Smart Investments in Minnesota’s Students
A Research-Based Investment Proposal

GROWTH & JUSTICE
Growth & Justice is a progressive think tank that focuses on economics. We believe that public investment in Minnesota’s people and places makes our economy simultaneously more prosperous and fair and sustainable. Investing in people has always meant investing in education and there is broad agreement that it’s the right thing to do for our economy and the right thing to do for our people. In this work we examine the economics of that vital education investment and what works best to advance growth and justice.

This project was conducted over nearly two years in three phases. The first phase (September 2006 to May 2007) involved assembling key stakeholders who would serve as steering committee members. The second phase (June to November 2007) involved recruiting and commissioning a set of scholars in education finance and economics who analyzed current findings on what works, in the most cost-effective manner, in reaching desired educational outcomes in Minnesota. The third phase (December 2007 to June 2008) involved building consensus among committee members on how to cost-effectively invest along the educational pathway, using the empirical findings.

The final analysis and reporting for Smart Investments™ in Minnesota’s Students is the work of Growth & Justice and its authors are responsible for any errors. The views here are also those of the authors and do not necessarily reflect those of the scholars and the funders involved in this effort.

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To download a copy of this report visit
www.growthandjustice.org/education_report.html
or contact Ellen M. Perrault at 651-251-0676

with questions about reprinting or to have a copy mailed to you.

Layout and Design by Mark Tundel
Economists, business leaders and educators agree: Minnesota’s relative prosperity over the past quarter century has been driven largely by our investment in human capital. But Minnesota faces major economic shifts that challenge our long-term prosperity. At the current rate we are producing students with post-secondary degrees, within two decades Minnesota will not have enough skilled working adults to sustain our economy or quality of life at the levels most of us have enjoyed.

To meet the demand for skilled workers — and to ensure families can enjoy a decent standard of living — we should, by 2020, increase by 50 percent the rate of Minnesota students who finish some type of post-secondary education.

To reach that goal, we must invest in solutions now. Each year, 10,000 high school students drop out, at a cost to the state economy of $10 billion over their lifetimes.

Most agree that an educated workforce is good for businesses and families as well as for our overall well-being. A majority of Minnesotans is willing to invest more in public education — if they believe the money will have the desired impact.

But with limited state resources and different ideas about reforming education, how do we decide what will work best for all students?

Smart Investments™ in Minnesota’s Students employed Growth & Justice’s signature approach of bringing evidence and consensus to bear on these critical questions:

• Where do we need to improve?

• How do we intervene in ways that will actually create and sustain improvement?

• Which of these interventions will provide the greatest return on investment?

Smart Investments™ in Minnesota’s Students provides a fresh way to think about investing new education dollars for better results. It shows how to:

Invest in the whole student from birth to college following four principles of smart investment.

Choose approaches proven to “work best for less” based on evidence of outcomes and economic analysis.

Raise enough money fairly using a progressive reform of the current tax structure — to cost-effectively support students all the way to post-secondary success.

Educational research and economic analysis sponsored by Growth & Justice indicates that an annual $1 billion investment in human capital would more than pay for itself — through higher earnings for each additional graduate, greater state tax revenue from higher wages and economic growth, and lower social costs paid by taxpayers.
What are Smart Investments?

Principles for Smart Investment
Using insights from educators and the commissioned research described in the report, we formulated four principles for guiding better decision-making for investing in education.

1. Smart investments aim for compound effects. Comprehensive programs that address the whole student’s needs — social support, academic preparation, and improved access to early childhood and post-secondary learning opportunity — are more effective than any single component program.

2. Smart investments accumulate capital. Educational success depends on students being ready for school, continually ready to learn, and ultimately, ready for life.

3. Smart investments address real disparities. The greatest returns on investment come from addressing the greatest disparities in opportunity and achievement.

4. Smart investments are made with accountability for results. Investments should be chosen based on evidence through a transparent process that measures and reports the outcomes.

Making Progress
As students progress along the path to college, they reach five key points where their readiness for the next level can be measured. Smart investments in proven programs can prepare students academically and socially for these gateways to post-secondary success.

Birth to age 3
Good prenatal care and quality early childhood experiences ready a child for elementary school learning.1

Pre-K (age 4) through grade 3
Students ready for kindergarten acquire and grow language and math skills earlier, leading to success on 4th grade national skills tests.2

Grades 4 through 8
Keeping students proficient in basic skills during these years makes them more likely to graduate from high school.3

Grades 9 through 12
Arriving in high school ready for rigorous coursework, students become more prepared to enroll and succeed in post-secondary education, and sustain higher-level learning with social support.4

Transition to post-secondary
Students who have good academic preparation, social support and access to financial aid have a greater likelihood of completing their degrees on schedule.5

Smart Investments Start Early and Prepare the Student for the Next Level
Higher attainment comes from investing in readiness

<table>
<thead>
<tr>
<th>Birth to age 3</th>
<th>Age 4 through grade 3</th>
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<th>Transition to post-secondary</th>
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<tbody>
<tr>
<td>Nurse home visiting programs</td>
<td>Social skills training</td>
<td>Rigorous coursework</td>
<td>College prep curriculum with teacher development</td>
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<tr>
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5 Perna, 2007.
Minnesota has established requirements for reading proficiency and 8th grade Algebra as well as for rigorous high school curricula. The research is clear that these requirements mark important thresholds of student development, and acquiring these skills correlates with success at the next level. In particular, that means being ready to enroll in, persist in, and complete some post-secondary education — a professional certificate, an associate degree or a bachelor’s degree.

But our education system is still organized, regulated, and funded according to a disjointed model of Pre-K, K-12 and higher education that sets up competition over resources — while having no coherent, evidence-based framework for achieving lasting results for the student.

Instead of focusing on funding the “system,” we should determine what works best to prepare more students to complete a post-secondary education. Then, we can invest accountably to achieve that outcome.

