National High School Center

betterhighschools.org

Linking Research and Resources for Better High Schools

Approaches to Dropout Prevention: Heeding Early Warning Signs With Appropriate Interventions

This report is offered by the National High School Center, a central source of information and expertise on high school improvement issues that does not endorse any interventions or conduct field studies. Funded by the U.S. Department of Education, the National High School Center serves the Regional Comprehensive Centers in their work to build the capacity of states across the nation to effectively implement the goals of No Child Left Behind relating to high schools. The National High School Center is housed at the American Institutes for Research and partners with other leading education research organizations such as Learning Point Associates, MDRC, WestEd, and the National Center for Educational Accountability (NCEA). *The contents of this report were developed under a grant from the U.S. Department of Education. However, those contents do not necessarily represent the policy of the U.S. Department of Education. It is important to note that the National High School Center does not endorse particular practices, programs, or interventions.*

Approaches to Dropout Prevention: Heeding Early Warning Signs With Appropriate Interventions

REPORT AUTHORS

Louise Kennelly
Maggie Monrad
National High School Center at the American Institutes for Research

October 2007

TABLE OF CONTENTS

Approaches to Dropout Prevention: Heeding Early Warning Signs With Appropriate Interventions

EXECUTIVE SUMMARY

There are effective, research-based steps school systems can readily take to identify likely high school dropouts. Less is known about effective remedies designed to address dropout, though a variety of promising programs and interventions are available.

The first step toward an effective dropout prevention strategy involves tracking and analyzing basic data on which students are showing early warning signs of dropping out.

The key indicators that researchers have identified as indicative of who is most likely to drop out are

- poor grades in core subjects,
- low attendance,
- failure to be promoted to the next grade, and
- disengagement in the classroom, including behavioral problems.

To be most effective in preventing dropout, school systems should focus dropout prevention efforts in the beginning of the middle grades.

Most future dropouts may be identified as early as sixth grade and many can be identified even earlier. One key study indicated that more than half of sixth graders with the following three criteria eventually left school: attend school less than 80 percent of the time; receive a low final grade from their teachers in behavior; and fail either math or English (Balfanz & Herzog, 2005). Eighth-graders who miss five weeks of school or fail math or English have at least a 75 percent chance of dropping out of high school. (Neild & Balfanz, 2006). Retention in middle grades, and even elementary school, is associated with dropout. For example, one study on dropout determined that 64 percent of students who had repeated a grade in elementary school and 63 percent of those who had been held back in middle school left school without a diploma (Alexander et. al., 1997).

Research has shown that students with prior behavior problems are most likely to fail during transition years and eventually drop out. There appears to be a window of opportunity in reaching middle-grades students who show signs of poor behavior but who are not yet failing academic subjects. By the time future dropouts get to high school, poor behavior and course failure tend to converge among many students who eventually leave school (Herzog and Balfanz, 2005).

Most future dropouts can also be identified in the first year of high school when a sense of urgency around reaching out and supporting these students is critical before they disappear from school. These key indicators can assist decision makers in targeting dropout prevention resources to the students most at risk of imminently leaving school.

School communities interested in building an early warning system should address the following steps:

1. Establish a data system that tracks individual student attendance, grades, promotion status, and engagement indicators, such as behavioral marks, as early as fourth grade.
2. Determine criteria for who is considered off-track for graduation and establish a continuum of appropriate interventions.

3. Track ninth grade students who miss 10 days or more of school in the first 30 days (Neild & Balfanz, 2006). The first month of high school provides important information about who is at risk of dropping out. Even moderate levels of absences are a cause for concern. Just one to two weeks of absence per semester—which was typical for freshmen participating in a key Chicago study—was found to be associated with a substantially reduced probability of graduating (Allensworth and Easton, 2007).
4. Monitor first quarter freshman grades, paying particular attention to failures in core academic subjects. Receiving more than one F in core academic subjects in ninth grade—together with failing to be promoted to tenth grade—is 85 percent successful in determining who will not graduate on time (Allensworth and Easton, 2005). Schools can offer immediate academic supports to the students who are failing in the first quarter of freshman year.
5. Monitor Fall semester freshmen grades, paying particular attention to failures in core academic subjects. As first semester grades are posted, schools can develop individual student dropout strategies. By the end of the first semester, course grades and failure rates are slightly better predictors of graduation than attendance because they indicate whether students are making progress in their courses (Allensworth and Easton, 2007).
6. Monitor end-of-year grades. The end-of-year grades will provide further information about failure rates and reveal grade point averages, providing detailed information about who is likely to struggle in later years and is considered by some researchers to be the best indicator for predicting nongraduates (Allensworth and Easton, 2007). In general, grades tend to be a more accurate predictor of dropout than test scores.
7. Track students who have failed too many core subjects to be promoted to tenth grade. This provides perhaps the most critical information about which students should receive specialized attention and support. Research has shown that those who fail to be promoted are more likely to drop out. According to Alexander, Entwistle, and Horsey (1997), being held back trumps all for dropout indicators.

Currently, there is not an extensive menu of proven strategies and interventions tailored for key dropout prevention initiatives most appropriate for various risk factors at differing stages across the education pipeline. However, there are a few proven dropout prevention programs featuring key components, such as

- attendance and behavior monitors,
- tutoring and counseling,
- establishment of small learning communities for greater personalization,
- engaging catch-up courses,
- Ninth Grade Academies,
- homerooms,
- benchmarking,
- progress monitoring,
- tiered interventions,
- a focus on equal access to rigorous coursework and high expectations,
- career/college awareness,
- community engagement, and
- eighth-to-ninth grade transition programs.

