EDUCATION IN THE POST-LAKE VIEW ERA:

WHAT IS ARKANSAS DOING TO CLOSE THE ACHIEVEMENT GAP?

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Executive Summary

Arkansas Education in the 21st Century: Great Achievements But a Persistent Achievement Gap

Since the Arkansas Supreme Court's 2002 *Lake View* decision, the state of Arkansas has taken significant strides to improve its education system.

- The U.S. Department of Education has recognized Arkansas for its leadership in implementing rigorous curricular standards.
- Arkansas has raised teacher pay to rank 32nd in the nation.
- Arkansas has provided over $100 million a year for quality preschool. The National Institute for Early Education Research ranks Arkansas among the nation's leaders in the quality of its early childhood educational standards.
- State per pupil funding for public education has increased dramatically since the *Lake View* decision and the state appropriated several hundred million dollars to improve school facilities.

More importantly, the benefits of the increased attention and investment to public education have already begun to manifest themselves.

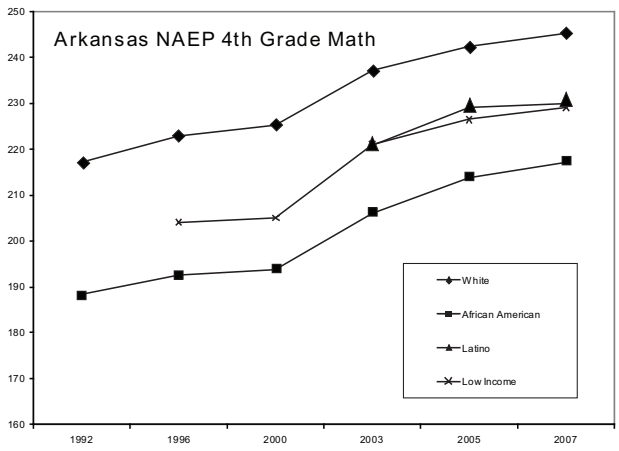
- *Education Week*'s 2008 Quality Counts study ranked Arkansas 8th in the nation for overall educational quality.
- In 2001, just 42% of fourth graders scored at proficient levels on the math portion of the Arkansas Benchmark Exam. In 2007, 65% were proficient on an even more difficult test.
- From 2003 to 2007, Arkansas was one of three states to improve on three of the four National Assessment of Educational Progress (NAEP) tests. These gains put Arkansas at or near national averages.
- The average ACT score for Arkansas students grew from 17 in 2001 to 21 in 2006, the most growth for any state testing at least half of its graduating seniors.

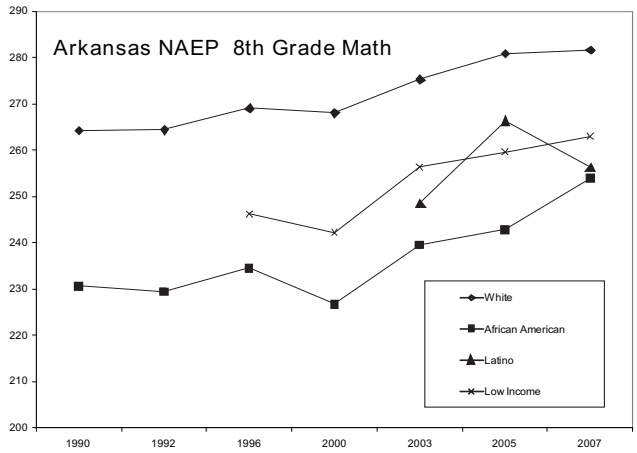
Despite these significant strides, major gaps remain among students of different racial and socioeconomic groups, as demonstrated by Arkansas's NAEP test scores over the past dozen years. By creating task forces focused on closing the achievement gap, the General Assembly and the Arkansas Department of Education have demonstrated an awareness of its importance.

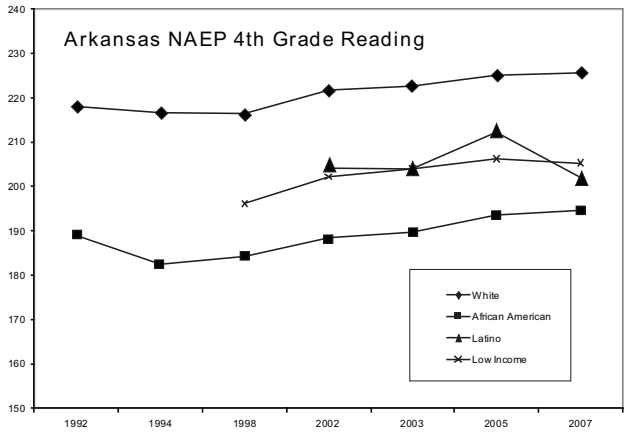
Now that the *Lake View* reforms have been in place for several years, it is time to assess where we are in efforts to close the achievement gap. This report is a collaborative effort of Arkansas Advocates for Children & Families, the Arkansas Public Policy Panel, Hendrix College, and the University of Arkansas, Clinton School of Public Service. This report assesses whether the reforms Arkansas has adopted are likely to close the achievement gap between economically advantaged and disadvantaged students and between white and minority children in the state and identifies additional promising steps to close the achievement gap in future years. We hope this study will provide a menu of ideas to help state policymakers as they work to close our achievement gap.

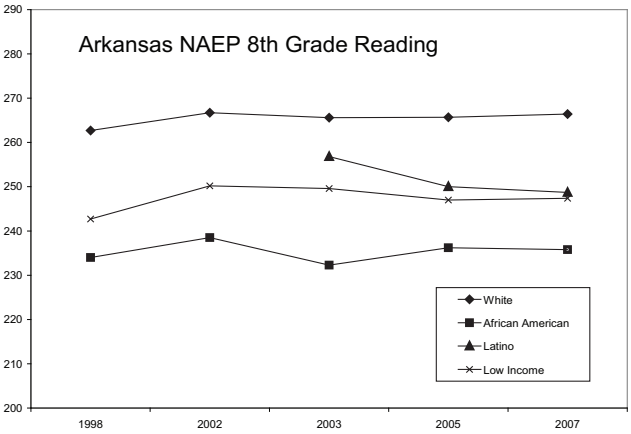
The Achievement Gap Challenge

There are diverse and deeply rooted reasons for the gap in test scores and graduation rates between white students and African American and Latino students, as well as between middle class and low-income students. In his book *Class and Schools*, Richard Rothstein describes the many disadvantages in their home and family environment that poor and minority students must overcome to succeed in school, including language development, literacy development, self-confidence, health, and housing. Researchers have found that middle class children have vocabularies two to three times larger than low-income children, are praised more often, have significantly more non-school learning opportunities, move much less often, and have much lower rates of asthma, vision, and hearing problems.









The good news is that closing the achievement gap can be done. President Bill Clinton once said, "There is no problem facing America that has not already been solved somewhere in America." In the 1970s, when the federal government targeted funds for poor students and these students attended increasingly integrated schools, the racial achievement gap was cut in half. Unfortunately, that progress did not continue through the 1980s.

In the past few years, many of Arkansas's neighbors have proven that effective interventions exist and have reduced their achievement gaps. Oklahoma, West Virginia, Texas, and Tennessee have significantly smaller racial and socioeconomic achievement gaps than Arkansas.

Our Vision

We believe that only by thinking holistically about children and their environments can we hope to address the achievement gap challenge in Arkansas. Because the circumstances that create disadvantages for low-income and minority students are so diverse and deeply rooted in our state, we must support these children at every opportunity.

In the home, research shows that engaging parents, not only by teaching specific skills but also by encouraging them to be active in schools, leads to higher self-confidence, vocabulary, and persistence in their children. Parents who have made a choice and a commitment to a specific, unique school are also more likely to be engaged in their children's education.

In schools, research shows that children who spend more time in quality schools learn more, beginning as early as three years old. Research shows children who see, hear, breathe, and work without pain learn more. Children who are challenged to learn rigorous material by caring, well-trained, and well-supported teachers will learn faster and better.

In our communities, research shows that children who explore, socialize, and study with caring, trusted adults after school and during the summer will build on their school lessons more effectively and learn significantly more over the course of their lives.

How Can We Achieve the Vision?

Given how deeply rooted and diverse the circumstances are that create disadvantages for low-income and minority students, there is no silver bullet to close the achievement gap. Adopting a single program or approach will not eliminate disparities between African American and white children or between low-income and middle class children. Only a multi-pronged, comprehensive strategy that includes health agencies, local governments, universities, and community groups will succeed. Local activism and innovation as well as state support and guidance are both critical. To provide some guidance in this challenging work, we

examined the educational policy literature on the achievement gap to identify the interventions that have been proven to work in reducing achievement disparities and to highlight effective strategies that have already been adopted in Arkansas.

We find that Arkansas has already done a great deal to improve facilities, curriculum and instructional strategy. Because successful systems are already in place, we believe it is unlikely that new facilities enhancement or new curricular or instructional reform will have much additional impact on the achievement gap.

Opportunities for Enhancing Existing Successful Interventions

Arkansas has begun promising work and should deepen its commitments in early childhood education, teacher quality, and high-quality charter schools.

More than any other intervention, early childhood education has been proven to close the achievement gap. Arkansas has developed a high-quality pre-kindergarten initiative available to all needy families. We believe the crucial next step is to broaden participation in these programs. If all the families of three- and four-year-olds who are eligible for free preschool put them in quality pre-K programs, it would dramatically reduce the achievement gap. To achieve higher rates of pre-K attendance, we recommend a major public communications effort.

Educational research has also made it clear that teacher quality is the key to student achievement and that low-income and minority children tend to have less experienced, less well-qualified teachers. State policymakers in Arkansas should be applauded for raising teacher salaries and providing financial incentives for teachers to move to high-need school districts. Arkansas has also become a national leader in developing a longitudinal tracking system which allows the value added to students' learning to be calculated. We recommend the state aggressively implement the longitudinal tracking system and use this data to improve the way Arkansas teachers are educated, distributed, and developed in service.

The only elements of school choice that have shown any convincing evidence of success in closing the achievement gap are certain charter schools with distinctive traits: extended learning time, rigorous professional development, and strong school leadership. Such traits are found in the KIPP charter schools such as the one now in operation in Helena-West Helena. We recommend that any new charter schools be focused on reducing the racial and socioeconomic achievement gap. Moreover, we contend that the state board of education should review all charter school applications for evidence that they employ methods for closing the achievement gap that are backed by scientific research.

Significant Opportunities for New Interventions

Most importantly, we identify four extremely promising areas in which Arkansas has taken only first steps. We believe that serious new investments in the following areas will have the most dramatic impact on the achievement gap.

Research shows that students with health challenges spend less time in school, resulting in lower levels of achievement, a greater likelihood of grade retention, and lower graduation rates. Because low-income, African American and Latino students are more likely to have health problems, student health programming should be a major component of a state achievement-gap reduction plan. We recommend Arkansas re-introduce state funding to support school-based health clinics for under-served students or promote their development through the Coordinated School Health Initiative.

Research tells us summer learning loss and unproductive time between 3 and 6 p.m. are key causes of the achievement gap. High quality after-school and summer programs can play an important role in closing the achievement gap. However, Arkansas lacks a statewide funding and quality assessment system. As a result, about one-fifth of Arkansas students are latchkey children and a much larger number lack access to academically rich experiences after school and in the summer. By creating task forces to develop policy frameworks, state policymakers have recognized the promise these programs have. We recommend the state aggressively implement any forthcoming recommendations of the Governor's Task Force on After-School and Summer Programs.

The research carried out on class-size reduction in Tennessee, a state with many demographic similarities to Arkansas, shows that class sizes of 13-17 students in the early grades significantly improved students' test scores and graduation rates, especially among African American students. While an expensive endeavor when embraced statewide, we recommend state funding for reduced class sizes targeted to schools with high proportions of students from low-income, African American, or Latino families.

Finally, programs that engage parents to become knowledgeable and engaged in their children's education, such as Arkansas's HIPPY program, have been proven to close the achievement gap. Through home visits and one-on-one training, children as well as parents gain self-confidence. Arkansas can build on these targeted successes to encourage broader community-based organization to build social capital among parents. We recommend the state sustain the successes achieved by Winthrop Rockefeller Foundation's 21st Century Programs.

Conclusion

Arkansas has done some great things in recent years to improve education for our children. However, there is much more to do. Those who have worked hard to reform Arkansas's education system in this decade cannot rest on their laurels. In this study, we have suggested several directions, some familiar and some new, to build on our recent successes. We hope this study will generate discussion and action among policymakers, parents, and citizens who are interested in improving educational outcomes for all children, regardless of their income, race, or geographic location.

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Introduction

The first decade of the century has been one of significant change in the financing of public education in Arkansas. Diligent oversight by the state Supreme Court, which declared the state's school system constitutionally inadequate and inequitable in the 2002 *Lake View* decision, has led to significant and ongoing growth in funding and finally to the Court's 2007 declaration that adequacy had been achieved. Enhanced funding's purpose is, of course, to achieve better educational outcomes for all children. Early indications are that Arkansas's educational system, compared with other states, has indeed shown improvement on some key measures as the programs funded by these new school-focused revenues have been implemented (Quality Counts 2007). No analysis to date, however, has systematically examined whether the programs implemented in recent years are likely to close the achievement gap between economically advantaged and disadvantaged children and between white and minority children in the state. Have new programs been established that promise to reduce the significant disparities in educational achievement that have been the historical record in the state?

This report serves as an examination of the vast educational policy literature on the achievement gap with an eye toward: (1) the interventions that have been proven to work in reducing achievement disparities between subgroups of students and (2) highlighting effective strategies that have been adopted in Arkansas. The conclusions indicate that certain new programs implemented during the *Lake View* era do hold some promise for reducing the achievement gaps based on race/ethnicity and economic status. In almost every area, however, Arkansas has adopted only partial steps. In other important areas of policy that clearly can alleviate the achievement gap, Arkansas policymakers have yet to begin work. By creating task forces focused on closing the achievement gap, the General Assembly and the Arkansas Department of Education have demonstrated an awareness of its importance. This report is intended to be an additional prod for policymakers to tackle this crucial obstacle to a truly equitable educational system and to provide guidance in that challenging work.

We identify two areas in which Arkansas has done a great deal: facilities and curriculum and instruction. Because successful systems are already in place, we believe it is unlikely that new facilities enhancement or new curricular or instructional reform will have much additional impact on the achievement gap.

In three other areas, however, Arkansas has begun promising work and should deepen its commitments: pre-kindergarten, teacher quality, and high-quality charter school development. By continuing to fund these areas and, more importantly, by strengthening program quality according to research-proven practices, the state can reduce the achievement gap.

Finally, we identify four extremely promising areas in which Arkansas has taken only token steps: student-health programming, extended-learning opportunities, class-size reduction, and parent and community engagement. Serious new investments in these areas will have the most dramatic impact on the achievement gap.

Defining the Achievement Gap

Achievement gaps can exist based on race, income, gender, disability, primary language, or geography. The Arkansas Commission on Closing the Achievement Gap and Act 33 of the General Assembly's Second Extraordinary Session of 2003 lists this set of priorities for narrowing the achievement gap among two subgroups: (1) economically disadvantaged students and (2) students from major racial and ethnic groups (Report of the Arkansas GAP Commission 2006, 2). Accordingly, this study focuses on the gaps between racial and economic groups.

The Arkansas Department of Education (ADE) defines economically disadvantaged students as those who are eligible for free and reduced-price lunches under the federal school lunch program. While other measures directly based on income, parental education, and parent profession may more accurately describe socio-economic status, free and reduced-price lunch data is widely available and is an often-used proxy.

The ADE identifies four major ethnic groups: white, African American, Latino[1], and Asian/Pacific Islander. Research has shown that Asian American students perform as well as or better than white students on standardized tests, graduation, Advanced Placement classes, and in the college-going rate. In Arkansas, the most salient racial gap continues to be the African American/white gap, but as the number of Latinos has grown in the state the Latino/white gap has become important.

Measuring the Achievement Gap

The size of the gap between African American and white students or between low-income and middle-class students can be measured with (1) standardized test scores, (2) graduation rates, (3) remediation rates, (4) access to advanced coursework, (5) school discipline rates, and (6) college-attendance rates (Rickard 2005, 4).

All other things being equal, graduation rates and their converse measure, dropout rates, might be the best measure of the achievement gap. Dropouts are 15% less likely to be employed and earn almost 30% less than their diploma-holding peers (Curran 2005, 9). Dropouts are also more likely to rely on public assistance and to end up in the criminal-justice system. Accordingly, the federal No Child Left Behind Act and state accountability systems include improving graduation rates as primary objectives. Unfortunately, most researchers view the graduation and dropout statistics compiled by school districts as suspect (Mishel and Roy 2006). Districts have strong financial and political incentives to underreport dropouts. A National Governors Association report concluded, "Until recently, many states did not collect both graduation and dropout data, and those that have collected these data have not generally obtained accurate information. . . . At both national and state levels, officially reported graduation rates are routinely inflated" (Curran 2005, 7).

Despite these concerns, we believe graduation rates are an important measure of the achievement gap. According to Education Week's Cumulative Promotion Index, African Americans and Latinos are significantly less likely to graduate on time than whites and Asians: 52% of African American students, 77% of Asian students, 56% of Latino students, and 76% of white students graduated on time in 2003 (Hall 2006). These patterns are reflected in Arkansas (see below). Any significant reduction in the achievement gap requires increasing African American and Latino students' graduation rates to the levels of their white and Asian peers.

Because other data is difficult to obtain and of questionable reliability, standardized test scores have become the most commonly used measures of the achievement gap. Standardized tests come in two types, each producing a different measure. Norm-referenced tests, such as the Iowa Test of Basic Skills or Stanford Achievement Test, rank students against one another. Students receive a percentile score. Many of the studies in this report describe student gains using Normal Curve Equivalent (NCE) scores, which is a statistical conversion of percentile ranks on a scale of 0-99.[2] Other studies describe student gains in terms of effect sizes or standard deviations, usually percentages of a single standard deviation. One standard deviation is roughly equivalent to 20 NCE points, which is considered by researchers to be a very large effect. One standard deviation is equivalent to the amount of learning that the National Assessment of Student Progress expects to occur between the fourth and eighth grades (Peterson 2003, 40). One full standard deviation is also equivalent to the amount by which Japanese middle schoolers outperform their American peers on international math exams and, most importantly, the size of the white/African American test-score gap (Peterson 2003, 40).

The second type of standardized tests is criterion-referenced tests, such as the National Assessment of Educational Progress

1 Reports, studies, and public documents referenced in our report use "Latino" and "Hispanic" interchangeably. We adopt "Latino" as the increasingly most commonly used denotation of this subgroup of the population.

2 Norm-referenced tests are designed to produce a normal curve of test scores over large student populations. Statisticians have recently developed a means of converting percentile-rank scores into equal interval Normal Curve Equivalent (NCE) scores, which can be added and averaged. Because percentile ranks and NCE scores measure students against one another, if all students were to make exactly one year of progress after one year of instruction their NCE scores would remain exactly the same and their NCE gain would be zero, even though the number of questions they answered correctly increased. Of course, some students will make more than a year's progress in that time and will have a net gain in the NCE score, which means that those students have learned more, or at least have made more progress in the areas tested, than the general population. Other students, while making progress in their skills, may progress more slowly than the general population and will show a net loss in their NCE score.

and state-designed standardized exams like the Arkansas Benchmark Exam. These tests judge students not against one another but against an absolute standard: in the case of state tests, the state curriculum standards. Students typically receive one of four scores: below basic, basic, proficient, and advanced.[3] Studies relying on criterion-referenced test results typically describe changes in the percentages of students scoring at proficient or advanced levels — or decreases in students scoring below proficiency. Because the state standardized exams are universally administered, many reports use criterion-referenced tests to measure the achievement gap. For example, Standard & Poor's widely used School Matters website (www.schoolmatters.com) focuses strictly on differences in proficiency rates on state reading and math tests among student groups in reporting the achievement gap.

Causes of the Achievement Gap

In his book *Class and Schools: Using Social, Economic, and Educational Reform to Close the Black-White Achievement Gap*, Richard Rothstein describes the many deficits that poor and minority students must overcome to succeed in school. His argument is based on the average child in average circumstances. Rothstein argues that his description does not apply to all students. Extraordinary students from every racial and economic background succeed, and students given every advantage fail. However, since the achievement gap refers to a gap between the average African American student and the average white student, or between the average middle-class student and the average low-income student, a description of the circumstances that affect these students must also compare the average low-income student to the average middle-class student. Rothstein argues that while any one of these deficits may pose an obstacle for a student to overcome, it is the collection of them that leads to a persistent appearance of an achievement gap.