As Minnesota Department of Education Commissioner Alice Seagren has said, money matters. But with so many stakeholders, limited resources, and a fragmented education industry, agreeing on solutions — and how to pay for them — is difficult. Scholars are still wrestling with showing exactly where and how much investment makes a difference, and new research and analysis are needed to sharpen this understanding. Education investment dollars have dried up in recent years, and this under-investment is proving costly to our state. Investing wisely in education is the focus of this project.

We owe it to today’s students not to wait. Our project shows how money can best be invested, based on what we know today, to make a measurable difference for more students that will affect the rest of their lives.

Minnesota faces major economic and demographic changes. We cannot address them simply by flattening education spending to force reform or by reallocating scarce dollars without evidence of effectiveness.

Prioritizing new investment in our human capital — based on evidence, directed where improvement is most needed, and focused on interventions that achieve results cost-effectively — is the smartest investment Minnesota can make.

As steering committee member Vernae Hasbargen said, “This work makes an important contribution to the education policy discussion in the state.”
Many factors contribute to a strong, stable, and growing Minnesota economy, but the essential ingredient is human capital. As Nobel Laureate economist Gary Becker observed over 40 years ago, education is among the most important engines of human capital.\(^1\)
And as Minnesota’s State Economist Tom Stinson is fond of saying: People and businesses are not attracted to Minnesota for the weather, and they are not attracted to low taxes. They are attracted to the pool of very good human capital.

In our work at Growth & Justice, we build on this case for investing in Minnesota’s best asset, its students.

Minnesota’s historic investment in education has paid double returns. First, through a well-educated population that enhances productivity, our businesses have proven more competitive, and our economic growth has outpaced the national average. And second, our investments have enabled more individuals to earn a decent living in an increasingly knowledge-based economy.\(^2\)

What does well-educated mean? Consistent with our investment perspective, we’ve chosen an economic definition — that is, the ability of two-income earners to support a family of four on a basic-needs budget. In today’s terms, that means earning annual post-tax pay of about $44,000.\(^3\) Increasingly, to reach this level of earnings, Minnesotans will need to attain some level of post-secondary education — a professional certificate, an associate degree, or a bachelor’s degree.

As of 2006, 36 percent of Minnesotans ages 25 to 34 have a bachelor’s degree or higher, while 16 percent have an associate degree.\(^4\) According to projected high school graduation rates, by 2020, the share of Minnesota’s population with bachelor’s degrees or higher will drop.

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\(^1\) Becker, 1964.
\(^2\) Bauer, Schweitzer & Shane, 2006. High school and college attainment rates are the main factors explaining a state’s relative per capita personal income.
\(^3\) Statewide average for two adults, two children, two workers. Using the Cost of Living in Minnesota Family Wage & Budget Calculator (www.jobsnowcoalition.org).
This projected decline is driven in large part by two trends. Minnesota’s students of color and American Indian students are not doing even half as well in post-secondary enrollment and completion rates as their white peers, yet they represent the fastest growing population segment in the state. If we do not improve our current rates of attainment, more Minnesota families will fall behind in their ability to earn a decent standard of living, and Minnesota will fall short of the educated labor pool we need to compete globally.

Nearly 10,000 Minnesota students drop out of high school each year. Entering the workforce without a diploma, let alone a college degree, nearly guarantees a life of low wages. Not only does the dropout have less access to job opportunities, the economic costs can be considerable because dropouts have higher reliance on public programs such as welfare and Medicaid, and they are more likely to be involved with the criminal justice system. With each new “class” of dropouts, Minnesota faces aggregate costs of $10.6 billion over the course of their lives.

Put positively, the state sees broad economic benefits from having a well-educated population, and the value of each additional high school graduate can be estimated over the graduate’s lifetime.6

- The individual graduate gains $475,900 in extra earnings.
- Taxpayers gain $251,900 from increased tax revenues and lower expenditures on health, crime, and welfare.
- The State of Minnesota sees gains worth $1,059,500 from the foregoing benefits, plus lower crime victimization rates and faster economic growth.

Minnesota is not alone in facing the challenges of maintaining a robust economy in a globalizing marketplace, but with the demographic changes ahead, it faces potentially greater consequences. Minnesota has not yet developed an education strategy to address this looming shortfall of graduates. Many other states have. A 2006 national survey by Jobs for the Future found that 23 states have already set a clear, numerical target for improving college success.7

While the state has not yet set such a goal, Growth & Justice has. As a way to focus on the right educational challenges and develop specific approaches to improve attainment, Growth & Justice proposes the following strategic goal for Minnesota:

By 2020, increase by 50 percent the rate of students who finish post-secondary education, which includes increasing the attainment rate of students of color and American Indian students accordingly.

In order to achieve this strategic goal, the percentage of students of color and American Indian students who finish a post-secondary degree needs to increase well beyond current rates (see Appendix A). This is due to the changing demographics of our student population as well as the disproportionately lower rates of attainment of the non-white populations.

**Smart Investments** set out to develop a strategy that would provide an evidence-based investment framework for the state to achieve this goal.

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5 See Appendix A. Demographics and Minnesota’s Post-secondary Attainment Progress.
For some students, the opportunity gap opens early and never closes.

No matter how we state the challenge — as supporting the well-being of Minnesota families, maintaining a competitive business climate, or replacing the skills of a retiring generation — Minnesota must address disparities in post-secondary attainment.

Minnesota’s greatest opportunity for increased growth in attainment rates lies with low-income students, students of color, and American Indian students. Minnesota’s education success is unusually concentrated among whites and at the higher end of the socioeconomic spectrum. This demographic feature may be responsible for some of Minnesota’s historically high graduation rates. But as our population growth trends toward student groups that have historically attained post-secondary degrees at lower rates, we must narrow this gap — by raising attainment rates for these groups and maintaining or gaining ground among all segments of the population. As steering committee member Jennifer Godinez said, “College access needs to be a reality for low-income students and communities of color all over Minnesota.”

So it’s instructive to look beyond Minnesota’s historically strong numbers — relatively high national test scores, overall graduation rates, and percent of college graduates — and consider some of the early warning signs along the education pathway.