Some of the common elements shared across numerous programs include attention to school climate in order to facilitate student engagement, rigorous coursework for all students, and the effective use of extended learning time during the school day such as the block schedule.

Specific dropout prevention programs that have strong research showing positive or potentially positive effects include *Check & Connect, Achievement for Latinos through Academic Success* (ALAS), and *Career Academies* (What Works Clearinghouse, 2006).

There is general consensus among researchers that strategies need to be more targeted to reach specific grade levels of at-risk populations, as identified by the key dropout indicators. There is also growing consensus that school level factors such as grades, retention, attendance, and classroom behavior and engagement are better predictors of dropout than fixed status indicators such as gender, race, and poverty, although background factors are indeed often associated with dropout, including being born male, economically disadvantaged students, African American, or Latino (Jerald, 2006; Rumberger, 2004). Allensworth and Easton's study, "What Matters for Staying On-Track and Graduating in Chicago Public Schools," shows how freshmen with weak academics entering high school who reported a positive ninth grade academic experience graduated at nearly twice the rate of incoming freshmen with strong academics who reported a negative ninth grade academic experience, revealing just how critical school-level factors are in determining who stays in school and who does not. There also seems to be great opportunity to link social and emotional learning to support students in succeeding in school despite significant adversity in their lives.

Schools interested in using the data on hand for optimal impact need an electronic data system that includes individual student-level data that can track students over time and also allow risk factors to be assessed (Jerald, 2006), and must be willing to share regularly updated data—and provide training in the use of that data—with dropout prevention team members, including teachers.

A lot still is not known about dropout prevention strategies and interventions that make a positive difference. However, interventions that have the capacity to be oriented around individual student needs, and that work in tandem with schoolwide interventions able to adjust around grade-level needs, hold promise as an effective combination for combating the nation's dropout problem.

INTRODUCTION

When students drop out of high school, the toll on the quality of their individual lives as well as on the prosperity and competitiveness of the communities where they live—and collectively across the nation—is significant.

About 1.3 million students did not graduate from United States high schools in 2004, costing more than $325 billion in lost wages, taxes, and productivity (Alliance for Excellent Education, 2007). The more than 12 million students who will drop out over the next decade will cost the nation about $3 trillion (Alliance for Excellent Education, 2007). Across the country, urban centers eager to draw businesses to their location are at a disadvantage if they cannot manage to provide a readily available skilled and educated workforce or a stable community unburdened by recurring cycles of poverty.

A recent study of Philadelphia high school students, conducted by Ruth Curran Neild and Robert Balfanz (2006), found that for every five students working toward a high school diploma, three teenagers had dropped out.

National statistics surrounding high school dropouts highlight the far-reaching extent of the problem:

- It is estimated that close to 30 percent of students who enter high school this year will not graduate in four years, while roughly half of all African American and Latino students entering high school will not graduate in four years (Greene & Winters, 2005).
- The health of a high school dropout suffers dramatically. An average 45-year-old high school dropout is in worse health than a 65-year-old high school graduate. High school dropouts have a life expectancy that is nearly a decade shorter than high school graduates (Gibbons, 2006).
- Because high school graduates are less likely to commit crimes, increasing the high school completion rate by just one percent for all men ages 20 to 60 would reduce costs in the criminal justice system by $1.4 billion a year (American Youth Policy Forum, 2006).
- Globally, the United States ranks 17th in high school graduation rates and 14th in college graduation rates among developed nations (Organization for Economic Co-Operation and Development, 2006). Concurrently, about 90 percent of the fastest growing jobs will require some post-secondary education (Alliance for Excellent Education, 2007).

These statistics reveal that there are important moral, social, and economic imperatives for resolving to turn around the dropout crisis. Understanding the magnitude of the dropout problem and the forces that impact the dropout rate is an important preliminary step to developing dropout prevention strategies.

WHO DROPS OUT WHEN

In the past, there have been numerous checklists that include characteristics of students with risk factors associated with dropping out, but this approach has yielded only about a 30 percent predictability rate (Gleason & Dynarski, 2002).

Until recently, there has been a dearth of research that revealed the high yield indicators for dropout. Key researchers in this area who have made recent important contributions to understanding which students are off the graduation track include Elaine Allensworth, John Easton, and Melissa Roderick of the Consortium on Chicago School Research

at the University of Chicago, as well as Ruth Curran Neild of the University of Pennsylvania, and Robert Balfanz and Nettie Legters of the Center for Social Organization of Schools at the Johns Hopkins University. These researchers have discovered that to identify who is most likely to drop out, schools need to identify students who

- receive poor grades in core subjects,
- possess low attendance rates,
- fail to be promoted to the next grade, and
- are disengaged in the classroom.

These are considered better predictors of dropout than fixed status indicators such as gender, race, and poverty, although background factors are indeed often associated with dropout, including being born male, economically disadvantaged, African American, or Latino (Jerald, 2006; Rumberger, 2004).

A Focus on Ninth Grade

Paying attention to the key predictors during important transition years, such as ninth grade, is crucial for targeting resources for dropout prevention. The ninth grade is often considered a critical make-it or break-it year when students get on- or off-track to succeed in high school. More students fail ninth grade than any other high school grade, and a disproportionate number of students who are held back in ninth grade subsequently drop out (Herlihy, 2007). According to Neild and Balfanz (2006), about two-thirds of the students who dropped out of school in Philadelphia in 2003-04 were in grade 10 or below.