Rothstein identifies five categories of environment or context that influence the achievement of poor and minority students: (1) language development, (2) literacy development, (3) self-confidence, (4) health, and (5) housing.

Language and literacy development begins early in life. A University of Kansas study conducted twenty years ago tracked conversations between parents and young children of different economic backgrounds. The researchers found that, as a result of the difference in the number of words parents spoke to their children, startling differences were already apparent by the age of three. In fact, the researchers found that by the age of three, "the children of professionals had larger vocabularies themselves than the vocabularies used by adults from welfare families speaking to their children" (Rothstein 2004, 28). Ultimately, the researchers estimated that by the time the children of professionals were ready to enter preschool at four years old, they would have exposure to 45 million words, as opposed to children in welfare families having had exposure to only 13 million words (Rothstein 2004, 28). Similarly, children with college-educated parents are more likely to be read to daily in early years. Since language and literacy are fundamental to learning, the culminating result of the different preparation is superior educational opportunity for children of professionals.

In addition, opportunities outside of school also contribute to the achievement gap. It is not only in the additional experiences that these opportunities provide but also the development of self-confidence. Fees, transportation complications, or lack of availability often prohibit low-income children from participating in organized out-of-school activities. Consequently, the opportunities to build self-confidence and self-discipline are not as readily available. When students who have not had these opportunities are faced with challenges at school, they tend to find them more daunting than do students who have had the opportunity to face challenges and build self-confidence (Rothstein 2004, 26).

Serious disparities also exist in the quality of health between poor and middle-class children (Rothstein 2004, 37-44):

- Fifty percent or more of minority and low-income children have vision problems that interfere with their academic work.
- Lower-class children have more hearing problems.
- Poor children are three times as likely to have untreated cavities, which are distracting during class and testing.
- Low-income children have dangerously high blood levels of lead, five times the rate of middle-class children, which can harm cognitive functioning and behavior and contribute to hearing loss.
- The asthma rate is substantially higher for poor than for non-poor families. Low-income children with asthma are about 80% more likely than middle-class children with asthma to miss more than seven days of school a year.
- Fetal alcohol syndrome is 10 times more frequent for low-income black than for middle-class white children.
- Children of mothers who smoked prenatally, who are disproportionately lower-income, do more poorly on cognitive tests, their language develops more poorly, they have more serious behavioral problems and greater hyperactivity, and they are involved in more juvenile crime.
- Low-birthweight babies, on average, have lower I.Q. scores and are more likely to have mild learning disabilities and attention disorders. Thirteen percent of black children are born with low birthweight, double the rate for whites.
- Low-income kindergartners whose height and weight are below normal for children their age tend to have lower test scores. Iron-deficiency anemia also affects cognitive ability; 8% of all children suffer from anemia, but 20% of black children are afflicted.

Cumulatively, these health differences create a significant disadvantage for poor and minority students that is certain to

3 Divisions among these four categories are contested and controversial. Many states have lowered their "cut scores" in order to make it appear that student achievement is improving and to avoid penalties imposed by the federal No Child Left Behind law. Arkansas has done the opposite, raising the cut scores on the Arkansas Benchmark Exam in 2005. As a result of this change, proficiency rates on the Arkansas Benchmark Exam before and after 2005 are not comparable.

negatively affect the average performance of those students.

Finally, Rothstein identifies the growing challenge of families to find affordable and adequate housing. The instability of housing for low-income students leads to mobility among schools. It comes as no surprise that the more frequently children move, the more difficult it is to perform well. Having to develop social and peer relationships adds to the stress of changing schools, and for teachers a constant influx of new students makes it difficult to develop a cohesive classroom curriculum and environment. A 1994 report by the General Accounting Office found that, of the poorest students, 30% attended at least three different schools by the third grade while only 10% of middle-class students had attended three or more schools (Rothstein 2004, 46). Additionally, a 2004 statistical analysis published in the *Journal of Public Economics* concluded that "if black students' average mobility were reduced to the level of white students' average mobility, this improvement in housing stability alone would eliminate 14% of the black-white test score gap [and that] reducing the mobility of low-income students to that of other students would eliminate 7% of the test-score gap by income" (Rothstein 2004, 46).

Attacking the Achievement Gap: It Can Be Done

Given how deeply rooted and diverse are the circumstances that create disadvantages for low-income and minority students, we recognize that the public schools cannot and should not try to address them all. However, like Rothstein, we believe that it is essential that schools and school reformers recognize that some children come to the schoolhouse door with greater needs than those children who have advantages brought to them by parents, economics, and health. This requires looking more holistically at school reform and including health agencies, local governments, universities, and community groups in strategies.

The good news is that it can be done. Studying the history of the achievement gap over time in the United States demonstrates that the gap can be reduced and that government policies can play an important role in this reduction. In the 1970s and 1980s, when the federal Elementary and Secondary Education Act targeted funds for poor students and these students attended increasingly integrated schools, the black-white achievement gap was cut in half (Grissmer, et. al 2000). Unfortunately, that progress did not continue, and the achievement gap based on students' race and income worsened in the 1980s.

Other states, including many of Arkansas's neighbors, have also proven that the achievement gap can be reduced. The results of the 2007 National Assessment of Educational Progress (NAEP), known as the Nation's Report Card, reveal that Oklahoma, West Virginia, Texas, and Tennessee have significantly smaller achievement gaps between low-income and middle-class students, as well as between white and African American students.

Oklahoma and West Virginia boast some of the model pre-kindergarten programs in the country. Tennessee has a long history of experimenting with education reforms. We highlight its value-added method of assessing teacher-quality and class-size-reduction (STAR) programs. We also highlight promising health and extended-day programs piloted by the Memphis School District. Finally, in Texas we spotlight a model teacher-training program in San Antonio, as well as

TABLE 1: NAEP Test Score Gaps (in points), White vs. African American, and by Income (2007)[4]

	4th grade Reading Income Gap	4th grade Reading Racial Gap	4th grade Math Income Gap	4th grade Math Racial Gap	8th grade Reading Income Gap	8th grade Reading Racial Gap	8th grade Math Income Gap	8th grade Math Racial Gap
Arkansas	27	31	20	28	22	30	22	28
West Virginia	19	14	15	14	16	15	19	21
Oklahoma	18	19	15	22	17	23	21	22
Texas	23	25	17	23	24	26	22	29
Tennessee	27	32	19	26	22	27	22	28

4 The number is the amount that white students outscore African-American students and that middle-class students outscore low-income students, measured in raw test points.

innovative health and summer programs in Austin. The relative success of Arkansas's neighbors in attacking the achievement gap demonstrates the potential that proven, effective programs can have.

What Arkansas Has Accomplished in the "Lake View" Era

In November 2002, the Arkansas Supreme Court affirmed most of the lower trial court ruling on the adequacy and equity of the state's school-funding scheme in the case of *Lake View* School District No. 25 of Phillips County, Arkansas, et al. v. Governor Mike Huckabee, et al. The Court clearly stated that the state had failed to live up to the commitments of the equal-protection provisions of the state Constitution as well as that document's requirement that the state provide a "general, suitable, and efficient system of free public schools." As the Court said in its conclusion to the ruling, "No longer can the State operate on a 'hands-off' basis regarding how state money is spent in local school districts and what the effect of that spending is."

The case represented the third major school funding decision by the state Supreme Court. In 1983's DuPree case, the Court had declared the funding mechanism in the state inherently inequitable. Just over a decade later in the first "Lake View" case (1994), the Court concluded that, despite alterations in the school-funding formula, the funding inequities statewide were actually larger in 1994 than at the time of the DuPree ruling. In addition, the Court expressed its doubts that the state education system was "adequate" under the education provisions of the state Constitution. The Court ordered the state to carry out a study to ascertain the cost of a truly "adequate" education; this study was never carried out despite 1995 legislation directing the Department of Education to do so. Still, an alteration to the school-funding process did occur as a result of the first *Lake View* case. Voters in all districts in the state were required to raise their operation millage rates to at least 25 mills, and a subsequent constitutional amendment, passed by the voters as Amendment 74 in 1996, meant that the revenues from these 25 mills would be automatically transferred to the state coffers for redistribution to enhance the equity of the system. If they failed to raise their millage rates to that level, district residents would face an income-tax surcharge.

However, as noted above, the 2002 Court was convinced by plaintiffs from the Phillips County district, as well as by interveners in the case from the fast-growing northwest corner of the state, that the state's funding mechanism remained inequitable and that funding was lacking for the offering of a truly adequate elementary and secondary education in Arkansas. In the 2002 *Lake View* decision, the Court gave the state a December 2003 deadline for creating a system to provide a truly "adequate" and "equitable" school system. In its 2003 regular session, despite a great deal of attention paid to Governor Huckabee's controversial call for consolidation of all districts with fewer than 1,500 total students, the only major action on the topic of education reform was the establishment of a special interim committee tasked with defining the components of educational "adequacy" and the cost of funding it.

That committee contracted with an outside consulting firm, Lawrence O. Picus and Associates, to carry out the study and report back its findings. A price tag of $847 million a year over current educational spending in the state — for increased teacher salaries, smaller classes, expanded preschool programs, bonuses for teachers to take up residence in less desirable parts of the state, and an equitable funding formula — was calculated by the consultants working with the adequacy committee. The consultants assumed no consolidation in their estimates of cost. In the adequacy report, the consultants emphasized three keys to closing the achievement gap: an advanced curriculum that was accessible to all students, qualified teachers in front of each class, and a quality pre-kindergarten education (Odden, Picus, and Fermanich 2003).

Governor Huckabee called the assembly into session just over three weeks before the January 1 deadline laid out by the court in *Lake View* II to deal with the issue despite the fact that no consensus on the issue had emerged. At the final hour before the deadline, the legislature did approve a so-called stay-out-of-court plan that revised the school-funding formula so that the facts ruled on by the Court in the 2002 case would no longer be in place. It was believed that this would mean that an entirely new case would have to work its way to the Court. Many were surprised when, days after the *Lake View* case had been set to expire, the Court said that the case was not dead. It said that there was reason to believe that the tweaking of the school formula was insufficient to meet the equity and adequacy requirements of the 2002 ruling. The announcement that the Court would hear arguments in the case jump-started the legislature. Though opposition to any consolidation based on school size remained fervent through a number of votes in each house, eventually a majority in each house supported a plan to consolidate districts with fewer than 350 students (57 districts, immediately). Huckabee allowed the measure to become law without his signature, as was the case with the sales-tax increase of seven-eighths of a cent and application of sales-tax to services previously not subject to the tax, which were the primary revenue source for the program.

Because of the state's "noncompliance" with the 2002 ruling, after the legislative action the Supreme Court appointed special masters (two former justices) to guide the Court in evaluating the progress toward suitable and equitable education. Those masters issued a report that gave the legislature credit for the increase in funding for schools, including teacher salaries, for the wiser targeting of those dollars to districts with significant numbers of students with special needs including those eligible for the federal free- and reduced-lunch program, and for prioritizing public education spending over all other components of the state budget, which meant that other budgets would be cut if the state education budget came up short. By a four-to-three vote in a mid-June 2003 ruling, the Court stated that its oversight role in the *Lake View* case must

end because of the principle of separation of powers.

But this would not be the end of the *Lake View* case. The actions and inactions of the General Assembly during its 2005 regular session led about 40 of the districts that had joined the original case to ask the Court to reopen it. In June 2005, the Court did just that, reappointing the same special masters to evaluate the way that the General Assembly had addressed education matters during the 2005 session. Those masters found that the legislature had not funded education first, as its own 2003 law had required, that it had not carried out a new adequacy study for the coming biennium, that it had failed to appropriate money for a cost-of-living increase for educational expenses (instead, it had funded money for teacher health-insurance cost increases), and that it had appropriated insufficient monies for the process of creating adequate school facilities in the state. Following that masters report, the Court deemed the state's school system once again inadequate and gave the legislature until the end of 2006 to remedy the problem.

The governor called a special session of the legislature in April 2006. Responding to a new adequacy study by Picus and Associates, the legislature increased base funding for the two years of the budget cycle. In addition, $50 million in increased aid was dedicated to facilities enhancement in advance of a comprehensive facilities adequacy study to be completed for the 2007 regular session of the legislature. After these actions, the Court determined that it would maintain control of the case until after the 2007 legislative session, and it again asked the special masters to evaluate the legislative actions. [5]

During the 2007 session of the legislature, the state increased school funding in accordance with a new adequacy study and, moreover, appropriated $87 per student of "Enhanced Educational Funding" across the two years "in addition to, and in excess of, the amount of funds necessary to provide an adequate education as required by the Arkansas Constitution." The appropriation of $456 million in general-improvement funds for the purposes of covering the cost of adequate school facilities, as determined by facilities adequacy study, finished out the new major investment in education.

Following the session and another report by the special masters, the Supreme Court once again declared the case complete in late May 2007. "[W]e are now able to direct the issuance of the mandate in this case due to the hard work of the Masters, the General Assembly, and the executive branch. This court, the people of Arkansas, and the generations to come are indebted to them for their commitment to education."

Effects of the *Lake View* Era on Educational Outcomes

As a result of this intense attention, Arkansas has taken significant strides to improve the rigor of its curricular standards, improve teacher quality, improve educational facilities, and provide high-quality early childhood education. The U.S. Department of Education has recognized Arkansas for its leadership in implementing rigorous curricular standards, including requiring four years of math for high school students. Arkansas has raised teacher pay to rank 32nd in the nation (National Education Association 2007). To specifically address the achievement gap, the General Assembly has provided recruitment and retention bonuses of up to $10,000 in "high-priority districts" in which students are failing to make adequate yearly progress. Education Week ranked Arkansas fourth in the nation for its policies to promote teacher quality. Arkansas has also made great strides in early childhood education. The state now provides over $100 million a year for quality pre-school. The National Institute for Early Education Research ranked Arkansas among the nation's leaders in the quality of its pre-K standards.

The benefits of this increased attention and investment have already begun to manifest themselves. Overall, from 2002 to 2007, Arkansas students have dramatically improved their performance on the Nation's Report Card, the National Assessment of Educational Progress (NAEP), the Arkansas Benchmark Exam, and the ACT test. For example, in 2007, 65% of fourth graders scored proficient or above on the math portion of the Arkansas Benchmark Exam, compared to just 42% in 2001, despite changes to the test that made it more rigorous. Arkansas was one of three states improving on three of the four NAEP tests since 2003.[6] These gains put Arkansas at or near the national average on all four tests. Finally, the average ACT score for Arkansas students grew from 17 in 2001 to 21 in 2006, higher than the national growth rate and the highest growth rate for states testing at least half of their graduating class.

The Current Achievement Gap in Arkansas

While Arkansas has dramatically improved its overall test scores, it has lagged behind in addressing its racial and income achievement gaps. A 2005 Arkansas Public Policy Panel report by David L. Rickard concluded that the racial and income achievement gaps in Arkansas are extremely severe (Rickard 2005). However, Rickard found no evidence of a gender gap in any major category examined.

Using data from the Arkansas Benchmark Exam, Rickard demonstrated a large and persistent gap between white students on one hand, and African American, Latino, and

5 For an overview and analysis of the *Lake View* era activity in Arkansas through the 2004 Court ruling ending court oversight, see Blair and Barth (2004). For such materials through the 2005 regular session of the General Assembly, see Ritter (2005).

6 NAEP tests are administered for 4th grade reading, 4th grade math, 8th grade reading, and 8th grade math.

economically disadvantaged students on the other.[7] He also used Advanced Placement, Gifted and Talented, and dropout data to demonstrate a severe achievement gap between white, African American, and Latino students. African American and Latino students were significantly underrepresented in Advanced Placement courses as well as the Gifted and Talented Program, while white and Asian students were significantly overrepresented (Rickard 2005, 23-4). African American students were significantly overrepresented in suspension and expulsion rates, as well as dropout rates (Rickard 2005, 24). Finally, African American students in Arkansas scored 15% to 20% below the state average on the ACT (Rickard 2005, 27).

Since 2005, the achievement gap has persisted. The most recent Arkansas Benchmark Test scores show that the test scores of all students have generally risen, but reflect only a slight narrowing of the white-African American achievement gap and an increase in the white and Latino achievement gap (Arkansas Department of Education 2007).

The table below summarizes the difference between the percentages of white and African American and white and Latino students scoring at a proficient or advanced level on the Arkansas Benchmark Exam.[8]

The figures below show the achievement gap in Arkansas over the past dozen years, as measured by the National Assessment of Educational Progress (NAEP). Even when student achievement improves, the gaps between white, African American, Latino, and low-income students have persisted.

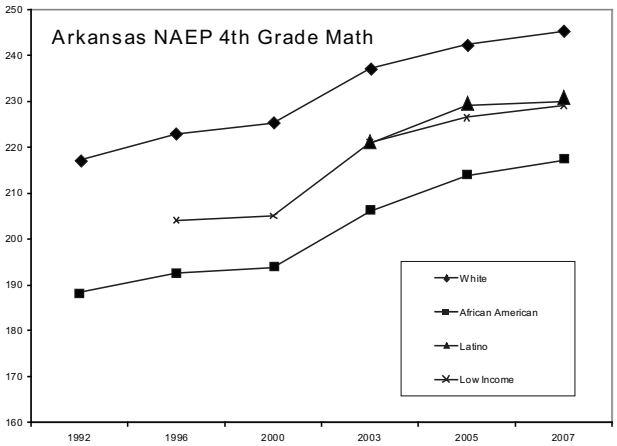
Having described the outlines of the achievement gap in detail, Rickard ended by asking, "What specific reforms are needed to close the gap?" (Rickard 2005, 10). This report attempts to answer this question.

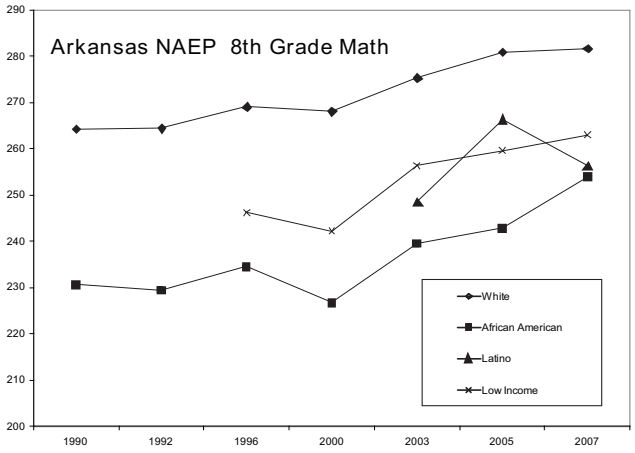
7 For example, more than twice as many white 11th graders (55%) score at proficient or advanced levels in literacy than African American (19%), economically disadvantaged (27%), or Latino students (28%) (Rickard 2005, 14).

8 For example, in 2005-06, 64% of white fourth graders were proficient or advanced in literacy, while only 35% of African American fourth graders were proficient or advanced, a difference of 29% (the first cell in the table). These are percentage comparisons and are only intended to show the change in the achievement gap from 2006 to 2007.

TABLE 1: Arkansas Benchmark Exam Proficiency Rates, by Race, 2005-06 and 2006-07

	White - African American Gap: 2005-06 (% proficient)	White - African American Gap: 2006-07 (% proficient)	White- Latino Gap: 2005-06 (% proficient)	White - Latino Gap: 2006-07 (% proficient)
3rd Grade Literacy	29%	23%	9%	20%
3rd Grade Math	33%	27%	8%	16%
4th Grade Literacy	31%	30%	17%	23%
4th Grade Math	32%	32%	11%	19%
5th Grade Literacy	33%	32%	16%	25%
5th Grade Math	36%	33%	18%	18%
6th Grade Literacy	31%	27%	20%	17%
6th Grade Math	32%	34%	15%	15%
7th Grade Literacy	30%	30%	16%	20%
7th Grade Math	34%	35%	16%	20%
8th Grade Literacy	29%	27%	16%	21%
8th Grade Math	36%	35%	21%	18%





Determining What Programs Work

Taking our cue from Rothstein, we cast a wide net looking for interventions to reduce the achievement gap, searching through health, social policy, economics, as well as education sources.

In trying to determine which programs worked, we paid more attention to some studies than others. The most convincing studies were longitudinal, tracking the effects of interventions over long periods of time. Unfortunately, these evaluations are expensive and unusual. Almost all the evaluations we found analyzed the effects of programs over only one or two years. An exception was in the area of early childhood education. The existence of pre-K studies using longitudinal data led us to be most confident about its effectiveness as an intervention.

Among the short-term studies, we paid most attention to studies using a "randomized control trial" (RCT). In order to determine the real value added by an intervention, a RCT compares students who were randomly assigned into treatment groups, which receive the intervention, and control groups, which do not.[9] Unfortunately, few of the studies we found used an RCT methodology, and these were largely in the well-developed tuition-voucher literature. This gap is understandable because in the real world it is difficult to identify and track a randomly assigned control group.