Tracking the Opportunity Gap

The graphs (“Reading Below Proficiency” and “Math Skills Below Proficiency”) show the high percentage of students who are currently “not on track” at key gateways along the education pathway. Disparities in reading and math proficiency among different groups appear early and are not overcome as students approach high school graduation.

Not surprisingly, failure to perform at grade level predicts later academic trouble. Getting all students to meet grade-level proficiencies is one key to raising the state’s post-secondary attainment rate. Meanwhile, a significant proportion of students who score “below proficient” in reading and math skills still graduate from high school. These students are not prepared for college and will require remediation — which adds to the cost and time needed to acquire a post-secondary degree and increases the risk of dropping out.

These disparities represent an opportunity gap that becomes more difficult to close the longer it persists — and at greater cost to the individual and society.
Early Warning signs that fewer Minnesotans will obtain degrees
All these factors are linked to lower post-secondary attainment, but it’s hard to see the strategic connection when student development is addressed in separate categories.

Early childhood
- Minnesota ranks 27th in the nation for access to prenatal care.
- Only 2 percent of the state’s preschool students receive state funding, ranking Minnesota 37th out of 38 states that fund preschool.
- Nearly 50 percent of Minnesota kindergartners were assessed as either “in process” or “not ready” for kindergarten upon enrollment.⁸

K-12
- Annually, 10,000 Minnesota students do not graduate from high school on time.
- Based on Minnesota’s per capita income, the state is under-investing in programs for at-risk students.
- Minority males in Minnesota start school behind their peers and get further behind through the school years.

Higher education
- Minnesota has one of the worst student-to-counselor ratios in the country, ranking 48th among states.
- Minnesota is a high tuition/moderate aid state, receiving a “D” in this category.⁹
- Minnesota offers an overall low level of advanced math coursework, and in particular, less academic preparation for students of color.

Time out of school
- Young people have an average of 1,900 hours per year of discretionary time without structure or supervision.¹⁰
- 42 percent of Minnesota children ages 10 to 12 are home alone after school — the highest percentage in the nation.¹¹
- Unstructured out-of-school time exacerbates the achievement gap between economically disadvantaged students and their more affluent peers.¹²

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¹⁰ Minnesota Commission on Out-of-School Time, 2004. Participation in after school programs has been linked to better school attendance, better grades and test scores, more positive attitude towards schoolwork, and higher aspirations for college.
We can’t overlook what research shows — that learning builds on itself over time. Closing the opportunity gap means following a scaffold approach that builds upon prior successes. Any plan to improve post-secondary attainment, then, must consider the entire education continuum and work to ensure that students are ready to succeed at key points along the way.

For example, we learned that early childhood investments realize a positive rate of return, but early learning experiences alone are not sufficient to ensure that children perform well throughout their lives. Without attention to the entire continuum, we cannot reach our goal. The chart below shows this learning continuum from early childhood to working adulthood.

**Birth to age 3**
Good prenatal care and quality early childhood experiences ready a child for elementary school learning.

**Pre-K (age 4) through grade 3**
Students ready for kindergarten acquire and grow language and math skills earlier, leading to success on 4th grade national skills tests.

**Grades 4 through 8**
Keeping students proficient in basic skills during these years makes them more likely to graduate from high school.

**Grades 9 through 12**
Arriving in high school ready for rigorous coursework, students become more prepared to enroll and succeed in post-secondary education, and sustain higher-level learning with social support.

**Transition to post-secondary**
Students who have good academic preparation, social support and access to financial aid have a greater likelihood of completing their degrees on schedule.

**Smart Investments Start Early and Prepare the Student for the Next Level**
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- **Birth to age 3**
  - Nurse home visiting programs
  - Expanded access to quality child care

- **Pre-K (age 4) through grade 3**
  - Social skills training
  - Quality half-day preschool
  - Class size reduction
  - Intensive focus on early skill acquisition

- **Grades 4 through 8**
  - Rigorous coursework
  - Intensive tutoring
  - In-school and out-of-school social supports such as mentoring

- **Grades 9 through 12**
  - College prep curriculum with teacher development
  - Parent involvement
  - Student counseling and progress monitoring

- **Transition to post-secondary**
  - Counseling, academic preparation
  - Teen pregnancy and dropout prevention
  - Need-based aid
Current educational investments tend to be driven by the system’s needs. Using insights from educators and the commissioned research described in the next section, we formulated four principles that should guide better decision-making for investing in education.

1. **Smart investments aim for compound effects.** Interventions that cluster components to address social support and academic preparation gaps and ensure access for low-income students are more effective than narrow, single component programs.

For example, class size reduction alone is not as effective as when bundled with other components such as social skills training or instructional focus.

2. **Smart investments accumulate capital.** Educational success depends on students being ready for school, continually ready to learn, and ultimately, ready for life. Gains can fade when one phase is funded at the expense of the others.

For example, learning gains can be made over the summer, and summer learning can have as important an impact as in-school learning.

3. **Smart investments address real disparities and actual student needs.** The most cost-effective investments are high quality interventions focused on the greatest disparities; they address students’ actual social, academic, and financial needs.

In some cases, an intervention such as quality subsidized childcare, can address more than one disparity.

4. **Smart investments are made with accountability for results.** Investments should be chosen based on evidence through a transparent process that measures and reports the outcomes.

Political support for increased education spending exists if taxpayers believe the money will achieve educational results.

We believe these principles can be applied to help policymakers evaluate what type of investment works best for students, even as new research findings and programs emerge.

Getting the education outcomes Minnesota needs requires a long-term, systematic approach to investment.
While positive learning outcomes are the ultimate objective of any education reform, it has been very difficult for leaders to draw good conclusions about the effectiveness of education spending without rigorous (and costly) studies and cost-benefit analyses. In an environment where critics want to root out non-essential spending and administrators are cutting “frills” such as teacher aides, art, music, and extra-curricular programs to balance budgets, such studies are unlikely to win funding.

But a back-to-basics, “cut what doesn’t work” approach, based on assumptions about what worked in the past, fails to answer the essential question facing Minnesota for the future: What does work?