The Dropout Gap

A disproportionate number of minority students leave high school before graduating. According to the study by Neild and Balfanz (2006), only about one-half of African American and Caucasian males finished high school in Philadelphia for the classes of 2000-03, while only 46 percent of Latino males graduated with a diploma within six years. The schools with the lowest student-retention power across the nation—a factor Balfanz labels the "promoting power"—have a minority enrollment of 90 percent or more. Schools with high percentages of low-income or minority students tend to have poor academic performance and high dropout rates, and schools with the most low-income students are often concentrated in urban communities (Finn, 2006).

PREDICTING DROPOUT

Because schools and districts can now predict early on which students are most likely to drop out, they can also intervene to prevent dropout. Research has found that some of the behaviors students exhibit that are predictive of dropout include academic failure and disengagement (Allensworth & Easton, 2005). According to a study conducted by Karl L. Alexander, a sociologist at the Johns Hopkins University in Baltimore, Md., the predictor that is most indicative of dropout is whether a student has repeated a grade in elementary or middle school (Viadero, 2006). Other research has noted that most future dropouts can be predicted as early as 6th grade by studying academic and engagement issues among these students in elementary and middle schools (Balfanz & Herzog, 2005).

Many studies show a consensus around the four key predictors of dropout. Table 4 provides a complete list of academic indicators. The following sections synthesize findings regarding these key predictors.

Failure to be Promoted to the Next Grade Level

According to another study, conducted by Karl Alexander, Doris Entwistle, and Carrie Horsey (1997), also of the Johns Hopkins University, 64 percent of students who had repeated a grade in elementary school and 63 percent of those who had been held back in middle school left school without a diploma. Additionally, Neild and Balfanz's (2006) study of Philadelphia students determined that more than half of the city's dropouts are not promoted past the ninth or 10th grade but are 17 years old or older when they drop out, and have already spent some years attempting to graduate.

Failure of Core Academic Courses in Secondary School

Numerous studies include failure in core academic courses as another predictor of dropout (Neild & Balfanz, 2006; Allensworth & Easton, 2005; Balfanz & Herzog, 2005). Allensworth and Easton (2005) determined that one key predictor of dropout for ninth grade is receiving more than one F (based on semester marks) in core academic subjects together with failing to be promoted to 10th grade. This predictor is 85 percent successful in determining who will not graduate on time. In both Chicago and Philadelphia, grades tended to be better predictors of dropout than test scores.

Excessive Absenteeism

Numerous studies point to absenteeism as a predictive factor regarding the probability that a student will eventually drop out (Neild & Balfanz, 2006; Allensworth & Easton, 2007). Because absenteeism is considered one of the strongest predictors of course failure (which in turn is associated with dropout), studies show that it is important for schools to monitor rates so that they can intervene quickly. For instance, of the eighth graders in Philadelphia who attended school less than 80 percent of the time, 78 percent eventually dropped out (Neild & Balfanz, 2006).

Allensworth and Easton (2007) have linked even moderately poor attendance in the freshman year with eventual dropout. They conclude that information on absences is available early in the school year and might be the most practical indicator for identifying students for early interventions:

> In Chicago Public Schools (CPS), about 15 percent of first-time freshmen have extremely high absence rates, missing a month or more of classes each semester. These students have largely disengaged from school—they remain enrolled but have marginal attendance—and they have less than a 10 percent chance of graduating. However, it is not just extremely low attendance that is problematic. Even moderate levels of absences are a cause for concern. Just one to two weeks of absence per semester, which is typical for CPS freshmen, are associated with a substantially reduced probability of graduating. In the 2000-01 cohort, only 63 percent of students who missed about one week (five to nine days) graduated in four years, compared to 87 percent of those who missed less than one week.

While attendance is key to predicting dropout, the research does not show consensus on what defines low attendance.

Other Signs of Disengagement

A lack of engagement with school is considered a precursor to dropout, and signs of disengagement perhaps provide the best window of opportunity to target resources for dropout prevention, particularly if students are not yet failing core coursework. Some studies include lack of attendance as an indication of disengagement, while others use classroom engagement scales and behavior marks—or a combination—when gathering data to assess engagement (Finn, 2006).

Students most often report school-related reasons for why they dropped out. Students leaving high school often cite a lack of motivation, boredom, an unchallenging atmosphere, and an overall lack of engagement in school as a reason to drop out (Bridgeland et al., 2006). Often, disengagement leads to academic failure (Finn, 1993).

LEADING FACTORS OF DROPOUTS BY GRADE WITH AN EMPHASIS ON LOW ACADEMIC ACHIEVEMENT

Key research in the field of dropout prevention has managed to assess individual grade levels for predictions of eventual dropout.

At-Risk Sixth Graders

A study conducted by Balfanz and Herzog (2005) in Philadelphia found that more than half of sixth graders with the following three criteria eventually left school:

- attended school less than 80 percent of the time,
- received a poor final grade from their teachers in behavior, and
- were failing either math or English.

The study found that in a given year, between 1,000 and 2,000 sixth graders in Philadelphia had these risk factors—with most typically exhibiting one or two risk factors. In 1996–97, about 3,500 6th graders possessed one or more of the above risk factors.

Balfanz and Herzog (2005) discovered that middle grades students who later dropped out sometimes exhibited problems with academic performance or engagement—but not both at the same time, suggesting that an off-track academic path and an off-track nonacademic track to dropout seemed to converge closer to high school. Attending to behavior challenges, engagement, and attendance with middle-grade students who are not failing coursework may be one key to reaching a group of students who may otherwise drop out later.