Therefore, we accepted evaluations that turned to other methods. In these cases, the next best alternative used statistical methods to locate or create a similar comparison group for a treatment group, allowing evaluators to describe the relative value added by an intervention. Studies of charter schools and some literacy studies used this methodology. A third-best alternative used a pre- and post-test methodology, comparing the same students before and after the intervention using the same testing instrument to determine the value added by the intervention. This approach is most useful in the absence of other instructional programs, such as during pre-kindergarten. Unfortunately, this approach does not account for normal cognitive and social development.

We had the least confidence in studies reporting gains without reference to any comparison group. These studies measured the effectiveness of interventions by recording the same cohort's growth over a year or semester. Without any comparison for reference, it is impossible to tell how much of the students' improvement was due to the intervention. In these cases, we note the evaluation's inferior methodology and typically neither showcase the intervention as one that works nor highlight its characteristics as a best practice.

Unfortunately, in reviewing the literature on strategies and interventions to reduce the achievement gap, most of the studies fell into this last, least rigorous category. For example, the U.S. Department of Education's What Works Clearinghouse conducted an evaluation of 887 studies of 153 beginning reading programs and concluded that only 27 studies met their standards and another 24 met their standards with certain reservations (Institute of Education Sciences 2007).

After an initial, broad literature search, we identified nine categories of interventions for more investigation: (1) early education, (2) teacher quality, (3) school choice, (4) health, (5) extended-learning opportunity, (6) parent and community engagement, (7) class-size reduction, (8) curriculum and instruction, and (9) facilities. These nine categories make up the nine core sections of this report. We do not claim that these nine categories are the only categories of interventions addressing the achievement gap or even that they include the most effective interventions. However, we do believe that they include the strategies that have been shown, through solid social-scientific research, to reduce the achievement gap as we have defined it: gaps in test scores and graduation rates of different racial and economic student groups.

In each of the nine categories, we searched for programs that had been proven by rigorous evaluation to work to reduce the racial or income achievement gaps. As noted earlier, the evidence typically was higher test scores. Less frequently, studies showed increases in graduation rates. We also included studies that provided evidence that programs increased attendance rates, decreased absenteeism, and produced fewer incidents of disciplinary action. All of these have been shown to increase graduation rates and decrease dropouts, as well as to increase test scores.

Early Childhood Education

Early childhood education has proven to be the most promising strategy to helping less advantaged children start school with the same potential for learning as their more advantaged peers. While not a cure all for every challenge that a child can encounter on the road to school, early childhood education does help level the playing field before the academic achievement gaps become overwhelming.

As of the 2005-2006 school year, 38 states funded some form of a pre-kindergarten initiative. Across these 38 states were 48 distinct programs. Twenty percent of the nation's four-year-olds are enrolled in state-funded pre-kindergarten programs and 3% of three-year-olds are enrolled in such programs. Head Start serves a significant portion of children (11% of the nation's four-year-olds and 7% of three-year-olds),

9 RCT is the "gold standard" of evaluation. This approach washes out expected growth due to normal learning, cognitive development, changes in funding or other environmental changes since it compares similar students at the same moment in time. It is important that the assignment of the students into treatment and control groups be random. Many programs take volunteers or applicants, but the treatment and control groups must be randomly drawn from this applicant pool, which means denying some students and families access to a program that they want.

but because of the vast range in quality and services provided in Head Start, it will not be considered a state pre-kindergarten initiative for the purposes of this paper.

The benefits of early childhood education are significant in not only helping to reduce the achievement gap but also in improving the state of society. In a 2007 Economic Policy Institute study, Robert Lynch found that all children benefit from high-quality pre-kindergarten programs. Additionally, Lynch found that children enrolled in high-quality pre-kindergarten programs needed less special education and child-welfare services, were less likely to repeat a grade, and as both juveniles and adults were less likely to engage in criminal activity.

These findings have also been found to hold true through adulthood. The High/Scope Perry Preschool Program (Ypsilanti Public Schools, Michigan) conducted a longitudinal cohort study in which 123 African American children living in poverty and at risk of school failure were randomly assigned to preschool and no preschool groups from 1962-1967. They were assessed at the end of their preschool enrollment and again at ages 10, 15, 19, 27, and 40. The latest results, collected in 2005 and including 97% of the original study participants still living, showed that the adults who had participated in the program were 19% more likely to have graduated from high school and gone on to get at least an associate's degree, were less likely to have been arrested for various types of crimes, including violent offenses, drug-related crimes and property crimes, and were more likely to hold a job and have higher earnings than those who did not gain access to the program years earlier.

Compounding these social benefits of early childhood education are the economic benefits. The analysts of the Ypsilanti program also estimated that for every dollar invested in the program the return to society through lower welfare costs, gains from education and salary, more taxes paid, and lower costs due to crime was approximately $16.14, with $12.90 of the benefit returning to the public and $3.24 returning to the participants (Schweinhart and Weikart 1985). Others have estimated the broader economic impact of a public investment in such programs. Brookings Institution economists estimate that a high-quality, universal preschool policy in the United States could add as much as $2 trillion to annual GDP by 2080. This estimated fiscal impact understates the improvement in productivity due to gains in non-cognitive areas like persistence and diligence. These benefits would come at a substantial cost. Model full-day programs cost between $3,238 and $4,529 per child annually (in current dollars).

Of the many early education programs found in the United States, four different types of statewide programs have been shown empirically to be effective. We present four model statewide programs: Oklahoma's Universal Pre-kindergarten program, West Virginia's Early Education Program, South Carolina's Half-Day Child Development Program, and Michigan's School Readiness Program. While each of these programs is distinctive, they share some critical components that make them effective. Most significantly, each program requires a bachelor's degree from its teachers and a maximum class size of 20 students with a staff/child ratio of 1:10. Additionally, three of the four programs (Oklahoma, West Virginia and Michigan) have comprehensive early learning standards, and three of the four programs (Oklahoma, West Virginia and South Carolina) provide vision, hearing, and health screening, plus support services.

Arkansas has made great strides in the *Lake View* era in early childhood education. The state now provides over $100 million a year for quality pre-school. The National Institute for Early Education Research (NIEER) ranked Arkansas first in the nation in the quality of its standards. While state policymakers should be congratulated for their hard work on pre-K, some work remains to be done to expand access and strengthen teacher certification standards.

Universal Pre-kindergarten (Oklahoma)

In 1998, Oklahoma established a statewide, voluntary pre-kindergarten program with both school districts and families within those districts provided the option of participating. As of 2002-03, 91% of Oklahoma's school districts were participating and 65% of all four-year old children were enrolled. The public schools provided services directly to the students, although in some cases there was collaboration with local Head Start programs.

A key feature of Oklahoma's program is its teacher requirements. All pre-kindergarten teachers must have a college degree and certification in early-childhood education. Accordingly, pre-kindergarten teachers are guaranteed the same salary and benefits as teachers in the public schools. Pre-kindergarten teachers have a starting salary of $27,060. There are also strict ratio and group-size requirements. Pre-kindergarten classes may not have more than a 10:1 ratio and group sizes cannot exceed 20 children. These requirements correspond with Head Start program guidelines. Curriculum development was left to individual school districts. In 2005, the cost per child enrolled for the full-day program was $3,238 and the cost per child enrolled in the half-day program was $1,743.

William T. Gormley and Deborah Phillips (2005) conducted a study in the Tulsa Public Schools to evaluate Oklahoma's pre-kindergarten program as implemented in that district. Tulsa Public Schools (TPS) have 41,495 students: 77% qualify for free or reduced-price lunches and represent a diverse cross section of racial and ethnic backgrounds. In 2001-02, 66% of Tulsa four-year-olds were participating in some form of pre-kindergarten associated with TPS; 43% of those students were in a full-day program and 57% in a half-day program. Gormley and Phillips used a regression-discontinuity design to compare entering pre-kindergarten students and entering kindergarten students who had just finished a pre-kindergarten program. The students were evaluated using the Early Childhood Skills Inventory (ECSI) with further analysis of racial/ethnic subgroups, students of different income backgrounds, and students engaged in the full- and part-time programs. The total sample size was 3,560 and the demographics of the sample were determined to be

representative of the larger population.

Overall, children participating in the pre-kindergarten program increased their ECSI scores by 16%, with Latino children improving by 54% and African American children improving by 17%. Of the four skill categories tested (Social/Emotional, Cognitive, Motor, and Language), the most improvement occurred in the Cognitive and Language sub-categories. When broken down by income, children eligible for the reduced-price lunch program improved their language scores by 35%, while students receiving a free lunch improved their overall score by 26%, cognitive score by 31%, motor score by 15%, and language score by 18%.

Early Education Program (West Virginia)

In 2002, West Virginia passed legislation that would require universal pre-kindergarten for four-year-olds by 2012. As of 2006, 40% of the state's four-year-olds and 4% of its three-year-olds were enrolled in pre-kindergarten. Funding is distributed through the public schools, although as the program expands the state requires that half the programs be in collaborative settings with Head Start, childcare, or private pre-kindergarten programs. About 85% of the programs use the Creative Curriculum in the classrooms and use web-based portfolios to show progress in the West Virginia Early Learning Standards. In public pre-kindergarten programs, teachers are required to have a bachelor's degree with certification in early childhood development. In several counties, collaboration with Head Start provides comprehensive social services to all students in public pre-kindergarten programs, regardless of eligibility. In 2006, the cost per child was $4,529.

In 2005, a group of scholars from the National Institute for Early Education Research (NIEER) evaluated the effectiveness of several statewide early childhood education programs, including that in West Virginia (Lamy, Barnett, and Jung 2005a).[10] The study used a regression-discontinuity design (similar to the Gormley and Phillips study in Oklahoma) in which entering pre-kindergarten students were compared with entering kindergarten students who had just finished the pre-kindergarten program. In West Virginia, the sample included children whose demographics closely represented the overall state percentages. Due to a lack of data, family income was not included in the primary analysis. However, of the 47% of sample children for whom the study had information, 70% received free or reduced-price lunches. A variety of tests were used to evaluate students' receptive vocabulary, mathematical skills, phonological skills, and print awareness.

The NIEER study found that West Virginia's Early Education Program increased a child's average vocabulary score by 7%, the average math score by 17%, and the average print-awareness score by 56%. No statistically significant change was found for phonological skills.

10 See also Barnett, et al. (2006).

Half-Day Child Development Program (South Carolina)

In 1984, the South Carolina legislature passed the Education Improvement Act, which created the Half-Day Child Development Program. The program targets students identified by state-specified risk factors, including having a single parent, being from a home with parents with low educational attainment, being homeless, or having a low family income. Funding for the program was determined by the number of kindergarteners eligible for free or reduced lunches in each district. About 15% of the programs use additional funding to provide full-day services. Most programs are through the public schools, although some school districts partner with local Head Start programs or with private child-care programs. In 2005, the cost per child enrolled in the program was $1,085.

The NIEER study evaluated the South Carolina half-day program employing the same regression-discontinuity design (Lamy, Barnett, and Jung 2005b). Again, the sample size in South Carolina was representative of the overall state demographics. Due to a lack of data, family income was not included in the primary analysis. However, of the 89% of sample children for whom the study had information, 61% received free or reduced-price lunches. A variety of tests were used to evaluate receptive vocabulary, phonological skills, and print awareness. South Carolina was the first state to participate in the study and therefore no math test was given.

Lamy, Barnett, and Jung found that the Early Education Program increased a child's average vocabulary score by 10% and the average print-awareness score by 42%. Again, no statistically significant change was found for phonological skills.

School Readiness Program (Michigan)

Finally, the Michigan School Readiness Program (MSRP) has provided preschool to at-risk four-year-olds since 1985. Half of the children served must fall below 250 percent of the federal poverty level and have at least one of 24 risk factors. Children above the income threshold must have at least two of the risk characteristics. Funding is distributed based on a formula that calculates the need of the district, but additional funding is available through competitive grants to Head Start agencies, private child-care centers, and mental-health and social-service agencies. As of 2005, all MSRP teachers must have a bachelor's degree and early childhood specialization. During that same 2005 review, the state conducted a major revision of its early learning standards. Michigan now is working to integrate the state's system of early childhood and related family services. In 2006, the cost per child enrolled in the program was $3,934.

The NIEER study also evaluated the Michigan school-readiness program, using the same regression-discontinuity design (Lamy, Barnett, and Jung 2005c). The sample was representative of the overall state demographic percentages.

Due to a lack of data, family income was not included in the primary analysis. However, of the 77% of sample children for whom the study had information, 64% received free or reduced-price lunches. A variety of tests were used to evaluate receptive vocabulary, mathematical skills, phonological skills, and print awareness. The study found that the MSRP increased a child's average vocabulary score by 6%, the average math score by 21%, and the average print-awareness score by 63%. Again, no statistically significant change was found for phonological skills.

Early Childhood Education in Arkansas

Over the last five years, Arkansas has made a major investment in early childhood education for three- and four-year-olds. As shown by the research on state pre-kindergarten in other locales, this investment has real promise to reduce the achievement gap by leveling the playing field for children from different economic, racial, and ethnic groups as they start school.

Although the Supreme Court said it could not conclude that pre-kindergarten education was required by the state Constitution in the 2002 *Lake View* decision, an additional $100 million dollars has been put into the existing Arkansas Better Chance (ABC) for School Success Program to increase total funding to $111 million by 2006 (an additional $40 million was appropriated by the 2007 session of the General Assembly). This funding ensures that all three- and four-year-old children whose families' incomes are up to 200% of the federal poverty line will have access to early childhood education. In Arkansas, this equates to nearly half of all three- and four-year-old children. Three-quarters of the children attend the program in a school or center, while 25% of the children are served by home instruction through the parent-led Home Instruction Program for Preschool Youngsters (HIPPY). (See the extended learning opportunity section of this report for more details on HIPPY.)

NIEER's "The State of Preschool 2006" yearbook ranks Arkansas among the nation's leaders in the quality of its program standards, 15th in the nation in access for four-year-olds, fifth in access for three-year-olds, and ninth in resources for pre-kindergarten programming. Additionally, Arkansas meets nine of NIEER's 10 quality benchmarks. The single benchmark that Arkansas has failed to meet is for teachers' educational qualifications. Arkansas requires a B.A. or B.S. for teachers in a single classroom site, but only an associate's degree for multiple classroom sites. The NIEER benchmark requires a bachelor's degree for all pre-kindergarten teachers. However, Arkansas does meet the teacher specialized training benchmark, requiring a degree in early childhood and a P-4 license for single classroom sites and a degree in early childhood for multiple classroom sites.

In 2007, Steven Barnett and his NIEER colleagues evaluated Arkansas's ABC Program using the same regression-discontinuity design described above and used in other states. This report is the first in a five-year longitudinal study using a more common cohort design to estimate the impact of the program through the third and fourth grades of the two respective cohorts. As in the other studies by Barnett et al., the sample was representative of the state's overall demographic percentages. The researchers found that compared with the control group, ABC Program increased children's vocabulary scores by 31% (.36 standard deviations), math scores by 37% (.24 standard deviations), and print awareness by 116% (.76 standard deviations). These are significant effect sizes. Since 1.0 standard deviations is roughly the size of the African American-white test-score gap, these effect sizes mean that the ABC program has the potential to dramatically reduce the achievement gap. The report also estimates that of the teachers in the sample 94% held at least a bachelor's degree, even though the state has no requirement that teachers hold one.

In the 2006 publication "An Economic Analysis of Pre-Kindergarten in Arkansas," researchers determined that the total cost of a universal pre-kindergarten serving all of Arkansas's 52,300 three- and four-year-old children is $226 million, representing less than 8 percent of the Arkansas Department of Education's total budget (Belfield 2006). Moreover, the analysts also determined that universal pre-kindergarten would return $1.58 to Arkansas for every dollar spent on a truly comprehensive early childhood education program.

Recommended Next Steps for Arkansas in Early Childhood Education

While Arkansas has made significant strides in improving the quality of its preschool since the inception of ABC in 1991, important work clearly remains to capitalize on the state's impressive investment. Arkansas has been recognized for its early childhood education standards, but more rigorous standards requiring a bachelor's degree with early childhood development certification for pre-K teachers would align Arkansas's requirements with best-practice states.

Similarly, while Arkansas generally has done well in providing access to needy families, universal access would be preferable. Even more importantly, increasing the participation rate of children whose families are eligible for free preschool would significantly reduce the achievement gap. To achieve higher rates of pre-K attendance, we recommend a major public communications effort to promote the benefits that result for families and our society when young children participate in a quality pre-k or early childhood education program.

Teacher Quality

Teachers are the critical agents in ensuring that children receive a high-quality education. Where less-qualified teachers go, achievement gaps are sure to follow. In the National Commission of Teaching & America's Future (NCTAF)

		WHAT WORKS	What Arkansas is Doing
Early Childhood Education	Universal Pre-kindergarten (OK)	Universal, voluntary state-funded pre-kindergarten • Teachers required to have B.A. and Early Childhood Development certification • Small groups • Low teacher/student ratio • Full Day: $3,238 per child (2005) • Half Day: $1,743 per child (2005)	Arkansas Better Chance: Full-day Program (7.5 hours/day, 5 days a week, academic calendar) • Targeted to students at 200% of poverty • Comprehensive Early Learning Standards • Teachers must have ECD degree • 60 hours teacher in-service req. • Maximum class size 20 • Staff/child ratio: 10:1 • Vision, hearing, health, and development screening with support services • Breakfast, lunch, and snack • Site visits • $4,836 per participating student (2006)
	Early Education Program (WV)	Universal pre-kindergarten by 2012 • Teachers required to have B.A. and ECD certification • Early Learning Standards • $4,529 per child enrolled (2006)	
	Half-day Child Development Program (SC)	Half-day program: • Targeted to low-income and at-risk students • $1,085 per child enrolled (2006)	
	School Readiness Program (MI)	Full-day program: • Targeted students • Early Learning Standards • Teachers required to have B.A. and ECD certification • $3,934 per child enrolled (2006)	

report *What Matters Most: Teaching for America's Future*, the authors reported that in a study of 1,000 school districts, each additional dollar spent on more highly qualified teachers had a larger impact on student achievement than did any other use of school funds. The NCTAF also cited a study that compared high-achieving and low-achieving elementary schools with similar student characteristics, which concluded that "differences in teacher qualifications accounted for more than 90% of the variation in student achievement in reading and mathematics" (NCTAF 1996, 8). Other studies have found that effective teachers are the "single most important school-related factor responsible for increasing student achievement" and that "the amount of variability in student achievement directly attributable to teachers far exceeds the variability at the school and district levels" (Schacter 1999, 328).

Strong instruction is absolutely necessary to overcome the

deficits that less-advantaged children accrue both in the early years of their development and over the course of the less-rigorous instruction that is often associated with poorer schools. There are two schools of thought about how to improve the quality of teachers. A more traditional approach focuses on teachers' preparation and credentials and assumes that better-prepared, more-experienced teachers will do a better job. Organizations such as the Education Trust have highlighted serious inequities in the distribution of experienced, well-prepared teachers. Peske and Haycock (2006) report that teachers in the highest poverty schools are assigned to novice teachers twice as often as children in low-poverty schools, and students in predominantly minority schools are assigned novice teachers at twice the rate as students in schools without many minorities. Similarly, students in high-poverty, high-minority schools are significantly more likely to be taught by a teacher without a university major or minor in that subject (Peske and Haycock 2006, 2-3). Interventions from this approach focus on improving teacher quality in teacher-preparation programs, especially for teachers of low-income, African American, and Latino children. Linda Darling-Hammond (2006) argues that high-quality teacher-preparation programs are both learning-centered and learner-centered, and emphasize clinical practice, developmental psychology, and proven pedagogy.

A newer approach to improving teacher quality argues that determining the quality of a teacher can be measured by student performance on standardized tests and reviews of classroom teaching. Following this approach, interventions such as the Teacher Advancement Program (TAP) create incentives for better teaching.

In the *Lake View* era, Arkansas has taken significant strides to improve teacher quality. The state has strengthened licensure requirements and raised teacher salaries. Arkansas has raised teacher pay to rank 32nd in the nation (National Education Association 2007). To specifically address the achievement gap, the General Assembly has provided recruitment and retention bonuses of up to $10,000 in "high-priority districts" in which students are failing to make adequate yearly progress. Education Week ranked Arkansas fourth in the nation for its policies to promote teacher quality. Arkansas is also a national leader in creating a longitudinal tracking system for students that would allow the "value-added" to a student's test score by a teacher. Despite these successes, tremendous work remains to ensure that every student in the state receives an education from a high-quality teacher. Arkansas must continue to address improvements in its teaching force and should work to define in unambiguous terms what it means to be a high-quality teacher.