Growth & Justice commissioned seven economists and education finance scholars to examine the full body of literature on “what works” at getting students to the desired outcomes at each key learning phase from birth to college. After identifying which interventions showed a significant effect, the scholars further winnowed the list to those that could be shown to be cost-effective.

The scholars presented their findings on “what works at the best price” at the Smart Investments™ in Minnesota’s Students summit in November 2007. Approximately 300 educators and policy makers attended, including Education Commissioner Alice Seagren and elected officials and staff representing about one-fifth of the Minnesota Legislature.

Researchers identified effective interventions that showed a positive return on investment.

### What Works?

**Papers, presentations, and summaries of the research are available at**

[www.growthandjustice.org/smart_investment_summit.html](http://www.growthandjustice.org/smart_investment_summit.html)
Altogether, the researchers considered scores of interventions across the education continuum that had success in getting students performing below proficiency on track toward post-secondary attainment (see Appendix B).

A discernible pattern emerged from these collective findings. Academic preparation is only one part of the preparation needed for post-secondary success. In fact, three key features were present in many effective interventions: academic quality, social supports, and access to financial support.

Quality academic preparation and alignment
Children receiving sustained quality instruction, rigorous curriculum, and meaningful, ongoing assessments are more likely to succeed at the next education level. This finding held from early childhood years until secondary school. For example, an intensive reading curriculum with associated professional development and rapid-response evaluation components contributes to higher rates of reading success for early learners.

Social supports
Relationships between children and adults in early childhood, school, and non-school settings are significant to academic success. For example, reduced classroom size in the early years (Pre-K to 3rd grade) and small learning environments in the secondary years have a positive achievement effect. Relationships among adults matter, too. Parents contribute to a child’s educational success when they are involved with care providers, teachers, mentors, and tutors.

Access and financial support
Access to quality providers, programs, and institutions places children and students in a position to take advantage of learning opportunities. But limited financial means can be a barrier to access. Subsidized childcare, preschool, and post-secondary tuition grants expand access to quality learning experiences for students at all income levels.

Researchers found the more effective programs integrated two or three of these key support features — or were clustered with other interventions that did. For example, low-performing students have higher rates of success taking rigorous coursework if they are also receiving tutoring or mentoring, or participate in an after-school program that is associated with the curriculum.

Conversely, the intended effect may be lost or the return on investment reduced when components of an effective program are changed — often in an attempt to reduce cost. Combining a high-quality preschool curriculum with certified preschool teachers will yield far greater results than choosing just one of these. Similarly, decoupling tuition assistance from mentoring will not be as effective for college access and success as blending the two. Award-winning teachers Pam Willard and LeeAnn Stephens, who both served on the project steering committee, said their experiences echo these research findings.

Looking at funding in a new way
This pattern suggested a different way to think about funding education interventions. Schools are organized — and education budgets aligned — according to established categories of Pre-K, K-12 and higher education. In turn, state agencies, legislative committees, and advocacy groups tend to be organized on the same lines, and the competition for dollars follows. Humphrey Institute Fellow Steve Kelley, a former state legislator and a member of the steering committee, has stressed the boundary-spanning element of our framework. He stated, “We need to restructure our picture of schools and understand that attractive reforms are those that challenge our existing concept of what school is.”

Rather than simply look at where interventions fit within the education delivery system, we decided to consider how they complement each other and relate to the student’s overall needs in three development phases we call Ready to Launch, Ready for Higher Learning, and Ready for Life.

Yeh, 2007. Ongoing assessments such as Response to Intervention and Rapid Assessment monitor student progress and are tied to academic improvements.
To make the research findings and investment principles more concrete, we have provided here some examples of successful programs shown to be cost-effective by providing a positive return on public investment. It is important to note that these interventions are not “silver bullets.” They achieve their long-term effects within the context of the entire continuum and other academic, social, and financial supports.

We do not mean to endorse individual programs here. These interventions are highlighted to represent those which showed impact and were validated by studies that met our rigorous research criteria. There are no doubt other worthy programs that exemplify our smart investment principles whose results have not been thoroughly studied, and there are similar programs that may not deliver the same results because they lack key elements. More outcomes-based research and analysis are needed to expand the menu of promising interventions we identified (see Appendix B for the complete list). Currently, there are other comprehensive post-secondary efforts underway in Minnesota.

We characterize the early childhood years as “Ready to Launch.” Good health and early learning experiences establish an essential foundation from which a child launches into the elementary school years.

Access to prenatal care promotes healthy early development, including proper brain architecture. Well-baby check-ups and parent mentoring on nutrition and health — as delivered through nurse home visiting programs — have been proven highly effective for first-time mothers. The benefits of these early interventions include reduced abuse and injury to the child, improved cognitive and socio-emotional skills, and delay of the mother’s second birth.

For 3- and 4-year-olds, access to quality childcare and part-time preschool readies children for success in the elementary school years. A half-day, 4-year-old preschool program, such as offered by the Chicago Child-Parent Centers, or a K-3 program such as Success for All, provides enough skill development to prepare a student to read by the end of 3rd grade. Reading is an essential gateway at the start of the education pathway, and reading by the 3rd grade is a commonly accepted measure of early childhood success. Minnesota students must be able to read by 3rd grade in order to meet federal standards under No Child Left Behind (NCLB), by 2014.
Home visiting refers to programs that send a nurse, social worker, parent educator, or paraprofessional to the homes of parents who are expecting a child or have children ages 0 to 5. Information provided during home visits ranges from health and nutrition to early literacy. The goals of home visiting also vary, from health outcomes, such as healthy births, to reductions in abuse or neglect and improved school readiness.

Home visiting programs that target at-risk families and use relatively well-trained staff and intensive services are likely to garner the best results. One of the most cited studies of a home visiting model is the Nurse Family Partnership in which registered nurses visit the homes of at-risk, first-time mothers of children prenatal to age 2. Effects found in two or more trials include improved prenatal health, fewer subsequent pregnancies, increased intervals between births, fewer childhood injuries, improved school readiness, and increased maternal employment. A cost-benefit analysis of one trial of the Nurse Family Partnership model showed that the monetary value of benefits attributed to the program exceeded costs by a wide margin.