At-Risk Eighth Graders

One of the strongest predictors of dropout involves two eighth-grade factors: attending school less than 80 percent of the time (e.g., missing at least five weeks of school) and receiving a failing grade in math and/or English during eighth grade (Neild & Balfanz, 2006). Eighth graders provide some of the same indications as sixth graders when they are moving along the dropout path. Researchers have developed an approach to identifying future dropouts that has an even higher rate of accuracy. Neild and Balfanz (2006) found: "Of those 8th graders who attended school less than 80 percent of the time, 78 percent became high school dropouts. Of those 8th graders who failed mathematics and/or English, 77 percent dropped out of high school. Importantly, gender, race, age, and test scores did not have the strong predictive power of attendance and course failure."

At-Risk Ninth Graders

Findings from the Philadelphia study show that important indicators of at-risk ninth graders involved the following:

- attended less than 70 percent of the time,
- earned fewer than two credits, and/or
- were not promoted to 10th grade on time.

A ninth grader with just one of these characteristics had at least a 75 percent probability of dropping out of school. About one-half of the dropouts in Philadelphia public schools can be identified before they ever enter high school, and a full 80 percent who dropped out were either at-risk eighth graders or at-risk ninth graders. Being held back in ninth grade is considered the biggest risk factor for dropping out according to Neild and Balfanz, who base this conclusion on their work in Philadelphia.

In her groundbreaking research on early warning signs, Melissa Roderick (Consortium of Chicago School Research) noted that early dropouts (those who leave school in ninth or 10th grade) tend to have low grades in elementary school. They also

experience a steep decline in attendance and grades during the transitions to middle grades and high school. However, nearly one-third of Philadelphia dropouts exhibited no warning signs in eighth grade but had problems in ninth grade. Grouping ninth graders into interdisciplinary teams resulted in significantly lower dropout rates in Maryland (Kerr & Legters, 2004).

High-yield risk factors in ninth grade dropouts have been identified in both Chicago and Philadelphia and include the following (Jerald, 2007):

- Sixth graders with poor attendance (less than 80 percent), a failing mark for classroom behavior, a failing grade in math or a failing grade in English had only a 10 percent chance of graduating within four years of entering high school and only a 20 percent chance of graduating a year late (Balfanz & Herzog, 2005).
- Eighth graders with poor attendance (less than 80 percent), a failing grade in math, or a failing grade in English had less than a 25 percent chance of graduating within eight years of entering high school (Neild & Balfanz, 2006).
- Among entering freshmen who had exhibited no eighth-grade risk factors, those who had very poor ninth-grade attendance (less than 70 percent), earned fewer than two credits during ninth grade, or did not earn promotion to 10th grade had only a one-in-four chance of earning a diploma within eight years (Neild & Balfanz, 2006).
- Based on similar cohort studies, the Chicago Consortium on School Research combined two highly predictive ninth-grade risk factors to create an "On-Track Indicator" for high school freshmen. A student is considered on track at the end of ninth grade if he or she has accumulated enough course credits to earn promotion to 10th grade while receiving no more than one F (based on semester marks) in core academic subjects. The indicator is 85 percent successful in predicting which members of the freshmen class will not graduate on time and nearly as good at predicting who will not graduate within five years. "On-track" students are more than 3.5 times more likely to graduate from high school in four years than students who are "off-track" (Allensworth & Easton, 2005).

In terms of measurement, the on-track indicator criteria differ in two key ways. First, course failures are counted only for core courses, while credit accumulation includes all credit-bearing classes. Second, failures are counted by semester, while credit accumulation is measured in terms of full-year credits, with half credits given for each semester course. Thus, the on-track indicator combines two separate but related factors: number of credits earned, and number of F's in core subjects. According to Allensworth and Easton (2005), mid-semester grades can also provide important insight into whether students are on track.

Allensworth and Easton have recently released a study that includes freshman year overall Grade Point Averages (GPAs)—as well as freshman year absences—as key predictors that allow schools to know sooner and with greater accuracy than their 2005 On-Track Indicator who will drop out if targeted interventions and supports are not offered. The predictive ability of a variety of indicators as identified by the researchers is reflected in their table below:

Table 1. Accuracy of Forecasting High School Dropouts Based on Freshman Year Student Performance Indicators

Freshman Performance Indicator	Overall Correct Prediction	Percentage of Dropouts Who Can Be Identified (Predicting nongraduates)	Percentage of Graduates Who Can Be Identified (Predicting graduates)
On-track vs. off-track	80%	72%	85%
Absences for the year Fall-semester absences	77% 74%	59% 53%	90% 89%
GPA	80%	73%	85%
Semester course failures Fall semester failures	80% 76%	66% 55%	89% 91%

(Allensworth & Easton, 2007)

According to Allensworth and Easton's most recent findings, more than one-half of non-graduates can be identified by the end of the first semester by using either failure rates or absences:

> By the end of the first term, course grades and failure rates are slightly better predictors of graduation than attendance because they directly indicate whether students are making progress in their courses. These rates also provide more specific information to target programs for struggling students than the on-track indicator. GPA, in particular, provides information about who is likely to struggle in later years and is the best indicator for predicting nongraduates (Allensworth & Easton, 2007).

Later Years in High School
It is more difficult to predict who will drop out in the later grades and therefore more difficult to target them with supports (Neild & Balfanz, 2006). An effective system of credit recovery, second-chance schools, and alternative paths to graduation are important strategies to stem the dropout of students in 11th and 12th grade.