Measuring Teacher Effectiveness: Value Added

Andrew Wayne (2002) examines data from the Schools and Staffing Survey and the Baccalaureate and Beyond Longitudinal Study to determine inequalities in teachers' academic skills. Wayne argues that while experience, certification, and degrees may indicate theorized components of teacher quality, teachers' academic skills are a stronger indication of their quality as a teacher and better predict their success in the classroom. He demonstrates that teachers with high academic skills are more often found in wealthier schools.

In the winter of 2006, the U.S. Department of Education approved Tennessee's Teacher Equity Plan, which included a comparison between teacher experience and education levels in schools with high percentages of minority and low-income students versus schools with high percentages of white and middle class students. Tennessee found, as have other states, that "high-poverty schools and high-minority schools have a larger percentage of beginning teachers than low-poverty schools and low-minority schools, and also that high-poverty schools and high-minority schools have a smaller percentage of teachers with master's degrees than low-poverty schools and low-minority schools" (Tennessee Department of Education 2007: 1).

Tennessee policymakers recognized, however, that credentials alone do not always predict teacher effectiveness. Thus, researchers in Tennessee used that state's 14 years of student-assessment databases, which include links between students and teachers, to measure teacher effectiveness using Dr. William Sanders' "value-added" statistical model. Using this model, researchers found that not only are teachers not distributed equitably by experience or credentials, they are also not distributed equitably by effectiveness. They concluded that "the least effective teachers in high-poverty/ high-minority schools are even less effective than the least-effective teachers in low-poverty/ low-minority school" (4). Using the value-added model, researchers have been able to identify the most effective teachers in Tennessee and determine the impact of teacher effectiveness on student achievement.

A 1998 evaluation of the Tennessee Value-Added Assessment System (TVAAS) revealed that for students in grades three through eight, the racial composition of schools, the percentage of students receiving free and reduced-price lunches, and the mean achievement level of the school are unrelated to the cumulative gains in student achievement (Sanders 1998, 4). The study also found that the negative effects of ineffective teachers continued to have residual effects even when the students were later assigned to very effective teachers. Additionally, the data exposed that ineffective teachers were ineffective with all students, regardless of the student's prior achievement level, and that only the most effective teachers (scoring in the top quintile of effectiveness) were able to produce significant gains for the highest-achieving students. Finally, and most relevant for the achievement gap, the study concluded that African American students were disproportionately assigned to ineffective teachers, resulting in a severe academic handicap compared with students who have different teacher-assignment patterns (Sanders 1998, 6).

Performance Pay

Programs that reward teachers or principals with bonuses for improved student performance and/or positive evaluations

have grown in popularity. For example, in 2006, the federal government appropriated $99 million a year for a Teacher Incentive Fund to encourage school districts to implement performance or merit pay for principals and teachers. Texas has implemented a $330 million Governor's Educator Excellence Award Program. Florida has created a $147 million Merit Award Program. Minnesota has created an $86 million Q-Comp system. At a district level, the Denver School District reached an agreement with the teachers' union on a $25 million performance-pay plan.

Despite this activity, few rigorous studies have evaluated the effect of performance-pay programs on students' academic performance, and none of these has focused on their potential to reduce the racial or income achievement gap. In reviewing the research on performance pay, researchers from the federally funded Consortium for Policy Research in Education concluded: "Evidence of a substantial positive impact on either student achievement or teacher performance is lacking, and teachers report a wide variety of both positive and negative reactions to local plans" (Heneman, et al. 2007). Podursky and Springer (2007) searched more broadly, and reviewed performance-pay programs in Britain, Kenya, Israel, and India, as well as the United States. Even casting such a broad net, they found only a handful of rigorous evaluations. These were generally positive, though a minority showed mixed effects.

Advocates for performance pay have identified several key attributes in successful performance-pay programs: (1) teachers must value the reward, (2) teachers must see the performance-pay link, (3) teachers must see a link between effort and performance, and (4) teachers must perceive the system as fair (Heneman, et al. 2007).

Teacher Advancement Program (TAP)

The Teacher Advancement Program (TAP) is a comprehensive school-reform model developed by the Milken Family Foundation. The model restructures the teaching profession by "(a) recruiting high-quality teachers, (b) providing teachers with a career continuum, (c) implementing teacher-led professional development, (d) establishing a rigorous teacher-accountability system [such as the TVAAS], and (e) granting commensurate compensation based on position, skills, knowledge, and performance" (Schacter 1999: 328). The researchers then used student-achievement data, a teacher-satisfaction and -attitude survey, and a TAP implementation survey conducted to capture the variability in school implementation to measure the growth in student achievement compared with control schools.

The Milken Family Foundation funded a rigorous evaluation of TAP, which concluded that schools implementing the program experienced large, significant gains in student achievement (Schacter et al 2004). The study was conducted in 2001 and 2002 and evaluated four elementary schools in Arizona. The schools reflected a wide range of differences in student population, percentage of students eligible for free lunch, and location. Using a statewide cluster analysis to identify matching control schools and a multivariate repeated-measures model to measure gains on the Stanford Achievement Test, researchers found aggregate effect sizes of .35 standard deviations in 2001 and .41 standard deviations in 2002. [11] In other words, schools implementing TAP improved student performance more than comparison schools enough to eliminate more than a third of the white-African American achievement gap, as measured by standardized tests. Although data was not available to statistically test the relationship between TAP school performance and the rigor in which TAP was implemented, the researchers note a strong correlation; the more thoroughly TAP is implemented, the greater the gains in student achievement.

Teacher Training Programs

According to Linda Darling-Hammond (2006), teacher preparation provides crucial general knowledge and skills as well as a strong subject-matter background necessary for teaching. Darling-Hammond identifies five teacher qualifications that influence student achievement: "(1) general academic and verbal ability, (2) subject-matter knowledge, (3) knowledge about teaching and learning as reflected in teacher-education courses or preparation experience, (4) teaching experience, and (5) the combined set of qualifications measured by teacher certification" (Darling-Hammond 2006, 21). Studies using state and national data show a strong correlation between teacher-certification requirements and student achievement.

In defending the importance of quality teacher-preparation programs, Darling-Hammond disputes the claim that programs such as Teach for America (TFA) show that teacher preparation is unnecessary. She points out that often TFA teachers are teaching alongside equally inadequately prepared teachers and that studies have shown students in both types of classes do poorly compared with students in well-trained teachers' classrooms (Darling-Hammond 2006, 29). She goes on to say that TFA teachers who become certified do about as well as teachers with similar preparation and experience, but only those who attain certification and stay in the classroom show improvements in their students' learning. Finally, Darling-Hammond illustrates the challenges that TFA teachers with no training face in helping a child who has difficulty learning, regardless of how academically gifted the TFA recruits may be. In fact, because they are so academically gifted, TFA teachers likely lack the firsthand experience in overcoming challenges with learning (Darling-Hammond 2006, 30).

Darling-Hammond examines six teacher-training programs whose graduates proved to be highly effective in the classroom. In order to assess these new teachers' perceptions regarding their training, she "surveyed all the graduates of each of the seven programs within the prior three years, plus a comparison group of teachers with three or fewer years of experience, drawn as a random sample from a list supplied by the National Education

11 Again, an effect size of 1 standard deviation is considered very large, roughly the size of the white-black test-score gap.

Association" (Darling-Hammond 2006, 59). The survey included demographic questions, questions about the schools in which the teachers taught, questions across 36 dimensions of teaching on preparation, questions on their practices, and finally, questions asking how efficacious the new teachers felt. Darling-Hammond found that teachers from these six programs felt significantly better prepared and, in a separate survey of their principals, were viewed as more competent.

The six schools examined were Alverno College in Milwaukee, Wheelock College in Boston, Bank Street College in New York City, the Developmental Teacher Education program at the University of California at Berkeley, the University of Southern Maine Extended Teacher Education Program in Gorham, Maine, Trinity University in San Antonio, and the University of Virginia Curry School of Education in Charlottesville. Each of these programs: "have in common an approach that prepares teachers to practice in ways that we describe as both learning-centered (that is, supportive of focused, in-depth learning that results in powerful thinking and proficient performance on the part of students) and learner-centered (responsive to individual students' experiences, interests, talents, needs, and cultural backgrounds)" (7-8). They also place a strong emphasis on clinical practice, developmental psychology, and proven pedagogy.

Teacher Quality in Arkansas

In recent years, Arkansas has taken significant strides to improve teacher quality. The state has strengthened licensure requirements and raised teacher salaries. Following the *Lake View* adequacy lawsuit, Arkansas has raised teacher pay to rank 32nd in the nation (National Education Association 2007). To specifically address the achievement gap, the General Assembly has provided recruitment and retention bonuses of up to $10,000 in "high-priority districts" in which students are failing to make adequate yearly progress. The state also provides a $5,000 annual stipend for teachers who earn advanced certification from the National Board for Professional Teaching Standards.

Arkansas has also begun to experiment with performance pay. With financial support from the Hussman Family Foundation, the Little Rock School District has implemented a merit-pay program in several elementary schools. A 2006 evaluation by researchers at the University of Arkansas at Fayetteville compared one elementary school implementing the merit-pay program, Wakefield Elementary, with comparable elementary schools in the district. Both the treatment and control schools were predominantly African American (more than 80%) and low-income (more than 90%). Barnett et al (2007) concluded that students at the treatment school showed a significant improvement in their test scores over the control group: 3.5 Normal Curve Equivalent (NCE) points, equivalent to 7 percentile points. While the gains are significant, the results of this evaluation should be considered preliminary. The conclusions are based on 89 students' test scores at three schools. Finally, the program had significant costs. Teachers received bonuses ranging from $1,200 to $9,200 a year.

Beyond these initial steps, tremendous work must be done to ensure that every student in the state receives an education from a high-quality teacher. Arkansas must continue to address improvements in its teaching force and should work to define in unambiguous terms what it means to be a high-quality teacher.

Arkansas is doing well in attempting to provide a data-driven, value-added assessment model. Act 35 of the second special session of 2003, which revised the state's assessment and accountability system, included a provision for the development of a longitudinal tracking method focusing on the value added to students' learning by their educational experiences during a given academic year. Such "value-added" systems focus on comparing "previous and post student achievement gains against a national cohort" (Act 35). The state Department of Education determined that the longitudinal tracking system should be implemented in the 2009-10 academic year, providing value-added information by district, school, and teacher.

Arkansas has five schools implementing TAP as well: the elementary, middle, and high schools in Lincoln and Stephens and Rockefeller elementary school in Little Rock. Evaluations of these programs have not yet been released, but Schachter's Arizona data shows promise in improving student outcomes with this program.

On the more traditional preparation side, several on-going efforts have been launched. The Arkansas Commission on Closing the Achievement Gap recently released a report that identified teacher quality as one of seven priority areas. The commission emphasized work done to improve the standards and requirements necessary to become a licensed teacher, citing a January 2006 issue of Education Week in which Arkansas was ranked fourth in the nation for "its efforts including requiring prospective teachers to pass a comprehensive battery of tests" (5).

However, the National Council on Teacher Quality's (NCTQ) 2007 Arkansas State Summary of the State Teacher Policy Yearbook notes that the state has guidelines for licensure that are not necessarily based on classroom effectiveness (2). Additionally, the Yearbook determined that Arkansas's standards are "inappropriately broad, failing to cite the specific professional knowledge and skills that new teachers must demonstrate to gain entry into the field… The lack of specificity in these standards makes it nearly impossible for the state to fulfill its role as the benchmark and monitor of who gains access to classroom teaching" (24).

In addition to improving its licensure standards, the NCTQ report argues that Arkansas should enrich its general education requirements for all teacher candidates. The current requirements "are too broad to guarantee that they will cover the topics addressed in the [elementary] classroom" (11). Finally, NCTQ recommends that Arkansas require middle-school teachers as well as high school teacher to complete a subject-area major and a subject-matter test to ensure high-quality teaching at that level (15).

		WHAT WORKS	What Arkansas is Doing
Teacher Quality	**Teacher Training Programs**	• A common, clear vision of good teaching permeates all coursework and clinical experiences. • Well-defined standards of practice and performance are used to guide and evaluate coursework and clinical work. • Curriculum is grounded in knowledge of child and adolescent development, learning, social contexts, and subject- matter pedagogy, taught in the context of practice. • Extended clinical experiences are carefully developed to support the ideas and practices presented in simultaneous, closely interwoven coursework. • Explicit strategies help students confront their own deep-seated beliefs and assumptions about learning and students learn about the experiences of people different from themselves. • Strong relationships, common knowledge, and shared beliefs link school- and university-based faculty. • Case-study methods, teacher research, performance assessments, and portfolio evaluation apply learning to real problems of practice.	• Teacher-training program requirements broad and vague • Requires the same content-hour distribution in broad subject areas for all undergraduates • Lacks subject-matter preparation requirements for early childhood teacher candidates • Lacks subject-matter major requirement for middle-school teachers • Requires high school teachers to have subject-area major, as well as pass a Praxis II subject-matter test
	Performance Pay	• Significant: teachers must value the reward. The size of the incentive must be large enough to merit attention (2% is too small). • Clear: teachers must understand the incentive system and perceive the link between effort and incentive. • Fair: the system must be easily understood and designed to fairly distribute rewards.	Little Rock has a pilot performance-pay program. Statewide programs include: • Up to $10,000 recruitment and retention bonus in high priority districts • $5,000 annual stipend for teachers earning National Board for Professional Teaching Standards
	Teacher Advancement Program (TAP)	• Recruiting high-quality teachers • Providing teachers with a career continuum • Implementing teacher-led professional development • Establishing a rigorous teacher-accountability system • Granting commensurate compensation based on position, skills, knowledge, and performance	Generally speaking, Arkansas districts have: • Rigid salary schedule that determines salary and pay raises based on years of experience and degree status

Recommended Next Steps for Arkansas in Improving Teacher Quality

While Arkansas has invested heavily in improving the quality of its teachers and has been recognized for these efforts, the NCTQ has identified several ways in which the state can improve its licensure standards and requirements. For example, Arkansas should consider examining its teacher licensure standards to make them more specific, to exclude vague statements, and to include more concrete references to effective pedagogy. The state should also consider enriching general education requirements for all teacher candidates. Finally, Arkansas should consider requiring both middle-school teachers as well as high school teachers to complete a subject-area major and a subject-matter test to ensure high-quality teaching at that level.

More importantly, we recommend the state aggressively implement the longitudinal student tracking system in development. We commend Arkansas for its cutting edge work in developing its data systems, and we hope policymakers use this data to improve the way Arkansas teachers are educated, distributed, and developed in service.

School Choice

Economist Milton Friedman argued that empowering parents to choose their children's schools would create competitive pressures on schools to improve. He specifically proposed giving parents tuition vouchers that could be used at any public or private school and argued that the vouchers would particularly benefit low-income families (Friedman 1981). During the 1960s, progressives supported vouchers as a way to empower low-income families. In 1970, the Office of Economic Opportunity, created by the Johnson Administration as part of its War on Poverty, sought to use tuition vouchers as a means of empowering poor families. More recently, political scientists John Chubb and Terry Moe (1990) argued that school choice was the best way, and indeed the only way, to fundamentally improve the public education system. The existing educational bureaucracy, they argued, is so pathological and ineffective that it must be stripped of as much authority as possible. Parents should choose schools and schools should be freed to attract children by innovating. A more efficient and effective educational market should replace the bureaucracy.

Despite its elegant logic, it is not clear that school choice improves academic outcomes, particularly for low-income or minority students. A few promising programs, such as the KIPP charter schools, have dramatically improved the academic achievement of low-income and minority students, but there is no clear evidence that embracing choice, competition, and markets will reduce the achievement gap.

Studies Disagree on the Effects of School Choice on Student Performance

Researchers have found mixed results when testing the hypothesis that greater school choice and competition will improve student achievement. Belfield and Levin (2002) reviewed 25 studies testing the effects of greater market competition on academic outcomes. Between a third and two-thirds of statistical models found a positive, significant correlation between school choice and higher academic achievement in public schools. For example, Hoxby (2000) found that greater choice among public schools led to improved student performance. However, a few studies found that school choice had negative effects on academic outcomes and a sizable minority found no effect at all. For example, Sander (1999) found no positive effect of greater private school competition on Illinois public school test scores, graduation rates, and college-going rates.

Evaluations of specific choice programs have found mixed effects on test scores and graduation rates. After examining more than 100 studies of school-choice programs, Teske and Schneider (2001) concluded that choice programs demonstrate modest to moderate test-score improvements for a few, but not all, students who participate, compared with a similar control group.

With regard to the achievement gap, the effect of school-choice programs is unclear and contested. A few studies have found that tuition vouchers improved the test scores of African American students (Howell et al., 2000). Others, however, concluded that voucher programs most benefited higher-income families (Witte 1999) and created greater racial and socio-economic segregation (Levin 1998; Carnoy 2000).

Tuition Vouchers

Public voucher programs give parents public funds to help pay for private school tuition. The oldest publicly funded tuition-voucher program is in Milwaukee. In 2001-02, the program cost $58.4 million and served an estimated 10,700 students, for a per-student cost of more than $5,400. Researchers have found that parents participating in the voucher program were more satisfied with their children's schooling. However, researchers disagree on the Milwaukee voucher program's academic effects. Greene, Peterson and Du (1998) compared participating students (treatment group) with students who applied to the program but were unable to participate because of limited spaces (control group). They found no difference between the treatment and control groups for the first two years but statistically significant higher test scores for the treatment group after three years. Rouse (1998) found positive effects for math scores, though smaller than Greene, Peterson and Du, but not for reading scores. However, Witte (1997) found no cases in which voucher program students in private schools outperformed non-participants in public schools.

In 2004, the U.S. Congress created a tuition-voucher program for the poorly performing Washington, D.C., school system: the Washington Opportunity Scholarship Program. Only families earning below 185% of the federal poverty line are eligible for the annual $7,500 tuition voucher. Since its inception, almost 90% of the participating students were African Americans and 9% were Latino. Using a randomized control trial, which compared participants (treatment group) with applicants who applied but could not participate because of the limited number of scholarships (control group), Wolf, et al. (2007) found no statistically significant differences between the test scores of the treatment group and the control group. In short, the voucher program had no significant effect on low-income, minority students' academic achievement, as measured by test scores.

Evaluations of private voucher programs in Washington, D.C., Dayton, Ohio, and New York City found improved test scores, graduation rates, and parent involvement in the treatment groups, especially among African American students (Howell, et al. 2000). Wolf and Hoople (2006) attempt to explain the success of the privately funded Washington Scholarship Fund, which provides $2,000 and $3,000 scholarships to elementary and secondary school students, respectively. They argue that greater school resources, smaller schools, smaller class sizes, strict order and behavior, and increased communication between schools and parents did not account for the academic gains in the treatment group. More likely causes for improved achievement were more racially diverse peers, particularly white students; more homework; and "teachers who are described by students as interested in them, good listeners, fair, respectful, and willing to punish cheaters" (Wolf and Hoople, 2006: 22).

Charter Schools

Charter schools are independent public schools that commit to a performance agreement (the charter) and enjoy exemptions from many district and state regulations, including hiring, firing, and spending decisions. Parents and students must choose to attend ("opt-in"). Many charter schools require parents, students, and even teachers to sign a commitment contract.

While randomized control trials have been common in voucher evaluations, they have been rare in charter-school evaluations because no one tracks children who wanted to attend a charter school but could not due to limited spaces. As a result, researchers have been forced to rely on less satisfactory methodological and statistical techniques to evaluate the effectiveness of charter schools. Unfortunately, different methodological approaches produce different conclusions regarding charter schools.

The most direct approach compares charter schools and nearby traditional public schools with similar student demographic characteristics. Using this methodology, Greene, Forster and Winters (2003) found that students attending charter schools in several states performed 3% better in reading and 2% better in math on standardized tests. [12] They found the strongest results in Texas and Florida, where charter-school students outperformed comparable neighborhood-school students by 6 to 8% on standardized tests. [13]

Using a hierarchical linear model to control for differences in the racial and socio-economic make-up of student populations, researchers with the U.S. Department of Education's National Center for Education Statistics used a much larger national test-score data set to compare traditional schools with charter schools. They found that students in traditional public schools scored an average of 4 to 5% better in reading and math than comparable students in charter schools (Braun, et al. 2006). [14]

It is important to note that researchers have found as much variation among charter schools as between charter schools and traditional public schools. Charter schools' academic programs, leadership, and teachers vary so much that understanding what works requires understanding specific charter schools.