**Nurse Home Visiting Programs**

The Child-Parent Centers (CPC) program in the Chicago Public Schools provides intensive instruction in reading and math from Pre-K through 3rd grade, combined with frequent educational field trips. The children’s parents receive job skills training, parenting skills training, educational classes, and social services. They also volunteer in their children’s classrooms, assist with field trips, and attend parenting support groups. A study by University of Minnesota scholars Arthur Reynolds and Judy Temple, who served on the *Smart Investments℠ in Minnesota’s Students* steering committee, followed the children from ages 3 or 4 through 24 to assess the possible benefits of the CPC program. The children in the study were 93 percent African American and 7 percent Latino.

The study results strongly suggest that the program produced lasting benefits — even for children who completed only part of the program. By age 24, for example, children who participated only in the preschool program had lower rates of depression, lower rates of violent crime and incarceration, were more likely to attend 4-year colleges, and were more likely to have health insurance than children who did not participate in the preschool program. Graduates of both the preschool and school-age components of the CPC program were more likely to attend college and to be employed full time, and less likely to receive public assistance or to have a disability than those who participated in other programs.

**Chicago Child-Parent Centers**

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<th>Investment</th>
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<td>$35 million for 60,000 families at 185% of poverty</td>
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<td>Benefit/Cost: $6 : $1</td>
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<table>
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<th>Investment</th>
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<tr>
<td>$285 million for 36,000 preschoolers to 3rd graders below proficiency</td>
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<td>Benefit/Cost: $10 : $1</td>
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</table>
Beyond 3rd grade reading, student proficiency in math and reading in 4th and 8th grades is predictive of a student’s likely success in middle school and readiness to take and pass rigorous coursework in high school\textsuperscript{14} – the critical gateway that qualifies them to attend a post-secondary program. Minnesota’s Legislature has established that, by 2014, all 8th graders will take and pass Algebra I and high school students will take and pass rigorous coursework such as Algebra II, chemistry, and physics, in order to comply with NCLB. Research on post-secondary success indicates that students who take and pass rigorous coursework are more likely to enroll and finish a post-secondary program.\textsuperscript{15} Further, research purports that improving high school curriculum participation is especially important for Latinos.\textsuperscript{16}

Rigorous coursework alone will not have the intended effect for those students who are performing at or below proficiency levels. Social supports are often needed, such as tutoring, in-school counseling, mentoring, and college post-secondary enrollment. School-based programs that monitor student progress, such as Achievement for Latinos through Academic Success (ALAS), Check & Connect, and Admission Possible, have demonstrated a positive impact on high school dropout rates, college attendance rates, and have shown positive returns. There are several promising practices (see Appendix B) but a dearth of studies on effects and benefit-cost ratios. This may be due to the fact that out-of-school time programs are often under-funded, leaving very few resources for long-term evaluations that detect key benefits, such as reduced risk of school drop-out. While the cost analysis literature on academic and social supports for middle and high school students outside the school day is not robust, many economists would agree that the benefit analysis is conservative and the benefits of reduced suspension and dropout rates are worth the cost.

One proponent of social supports is University of Minnesota Professor Sandy Christenson, who advised Growth & Justice on this project. Professor Christenson studies student behaviors, cognition, and academic indicators, and for more than 15 years has evaluated interventions like Check & Connect. Professor Christenson notes that “graduation from high school with sufficient social and academic skill is essential in this new economy.”

\textbf{Early College High School}

Early College High Schools (ECHSs) are small schools that blend high school and post-secondary study. Students are engaged in a rigorous, college-preparatory curriculum and earn both a high school diploma and an associate degree or up to two years of credit towards a bachelor’s degree. ECHSs have a positive return on investment that has exceeded investment returns on traditional high schools by up to $2.11 per dollar invested. While ECHSs focus on first-generation, low-income, English language-learner, and minority students, all students benefit from participation in accelerated learning programs such as Post-Secondary Enrollment Options (PSEO), including Advanced Placement (AP) courses and College in the School courses. Minnesota has not implemented ECHSs programs, but proxies for Minnesota are our post secondary enrollment/dual enrollment options such as AP and College in the School. Expanding the reach of PSEO to all Minnesota high school students would cost $95 million.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
\textbf{Investment} & \\
\hline
\textbf{$95$ million for 9th grade through post-secondary students (below proficiency) for challenging curriculum options} & \\
\hline
\textbf{Benefit/Cost: $2.50 : $1} & \\
\hline
\end{tabular}
\end{table}

\textsuperscript{14} Horn & Kojaku, 2001.
\textsuperscript{15} Adelman, 1999.
\textsuperscript{16} Adelman, 2008.
Minnesota Governor Tim Pawlenty has called for high school reform that includes small learning communities. While the considerable literature on small high schools indicates that smallness alone does not have the intended effect, supplementing small learning communities with other strategies has shown positive results. Comprehensive programs such as Talent Development High School, First Things First, and Advancement Via Individual Determination (AVID) are among the strategies that have shown success.

The Talent Development High School model breaks large high schools into small learning communities, with students moving into career-oriented academies for grades 10 through 12. The model features five key qualities: small learning communities; emphasis on rigorous math and reading curriculum; academic supports; professional development for teachers; and parent and community involvement. Ninth to 10th grade progression rates have shown appreciable improvements (8 percent) as a result of this intervention.

Achievement for Latinos through Academic Success (ALAS, which means “wings” in Spanish) is a program that monitors attendance, behavior, and achievement. Counselors are assigned to Latino middle school/junior high students and their parents to offer remediation and provide feedback on school progress.

ALAS counselors serve as advocates for students and intervene when problems are identified. Students are trained in problem-solving activities, and in how to contact teachers and administrators to address issues.
Once students finish a rigorous high school curriculum and obtain a high school diploma, they may still have the final gate closed to them because they can’t afford post-secondary education. Minnesota is considered a high tuition/moderate aid state. We rank substantially above the national average in tuition expense at our public and private two- and four-year institutions, while the availability of financial aid ranks below many states.

