Culture includes the learned behaviors, orientations, interpersonal patterns, beliefs, values, and underlying assumptions that are prevalent among the members of a society. Culturally competent educators recognize the connection between culture and learning. While teaching, they consistently demonstrate an awareness and sensitivity of the cultural knowledge, beliefs, and practices that students bring into the classroom. In doing so, they remain responsive to the culture-related inclinations of the students they serve. Due to the diverse nature of America's classrooms, the pursuit of achievement equity requires attention to culturally responsive pedagogy.

According to Howard (2010), "Culturally responsive pedagogy assumes that if teachers are able to make connections between the cultural knowledge, beliefs, and practices that students bring from home, and the content and pedagogy that they use in their classrooms, the academic performance and overall schooling experiences of learners from culturally diverse groups will improve" (p. 67-69). In other words, educators must incorporate diverse cultural inclinations into teaching and learning contexts, so students, particularly those traditionally marginalized under the traditional system of schooling, are more likely to remain engaged in learning.

As demonstrated through the ACT performance of Illinois students', providing all students with equitable opportunities to participate in rigorous courses will likely improve the academic achievement of all children. But because such improvement does not in and of itself translate to a narrowing of achievement gaps based upon socioeconomic status and race, it can be concluded that culturally responsive pedagogy is necessary. More specifically, educators must begin to recognize the valuable contributions that all students, including low-income students and children of color, bring into the classroom and use this knowledge to create equitable opportunities for all children to succeed in school and life. Among these opportunities is access to a rigorous curriculum and uniform quality of instruction that reflect the cultural inclinations of a pluralistic society. By transforming the traditional construct of schooling to create truly equal opportunities, achievement equity can become a reality for all children.

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