KIPP schools have emerged as the most promising charter schools in reducing the racial and socio-economic achievement gap. Nationally, more than 95% of students enrolled in KIPP schools are African American or Latino, and more than 80% qualify for the federal free and reduced-price meals program. An independent evaluation of KIPP's academic impacts concluded, "fifth grade cohorts at KIPP schools post substantially greater academic gains . . . than what is considered normal. . . . The data suggest that these schools are doing something right" (Educational Policy Institute 2005: 1). Using the Stanford Achievement Test as a measure, fifth graders at KIPP schools had an average gain of 10 Normal Curve Equivalent (NCE) points in reading and 17.4 NCE points in math. [15]

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12 Specifically, Greene *et al*. found that charter-school students outperformed regular public school students by .08 standard deviations on state math tests and .04 standard deviations on state standards-based reading tests. One standard deviation is roughly equivalent to four years of expected learning as well as to the size of the black-white test-score gap.

13 In Texas, Greene *et al*. found that charter-school students outperformed traditional-school students by .18 standard deviations on math tests and .19 standard deviations on reading tests.

14 Using the 2003 National Assessment of Educational Progress charter-school data set, Braun *et al*. found traditional public school students outperformed charter-school students by .11 standard deviations on reading tests and .17 standard deviations on math tests.

15 A gain of 20 NCE points is roughly equivalent to 1 standard deviation, which is roughly the size of the white-black test-score gap. Thus, in one year, KIPP schools eliminated a majority of the test-score achievement gap.

KIPP schools all operate on "five pillars": (1) high expectations, (2) choice and commitment, (3) more time, (4) power to lead, and (5) focus on results. Three of these pillars require the freedoms that come with operating as a charter school. First, applicants to join a KIPP school — parents, students, and teachers — must make a formal commitment with specific requirements. Second, students attend school up to 60% longer than in traditional public school, including on Saturdays and during the summer. Teachers, students, and parents must commit to the extra time. Finally, KIPP principals go through a rigorous training and professional-development program, but then have the power to hire and fire staff, manage money, and select curriculum. Unfortunately, it remains unclear which of these five principles are essential for the success shown for the KIPP schools. Questions have also been raised about whether the KIPP model can be successfully expanded to a scale sufficient to impact large portions of the student population.

School Choice in Arkansas

Arkansas has no publicly funded tuition-voucher programs. However, privately funded programs provide needy Arkansas students with several dozen scholarships for private schools each year. For example, the Children's Scholarship Fund, a national organization co-founded by Wal-Mart heir John Walton, provided 35 students in Arkansas with scholarships toward private school tuition in 2006-07. The average CSF scholarship is $1,330, and families must meet income requirements based on federal free and reduced-lunch program guidelines. To the extent that these children enjoy more diverse peer groups, more rigorous homework requirements, and more caring, engaged teachers in their new private schools, they may benefit. However, the research does not predict improved academic outcomes for the thousands of low-income and minority students remaining in public schools.

In 2006-07, Arkansas had eight open-enrollment charter schools, with the full range of freedoms enjoyed by charters in other states. According to an independent evaluation conducted by Huron Mountain Research Services, Arkansas's charter schools exhibited wide variation in their cost. Charters, like other public schools, are free to raise funds independently through charitable donations and grants, beyond what is provided by the federal, state, and local government. In 2003-04, two of the eight open-enrollment charters spent less than the statewide average per-student expenditure of $6,400, while three spent significantly more, in one case almost $3,000 more per student. On the other hand, the open-enrollment charter schools spent significantly less on teacher salaries. The statewide average teacher salary in 2003-04 was $40,600, while the average salary at a charter school was under $29,000.

With regard to the achievement gap, the evaluators found that three of the eight open-enrollment charter schools, because of their location or policy commitment, focused on low-income and/or African American students. While two of the three schools had mixed achievement results, the evaluators concluded that KIPP Delta Prep in Helena "is doing an exemplary job, with its students exceeding regional and state averages after three years" (Huron 2006: 146). After four years at KIPP Delta Prep, the almost exclusively African American eighth-grade class had closed the racial achievement gap on the state's standardized test and was actually outperforming the state's white students.[16] In 2003-04, KIPP Delta Prep spent almost $700 more per student than the state average and other schools in its area. However, these extra funds did not go to teacher salaries. KIPP teachers earned only $28,000 on average, approximately $10,000 less than teachers in nearby schools and in schools with similar demographic characteristics.

Given the significant per-student costs of tuition vouchers and charter schools, ranging between $1,300 and $7,500 per student, and the mixed evidence on their academic impact, specifically with low-income and minority populations, Arkansas policymakers have been wise to adopt a wait-and-see attitude toward school choice.

Recommended Next Steps for Arkansas in School Choice

Given the documented success of the KIPP program and the KIPP Delta Prep school in reducing the achievement gap, policymakers should explore ways of replicating its successful program. Specifically, we recommend that state education officials commission a research project focused on determining which elements of the KIPP program are efficacious in attacking the achievement gap and could be applied to other public schools in the state. This must be an active policy goal since the research indicates that, without such efforts, the benefits of KIPP Delta Prep would likely be restricted to its 220 students. We cannot expect benefits to naturally spread to other schools through a natural competitive process.

In addition, we recommend that any new charter schools in Arkansas be focused on reducing the racial and socioeconomic achievement gap. The state board of education should review all charter school applications for evidence that they employ methods for closing the achievement gap that are backed by research. The Arkansas Department of Education should explore what characteristics of charter schools and private schools make them more effective than public schools — e.g., more homework, racially mixed classes and schools, and engaged, fair teachers.

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16 On the 2007 Arkansas Benchmark Test, 66% of eighth graders at KIPP Delta Prep scored at proficient or advanced levels in math and 78% scored at proficient or advanced levels in literacy. On the same exam, 57% of white eighth graders in Arkansas scored at proficient or advanced levels in math and 71% scored at proficient or advanced levels in literacy.

		WHAT WORKS	What Arkansas is Doing
School Choice	**Tuition Vouchers**	No clear evidence that private school competition leads to improved public school outcomes. However, private schools pursue several successful strategies to reduce the achievement gap: • More homework • Racially diverse classes and schools, with significant percentages of white students • More teachers who are described by students as interested in them, good listeners, fair, respectful, and willing to punish cheaters • Cost: $2,000 to $5,400 per student a year	No public voucher programs, but privately funded programs such as the Children's Scholarship Fund. Magnet schools and teacher training programs seek to promote these strategies in public schools, but these strategies are not prioritized.
	Charter Schools	The Knowledge is Power Program (KIPP) has been proven to reduce the racial and income achievement gap. KIPP has "Five Pillars" • High expectations: students are expected to achieve and attend college • Choice and commitment: parents, students, and teachers sign commitment contracts • More time: extended school day, Saturday classes, and summer school add up to 2/3 more class time than traditional schools • Power to lead: school leaders have freedom in hiring and firing • Focus on results: teachers and students focus on specific testing and learning goals • In 2003-04, $7,109 per-student (vs. avg. statewide per-student cost of $6,421)	KIPP Delta Prep in Helena/West Helena, Ark.

Student Health

Studies have shown clear links between achievement and school attendance. Beginning with John Carroll's "A Model of School Learning" (1963), researchers have understood the degree of success in learning as a product of the time a learner spends on a task in relation to the amount of time a learner needs to master the task. David Wiley and Annagret Harnishfeger analyzed the Detroit sample of the Equality of Education Opportunity survey and concluded that "24% more school led to a 66% gain in reading comprehension and a 33% gain in math and verbal skills" (MA 2020, 3). Maribeth Gettinger studied four public schools in Madison, Wis., and concluded that "spending less time than needed resulted in attaining a lower degree of learning (average decrease of 11%) and lower retention of material one week later (average decrease of 16%) than obtained when children spent all the time needed in learning" (MA 2020, 4).

Simply put, absent students are less likely to achieve, and low-income students are more likely to be absent due to health problems. Richmond (2006) found that high absenteeism resulting from poor health is a key contributor to grade retention and leads to lower graduation rates. A study in Minnesota revealed that eighth graders who are in class 95% of the time are twice as likely to pass the state's standardized language-arts exam as students with attendance rates of 85% (Johnson 2000). Rothstein (2004) demonstrates that low-income children are much more likely to have asthma, vision problems, hearing problems, untreated cavities, high blood levels of lead, and low birthweight.

Asthma causes 14.7 million missed school days per year nationwide and is much more common in minority and low-income students (Environmental Protection Agency 2007). Similarly, oral-health deficiencies lead to a high number of preventable school absences (Georgia Department of Health), especially among low-income students (Arkansas Department of Health 1998: 9). Finally, risky behaviors such as drug use and gang activity result in reduced academic achievement, as does unprotected sex and resulting high rates of teenage pregnancy (Simun 1996).

Implementing programs to improve the health and well-being of low-income and minority students will lead to higher rates of school attendance and ultimately improved classroom performance. The model programs described below have been shown to improve students' health, reduce absenteeism, and improve students' attitudes toward school at relatively low costs. Further, existing federal programs such as Medicare often cover treatments for low-income children but are simply not being utilized.

Arkansans strongly support school-based health services. A recent statewide survey found that four out of five Arkansans believed primary health care services should be provided in schools (Sanders, Wheeler, and Oakleaf 2007).

Asthma

Several school-based asthma treatment programs have been effective at reducing student absenteeism in low-income, highly asthmatic students. The more successful programs have a trained health professional at schools with high cases of asthma. These professionals not only treat students and provide case management, they also give students information on how they can treat themselves at home.

Memphis City Schools, in collaboration with Le Bonheur Children's Hospital, instituted an asthma school-nurse case-management program in 14 inner-city schools with almost entirely African American student populations. A specially trained nurse meets weekly with asthmatic students for examinations and to teach effective personal treatment techniques. A longitudinal study found that absenteeism for students in the case-management program was reduced by half compared with a control group of students who received regular school-nurse care (Levy 2006).

A similar asthma program in St. Louis used contract physicians, who agreed to work for reduced pay, to perform case management and patient education. The program, the Asthma 411 Initiative, was evaluated in the 2004-05 school year with promising results (Richmond 2006). Treatment students were out of school 22% less than before, enough to bring their level of absences down to the same level as students without asthma. A successful mobile case-management program called the Breathmobile also resulted in a significant reduction in absenteeism in 20 mostly low-income Latino schools in Orange County, Calif. After one year in the program, only 26% of asthmatic children missed school due to their condition, down from 60% (Liao 2006).

Oral Health

School-based oral-health programs treat students who often would not have otherwise received dental care. In many cases, low-income students are eligible to receive dental care under Medicaid and other publicly financed insurance programs but have not utilized such opportunities. The most successful programs target these students and provide screenings and treatments in-house, leading to fewer school days missed. They also include classroom education components on oral health (Albert 2005: 2-3).

One notable program is the St. David's Dental Program in Austin, Texas. Five mobile dental clinics travel to schools with a high proportion of low-income students, as determined by free- and reduced-price meal status. The clinics provide both preventive and acute dental services. In 2004-05, more than 37,000 students were screened, with 2,800 receiving sealants at a cost of $114 per student. These relatively inexpensive treatments led to better oral health overall and reduced absenteeism (Jackson 2007).

Reducing High-risk Behaviors

The most successful school-based programs aimed at reducing risky behaviors such as violence and drug use focus not only on educating students on the hazards of these behaviors, but are also aimed at improving self-esteem, making

students feel valued and developing pro-school attitudes. [17] Research has shown all of these to dramatically improve academic performance and reduce the achievement gap (Cohen 2006; Simun 2006).

A Los Angeles area program called Project Support instituted many of these strategies in six predominantly minority elementary schools. Students were educated in drug and violence prevention and also received tutoring and mentoring. After-school "alternative" activities were heavily utilized and students were encouraged to participate in community-service activities. After the three-year pilot program, reading-achievement scores increased by 12.3%, math scores by 12.1%, and language-arts scores by 9.5% compared with scores among similar students who did not participate in the program (Simun 2006).

The Positive Action program focuses on students in middle and high school. This violence- and drug-prevention program, used in schools nationwide, also focuses on character development and socio-emotional skills. It is highly scripted and available for purchase from $360 to $460 per classroom. Results include lower rates of school suspension and use of alcohol, drugs, and tobacco (What Works Clearing House 2006). Other interventions show impressive reductions in violence and arrests. After just two 50-minute weekly sessions in one semester, participants in the low-cost Positive Adolescent Choice Training program in Dayton, Ohio, reduced both in-school aggression and juvenile-court charges by 50% (Department of Health and Human Services 1998).

Mental Health Services

Mental-health conditions can severely hamper a student's chances for a high level of achievement in school. Students suffering from mental-health conditions are more likely to be absent from school due to time spent in recovery and treatment. When in school, emotional issues often prevent a high level of engagement in schoolwork and behavioral problems can lead to time spent in suspension and/or detention (Boaz 2006). Moreover, students with mental-health issues are occasionally removed from the general school population and unnecessarily placed in special education, either because they are misdiagnosed or because schools simply do not have the resources to appropriately accommodate their needs. Minority and low-income students are less likely to receive effective treatment for mental-health conditions, contributing to the achievement gap.

A mental-health service delivery framework called "Systems of Care" uses an integrated approach that has resulted in positive academic outcomes. Inter-agency collaboration, formed around common goals, values, and principles, allows for the sharing of information and resources and fosters a team-based approach to treating each child, ensuring that all of an individual's needs are met systematically. A report by the federal Substance Abuse and Mental Health Administration shows encouraging outcomes. After 18 months of Systems of Care, students receiving mental-health services in treatment schools showed a 43% decrease in juvenile-detention-center placement and a 21% increase in passing performance in class (Substance Abuse and Mental Health Administration 2005).

School-based Health Clinics

School-based health clinics (SBHCs) have increased in popularity over the past few decades across the United States. As might be expected, SBHCs differ greatly in the services they provide and in their financing but tend to provide a common set of services. These typically include general medical services, including care of chronic illnesses and screenings for young children, which are covered by Medicaid in most states (The Center for Health and Health Care in Schools, 2002). A meta-analysis performed by the National Assembly on School-based Health Care showed that, of the seven clinics studied independently, six reported positive academic outcomes. Promotion to the next grade increased and dropout rates decreased in all schools looking at such data, compared with historical rates within those schools. Other notable results included increased self-esteem and a reduction in unsafe sex (Amaral, et al. 2003).

Less common services, but perhaps more important in the reduction of the achievement gap due to their relation to dropout and retention, include birth-control counseling, STD screenings and treatments, and referral to public-health organizations providing contraceptives. SBHCs in the Denver area, some of the longest running in the country, have shown dramatic decreases in teen-pregnancy rates by offering these services. Rates of teen pregnancy decreased from a high of 165 births per 1,000 students in 1991 to a low of 38 births in 1997 (Ricketts and Gunsey 1997).

Student Health in Arkansas

A strong consensus has emerged among Arkansans in favor of school-based health services. A statewide telephone survey conducted in October 2007 found that 79% of respondents strongly or somewhat believe that primary health services such as well-child visits and health screenings should be provided in schools (Sanders, Wheeler, and Oakleaf 2007). Accordingly, Arkansas policymakers have been making strides in providing health and mental health services to students, but much more work remains to be done in using health services to close the achievement gap.

When teen pregnancy rates are compared with those in other states, Arkansas ranks 47th (Arkansas Advocates for Children and Families, 2007). Birth rates are especially high among minority and low-income students. A reduction

17 A "self-affirmation" experiment (Cohen 2006) in one predominantly African American school showed that simply asking African American students to write about their most important values (i.e., good relationships with friends and family) at the beginning of the school year led to a 40% reduction in the achievement gap.

similar to that seen from the clinic program in Denver schools (approximately 77%) would have a dramatic effect on dropout rates among these students and, subsequently, on the achievement gap.

Arkansas also scores poorly in the number of students utilizing the Early and Periodic Screening, Diagnosis, and Training (EPSDT) Medicaid benefit. Utilization rates for this program, which include vaccinations and screenings among other services, are just 27%, the worst in the United States (Arkansas Advocates for Children and Families, 2006). In the last year, Mississippi, a state with similarly poor utilization rates, has implemented a school-based program aimed at improving its numbers. The Mississippi EPSDT school-nurse program has yet to be evaluated, but the Medicaid EPSDT program in general has been very successful in the prevention and early detection of diseases and disabilities in low-income children (Mississippi Office of Healthy Schools 2006).

In an effort to address these and other issues, Arkansas has expanded the implementation of Coordinated School Health efforts in schools across the state the past three years. Coordinated School Health is a Center for Disease Control approach that has been recognized nationally as model partnership structure. It is currently being utilized in 30 schools across the state. Coordinated School Health is designed to help young people grow into healthy and productive adults by focusing on the physical, emotional, social, and educational development of children in kindergarten through 12th grade. This approach, which is administered jointly by the Department of Education and the Department of Health, is an effort to help schools leverage community health resources to meet the health needs of their students. Through the Coordinated School Health initiative a child health report card is being tested and data is being gathered to examine linkages between student health improvements and educational improvements. This effort is currently supported by a CDC grant and money set aside from Arkansas's Tobacco Settlement Fund. Supporting and expanding the Coordinated School Health model to all schools in the state can be the vehicle for addressing an array of health issues facing students today.

While still behind most states in regard to student oral health, Arkansas has been making strides toward reversing this trend. The Arkansas General Assembly in 2003 passed Act 1216, which made oral-health education mandatory in Arkansas schools. A training seminar for school nurses has been developed by the Arkansas Department of Health's Office of Oral Health. Moreover, the Future Smiles Program, a collaborative program involving 15 organizations, has provided 2,500 dental screenings, 250 sealants, and oral-health education for families (Arkansas Oral Health Coalition 2005). The state has also made advances in increasing community water fluoridation (Centers for Disease Control 1999). At present, however, only one school in the state—Wakefield Elementary School in Southwest Little Rock—houses a school-based dental clinic; the Little Rock School District has examined routes to replicating this model at other schools. The Arkansas Oral Health Coalition has called for an increase in school-based sealant programs (2005: 5) and has worked with the Arkansas Department of Health and local dental providers to implement sealant programs in several schools in the state.

Schools in Arkansas have been unable to do much to combat asthma in a deliberate, organized fashion. A 2006 study conducted by researchers at the University of Arkansas for Medical Sciences determined that due to rates of asthma estimated at 25% of students, "poorly controlled asthma was of great concern" in the Little Rock School District (Vargas, et al. 2006). The UAMS researchers also stated that, "Identification of children with asthma is critical for prompt and appropriate management of acute asthma to reduce time spent out of class" (Vargas, et al., 2006). Based on the urgent need as determined by UAMS researchers and the demographic groups it tends to impact, more active asthma case management and treatment in schools promises to close the achievement gap. As a first step, Arkansas is currently developing a school nurse manual for dealing with children with asthma which should help schools better serve those children's needs, but this falls short of an aggressive response to the asthma challenge.

A student's ability to see is critical to a student's ability to learn, Arkansas adopted a comprehensive vision policy during the 2005 legislative session. This legislation calls for every child to receive a standardized vision screen at school in kindergarten, 2nd, 4th, 6th and 8th grades. Students who do not pass two screens are referred to a vision care provider and required to receive a complete evaluation. School nurses receive Medicaid reimbursement for providing the screens on Medicaid eligible children. Arkansas is one of only a handful of states with a comprehensive vision policy in schools.

Similarly, Arkansas schools have made major advances in mental care for children over the past decade, applying different strategies to provide services. Some schools have in-house mental health providers while others contract with outside providers to come into the school and provide care. A group of schools have joined together to form the Arkansas School-based Mental Health Network that provides mental health services using evidence-based practices with an emphasis on early intervention. Improving the provision of school based mental health services is part of the current System of Care effort in Arkansas. This effort is working to ensure that mental health services for children are family centered and youth driven and are provided in the least restrictive setting. With the current efforts there is a very strong evaluation component being developed that is looking at measuring outcomes. This evaluation will be critical in determining best practices for school based mental health services.

During the 2003 legislative session Arkansas passed cutting edge legislation requiring all schools to perform BMI screens on children, to adopt yet to be developed nutrition and physical activity standards and to form a local wellness coalition to help reduce obesity among children. Arkansas is the only state in the nation to adopt measures of this nature at a state level. In the aftermath of the program's implementation, the progression of childhood obesity in the state has stopped.