Minnesota has a lot to be proud of with regard to our post-secondary attainment rates. In fact, a national policy center awarded Minnesota an “A” for participation and completion overall, rating Minnesota a “top performing state.” But raising the availability of need-based aid grants to be in line with the nation’s highest ranking states would require Minnesota to invest an additional $115 million per year. Need-based aid grants are especially important in promoting post-secondary enrollment of students from low-income families.

College enrollment and completion rates among low-income families, students of color, and American Indians are substantially lower than Minnesota’s aggregate numbers demonstrate. The lower attainment rates of some African Americans and Latinos are particularly troubling given that by 2020, African American and Latino high school enrollment is projected to increase 193 percent and 470 percent, respectively, as white enrollment declines by 17 percent.

To reach a 50 percent increase in post-secondary attainment, Minnesota needs to invest now to improve access for children who qualify for early childhood interventions, and to reach those students already in the K-12 system who are not “on track” to complete high school or to qualify for enrollment in post-secondary programs.

Check & Connect

Check & Connect promotes student engagement and high school completion by building long-term, trusting relationships between students and mentors and by routinely monitoring for signs of school withdrawal.

This program reinforces strategies found in the larger body of effective interventions. It mentors students and monitors and assesses their performance. The 12th grade dropout rate was nearly 20 points below that of those students who did not receive the benefits of this intervention.

Admission Possible

Admission Possible seeks to improve four-year college enrollment rates by helping students transition from high school to post-secondary education. The program identifies promising low-income students and provides help with ACT test preparation, college search and application processes, financial aid processes, and guidance in the transition to college. It requires students to participate in eight hours of community service each year. Additional support is provided to students once they have entered college. College acceptance rate for students in this program is 99 percent, at a cost of about $3,000 per student over two years.

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17 http://www.ohe.state.mn.us/pdf/AccountabilitySummary.pdf
18 Minnesota State Demographic Center, 2006. Projected change in working age population by race/ethnicity.
Investing in human capital is the best long-term investment the state can make. However, education is already the largest budget item for state and local spending, so it is important to be clear about where new investment would have the most impact. Any discussion about investing in education is headed for futility if it doesn’t address how much the state can afford — especially in times of austerity for families, businesses, and local governments.

Growth & Justice began its consideration of education investments in 2006 with Invest for Real Prosperity, a strategic framework for achieving a more prosperous, just, and sustainable Minnesota. It proposed increased public investment in Minnesota, using evidence to determine “what works at a good price.” Education — along with health care and smart infrastructure — was selected as a key area of investment that could increase our state’s capacity to create wealth and increase each individual’s chance of participating in that economic growth.

Invest for Real Prosperity made the case that Minnesota began investing less in state and local government services as a proportion of our income over the last decade — about 1.5 cents less per dollar than during Governor Arne Carlson’s administration. And over that period, our economic growth, once well above the national average, has slipped to the middle of the pack.

We developed several scenarios under which Minnesota could fairly raise about $2 billion of additional revenue annually, primarily by increasing income taxes for the very affluent, whose income growth has far outpaced that for middle and lower income households. This penny-on-the-dollar average increase would reduce the effective tax rate gap between top and middle earners — currently about three percentage points — and would still put the total price of government below where it stood when Minnesota’s economy was outperforming most other states.

19 The Price of Government — defined as total state and local revenues as a percentage of total personal income — is a measure of the cost of public services in Minnesota.
We proposed that $1 billion of the $2 billion should be invested in education from birth to college, and at that time first proposed measuring the success of that investment by whether it increased “the percentage of Minnesotans under age 35 who earn a college degree or a post-secondary certificate leading to a living wage job.” A restatement of that measure became the goal proposed for Smart Investments™ in Minnesota’s Students.

While $1 billion a year may sound like a lot, fiscal adequacy studies conducted by impartial analysts have determined that Minnesota’s K-12 system alone is short about $1.7 billion.²⁰ Our project did not attempt to estimate all the needs of public schools or the growing operating costs. Nor did we take on the immense task of determining the effectiveness of current spending. While it is certainly valid to ask whether some existing education dollars could be reallocated to achieve higher attainment, answering this based on evidence would require comprehensive government cooperation, multi-year studies, and a level of detailed analysis that the state itself has not undertaken. As well, we would argue that not all of the money needs to come from the state’s education budget. Cost sharing could come from various agencies serving children and families.

“How much?” is more than an economic question, it is a political question that we cannot answer here. It is likely the specific size of the investment will evolve with changes in demographics, the economy, and in student performance as improvements are realized over time. But we believe $1 billion is a feasible amount to raise and represents a threshold of investment needed annually to make a meaningful difference in overall attainment rates.

Conventional thinking about funding would place all this investment in the education portion of the state budget. However, part of the learning continuum we describe precedes the K-12 framework or falls outside school time and traditional school responsibility. And while the strategic goal is stated in educational terms, many savings resulting from the investment accrue to other areas of the state budget, as would the increased tax revenues. Although current, siloed budget categories do not recognize costs and benefits this way, legislators should take them into account. A strategic view would regard the investment as an investment in students rather than an investment in an education system.

²⁰ Augenblick, Palaich and Associates, Inc., 2006. P.S. Minnesota, a coalition of education and parent groups, commissioned a study after Governor Pawlenty’s 2004 education funding reform study determined that an additional $1 billion was needed to provide adequate public education in Minnesota.
What would a Smart Investment model look like?

This strategic framework was guided by a 24-member steering committee, representing diverse stakeholder positions from around the state and across the education continuum. Our analysis also benefited from a distinguished 13-member academic advisory council.

Armed with the information and analysis from the research, our steering committee was ready to consider a model $1 billion portfolio of investments that would most cost-effectively increase a student’s likelihood of attaining post-secondary success.

We wanted a process to make policy choices that could serve as a filter to reduce the influence of one political interest over another — and would not force trade-offs that valued one part of the education continuum over another.

We selected an approach based on a cost-benefit analysis model used in a widely acclaimed global economic project known as the Copenhagen Consensus.²¹

After eight meetings over 14 months, we held a session in which each committee member was “given” $1 billion and asked to allocate the money among 24 investment options that were priced according to the number of students affected.