Low Performers Across Grades 8–12
Those lowest-performing readers in the eighth grade whose test scores demonstrate achievement in the lowest quartile are 3.5 times more likely to drop out than students in the next highest quartile of academic achievement, and they are 20 times more likely to drop out than top-performing students (Alliance for Excellent Education, 2007).

SOCIAL INDICATORS OF DROPOUT

Social indicators, such as behavior problems, are among the red flags that a student may be at risk for dropping out, especially when combined with other signs, such as repeating a grade and/or changing schools. Often, risk factors appear to be cumulative. Table 5 provides a complete list of social indicators.

Abused and Neglected Students
About 70 percent of the students who had a substantiated case of abuse or neglect during the high school years, who had a foster care placement, or who had given birth within four years of starting high school, dropped out in Philadelphia (Neild & Balfanz, 2006).

While it is evident that students will benefit from strong instructional programs, effective and high-quality teachers, and engaging and safe schools, many students who are failing to thrive in middle and high school need additional supports. The most at-risk students with multiple indicators for dropout are often located in the highest poverty areas in unstable home and community environments, and require more than academic, structural, and systemwide interventions. Often these students require tiered and even intensive supports (National High School Center, 2007). Additionally, extensive research suggests that parent involvement programs improve student academic achievement and enhance educational programs for youth; indeed, family involvement in learning has been identified as the single most important determinant of success for at-risk children and youth (Fruchter, Galletta, & White, 1992).

Behavior
Behavior marks given by middle school teachers in Philadelphia were much better than suspensions at predicting which sixth graders would eventually drop out (Balfanz & Herzog, 2005). Philadelphia teachers typically assign sixth graders behavior marks consisting of "excellent," "satisfactory," or "unsatisfactory," which are averaged at the end of the year to determine a final mark. Balfanz and Herzog (2005) discovered that sixth graders with poor behavior (earning an unsatisfactory final behavior mark) have a one in four chance of making it to the 12th grade on time. The researchers noted that student behavior, as well as attendance and effort, influence the likelihood that students will significantly improve their achievement levels during sixth through eighth grades.

Mobility

According to some studies, changing schools can be a challenge to high school completion, yet others have noted mobility can actually be beneficial to some students' chances of graduating, depending on when and why students change schools.

Russell Rumberger (2002), of the University of California at Santa Barbara, has found that there is strong evidence that mobility during high school, as well as during elementary school, poses risks to graduating. A study by Robert Haveman and Barbara Wolfe (1994) similarly concluded that residential mobility reduced the chances of high school graduation even after controlling for a variety of family background variables. Christopher Swanson and Barbara Schneider (1999) also discovered that those who change schools are at risk of graduating in some instances; for example, those changing schools between grades eight and 10 were significantly more likely than non-mobile students to leave school before 10th grade. However, they determined that those who change schools in earlier grades are less likely to drop out during the last two years of high school than even non-mobile students.

CURRENT STATE OF DROPOUT DATA

Many schools assign self-reported dropouts with withdrawal codes such as General Education Diploma (GED), for example. Most of these withdrawal codes in Philadelphia reveal that the students were over the compulsory school attendance age and were dropped from the rolls for nonattendance rather than voluntary withdrawal. However, because most dropouts do not report that they are leaving, the voluntary withdrawal code is underutilized (Neild & Balfanz, 2006).

EARLY WARNING DATA SYSTEMS

Currently, there is no ready menu of proven strategies and interventions to select from that are designed to lessen the flow of dropouts, but there is general consensus among researchers that strategies need to be more targeted to reach specific grade levels or at-risk populations, as identified by the key dropout indicators.

Building Early Warning Systems

The first step in a proactive approach to stemming dropout is to build an early warning system designed to use accurate data to help target an appropriate mix of interventions for groups and individual students. Such an electronic data system includes individual student-level data that can track students over time and also allow risk factors to be assessed (Jerald, 2006). Craig Jerald's 2006 paper, *Identifying Potential Dropouts: Key Lessons for Building an Early Warning Data System: A Dual Agenda of High Standards and High Graduation Rates,* outlines steps and considerations to take when building an early warning system.

Jerald lists uses of student- and school-level information generated by such a system, including

- risk factors by individual student,
- aggregate risk factors by school and type of school,
- rates of decline in academic achievement and engagement (as indicated by attendance and behavior),
- school-level outcomes (on track by grade, off-track recovery rates, and graduation rates), and
- systemwide analysis of student characteristics, risk factors, outcomes, and impact of interventions.

Additionally, Allensworth and Easton explain that each on-track indicator has different advantages; therefore, an effective monitoring system should be created to take advantage of each indicator at different points in the school year. Schools can start in the first quarter with monitoring and addressing absences, then address first-quarter failing

grades by offering immediate support. As semester grades are posted, the creation of individual dropout strategies would be called for. The end of the year would show who is at high risk for dropping out, and one-on-one interventions could then be intensified (Allensworth & Easton, 2007).

Developing successful approaches to intervention requires dependable and accessible data, training on how to use those data, and regular information about how interventions are impacting students both in terms of academic performance and high school completion. Schools, districts, and states need the data capacity to allow them to prioritize and calibrate interventions to meet the needs of students, schools, and districts, respectively.

BEST PRACTICES

Upon establishing an early warning system, the work of matching student needs with the appropriate supports and interventions commences. Once a school recognizes that institutional factors matter at least as much, and in some cases more, than individual factors, the school can undertake to change those areas in their control in order to exert more of a holding power and to use data to inform exactly how to go about making adjustments.