Finally, while a number of school-based health clinics

		WHAT WORKS	What Arkansas is Doing
Student Health	**Asthma**	Trained health professionals at schools with high cases of asthma have reduced student absenteeism. The professionals: • Treat asthmatic students on site • Provide case management • Educate students with information on how they can treat themselves at home.	Schools in Arkansas have done very little to combat asthma in a deliberate, organized fashion.
	Oral Health	Targeting students who would not have otherwise received dental care at schools reduces absenteeism. Low-income students are eligible to receive dental care under Medicaid and other publicly financed insurance programs. Professionals provide: • Screenings • In-house treatments • Classroom education on oral health	Act 1216 (2003) made oral health education mandatory in Arkansas schools. Several schools participate in the dental sealant program, but only Wakefield Elementary has a dental clinic in the school.
	Reduction of Risky Behaviors	Aimed at reducing risky behaviors such as violence and drug use. The most successful programs focus on: • Education on the hazards of these behaviors • Improving self-esteem • Developing pro-school attitudes • Encouraging participation in community-service activities	Some schools have increased activity in this area as part of Coordinated School Health. Arkansas has not adopted a formal program on a statewide basis.
	School-based Health Clinics	School Based Health Clinics can provide general medical services, including care of chronic illnesses, mental illnesses, adolescent care and screenings for young children. Most of these services are covered by Medicaid in Arkansas for children who are elegible.	Arkansas is one of only seven states that do not have any school-based health clinics.

(SBHCs) previously existed in Arkansas, the state is currently one of only seven that do not have any state funded SBHCs. Several schools are looking at developing school based health clinics as part of their Coordinated School Health initiative, but none have yet been created. Considering the positive outcomes resulting from SBHCs in other states and areas of great need in student health in Arkansas, the potential impact of SBHCs in the state could be significant and could provide a venue for well-child and EPSDT screens, dental care and mental health services.

Arkansas has begun to take steps toward improving the health of students and faculty in schools, although the programs are not comprehensive in nature. Embracing proven coordinated school health practices can help ensure that children are receiving needed health services and education to perform well in school.

Recommended Next Steps for Arkansas in Student Health

As a state, Arkansas has not worked in a systematic, integrated fashion to close the racial and socioeconomic achievement gap by improving minority and low-income students' health care. For example, Arkansas should explore better utilizing the Medicaid EPSDT program, which in general has been very successful in the prevention and early detection of diseases and disabilities in low-income children. Similarly, based on the urgent need as determined by UAMS researchers and the demographic groups it tends to impact, more active asthma case management and treatment in schools promises to close the achievement gap. Finally, in keeping with recent trends of integrating oral-health education in school curricula, Arkansas should consider systematically integrating oral-health services into schools across the state.

Most importantly, we recommend that Arkansas re-introduce state funding to support school-based health clinics (SBHCs) or promote their development through the Coordinated School Health Initiative. While a number of state-supported school-based health clinics previously existed in Arkansas, the state is currently one of only seven in the nation without any state-supported SBHCs. Considering the positive outcomes resulting from SBHCs in other states and areas of great need in student health in Arkansas, the potential impact of SBHCs in the state could be significant and could serve as a home to many of the services proposed in this section, including asthma, dental care, and mental health services. Despite this progress Arkansas has made through the initial implementation of the Coordinated School Health and other recent health initiatives, the state has a long way to go in embracing the improvement of student health outcomes as a strategy for closing the achievement gap for its most vulnerable students.

Extended Learning Opportunities

A major contributor to the achievement gap is the lack of academic engagement of low-income and minority students outside of school hours — either during the academic year or during summer months. A study tracking Baltimore children from first grade to age 22 found that two-thirds of the reading-achievement gap between low-income and middle-class students can be traced to what they learned, or failed to learn, during the summer (Alexander, et al. 2007). The study also found that low-income students' lack of summer learning opportunities substantially account for their lower levels of college-prep-track placements, higher drop-out rates, and lower college-attendance rates. Low-income children can lose as much as two months learning to summer learning loss, or "summer slide" (Cooper, et al. 1996). By contrast, more affluent students are frequently exposed to intellectually stimulating activities outside of school, contributing to better school performance (Rothstein 2004: 153).

As a result, extended-learning-opportunity (ELO) programs — including after-school, summer, and extended-day programs — have become a key strategy for addressing the achievement gap. For example, the federal No Child Left Behind law provides low-income students in schools designated as needing improvement with vouchers for "supplemental education services." In theory, students can use these vouchers to receive free tutoring and other assistance to bring them up to proficient levels of academic performance. The federal government also funds 21st Century Community Learning Centers, which target low-income students in low-performing schools for academic support through school-based ELO programs.

Research has shown that ELO programs improve school attendance, student behavior, and test scores, especially among low-income students (Wright 2005, 7). Mid-continent Research for Education and Learning (McREL) conducted a meta-analysis of 53 extended-learning-time programs and found statistically significant positive effects on both reading and math test scores. Overall effect sizes for students who participated in ELO programs versus their peers who did not ranged from .06 to .13 standard deviations for reading and from .09 to .17 standard deviations for math (McREL 2004, 2).[18] A meta-analysis of 35 evaluations of ELO programs found nearly identical results for at-risk students. ELO programs had positive and significant effects on at-risk kids' reading achievement, with average effect sizes of .05 to .13 standard deviations, as well as math achievement, with average effect sizes of .09 to. 17 standard deviations (Lauer et al. 2006).

18 An effect size of 1.0 standard deviation is equivalent to the size of the black-white achievement gap in America. Thus, these effects after one year reduce the achievement gap by roughly 1/10.

While researchers stress that no single formula for success exists for ELO programs, they have identified several common characteristics of successful programs: (1) effective partnerships between multiple community organizations, (2) qualified, engaged staff, (3) family involvement, (4) a safe environment, and (5) enrichment opportunities that complement rather than duplicate school learning, often through project-based learning and exploration (Wright 2005, 10). Further, the most successful programs in reducing the achievement gap for low-income and minority students focus on: (1) one-on-one mentoring or tutoring, (2) intensive small-group instruction, and (3) a combination of recreation and instruction (McREL 2004, 3).

In addition to academic instruction, the model programs outlined below use innovative community-based enrichment activities, such as book clubs and recreational programs, to engage low-income and minority students, keeping them engaged in learning and in school. More importantly, they provide students with caring, engaged mentors in a safe, structured environment.

After-school Programs

The Extended Day Tutoring Program in Memphis, Tenn., picks up where the Success for All school-day curriculum (see Curriculum and Instructional section) ends. It focuses on low-income children eligible for federal Title I funds. The predominantly African American students participate in activities such as book clubs and academic skill-building activities such as computer lessons and test-taking strategies. In a randomized control trial, participating students (treatment group) had test scores .11 to .23 standard deviations higher than students randomly selected not to participate (control group) (Olatokunbo 1999). The more students in the treatment group attended the program, the greater the test score gains. Specifically, third graders gained 8.5 NCE points, while second and first graders had slightly smaller increases.

The Valued Youth Program, a cross-age after-school tutoring program used in various locations nationwide, is designed to increase the academic success of two distinct groups of students. At-risk high school students tutor low-performing elementary school students in an effort to reduce their dropout rates. The younger students benefit not only from the tutoring itself but also look up to the older students as role models. Two years after the start of the program, only 1% of the high school tutors had dropped out of school, compared with 12% in a control group of non-tutors. Program costs were minimal, consisting primarily of minimum wage stipends given to the tutors (Slavin 2005).

The Help One Student to Succeed program in Vancouver, Wash., takes a similar approach, with volunteers from local businesses and the community serving as tutors to low-income, mostly African American students. They use lesson plans generated by teachers that align with school-day curricula but deliver instruction outside the normal school routine. The program has not been evaluated using experimental control-group comparisons, but it has demonstrated normal-equivalent-curve (NCE) gains for participating students larger than other students in the same schools and in similar schools around the state. Participating first, second, and third graders recorded one-year NCE gains of 15, 25, and 25, respectively (Olatokunbo 1999). [19] Although these gains lack a control group reference, they are very large.

Summer Programs

For low-achieving students in reading and other areas of study, summer programs provide the opportunity to catch up to peers. A few weeks of intensive lessons with individual attention not only increases proficiency but can also lead to increases in pro-school attitudes and self-esteem, especially when parents are involved. Borman and Dowling (2006) evaluated summer programs in Baltimore using an experimental field trial. After two successive summer schools, they found that the treatment group scored .5 standard deviations better than the control group on standardized tests, which is equivalent to half of the African American-white test-score gap. These programs are also inexpensive. The cost of the Baltimore program was estimated at $815 per student.

The Austin, Texas-based Summer Opportunity to Accelerate (SOAR) is focused on improving literacy skills for students in kindergarten through second grade who are below grade level in reading and at risk for retention; these students are predominantly African American or Latino. Components include phonemic-awareness activities, shared reading and writing, and reading aloud in classes with an average size of 14 students.

Although the program was not evaluated using rigorous methods, it has shown promise. Nearly half the students gained two or more Development Reading Assessment levels and more than half left the program at or above grade-level proficiency. [20] Teachers also noted gains in self-esteem. The intensive 19-day program costs just over $500 per student (Cury 2001).

Extended Learning Time

Researchers have established that more classroom time improves academic outcomes, especially for low-income and minority students. For example, Wenglinksy used Hierarchical Linear Modeling on the 2000 National Assessment of Educational Progress test results to conclude that African American and Latino students perform significantly better on tests when

19 Again, a gain of 20 NCE points is roughly equal to one standard deviation, which is roughly equivalent to the amount of learning that the NAEP test assumes will occur in four years, as well as the size of the black-white test-score gap.

20 Developmental Reading Assessment (DRA) is a standardized method of evaluating student progress in reading in grades K – 8. For grades K – 2, an entire grade level includes approximately 7 to 8 DRA levels.

more classroom time is spent on mathematics instruction (Wenglinsky 2004).

However, specific programs that extend learning time beyond normal school hours remain new and untested. A report by the Center for American Progress concludes that "because these efforts are new, data may not yet reveal improvements in student achievement" (Rocha 7). The report does single out charter schools as "the leading force in the movement to increase learning time. . . perhaps because they have greater flexibility than public schools to develop and implement new programs" (Rocha 7). The Center for Education Reform surveyed charter schools in 2005 and found that 57% of respondents expand learning time (Center for Education Reform 2006). The most successful charter school in addressing the achievement gap, the KIPP program (described above), uses more time to increase student success. In all KIPP schools, students have an extended school day and every other week attend Saturday school, and they also attend a three-week summer program, which leads to up to 60% more class time than in traditional public schools. As fully presented in the School Choice section that discusses the other distinctive traits of KIPP programs, there is evidence that KIPP schools can eliminate the achievement gap. What remains unclear is how vital the extra class time is in promoting KIPP's apparent success.

Some traditional public schools have also pursued extended learning time. Districts in New York, Florida, California, and Pennsylvania have implemented extended-learning-time initiatives. The most ambitious initiative, however, is in Massachusetts. The Massachusetts Expanded Learning Time to Support Student Success Initiative (ELT) is the latest of eight projects spearheaded by the Massachusetts 2020 Foundation to expand learning opportunities for students in Massachusetts. Ten schools in five districts were selected to extend the school day by approximately two hours. The schools were selected based on high rates of students receiving free or reduced-price lunches and low state test scores. How the extra time was used was left to the discretion of school leadership, but most used it for core subject-area instruction, remedial small-group instruction, or enrichment activities. Funding for the initiative came from a $6.5 million allocation from the state legislature, approximately $1,300 per student.

Formal evaluation of the ELT initiative in Massachusetts is not yet available, as it has only been in place since the beginning of the 2006-07 school year. However, anecdotal evidence in parent and teacher surveys indicates a sense of success in all ten schools. Additionally, the three Boston Public Schools that participated in the initiative showed higher scores on the districtwide mid- and end-of-year math assessments.

Extended Learning Opportunity Programs in Arkansas

Currently, no statewide initiative for after-school, summer, or extended learning time has been implemented in Arkansas. A recent examination of after-school programs in Arkansas reports that nearly one in five schoolchildren are left to take care of themselves after returning home from school (Kelly 2006). There are no conclusive measures of the total number of students enrolled in extended-learning-opportunity programs in Arkansas because there are few large-scale programs in the state, either after school hours or during the summer. A few notable exceptions are YMCA and 4-H after-school programs, which enroll more than 200,000 students each year.

In addition, the Arkansas 21st Century Community Learning Centers (CCLC) offers enrichment opportunities to students before and after school, during holidays, and over summer break. According to the program statute, "a community learning center assists students in meeting state and local academic achievement standards in core academic subjects … by providing the students with opportunities for academic enrichment" (Arkansas Department of Education 2003). These centers are established with competitive grants awarded by the state to schools that meet the 40% free- or reduced-lunch student requirement. Non-school entities may apply for the grants but must describe a partnership with a targeted school. Additionally, they must actively participate in the development and execution of the program and not simply be a support or add-on to previously established programs. The 21st CCLC Advisory Committee recommends 12 to 15 additional out-of-school hours per week (and mandates ten hours) and a minimum number of attendance hours per student, and it requires students to be served on a year-round basis. The average grant awarded is between $100,000 and $150,000 and it restricts administrative costs to 5% of the total grant (ADE 2003).

Successful summer program models also exist within Arkansas. In the summer of 2007, Hendrix College sponsored a three-week intensive remedial program called Above the Line for elementary students in Forrest City scoring below or below basic on the Arkansas benchmark exam. An preliminary evaluation found that 73% of the students showed gains in science skills, 59% in writing, and 55% in math. Additionally, parents indicated an increased willingness to supplement learning at home by attending a monthly parents' class (Hendrix College 2007). The program costs around $25,000 to implement, although researchers note that replication of the program would be less expensive (Jennings 2007).

Arkansas also boasts a Children's Defense Fund Freedom School in Marianna and Marvell. These are summer programs modeled on Freedom Summer experience. The Children's Defense Fund reports that children who attend freedom schools have been shown to score significantly higher on standardized reading tests compared to children who attend other summer programs, and African American boys made the greatest gains (Children's Defense Fund 2007).

Despite these success stories, many of Arkansas's existing after-school and summer programs may not exhibit best-practice characteristics shared by the model programs described above. For example, of 423 school-age centers licensed by the Department of Human Services Division of Child Care and Early Childhood, only 18% meet quality standards (Kelly 2006).

		WHAT WORKS	What Arkansas is Doing
Extended Learning Opportunities	**Summer Programs**	Two-thirds of the achievement gap between low-income and middle-class children can be attributed to different summer opportunities. Features of the best programs: • Intensive • Highly structured • Learning in small groups • Caring, trained adults	Above the Line is a three-week intensive program for elementary students sponsored by Hendrix College.
	After-school Programs	Successful after-school programs provide students: • Safe, structured environment • With caring, training adults • A variety of activities including academic instruction, as well as enrichment activities, such as book clubs and sports.	Many local and community programs, but no comprehensive statewide program
	Extended Learning Time	More seat time and classroom learning can improve academic performance. MA 2020: • Additional two hours per day • Cost: $1,300 per student	AR 21st CCLC provide extended-learning opportunities before and after school, during holidays, and over summer break

Recommended Next Steps for Arkansas in Extended Learning Opportunities

The state of Arkansas has not provided funding or technical support specifically targeted to after-school and summer-program providers to grow their capacity and meet high-quality standards. Accordingly, we believe any attention to developing standards and any systematic support tied to increasing capacity would have a dramatic impact on the achievement gap.

The statewide Arkansas Out of School Network has been working to develop best-practice standards in the areas of program quality and professional development. Governor Beebe has also appointed a Task Force on Best-Practices in After-School and Summer Programs, which has been charged with developing a statewide framework. We recommend that the state aggressively implement any forthcoming recommendations of the Governor's task force in this high-priority area.

Parental Engagement and Community Organizing

Existing literature clearly shows that parental engagement in education results in increased student achievement. These positive outcomes are seen across a range of parental involvement, from evening assistance with homework to grassroots organizing aimed at reforming schools. More importantly, the best results are achieved when effective efforts to engage parents are "comprehensive in nature, with the school consistently interfacing with parents at many points, in many venues, over the course of the schooling years" (Redding 2004).

A dearth of academic reinforcement in the homes of low-income children is one of the root causes of the achievement gap (Rothstein 2004: 153). Research by Lewis and Henderson (1998) shows that achievement gap interventions not involving parents are less likely to be successful. There are several effective community-based parental training and assistance programs in Arkansas that provide parents with the materials and knowledge to complement their child's intellectual development, and these programs have shown positive academic outcomes. While these programs have been successful and should be continued, a more comprehensive approach is needed.

Community-based organizations in other states have developed processes for empowering parents to become change agents in educational reform. Beyond complementing their children's learning at home, when concerned parents coalesce and form common goals they build social capital that can be transformative. Community-based organizations of parents have the potential to fundamentally reform schools by questioning dominating paradigms in curricula, school leadership, and other areas (Shiley 1996). In some cases, true reform only occurs when community pressure reaches a critical mass so that school administrators and policymakers have no choice but to respond. The following programs show that community organizing by parents can be a very effective and, together with already successful home-based programs, can form a comprehensive approach to parental engagement that is capable of reducing the achievement gap.

Social Capital and Education Reform

According to political scientist Robert Putnam and other social researchers, there has been a general decrease in civic involvement and social trust in the United States over the past century. As people have become more geographically mobile they have become less invested in their local communities. This has been exacerbated by more intensive work schedules and an increase in participation in recreational activities that are more solitary, such as watching television, instead of group activities such as bowling leagues. He and others refer to this phenomenon broadly as declining social capital. People vote less often, volunteer fewer hours with community organizations, and do not form the social networks necessary to develop the leverage needed to create change in their communities (Putnam 2000).

In keeping with this logic, parents have generally become less involved in the education of their children. To combat this trend, community organizers in the Texas Industrial Areas Foundation (IAF) have developed strategies for fostering the development of social capital among parents. They accomplish this by using a multi-faceted grassroots strategy. Group meetings are organized in individual homes and bring together people from diverse backgrounds, such as blue-collar workers and stay-at-home mothers, to discuss broad social issues that may have been perceived as individual concerns. IAF organizers also conduct one-on-one home visits of teachers, parents, and other concerned members of the community to open dialogue and evaluate the most common concerns about local education. They also attempt to build social capital within churches and other existing institutions by using new and creative methods of facilitating discourse, setting action agendas, and implementing change. This strategy for achieving education reform changes the role of the parent from passive involvement to active engagement without transforming school culture and organization (Shirley 1996).

The strategies used by Texas IAF show promising results. An African American principal of a low-performing school known for disciplinary problems used clergy and community organizers to recruit parent participation in homework and in efforts to battle neighborhood blight. The Fort Worth middle school went from a ranking of twentieth to second in school district standardized test scores in the two years after the parental-engagement campaign (Shirley 1996).

Successful cases are not limited to efforts initiated by school officials. Parents in a primarily Mexican American neighborhood in Austin started a drive to establish a school-based health clinic after the closure of a community clinic. Despite facing fervent opposition from local religious groups, their effort was successful and catalyzed further parental involvement. The school reported significant increases in achievement following the parental-engagement boom. After house meetings regarding an abusive teacher, a parent-initiated effort in El Paso led to the reassignment of a school principal and forced all teachers to reapply for their positions, with parental involvement in the rehiring process (Shirley 1996).

Parental Engagement Programs in Arkansas

The Home Instruction Program for Parents of Preschool Youngsters (HIPPY) aims to increase the variety of intellectual experiences of pre-school children in the home. HIPPY staff, generally members of community organizations, come into the home to train parents in one-on-one methods of developing school readiness. Parents are given age-appropriate problem-solving and artistic-development materials and lessons. Language skills are developed through reading and question-and-answer sessions.

Evaluations have shown that children from HIPPY homes

		WHAT WORKS	What Arkansas is Doing
Parental Engagement and Community Organizing	**Parental Training Programs**	Encouraging intellectual stimulation at home. The best family-engagement programs (such as Arkansas's HIPPY) give parents materials and knowledge to become an integral part of their children's intellectual development by: • Visiting parents in their homes • Training parents one-on-one • Providing age-appropriate problem solving and artistic-development materials and lessons • Reading and question-and-answer sessions • Develop parental self-esteem	HIPPY and Schools of the 21st Century are effective at improving parental skills related to education, although 21C has had funding woes.
	Building Parental Social Capital for Education Reform	Community organizations focused on building social capital among school parents who are often best equipped to deal with complex, local issues. Strategies include: • One-on-one home visits with parents, teachers, community members to discuss social issues • Meetings of diverse members of community to discuss education issues • Building social capital in churches and other institutions	No active campaigns to build social capital among parents

outperform children from non-HIPPY homes academically and are better behaved in school. A study of HIPPY in Arkansas showed significant differences between former HIPPY students and a control group of students who received no HIPPY instruction. Specifically, HIPPY students scored better in reading, language arts, and mathematics in grades three through six and had lower rates of suspension (Bradley and Gilkey 2002). The program fee of $850 includes all the materials and training organizations that are needed to start a HIPPY program.