They were asked to follow a few rules reflecting our principles of effective investment:

- Some money should be invested in each phase along the pathway from early childhood to college
- Each investment choice must be fully funded
- They should invest in the programs or interventions they believed were most effective in increasing post-secondary attainment
- They should not simply spend leftover money if their preferred investments amounted to less than $1 billion

We tallied the results from the 18 members who participated in the exercise and determined the consensus investment would be apportioned with 40.5 percent to Ready to Launch, 25.5 percent to Ready for Higher Learning, and 34 percent to Ready for Life. Table A shows the consensus on where dollars should be invested, and Table B illustrates how the programs relate to each other in supporting student progress from birth to college.

While the recommendations here are an important result of the project, more important is this framework that brings evidence and consensus to bear on making better investment choices. This approach can also be applied in communities that face different challenges, and can be applied with more specificity as new research expands the realm of promising solutions.

### Table A: Distribution of Investments by Intervention

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prenatal to age 3: Need-based early care includes prenatal care/healthcare access, parent mentoring/home visits</td>
<td>$35 M</td>
</tr>
<tr>
<td>Birth to age 4: Need-based quality child care, expands availability</td>
<td>$85 M</td>
</tr>
<tr>
<td>Pre-K (age 4) to 3rd grade: High quality half-day 4-year-old preschool; class size reduction (Pre-K to 3rd grade); social skills training, e.g., Child-Parent Center, Success for All</td>
<td>$285 M</td>
</tr>
<tr>
<td>4th to 8th grade: Emphasis on rigorous/college-prep coursework, coupled with tutoring-intensive reading/math instruction, e.g., AVID</td>
<td>$105 M</td>
</tr>
<tr>
<td>9th to 12th grade: Small learning communities, college-prep curriculum, teacher development, parent involvement, targeted at low-achieving, high discipline problem students, e.g., Talent Development High School, First Things First</td>
<td>$55 M</td>
</tr>
<tr>
<td>9th to 12th grade: Rigorous coursework including dual enrollment options, e.g., expanded PSEO, College in School, Early College High School</td>
<td>$95 M</td>
</tr>
<tr>
<td>Out-of-school support: Social supports include summer school/after-school tutoring and mentoring, reducing pregnancy rates, substance abuse, and dropout rates, e.g., Achievement for Latino Academic Success, Big Brothers/Big Sisters, CASA, Carrera</td>
<td>$140 M</td>
</tr>
<tr>
<td>In-school counselors: Reduce ratio from 792 : 1 to 488 : 1</td>
<td>$10 M</td>
</tr>
<tr>
<td>Drop-out prevention: Monitor progress, build relationships, connect schools with families and students, e.g., Check &amp; Connect</td>
<td>$10 M</td>
</tr>
<tr>
<td>Transition to post-secondary: Aimed at promising, low-income students with academic potential; provide counseling and academic preparation for college readiness, e.g., Admission Possible</td>
<td>$65 M</td>
</tr>
<tr>
<td>Post-secondary need-based aid: Improve financial access for all students</td>
<td>$115 M</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$1 billion</td>
</tr>
</tbody>
</table>

### Table B: How investments follow the student

<table>
<thead>
<tr>
<th>$405 M Ready to Launch</th>
<th>$255 M Ready for Higher Learning</th>
<th>$340 M Ready for Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth to age 3</td>
<td>Age 4 through grade 3</td>
<td>Grades 4 through 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grades 9 through 12</td>
</tr>
<tr>
<td><strong>Access</strong></td>
<td></td>
<td>Transition to post-secondary</td>
</tr>
<tr>
<td>Need-based early care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Prenatal care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Quality childcare</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Academic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Half-day preschool</td>
<td>• Rigorous coursework</td>
<td>• Academic prep for high-potential, low-income students</td>
</tr>
<tr>
<td>• Class size reduction</td>
<td>• Intensive tutoring</td>
<td>• Dual enrollment/college credit</td>
</tr>
<tr>
<td>• Instructional focus</td>
<td>• Small learning communities</td>
<td></td>
</tr>
<tr>
<td>• Quality instructors</td>
<td>• College prep curriculum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Teacher development</td>
<td></td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Social skills training</td>
<td>• Mentoring</td>
<td>• School counseling</td>
</tr>
<tr>
<td>• Parent mentoring</td>
<td>• Counseling</td>
<td>• Youth development, tutoring, mentoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Teen pregnancy prevention</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• College counseling</td>
</tr>
</tbody>
</table>

*Ready to Launch* $405 Million (40.5%)

*Ready for Higher Learning* $255 Million (25.5%)

*Ready for Life* $340 Million (34%)
A strong Minnesota economy will require new investments in Minnesota’s students. We can do it wisely and cost-effectively.

Many groups in Minnesota have a vital interest in ensuring student success over the next decade. Businesses need to replace a large cohort of retiring workers. Communities of color want to address persistent disparities in income and achievement. Rural communities seek ways to retain their young people and maintain economic vitality. Parents want the best future for their children.

A growing body of economic research suggests that the right investments in education can lower public costs, strengthen economic growth, and raise the earning power of more families. *Smart Investments℠ in Minnesota’s Students* shows how to apply what is known about cost-effective investments in education to address a looming shortage of educated workers that could undermine the state’s economic well being.

Analysis indicates this investment in human capital would more than pay for itself — through $500,000 in higher lifetime earnings for each additional graduate and $1 million from increased revenues and lower social costs. But economic analysis does not necessarily give a clear direction about the best route to take in specific schools. Instead, it is better to highlight a spectrum of promising approaches. The choice of any new policy approach should be bolstered by evidence, guided by a set of achievement-centered decision-making principles, and focused on a transformational strategic goal.

“What works at the best price” may not be enough to make Minnesota’s education system the best that it can be. But it is a smart use of tax dollars. And when evidence-based public spending gets improved results, that increases support for more smart investments.

We hope this new model will guide researchers and help state policy makers, educators, and school boards make wise decisions for years to come.