Some of the best practice approaches undertaken by higher performing high schools with relatively low dropout include the following:

School Climate

Schools successful in dealing with dropout address overall school climate in order to facilitate student engagement, focus on easing the transition into high school, provide rigorous and relevant curriculum, help ensure K-12 alignment and alignment with state standards, implement meaningful professional development, and prepare students for rigor in a way that does not bore them.

Rigor

As high schools work to keep students enrolled, they also are endeavoring to enhance academic rigor to prepare students to meet the challenges of an information-based economy. Raising high school academic rigor and keeping students in school need not be mutually exclusive. Numerous high schools facing significant challenges have managed to introduce a high level of rigor and also keep students in school (National High School Center, 2006). Research shows that some key best practices at these schools also include

- providing supports so that students stay on track to graduate;
- extending learning time;
- providing challenging learning opportunities, even in catch-up courses, so that students remain engaged;
- aligning performance standards to college and career readiness; and
- focusing on transitions from high school to college and careers as well as on transitions into high school (Quint, 2006).

Schools that offer fewer math courses below Algebra I reduced the odds of dropping out by 28 percent, and those that offer calculus reduced the odds by 55 percent (Lee & Burkham, 2000). High schools that offer a constrained curriculum in math have lower dropout rates (Lee & Burkham, 2000). Research indicates that a balance between relevance and rigor will result in even more students staying in school. Engaging and challenging catch-up courses for struggling ninth graders also reduce dropout rates (Jerald, 2006).

Effective Teachers

Highly qualified and effective teachers exert a strong influence on student success and, for this reason, remain a top priority for high schools. Ronald Ferguson (1991) noted that teacher expertise was the largest factor that explained the gap between African American and Caucasian student achievement (40 percent of the variation). Teachers who comprehend their subjects and understand strategies to reach all high school students are integral to keeping students in school. Low-performing students facing learning barriers stand to achieve at higher standards if they are taught by high quality teachers (Darling-Hammond & Youngs, 2002; Haycock, 1998).

It is important that at-risk students have access to effective teachers with a track record of success. A report from the National Partnership for Teaching in At-Risk Schools (2005) cites research indicating that if economically disadvantaged students are given successful, highly motivated, and experienced teachers, achievement gaps can be narrowed and even closed. However, for too many underperforming and at-risk schools, a large number of teachers are unprepared, inexperienced, or less qualified than their peers in more successful schools. Too often the less experienced and qualified teachers are assigned to the schools with the most challenges, including high dropout rates.

Extended Learning Time

While extended learning time is seen as key, research on activities outside the regular school day have shown mixed findings regarding impact on graduation, with supplemental approaches—such as sporadic homework help and irregular counseling—having virtually no impact on dropout prevention (Orfield, 2004). Individual interventions must be more intensive (National High School Center, 2007).

DROPOUT PREVENTION PROGRAMS

Currently only eight programs have enough research behind them to merit inclusion in the What Works Clearinghouse (WWC). Few programs have demonstrated positive (or potentially positive) effects. Those that do show positive or potentially positive effects include *Achievement for Latinos through Academic Success, Check & Connect,* and *Career Academies*.

Many of the more successful dropout-prevention programs assign an adult to work with a small number of students (Balfanz & Legters, 2006). The more high intensity interventions with accelerated instruction for catch-up purposes and significant counseling features are considered more effective than the occasional tutoring typical in a lot of schools (Agodini & Dynarski, 2004). Challenging students and supporting students go hand-in-hand, and even the most struggling students need to feel that they are being pushed to learn and that teachers expect them to master rigorous content (Agodini & Dynarski, 2004). Table 3 depicts some of the other key characteristics of research-based high school improvement programs with implications for dropout prevention.

Some Highlighted Features of Research-based Dropout Prevention Programs

Achievement for Latinos through Academic Success provides student-level supports and also builds bridges between homes and schools. The program employs counselors who provide a set of coordinated supports to students and parents, monitor students and report to parents about attendance and truancy on an as-needed daily basis, and express a personal interest in students through a variety of ways, including positive reinforcements and group bonding activities (Jerald, 2007). The counselors follow up with teachers to keep them informed about how students and parents decide to address problems, and counselors provide parents with direct instruction and modeling on how to participate in their child's schooling and manage adolescent behavior (Jerald, 2007).

betterhighschools.org

Table 2. WWC's Effectiveness Ratings for Dropout-Prevention Programs in Three Domains

WWC Intervention Reports provide all findings that "Meet Evidence Standards" or "Meet Evidence Standards with Reservations" for studies on a particular intervention. Intervention reports are created for those interventions that have at least one study that "Meets Evidence Standards" or "Meets Evidence Standards with Reservations."

Intervention	Staying in school	Progressing in school	Completing school
ALAS (Achievement for Latinos through Academic Success)	+?	+?	
Career Academies	+?	+?	?
Check & Connect	+	+?	?
Financial Incentives for Teen Parents to Stay in School	+?	?	?
High School Redirection	±	+?	?
Middle College High School	?		?
Project GRAD		?	?
Quantum Opportunities Program		?	?
Talent Development High Schools		+?	
Talent Search			+?
Twelve Together	+?	?	

Key

- + Positive effects: strong evidence of a positive effect with no overriding contrary evidence
- +? Potentially positive effects: evidence of a positive effect with no overriding contrary evidence
- ± Mixed effects: evidence of inconsistent effects
- ? No discernible effects: no affirmative evidence of effects
- −? Potentially negative effects: evidence of a negative effect with no overriding contrary evidence
- − Negative effects: strong evidence of a negative effect with no overriding contrary evidence

Source: The What Works Clearinghouse (http://www.whatworks.ed.gov/), 2006.