Another parental-engagement program in Arkansas, Schools of the 21st Century (21C), has shown positive results in its 173 schools. While it is a broad program that includes after-school and pre-K programs for children, it focuses on family-support services and parental involvement. In fact, a bill passed by the state legislature in 2003, Act 603, requires all 21C schools to involve parents in their programs, which vary from district to district. While previously funded by the Winthrop Rockefeller Foundation, it is currently in search of new funding and is considering filing to become a non-profit organization (Lyon 2007).

Examples of successful 21C parental programs include "Dare to be YOU" in Monticello, which is a parental class aimed at developing parental self-esteem and promoting

improved decision-making. Studies have shown it to "reduce harsh parenting styles, improve parental competencies, and decrease family management problems" (Arkansas 21 C Network 2002). The Paragould school district, the first to implement the program in Arkansas, includes "Parents as Teachers," which uses home visits to guide parents through rearing their children before they enter school.

Recommended Next Steps for Arkansas in Parental Engagement and Community Organizing

In striving to reduce the achievement gap, traditional methods focused on reforming from the inside out will not always be successful. It is hard for some schools and districts to break old habits and instill sweeping change that is unfamiliar. Legislators and policymakers can be ill equipped to address local issues that are often unique and complex. This leaves an open door for parents to become active reformers. Programs such as Texas IAF are effective at organizing support and building the social capital necessary to facilitate parental entry into education reform. We hope that parents and children's advocates in Arkansas organize themselves and work to ensure that the needs of low-income and minority children are being met.

The success of HIPPY and 21C in Arkansas have proven that when parents are better equipped to facilitate and continue their children's education at home, students will achieve at higher levels. Now that the Winthrop Rockefeller Foundation has established the foundation for 21C programs, we recommend the state evaluate these programs and sustain their successes. As an area in which the state has done relatively little, we believe interventions to engage parents and organize communities should be a high priority.

Class-size Reduction

Evidence that class-size reduction (CSR) can reduce the achievement gap is strong. For example, Krueger and Whitmore (2001) demonstrate that small class sizes had persistent academic and social benefits for African American students. However, there is also evidence that done improperly, CSR can actually worsen the achievement gap.

The earliest studies of CSR interventions found positive academic effects. Glass and Smith (1978) conducted a meta-analysis of 78 CSR studies and concluded that student achievement improved when class size was reduced below 20 students. Because the initial studies did not use rigorous methodology, however, the results of Glass and Smith's meta-analysis cannot be considered conclusive.

More recently, researchers in Tennessee used a randomized control trial to show that students in early grades in small classes learned better than their peers in larger classes, even with teaching aides. They found that the effect was largest for African American students. These results were confirmed in Wisconsin, although its class-size reduction was combined with other interventions, making it impossible to determine how much of the improvement was due to CSR. The Tennessee and Wisconsin programs highlight two key characteristics for class-size reduction: (1) class sizes of 13-17 students, and (2) class-size reduction in the early grades (K-3).

However, because most education spending comes in the form of salary costs and because smaller classes necessarily mean more teachers and increased salary costs, class size reduction is a relatively expensive intervention. States have provided between $1,300 and $2,000 per student annually, but these have not covered the full costs, for which school districts have been responsible. Even more troubling, California's class-size initiative actually shifted credentialed, experienced teachers away from low-income African American and Latino students and to higher-paying positions in more affluent districts with more white students.

Tennessee STAR

The Tennessee Project STAR was a four-year longitudinal study funded by the Tennessee General Assembly and conducted by the Tennessee State Department of Education from 1985 to 1989. More than 6,000 students in 79 elementary schools were randomly assigned into one of three types of classrooms: a small class (13 to 17 students per teacher), a regular class (22 to 25 students per teacher), and a regular-with-aide class (22 to 25 students per teacher with a full-time teacher's aide).

Because it used a randomized control trial, a four-year research design, and has been validated by a follow-up longitudinal study, the results of the Tennessee STAR program should be taken very seriously. The evaluation of the Tennessee STAR program showed that students in the small 13-17 student classes outperformed students in regular and regular-with-aide classrooms by approximately .20 of a standard deviation. [21] More importantly for the achievement gap, the effects were nearly twice as large for racial minorities as for white students.

The effects continued beyond the third grade. Graduation rates for students in the smaller classes were 11% higher than those assigned to regular classes. The impact was even bigger for low-income students in small classes, whose graduation rates were 18% higher than their peers in regular-sized classes (Finn et al 2005). Evaluations of students in grades 4, 6, and 8 found sustained higher test scores for students in the reduced-size classes. By eighth grade, the difference in test scores remained

21 1 standard deviation is a very large effect, equivalent to four years learning on the National Assessment of Educational Progress (NAEP) test as well as against the size of the black-white achievement gap.

		WHAT WORKS	What Arkansas is Doing
Class Size Reduction	**Tennessee STAR**	• Reduce class size in grades K-3 to 13 to 17 per teacher. Found significant student achievement improvement in smallest (13-17) class sizes. • Cost: $12 million per year at time of implementation in 1990s.	Many Arkansas schools and some districts have reduced class sizes, but no widespread implementation.
	Wisconsin SAGE	• Students in reduced class sizes of 15 experienced more academic growth, especially African American students. • Cost: $2,000 per student.	

70% of the size of the differences in third grade (Nye et al. 1999). Additionally, a follow-up study conducted in 1996 by the Health and Education Research Operative Services showed that students in regular and regular-with-aide classes had a higher percentage of grade retention, 12% to 19%, versus just 8% of students in the smallest class sizes. Finally, students who had been in the smallest classes spent fewer days in suspension and were absent less frequently in grades eight through ten (Pete-Bain et al 1997).

Wisconsin SAGE

Wisconsin's SAGE program has also proven to be effective. Started in 1995, the SAGE program was developed to increase the academic achievement of low-income children in kindergarten and first grades by reducing class size to 15 students per class, extending school hours, collaborating with the community on activities, implementing a rigorous curriculum, and improving opportunities for teachers' professional development. Each SAGE school received the equivalent of $2,000 per low-income child served by the designated grades.

A study conducted by Phil Smith, Alex Molnar, and John Zahorik (2003) found that while all students benefited from reduced class size, the gains for black students were greater than for white students (Smith et al. 2003, 16). In order to measure the gains, first-grade students in SAGE schools and a group of students from comparison schools were tested in October of their first-grade year and again in May. The researchers found that when compared with their peers in similar schools, students in smaller class sizes gained an additional 1/3 to 1/2 years of academic growth per year (Smith et al 2003, 32). Although it is not clear how much of this growth is due to class-size reduction and how much to the extended day, community engagement, and professional development, the SAGE program has shown great potential in reducing the achievement gap for African American students.

Dangers of Class-size Reduction: California

In the mid-1990s, the California state government received a windfall from internet and Silicon Valley profits. Education interest groups pressured Governor Pete Wilson to increase education funding with some of the money. In 1996, rather than provide school districts with a lump sum to spend as they wished, Wilson earmarked $900 million for class-size reduction. The state provided each participating district with $650 per student if they reduced class sizes to 20 students or fewer in grades K-3. Although the program was technically voluntary, class-size reduction enjoyed such strong public and teacher support that all districts participated, even though the amount of state funding did not cover the full cost of hiring additional teachers to lower class sizes. Bohrnstedt and Stecher (2002) estimated that 43% of the costs were not covered by

the state. Nevertheless, within three years, 99% of the state's K-3 students were in small classes. By 1999, California's CSR initiative was the most expensive state education reform in the history of the United States, costing $1.5 billion a year, not including the costs borne by school districts.

Overall, the achievement gains attributable to CSR in California were modest, about .1 of a standard deviation, significantly less than in Tennessee (Bohrstedt and Stecher 2002). Researchers found few changes in teachers' classroom behavior.

More problematically, the massive and abrupt changes to class sizes led to an inequitable redistribution of teachers. In the late 1990s, demand for elementary school teachers expanded dramatically across the state. School districts competed for qualified teachers. Teachers with the most seniority and expertise got the best jobs, which tended to be in more affluent, suburban districts that served majority-white student populations. The remaining jobs were filled by less qualified or unqualified teachers.

Bohrnstedt and Stecher (2002) concluded that California's CSR initiative was associated with declines in teacher qualifications and a more inequitable distribution of credentialed teachers. Specifically, teaching talent moved away from the neediest students and created a crisis in staffing "undesirable" urban and rural schools.

Class-size Reduction in Arkansas

In Arkansas, the following average class-size limits are in place: Pre-kindergarten-Kindergarten 20 students, first grade through third grade 25 students, fourth grade through sixth grade 28 students, seventh grade through 12th grade 30 students. Although no statewide initiative is in place to reduce class size, Fayetteville Public Schools used funding from the National Class Size Reduction Program during the 2000-2001 school year to reduce class sizes in several elementary schools and promote professional development in literacy strategies and curriculum alignment. Two elementary schools reduced their first grade classes to 17 per class and one elementary school reduced its third-grade classes to 17 per class. Analysis of the program conducted by the Fayetteville Public Schools showed an increase in the percentage of students scoring at or above the 50th percentile rank on the Stanford Achievement Test compared with an average of the previous three years' scores.

Recommended Next Steps for Arkansas in Class Size Reduction

The research on class size reduction in Tennessee presents a compelling case that it can significantly improve educational outcomes, particularly for minority students. Nevertheless, the state of Arkansas has not pursued class size reduction. Accordingly, we recommend that state policymakers fund pilot class size reduction programs targeted at schools with high proportions of low-income, African American and/or Latino families. Because class size reduction has been so rigorously proven to be effective in Tennessee, it should be a high priority to investigate how well it can work in Arkansas.

Curriculum and Instruction

In the elementary years, evidence has shown that the material teachers present to students, particularly in the area of reading, can have a significant impact on closing the achievement gap. The National Reading Panel (2005) states that any effective early reading curriculum should emphasize phonemic awareness, phonics, guided group reading, reading comprehension, and fluency. Programs that have been shown to reduce the racial and income achievement gaps integrate these methods but go even further with a set of common goals and standards. These include a focus on at-risk students, grouping of students based on their level of achievement so that lessons may be tailored to meet their respective needs, the ability to effectively implement the same program at multiple sites, and extensive support services. While implementing a new curriculum is a major, costly undertaking, the following programs, all of which qualify for major federal and state subsidies, have been proven to reduce the achievement gap.

Under the leadership of the Arkansas Department of Education, Arkansas has done a good job of implementing best-practice curricular and instructional interventions. The U.S. Department of Education praised Arkansas for the rigor of its curricular standards, including the Smart Core curriculum that requires four years of mathematics in high school. Arkansas requires all high schools offer AP classes in math, English, science, and social studies by 2008-09. With regard to specific interventions to close the achievement gap, the Partnerships in Comprehensive Literacy, Reading Recovery, and Success for All programs have all been widely adopted, and each has been proven effective.

Success for All (SFA)

In use in 1,300 schools in Arkansas and 47 other states, Success for All (SFA) is a curricular program for grades K-8 and is one of the most widely used school programs in the United States. The program's "top priority is the education of disadvantaged and at-risk students" in primarily poor inner-city and rural schools. SFA has been shown to dramatically reduce the achievement gap (Slavin 2001).

Once the program begins, teachers and administrators undergo extensive training by SFA professional staff members. Students who begin the school year below reading level are taken aside for one-on-one tutoring outside regular class periods. After reaching a certain level of achievement, they are integrated back into the classroom. All students are grouped together into peer reading groups so that the instruction they receive is better tailored to their needs. Every eight weeks their progress is assessed and new peer reading groups are formed. Students engage in approximately 90 minutes of daily reading in groups. SFA also has a health-monitoring and services component, unique among major curricular programs on the market. Each student is monitored by a "Family Support Team" made up of various educational, social service, and health professionals to ensure that he or she has access

to medical services and receives assistance for behavioral problems (Slavin 2005).

Major reductions in achievement gaps have occurred after schools have implemented SFA. The Success for All Foundation funded a major randomized control trial (Borman et al. 2005) in 38 schools located in predominantly poor communities in 17 Midwestern and Southern states. The study found that students exposed to SFA (the treatment group) for two years outpaced students in a control group by the equivalent of 4.7 months of schooling. [22] Researchers at the University of Memphis studied a group of Memphis-area SFA schools, all of which were almost exclusively minority and economically disadvantaged. The SFA schools outperformed control schools on both individually administered and standardized tests in first and second grades (Ross, Smith and Casey 1997).

The Success for All Foundation reports similar success in Arkansas. In 2001, fourth grade students in the 11 Success for All schools in Arkansas had a 21% pass rate on the Arkansas Comprehensive Testing Assessment and Accountability Program. In two years, the pass rate jumped by nearly 30 percentage points to a rate of 50.4% (Success for All 2003). Substantial gains were also seen in Arkansas Benchmark Exam scores compared with non-program schools (Success for All 2004). Although these results are provided by the program itself and lack a statistically similar comparison group, much less a randomized control group, they confirm more rigorous, independent studies.

Independent researchers consider SFA to be one of the most cost-effective curricular interventions when comparing academic outcomes to the relatively low cost of the program (Borman and Hewes 2001). The first year of the program costs between $90 and $100 per student, largely due to initial training and materials costs. Beyond cost effectiveness, teachers are highly supportive of the program; after at least one year of implementation, 78 to 90% of teachers in Little Rock and Memphis schools using the program were still supportive (Success for All 2004).

Partnerships in Comprehensive Literacy and Reading Recovery

Another program notable for its results as well as for its widespread use in Arkansas is Partnerships in Comprehensive Literacy (PCL). The program was developed in 1998 by the University of Arkansas at Little Rock (UALR) and has since been implemented in 150 schools in ten states. Although newer than SFA, the program shows great promise, especially when coupled with the Reading Recovery small-group intervention.

PCL features a school-wide curriculum centered on group and independent reading, literature discussions, process writing, phonics, and self-reflection. It focuses on understanding how students learn and finding appropriate ways of connecting with all students. Students receive classroom, small-group, individual, and internal support as they learn. Teachers conduct on-going assessments of individual student progress. The curriculum builds on itself from year-to-year, developing reciprocity.

A 2002 study (Dorn, Soffos and Coppes) of all schools using the PCL program showed increases in student reading proficiency from the beginning of the year to the end of the year. Although the study lacked a randomized control group, reading achievement for first-, second-, and third-grade students in 21 Arkansas schools increased 20 percent or higher over previous years. For three continuous years, all sample schools, where the average poverty rate was 80%, had 84% of their first-grade children exceeding or meeting proficiency levels in reading, a marked improvement from previous years.

An important aspect of the program in terms of achievement gap reduction is its use of reading intervention groups. UALR provides training in the Reading Recovery program, a highly recognized, national small-group intervention program that enrolled nearly 3,000 Arkansas students in 2005-06. Intervention groups, consisting of only three or four students, are led by teachers with special training and provide an extra layer of literacy support (UALR University Training Center 2006).

Reading Recovery is a separate program from UALR's Partnerships in Comprehensive Literacy, but many districts using PCL have sent teachers to the UALR training center and developed the Reading Recovery as their small-group intervention within the PCL curriculum (Choate 2007). In keeping with program guidelines, PCL schools that do not use the Reading Recovery program must develop their own intervention programs. These programs do not necessarily include the best practices seen in Reading Recovery.

Researchers at the U.S. Department of Education's Institute for Education Sciences reviewed more than 170 programs and almost 900 studies and concluded that Reading Recovery was the only reading program to have scientifically proven positive or potentially positive effects across all four of the reviewed domains: alphabetics, fluency, comprehension, and general reading achievement (Institute for Education Sciences 2007). Other reading intervention programs shown to have positive effects in this analysis include Success for All, Peer-Assisted Learning Strategies, and Start Making a Reader Today.

Researchers at UALR recently evaluated Reading Recovery locally and demonstrated how small-group reading interventions can dramatically reduce the achievement gap. The UALR team compared two random sample groups, one white and one African American, of non-Reading Recovery students to a group of African American students enrolled in Reading

22 The study found effect sizes ranging between .12 and .25 of a standard deviation, depending on the learning measure. One standard deviation is roughly the size of the black-white test-score gap. The largest effect size was for "word attack," the smallest for "passage comprehension." The researchers converted these effect sizes into the length of learning time: 4.7 months for word attack to 1.3 months for passage comprehension.

		WHAT WORKS	What Arkansas is Doing
Curriculum & Instruction	**Effective Reading Curriculum**	Programs that have been shown to reduce the racial and income achievement gaps emphasize phonemic awareness, phonics, guided group reading, comprehension, and fluency. The most successful programs, such as Reading Recovery: • Group students based on their level of achievement • Tailor lessons to meet students respective needs.	Partnerships in Comprehensive Literacy (PCL). Features a school-wide curriculum centered on group and independent reading, literature discussions, process writing, phonics, and self-reflection.
	Success for All (SFA)	Focused on educating disadvantaged and at-risk students in primarily poor inner-city and rural schools districts. Key characteristics: • Teachers and administrators undergo extensive training by SFA professional staff members. • Students who begin the school year below reading level are taken aside for one-on-one tutoring outside regular class. • All students are grouped into peer reading groups to allow for more tailored instruction. Every 8 weeks progress is reassessed and new peer reading groups formed. • 90 minutes of group reading daily. • Each student is monitored by a Family Support Team, made up of educational, social service, and health professionals to ensure that he or she has access to medical services and receives assistance for behavioral issues.	In use in 1,300 Arkansas schools
	Direct Instruction	Designed to accelerate the learning of at- risk students in grades K-6 using scripted lesson plans that have been heavily written, tested, rewritten and retested. • Rapid pace, typically with 90% of students grasping the lessons after they are first introduced. • Skills are taught in sequence.	Not yet implemented in Arkansas
	Core Knowledge	Introduces students to interesting yet demanding subject matter at an early grade level so low-income students are not left behind in the formative years. • Includes lessons in math, arts, and world civilizations, in addition to reading and language • All teachers receive grade-to-grade content guidelines, creating a common core.	In use in West Helena, Clarendon, and Lepanto

Recovery. Both non-program groups started the year at much higher levels of achievement than the treatment group, but by the end of the year the Reading Recovery group had either closed or nearly closed the achievement gap (UALR University Training Center 2006).

Other Notable Programs

Direct Instruction is designed to accelerate the learning of at-risk students in grades K-6 using scripted lesson plans that have been heavily written, tested, rewritten and retested. This allows the program to be implemented at a rapid pace, with 90% of students typically grasping the lessons after they are first introduced. Skills are taught in sequence until students have fully internalized them. In addition, in-class coaches are used for implementation support. Akin to Success for All, common periods for math and reading are established so that students can be grouped based on performance level. Although not proven by rigorous, randomized control trials, increases in reading and language scores were dramatic. A nationwide study of DI found that students' language test scores increased between +.49 and +.84 standard deviations, reading scores increased between .07 and .69 standard deviations, and math scores increased between .57 and 1.11 standard deviations. [23] Costs range from $150 to $200 per student per year (American Federation of Teachers 1997).

A third promising program is Core Knowledge, which includes lessons in math, arts, and world civilizations, in addition to reading and language. The program introduces students to interesting yet demanding subject matter at an early grade level so that low-income students are not left behind in the early, formative years. Grade-to-grade content guidelines are given to all teachers, creating a common core. The program, already in use in West Helena, Clarendon, and Lepanto, has seen students gain 12 Normal Curve Equivalent (NCE) points in a year, compared with students in comparable schools (American Federation of Teachers 1997). [24]

Curriculum and Instructional Programs in Arkansas

Arkansas has been recognized as a leader in setting rigorous learning standards. In a study that compares the rigor of Arkansas' Benchmark Exam standards to the standard set by the "Nation's Report Card," the National Assessment of Educational Progress, Arkansas ranked in the top ten states (Peterson and Hess 2006). Arkansas was the second state in the nation to require four years of mathematics through Algebra II through the Smart Core initiative. Finally, Arkansas will require that all high schools offer Advanced Placement (AP) classes in math, English, science, and social studies by the 2008-09 school year. The state pays for AP exams, and participation rates in AP courses and exams have sharply increased. Many of the new participants have been minority and low-income children.

Arkansas has also taken advantage of the federal Reading First funds to create a state-developed initiative for funding early reading curricular programs for schools with low achievement levels. Reading First has a strict set of guidelines that must be met for local schools and districts to receive funding. With a little tweaking and the addition of a few extra curricular components, Success for All, Comprehensive Literacy, Direct Instruction, and Core Knowledge all qualify for Reading First funding (Arkansas Department of Education 2007).