### For $1 billion annually Minnesota Could

- Increase student wellness and readiness for learning
- Increase the rate of students who are successful readers by the 3rd grade
- Increase the number of students who successfully complete rigorous coursework
- Reduce high school dropout and pregnancy rates
- Reduce the financial burden of post-secondary education on students and families
Instead of focusing on funding the “system,” we need a new conversation about what works best to prepare more students to complete post-secondary education. With a fact-based consensus, we can invest more wisely to achieve that outcome.

Here’s how you can contribute to a stronger economy and a better quality of life for more Minnesotans.

1. **Learn more**
   Attend a public forum. Invite us to speak at a meeting or event. Read more about the research findings at [www.growthandjustice.org](http://www.growthandjustice.org)

2. **Advocate for the smart investments℠ in Minnesota’s Students framework**
   Advocate smart policies that invest in evidence-based, cost-effective solutions that prepare more students for post-secondary success.

3. **Show support**
   Contact your state legislator and show your support for smart investment reform efforts and legislation aimed at measurably increasing the numbers of students who finish post-secondary education.

4. **Support our work**
   Your financial contribution will advance our Smart Investments℠ work, which aims to strengthen our economy so that it works for more Minnesotans.
Demographics and Minnesota’s Post-Secondary Attainment Progress

Percent increase needed by subpopulations to reach 50 percent overall increase in attainment

<table>
<thead>
<tr>
<th>Demographic</th>
<th>6 year rate (BA)</th>
<th>3 year rate (AA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MN</td>
<td>48%</td>
<td>30%</td>
</tr>
<tr>
<td>White</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>African American</td>
<td>153%</td>
<td>150%</td>
</tr>
<tr>
<td>Asian American/Pacific Islander</td>
<td>45%</td>
<td>67%</td>
</tr>
<tr>
<td>Latino</td>
<td>243%</td>
<td>275%</td>
</tr>
<tr>
<td>American Indian/Alaskan Native</td>
<td>220%</td>
<td>233%</td>
</tr>
</tbody>
</table>

Analysis provided by Prof. Robert Johnson, St. Cloud State University
### Table 1: Cost-Effective Interventions

Programs determined to have benefits that outpace the cost of implementing them.

<table>
<thead>
<tr>
<th>Prenatal to Age 4</th>
<th>High School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Home Visiting (prenatal care/health care access; parent mentoring)</td>
<td>Talent Development High School (rigorous coursework; mentoring; parent involvement; small learning communities)</td>
</tr>
<tr>
<td>Financial assistance to broaden access to quality childcare</td>
<td>First Things First (small learning communities; rigorous coursework; family advocacy)</td>
</tr>
<tr>
<td>Age 4 to Grade 3</td>
<td>Out-of-School Time</td>
</tr>
<tr>
<td>Chicago Parent-Child Center (half-day quality preschool program; social skills training; reduced class size)</td>
<td>Big Brothers/Big Sisters (summer school/after school programs; mentoring)</td>
</tr>
<tr>
<td>Elementary School</td>
<td>Check &amp; Connect (progress monitoring and mentoring)</td>
</tr>
<tr>
<td>Success for All (intensive reading curriculum; professional development; on-going, aligned assessments; low student-to-teacher ratio)</td>
<td>Transition to Higher Education</td>
</tr>
<tr>
<td>Middle School to High School</td>
<td>Admission Possible (college preparation and mentorship)</td>
</tr>
<tr>
<td>Advancement Via Individual Determination (AVID) (rigorous coursework with tutoring)</td>
<td>Talent Search (high school completion counseling)</td>
</tr>
<tr>
<td>Achievement for Latinos through Academic Success (ALAS) (counselors monitor progress and intervene accordingly)</td>
<td>Financial access/need-based aid</td>
</tr>
</tbody>
</table>

The relatively short list of proven programs should not be taken as a shortage of potentially effective offerings. Rigorous evaluation methods and cost-benefit analyses simply have not been applied as frequently or broadly in K-12, higher education, and out-of-school studies as in early childhood. A number of promising practices are under review or have been reviewed using less rigorous methods (see Table 2).

### Table 2: Promising Interventions

<table>
<thead>
<tr>
<th>Prenatal to Age 4</th>
<th>High School</th>
<th>Out-of-School Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Childhood and Family Education</td>
<td>Breaking Ranks</td>
<td>Beacon’s American Indian Life Skills</td>
</tr>
<tr>
<td>Parents As Teachers (PAT)</td>
<td>Coalition of Essential Schools</td>
<td>BASICS</td>
</tr>
<tr>
<td>Elementary School</td>
<td>High Schools that Work</td>
<td>Project SEEK</td>
</tr>
<tr>
<td>Reading First</td>
<td>Early College High School</td>
<td>Keep a Clear Mind</td>
</tr>
<tr>
<td>Reading Recovery</td>
<td>Project GRAD</td>
<td>Boys &amp; Girls Club of America</td>
</tr>
<tr>
<td>Roots and Wings</td>
<td>College Access Program (CAP)</td>
<td>12 Together</td>
</tr>
<tr>
<td>Response to Intervention</td>
<td>TEACH</td>
<td>I Have a Dream</td>
</tr>
<tr>
<td>Middle School and High School</td>
<td>21st Century Scholars</td>
<td>L.A. Best</td>
</tr>
<tr>
<td>America’s Choice</td>
<td>Gates Millennium Scholars</td>
<td>Girls Inc.</td>
</tr>
<tr>
<td>KIPP</td>
<td>Sponsor-a-Scholar</td>
<td>21st Century Learning Centers</td>
</tr>
<tr>
<td>Teach for America</td>
<td>Power of You</td>
<td></td>
</tr>
<tr>
<td>Transition to Higher Education</td>
<td>TriO/Talent Search</td>
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</tbody>
</table>
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Perna, L. (2007, November). *Improving the transition from high school to college in Minnesota: Recommendations based on a review of effective programs*. Paper presented at the Smart Investments in Minnesota’s Students Education Summit, Saint Paul, MN.


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