The research-based *Check & Connect* intervention provides trained monitors to small groups of students. The monitors closely follow tardiness, absenteeism, behavioral referrals, and academic performance and meet with individual students each week, staying in touch with students' family members about progress. The personalized attention often involves arranging for transportation and community services.

Check & Connect tracks attendance from period to period and is so informed about students' needs that program leaders know who has trouble waking up on time and who needs help negotiating alternatives to out-of-school suspensions (Jerald, 2007). Intensive interventions such as *Check and Connect* can cut dropouts by as much as half, but they are even more effective when implemented with schoolwide reforms (Jerald, 2007). Interventions that have the capacity to be oriented around individual student needs, and that work in tandem with schoolwide interventions able to adjust around grade-level needs, hold promise as an effective combination.

The *Coca-Cola Valued Youth Program* (VYP) was evaluated using a quasi-experimental design showing one percent dropout compared to 12 percent dropout in comparison groups. The key to this program is intensive tutoring that focuses on academic achievement as well as engaging students, and includes student tutors and cross-age tutoring groups (Fashola & Slavin, 1998; Intercultural Development Research Association, 2004).

As early as first grade, Philadelphia mandates 120 hours of instructional intervention for any student falling behind—which basically requires schools to develop individualized education plans for struggling students. Additionally, in many of Philadelphia's middle schools, students two years older than their fellow students receive instruction in core academic subjects in self-contained classrooms with only 15 students, as well as more individualized social services in after-school and extended-day learning settings (Jerald, 2007).

Interventions designed specifically for the ninth grade tend to show positive outcomes for struggling high school students. MDRC's research related to *Talent Development* determined that the following three supports need to be in place in ninth grade to help bolster positive outcomes regarding improved attendance, academic course credits earned, and rates of promotion to 10th grade (Kemple, Herlihy, & Smith, 2005):

- ninth-grade success academies: schools within a school, wherein groups of ninth graders share classrooms and teachers;
- block scheduling: a double dosing of catch-up courses in math and reading are offered, using the block schedule, so that ninth graders can then complete Freshman English and Algebra I in the second semester of freshman year; and
- specialized high school prep classes to smooth the transition to high school.

For instance, the Comprehensive School Reform Quality (CSRQ) Center's report on middle and high school comprehensive school reform models found evidence of moderate positive effects in reading and math for *Talent Development*, as well as attendance and grade promotion rates (Comprehensive School Reform Center, 2006).

The school improvement program, *America's Choice,* also offers similar catch-up courses called Ramp Up to Algebra I and Ramp Up to Literacy. According to the CSRQ Center's report, *America's Choice* demonstrates evidence of moderate positive effectiveness in reading and math (Comprehensive School Reform Center, 2006). Another intervention, *First Things First,* demonstrates the same moderately positive effects.

The *School Transitional Environmental Program* (STEP) assigns at-risk students to homerooms wherein homeroom teachers provide guidance to students as needed throughout the day. Using a quasi-experimental design, an evaluation of the program found that STEP participants were much less likely to dropout (American Youth Policy Forum, 1998).

For truly challenged school districts with a very high incidence of dropout, an array of second-chance options for off-track young adults is appropriate for many students. Close to 60 percent of dropouts do earn a high school credential within 12 years of starting high school (Jerald, 2006).

New York City has developed a "multiple paths to graduation" initiative that offers alternative learning options, particularly for older students, such as the *Young Adult Borough Centers* which offer day and evening classes (Jerald, 2007). The city also has transfer schools for students who are more than a year behind due to truancy and a *Learning to Work* program which offers a career development focus. In Boston, the school system is moving toward allowing high school students to earn credits but not apply grade levels to them in order to avoid the stigmatization of being older than their peers (Olson, 2006).

Another career-oriented program emphasizing school to work, *Career Academies,* features small learning communities in larger schools. *Career Academies* provides internships with local businesses and includes technical coursework as well as academic coursework. High-risk students were less likely to drop out than high-risk students in a control group (21 percent versus 32 percent) but did not have better long-term completion rates—in other words, students in *Career Academies* appear to have stayed longer in school than they might have otherwise, but they did not eventually earn a diploma at higher rates than the comparison groups (Kemple & Snipes, 2000). This evaluation used a rigorous research study involving random control assignment.

Some high schools are adapting strategies for general education students that were originally developed for special needs populations, such as *Response to Intervention* (RTI), where students are regularly assessed to determine their progress and the need for increasingly intensive academic and/or behavioral supports (National High School Center, 2007). The RTI approach allows for data-driven decisions regarding student performance, engagement, and impact of interventions under way and allows for quickly refining a student's dropout prevention plan if needed.

Some researchers suggest that in the most challenged 15 percent of high schools (wherein 50 percent of the country's dropouts are generated), it is better to close down and start over than refine the current school and target resources to the most challenged students (Balfanz & Legters, 2006).

Additional Supports: Wrap-around Services

Providing social services as early as possible can make a positive difference in the lives of students struggling to complete high school. According to the Neild and Balfanz, students involved with social service agencies, such as delinquent placement facilities or foster care, are often at elevated risk of dropping out. Additionally, 70 percent of young women who gave birth within four years of starting high school also left before graduating. It is therefore important that high schools and relevant social service agencies work together to reach and connect with at-risk youth. Cross-agency coordination is critical in bringing all available resources to bear on a student's chances of success.