According to the state director of Reading First, 86 schools across the state utilize Reading First for their curricular programs. A majority of these schools use the Partnerships in Comprehensive Literacy, but only about half of the PCL schools have implemented the Reading Recovery intervention. Once used in at least six schools across the state, Success for All is currently used only in the Osceola district. None use Direct Instruction and Core Knowledge; they have been replaced by SFA and PCL, a move that reflects the more impressive effects that these programs have shown (Choate 2007).

Recommended Next Steps for Arkansas in Instruction and Curriculum

Arkansas policymakers should be congratulated on their efforts to improve curriculum and instruction. Through serious investments and persistent attention, Arkansas boasts one of the nation's most rigorous curriculum and has adopted instructional programs, such as Success for All and Reading Recovery, that have been proven to reduce the achievement gap. Because successful systems are already in place, we believe it is unlikely that additional reform to curriculum and instruction will have much additional impact on the achievement gap.

School Facilities

Are there real linkages between the quality of school buildings and the learning that takes place within them or are the subpar educational facilities that are disproportionately used by low-income and minority students only symbolically problematic? While research shows that improved facilities are not a single-bullet answer to closing the achievement gap, that research also increasingly indicates that at least some

23 1 standard deviation is a very large effect, equivalent to four years learning on the National Assessment of Educational Progress (NAEP) test as well as against the size of the black-white achievement gap.

24 A gain of 20 NCE points is roughly equal to 1 standard deviation.

physical traits of school facilities do connect with students' ability to learn. In the landmark *Lake View* decision of 2002, the Arkansas Supreme Court became one of a handful of state courts in the country to include the quality of school facilities as a core component of evaluating the adequacy and equity of public education in the state (Hunter 2006). Because of the state's delay in responding to the facilities piece of the *Lake View* decision, driven partly by an extensive analysis of the current state of Arkansas's public school buildings, it is difficult to analyze fully how effective the state has been in taking steps to close the achievement gap in this area.

Disparities in Facilities Quality

Both anecdotal evidence (see Kozol 1991, for instance) and more systematic analyses (General Accounting Office 1995) have shown that the school buildings used by lower-income American students have major deficiencies compared with those used by their richer peers. For example, a recent analysis of schools in North Carolina shows a clear relationship between the condition of facilities and the income levels of students with low-income students disproportionately attending poorer quality schools (Burton 1999).[25] With such patterns being exhibited, scholars interested in understanding the roots of the achievement gap in the United States have turned to the quality of school facilities as a direct and indirect cause of these patterns in learning outcomes.

General Building Quality and Learning Outcomes

Employing different methods in analyzing the "quality" of schools, a number of studies have shown that the overall health of public school facilities relates to the academic performance of students in the schools. As of this date, literally hundreds of studies have studied some aspect of this issue (Earthman and Lemasters 1996). Berner (1993), studying the student performance of Washington, D.C., school students, discovered that better academic outcomes in these urban schools were directly associated with schools that had better physical environments, controlling statistically for other key factors. Using similar methodology in a context with parallels to Arkansas, a statewide study of rural schools in Virginia linked school physical condition to achievement (Cash 1993). Lewis (2000) analyzed the relationship between the condition of school facilities and student achievement in Milwaukee's public schools. That multivariate analysis suggested a strong relationship between building quality (as evaluated by district staffers trained to carry out the survey of school health) and the performance of children learning in those facilities. In Harter's (1999) analysis of Texas elementary schools that focused not on the current status of the buildings but instead on the amount spent annually to maintain the facilities, higher levels of spending on maintenance was tied to higher fourth-grade state test scores. Finally, an analysis of all high schools in North Dakota, Earthman, Cash, and Van Berkum (1995) relying upon school principals to evaluate the health of their facilities also showed a relationship between the grade of the facilities and student achievement.

Picus, et al. (2005) point out significant methodological flaws in a number of these previous statistical analyses relying upon student performance on standardized tests as their dependent variable. They follow with an analysis of a more thorough and sophisticated assessment of the quality of all school buildings in the state of Wyoming and school quality's relationship to performance on state tests. While presenting a single-state analysis, Picus et al. show no significant relationship between the health of facilities and either student proficiency or student improvement across grade levels. It is important to note that Picus et al. found that Wyoming was a state where little relationship was shown between the wealth of students and the quality of their school buildings.

Additional studies that do not employ the multivariate analyses like those above have also shown a positive impact on student achievement by improving the quality of schools. Examining the impact of school renovations in Syracuse's city schools in the mid-1980s, for instance, Maxwell (1999) carried out a study of facility condition and student achievement. Test scores from before, during, and after school renovation projects showed a statistically significant relationship between upgraded facilities and math scores of students at the schools. However, the results of the analysis showed depressed student performance during the actual renovation period, suggesting a short-term cost to such work.

In addition to these analyses of the direct impact of school infrastructure quality on student achievement, some work has also been carried out on the impact of the quality of school facilities on teachers' decisions to stay in the profession. Buckley, Schneider, and Shang (2004) surveyed teachers at all levels in the Washington, D.C., district and found that the health of the built environment in which they taught was a significant factor in their decision to stay in the classroom, controlling for a variety of other factors. With the value of high-quality teaching having been shown to play a vital role in educational outcomes, school building quality seems to also be indirectly related to student performance.

It is important to note that school age alone has not been shown to consistently link to poor student performance. Some older buildings that have been properly updated are excellent learning environments; many from the 1960s and 1970s have serious flaws. However, it is true that older buildings are more likely to face some of the challenges that mar them as teaching and learning centers (Schneider 2002).

The Role of Specific School Infrastructure Characteristics

As presented in Schneider's excellent 2002 overview of the relationship between school facilities and academic outcomes, several distinct aspects of educational buildings shape learning

25 Interestingly, controlling for other key factors, an increase in the percentage of African American students in the school correlates to slightly healthier school facilities.

and can be tied to reduction in the achievement gap beyond the general quality of school buildings: the lighting in buildings, the acoustics of classrooms, the general indoor air quality in buildings, the thermal comfort of classrooms, and the technology accessible in schools.

Lighting: Appropriate levels of natural daylight in classrooms have been indicated to be important in fostering healthy learning atmospheres. In the most thorough analysis, the Heschong Mahone Group (1999) examined more than 3,000 classrooms across three states and found that, controlling for other important factors, rooms with the most natural daylight fostered higher levels of student achievement.

Acoustics: Not surprisingly, good acoustics in a classroom are fundamental to effective teaching and learning. A number of studies have shown the importance of good acoustics in the classroom and protection from external noise in promoting a healthy learning environment (see, for example Earthman and Lemasters 1998, Evans and Maxwell 1999, and Nabelek and Nabelek 1994). What is surprising is that many American classrooms face serious acoustic problems that have the potential to disturb learning; Feth and Whitelaw's analysis of 32 Ohio classrooms found that only two met recommended acoustic standards (1999).

Indoor Air Quality and Ventilation: It is estimated that more than 20 percent of America's students attend classes in schools that suffer from poor indoor air quality (IAQ), i.e. "sick building syndrome" (General Accounting Office 1995). "Sick" buildings make students sick as well, thus absenteeism is increased when students go to school in them. The American Lung Association (2002) has found that IAQ leads to more than 10 million missed school days in the country. Proper ventilation is a key to a healthy indoor air quality because poor air flow leads to the buildup of carbon dioxide and the particles that promote asthma. Thus, both the introduction of fresh air and well-functioning HVAC units are crucial to promoting healthy IAQ. Research has shown that African American and Latino students are significantly more likely to be exposed to poor IAQ in their schools. Given diminished achievement in poor IAQ buildings, such patterns promote the achievement gap (General Accounting Office 1996).

Thermal Comfort: Well-functioning HVAC systems are also crucial to the maintenance of moderate room temperatures and appropriate humidity levels in buildings. Both of these factors have also been shown to link to student performance. In particular, attention spans and performance fall off when temperatures and humidity rise above optimal levels (King and Marans 1979).

Technology: Increasing amounts of spending each year on school facilities is dedicated to technological materials, especially computer hardware and software. Solid research is beginning to emerge on the potential effectiveness of technology-based teaching and learning on student achievement. In a piece overviewing hundreds of these studies, Schacter (1999) argues that, when integrated thoughtfully into the classroom, technology-rich curriculum can pay off in terms of elevating student performance, especially for poor and minority children. Examining mathematics education, Wenglinsky (1998) analyzes NAEP scores from throughout the country and argues that access to technology is important for student performance but teachers' ability to use that technology effectively is even more important in promoting achievement.

Examining this previous research as a whole, it seems clear that typically there is some connection between the demographics of students and the school facilities that they have the opportunity to use. Moreover, some of the detrimental qualities of those facilities do likely limit the learning of these students. However, it also seems clear that certain aspects of these structures are most relevant in shaping student achievement. It is also quite clear that facilities improvement alone cannot be the answer to closing the achievement gap in the United States.

The Adequacy and Equity of Arkansas's School Facilities

In the 2002 *Lake View* decision, the majority decision explicitly cited inadequate and inequitable school facilities as a fundamental element of the unconstitutionality of the state's public school system. The court majority described the facilities limitations facing a *Lake View* District mathematics teacher: "He has an insufficient number of calculators for his trigonometry class, too few electrical outlets, no compasses and one chalkboard, a computer lacking software and a printer that does not work, an inadequate supply of paper, and a duplicating machine that is overworked." In the 2002 decision and in the series of cases reiterating that ruling in the four and a half years after it, the court regularly stated that adequate and equitable school facilities were a crucial component of the state's provision of a "general, suitable, and efficient" public school system as mandated by the state Constitution.

In the 2003 regular legislative session following the 2002 decision, the General Assembly enacted Act 1181 creating a Joint Committee on Educational Facilities to guide a legislative response to provide adequate and substantially equal facilities in the state. The Joint Committee quickly established a 60-plus member task force as its designee in carrying out the work. Based on facilities adequacy standards established by the task force, every educational structure in the state was evaluated by an outside consulting firm to determine its condition and whether it needed to be repaired or replaced. In addition, the student growth in every district was evaluated to determine facilities needs for the district in coming years. In November 2004, the task force published its assessment with facility conditions for the buildings in each district, initial cost estimates for each district for repair and replacement, and growth expectations over a five-year period (Arkansas Task Force to Joint Committee on Educational Facilities 2004; University of Arkansas Office of Education Policy 2005). A separate Technology Task Force was created to determine the condition of technical structures with an eye toward creating and maintaining adequate and equitable technology access

Table 2. Correlations Between Facilities Condition Index and Income and Race/Ethnicity of School Populations, 2004

% of Students on Free or Reduced-price Lunches	% of Students Latino	% of Students African American
.082	.036	.166*

*Relationship significant at the .01 level (one-tailed test)

across the state (Arkansas Technology in Education Task Force 2004).

Attention then turned to the funding of both immediate facilities needs as well as the funding of the longer-term facilities needs for the state. The new funding was appropriated across a series of special and regular sessions of the General Assembly with the largest amount coming in an appropriation of $456 million in general improvement funds in the 2007 regular session of the legislature. That General Assembly session also established a subcommittee to examine the cost of an adequate education in the state — both in terms of facilities and instructional needs — for consideration by the 2009 regular session of the legislature (Blomeley 2007).

The massive investment in spending on school facilities in the state — and the commitment to ongoing maintenance of adequate educational infrastructure in the state — promises to dramatically improve the general quality of these buildings and to improve many of the particular attributes of educational facilities that have been shown to connect with student achievement. The assessment tool employed by the team evaluating the condition of all buildings in the state explicitly focused on the health of the HVAC systems and the lighting of the buildings. In addition, the task force put attention on the establishment of building standards to guide future renovations and constructions; these standards take into account many of the key traits of classrooms shown to be linked to achievement.

Undeniably, the work of the state of Arkansas since 2002 on improving facilities and the apparent commitment to addressing facilities needs in the future is a vital part of the establishment of an adequate public education experience for Arkansas's students. However, there is reason to believe that the facilities improvements may have relatively little impact on the achievement gap. For any impact on the achievement gap to occur, to receive facilities upgrades districts would need to be disproportionately poor or minority in their student composition. An analysis of the relationship between the district-level facilities condition index ascertained during the task force's fact-finding period and the percentage of district students eligible for the federal free- or reduced-price lunch program shows no significant relationship. [Table 2 shows these correlational analyses.]

Thus, improvement in the quality of school buildings across the state would not be anticipated to close an income-based achievement gap. A similar story exists for Latino students; no significant relationship exists between the percentage of Latino students in a district and the quality of its buildings. However, we found a statistically significant relationship between the percentage of students in the district who are African American and the facilities condition index.

Recommended Next Steps for Arkansas in School Facilities

The work of the three branches of government to improve the quality of the facilities used by school children should be applauded; it serves as a model of what can be accomplished in educational improvement when there is commitment to change. However, it is important to note that much of the new funding on facilities will center on high-growth districts that are lower in poverty and minority composition.

We anticipate that improvement in the quality of school buildings across the state will not close an income-based achievement gap, nor the White-Latino achievement gap. It is likely that, in Arkansas at least, the bigger impact on the achievement gap is likely to come from more targeted interventions. Therefore, moving forward, we do not recommend further facilities improvement to be an important component in a strategy to close the achievement gap.

		WHAT WORKS	What Arkansas is Doing
School Facilities	**Lighting**	Appropriate levels of natural daylight in classrooms.	Significant commitment of new resources to school facilities by the General Assembly, including 2007 appropriation of more than $456 million for general improvement funding to Arkansas schools. Commitment to continued achievement of adequacy across time.
	Acoustics	Good acoustics in the classroom are essential to teaching and learning, including protection from external noise.	
	Indoor Air Quality and Ventilation	Proper ventilation prevents buildup of carbon dioxide and particles that promote asthma. Requires: • Well-functioning HVAC units • Introduction of fresh air	
	Thermal Comfort	Students concentrate better when comfortable. Well-functioning HVAC systems maintain: • Moderate room temperatures • Appropriate humidity levels	
	Technology	Technology-rich curriculum can elevate student performance, particularly for poor and minority children. • Integrated thoughtfully • Teachers must be well-trained teachers in using technology	

Conclusion

This report has outlined nine areas of interventions that have been shown to reduce the achievement gap between students from different economic backgrounds or different races and ethnicities. As shown in the pages of this report, during the "Lake View era" of real educational advancement in the state, the new educational policies of Arkansas show real commitment to such successful achievement-gap reduction programs in some areas and nearly complete avoidance in others. We recommend that the state deepen its commitments to pre-kindergarten, teacher quality, and high-quality charter school development through continued funding and through strengthening existing program quality according to research-based best practice. We also recommend that the state explore wholly new commitments to student health programming, extended learning opportunities, parent and community engagement, and smaller class sizes; in these four areas, the state may achieve even greater returns on investments in funding and program development.

Low-priority Interventions

In two areas, educational facilities and curricular and instructional reform, Arkansas has done a great deal during the first decade of the century. While they are significant reforms, we believe that it is unlikely that either facilities enhancement or curricular reform will have much additional impact on the

achievement gap in the future. Prodded by the state Supreme Court, the state has committed to the achievement and maintenance of adequate school facilities throughout the state. However, while an important educational reform in Arkansas, we cannot expect a major impact on the achievement gap from the investment of state and local monies in infrastructure enhancement. Because African American and Latino students are more likely to attend classes in inadequate facilities, there may be some reduction in the gap between white and minority students through the indirect impact of school facilities adequacy being achieved in the coming years. However, there is no significant relationship between students being low-income and attending schools with poor facilities. Thus, we cannot expect the ongoing commitment to facilities quality to close this achievement gap.

In addition, a significant number of Arkansas school districts have made use of the federal Reading First program to provide their students a new comprehensive curriculum, centered mostly although not entirely on reading improvement. Studies have shown that many of the curricula being used in Arkansas have been effective in reducing the achievement gap. The Arkansas Department of Education has shown strong leadership in this area, and we find little additional opportunity for improvement.

Existing Successful Interventions: Opportunities for Enhancement

Three other areas represent halfway steps by educational policymakers in Arkansas. All three are promising as techniques for combating the achievement gap and, therefore, we encourage the state's work to fully embrace them. As noted, more than any other intervention, early childhood education has been proven to attack the achievement gap. Arkansas has developed an excellent pre-kindergarten program. The crucial next step is to universalize access to the programs for poor and minority children. Thousands of three- and four-year-olds who are eligible for free pre-kindergarten do not take advantage of this opportunity. If their families did place them in quality pre-K programs, this would be an even more effective strategy for lessening the achievement gap. To achieve higher rates of pre-K attendance, a major public communications effort is necessary to alter many Arkansans' inherent skepticism that very young children should leave the home for an educational experience.

Second, educational research has made it clear that teacher quality is the key to student achievement and that low-income and minority children tend to have less experienced, less well-qualified teachers. State policymakers in Arkansas should be applauded for the work they have done to improve teacher quality: raising teacher salaries, raising credentialing standards, and providing incentives for teachers to move to high-need schools. Act 35 of the second special session of 2003 required the development of a longitudinal tracking method focusing on the value added to students' learning by their educational experiences during a given academic year. Such "value-added" systems focus on comparing "previous and post student achievement gains against a national cohort" (Act 35). The state Department of Education determined that the longitudinal tracking system should be implemented in the 2009-10 academic year. This system should be integrated with teachers' professional development. More broadly, additional resources put into the state's education system need to be coordinated to focus on proven strategies for improving teacher quality: improving university credentialing programs, more rigorous credentialing, and more rigorous evaluation.

Finally, it seems likely that pressure for additional school choice options will continue to grow in the state. The only element of school choice that has shown any convincing evidence of success in closing the achievement gap is the existence of certain charter schools with distinctive traits (extended learning, rigorous professional development, etc.). Such traits are found in the KIPP charter schools such as the one now in operation in Helena-West Helena. We argue that any expansion of charter schools in Arkansas be dedicated to achievement-gap reduction and that the state board and Department of Education encourage charter schools to make use of learning techniques that have shown success in other charters.

New Interventions: Significant Opportunities

There are four promising areas of reform into which Arkansas has taken only the most token of steps: student-health programming, extended-learning opportunities, parent and community engagement, and class-size reduction. Because these opportunities have not been exploited, we cite the need for serious new investments in these areas

Students with health challenges spend less time in school, resulting in lower levels of achievement, a greater likelihood of grade retention, and lower graduation rates. Because of low-income students' greater likelihood of dealing with such health problems, student health programming should be a major component of a state achievement-gap reduction plan. This would include programming targeted at alleviating certain common health maladies (e.g., asthma and dental problems) but also more comprehensive health programs such as the creation of school-based clinics that would address the variety of minor health challenges faced by individual students.

Similarly, Arkansas is nationally exceptional in its lack of state-funded, comprehensive programming focused on enhancing low-income students' academic opportunities after the school bell rings. After-school and summer programming targeted at African American, Latino, and low-income students have been shown to play an important role in attacking the achievement gap. Aside from federally funded and ad hoc local programs scattered across the state, Arkansas lacks such programming. As a result, about one-fifth of Arkansas students are latchkey children and a much larger number lack access to

academically rich experiences during the school year and in the summers between grades. These experiences have been shown to be a force in reducing the achievement gap when targeted at low-income, African American, and Latino students.

Evidence from the state to our east makes it clear that small class sizes can reduce the achievement gap. The research carried out on the class-size reduction experiment in Tennessee, a state with many demographic similarities to Arkansas, shows that class sizes of 13-17 in the early grades significantly enhances students' ability to succeed academically, especially among African American students. While an expensive endeavor when embraced statewide, we propose the state make this investment, particularly for those students from low-income and minority families.

Finally, programs that encourage parents to become knowledgeable and engaged in their children's education, such as Arkansas's HIPPY program, have been proven to attack the achievement gap. Through home visits, one-on-one training, and provision of age appropriate materials, children as well as parents gain self-esteem. Arkansas can build on these targeted successes to encourage broader community-based organization focused on building social capital among school parents. Through home visits and community meetings, parents and community members can discuss problems and generate their own solutions. Because these are locally generated, they have strong buy-in and tend to be more successful.

Next Steps

Arkansas's political leaders showed that they could defy the state's history of limited action in the area of education through their work to create a constitutionally adequate educational system between the 2002 *Lake View* decision by the Arkansas Supreme Court and that court's 2007 release of the state from oversight. While this focus on adequacy has produced significant advances for the state's educational system, these changes have had a limited impact on reducing the gap between the achievement rates for higher-income and low-income children and those for white and African American and Latino children.

A commitment to tackling the achievement gap and, thus, the development of a truly equitable state education system in Arkansas will involve a multi-faceted program that includes many diverse organizations and partners, in and out of education. Only by thinking holistically and partnering across sectors, geographic area, and political ideology can we hope to address this deeply rooted problem.

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