There are a myriad of available funding streams, legislation, and resources a community can and should align to meet the needs of high school-aged youth, in addition to education funds including (National Center on Secondary Education and Transition, 2004):

- **Health and Human Services:** Governmental programs and services under the Department of Health and Human Services can provide resources regarding Medicare, Healthy and Ready-to-Work programs, mental health, and protection and advocacy. Other resources can be found within developmental disability councils.
- **Workforce Development:** Resources under this agency focus on training, employment programs, and service options for youth, including youth with disabilities. Examples of workforce development resources include such model programs as Job Corps and the opportunities available under the Workforce Investment Act. Other opportunities include those provided by employers, business associations, and labor unions.
- **Social Security:** Local Social Security Administration offices offer programs and services for youth receiving Social Security Income (SSI) or Social Security Disability Insurance (SSDI). These programs also offer resources that can be accessed and aligned to meet the transition needs of youth with disabilities.
- **Vocational Rehabilitation Services:** These agencies offer an array of services, including career guidance and counseling, vocational evaluation, vocational training, job placement and follow-up services.

CONCLUSION

More research is needed on dropout prevention programs and strategies. The Graduation Promise Act, recently referred to the Senate Committee on Health, Education, Labor and Pensions, would provide more money for research on dropout prevention programs (Steinberg, Johnson, & Pennington, 2006). The bill calls for $2.5 billion to help prevent dropouts. The reauthorization of No Child Left Behind (NCLB) also provides opportunities for extending supports for dropout prevention.

Support for proven dropout prevention strategies is required among more policymakers at every level to see significant improvements in the dropout and graduation rates in the United States. Some states are already taking steps to combat the problem. Indiana has enacted the Dropout Prevention Act of 2006, which requires schools and districts to report the number of ninth graders without enough credits to go on to 10th grade (and are therefore off the graduation track) and to provide assistance and a course-recovery plan to those students (Jerald, 2007).

As schools adopt and adapt strategies for dropout prevention, districts need to provide parallel initiatives that include turnaround plans for low-performing schools that are responsive to data-based needs assessments with success indicators for determining progress.

Table 3. Key Characteristics of Research-based High School Improvement Programs

	Attendance and behavior monitors	Focus on achievement in core courses	Tutoring as an academic support	Counseling/Mentoring	Small learning communities for greater personalization/School within a school	Catch-up courses	Homeroom, teams or looping	Ninth Grade Academies or transition programs	Tiered approach to providing behavioral and/or academic support from universal to most intensive	Focus on positive effects for diverse students	Focus on positive effects for students with disabilities	Career/College awareness	Family engagement	Community engagement	Ensuring partnerships between high schools and feeder middle schools
Academic Literacy Program									✔	✔					
Achievement for Latinos Through Academic Success (ALAS)	✔			✔									✔	✔	
America's Choice (including Ramp Up to Algebra I and Ramp Up to Literacy)		✔	✔			✔								✔	
Career Academies					✔			✔				✔		✔	
Check and Connect	✔		✔	✔							✔			✔	
Coca-Cola Valued Youth Program (VYP)	✔		✔												
First Things First		✔[1]		✔	✔								✔		
Interpersonal Relations/ Personal Growth Class	✔		✔	✔											
Learning to Work program (NYC schools)												✔			
Lifelong Options Program (LOP)												✔			
Middle College High Schools					✔		✔					✔		✔	
Ninth Grade Dropout Prevention Program (NGP)			✔		✔		✔						✔	✔	
Ninth Grade Success Academies (part of Talent Development)								✔							

[1] This model received a "moderate" rating for evidence of positive effects in reading and/or math from the CSRQ Center's report, *CSRQ Center Report on Middle and High School Comprehensive School Reform Models* (2006).

Table 3. Key Characteristics of Research-based High School Improvement Programs (continued)

	Attendance and behavior monitors	Focus on achievement in core courses	Tutoring as an academic support	Counseling/Mentoring	Small learning communities for greater personalization/School within a school	Catch-up courses	Homeroom, teams or looping	Ninth Grade Academies or transition programs	Tiered approach to providing behavioral and/or academic support from universal to most intensive	Focus on positive effects for diverse students	Focus on positive effects for students with disabilities	Career/College awareness	Family engagement	Community engagement	Ensuring partnerships between high schools and feeder middle schools
Positive Behavioral Interventions and Supports (PBIS)	✔								✔		✔				
Project COFFEE	✔			✔	✔							✔			
Project GRAD															✔
Quantum Opportunities Program (QOP)			✔											✔	
Rehabilitation, Empowerment, Natural supports, Education, and Work (RENEW)									✔			✔			
RTI									✔						
School Development Program		✔[2]	✔												
School Transitional Environmental Program (STEP)							✔	✔		✔					
Strategic Instruction Model									✔						
Support Center for Adolescent Mothers (Family Growth Center)													✔	✔	
Talent Development High School	✔[3]	✔	✔		✔	✔							✔		
Teen Outreach Program (TOP)	✔													✔	
Twelve Together			✔	✔								✔			

[2] This model received a "moderate" rating for boosting student achievement from the CSRQ Center's report, *CSRQ Center Report on Middle and High School Comprehensive School Reform Models* (2006).

[3] This model received a "moderate" rating for evidence of positive effects in reading and/or math from the CSRQ Center's report, *CSRQ Center Report on Middle and High School Comprehensive School Reform Models* (2006).

Table 4. Academic Indicators of High School Dropouts		
Academic Indicator	**Notes on Indicators**	**Studies**
Low academic achievement	**Failed Core Academic Courses:** • Sixth-grade predictor: failing math or English. According to the study authors, these students have no more than a 10 percent chance of graduating on time or a 20 percent chance of graduating one year late (Balfanz & Herzog, 2005).[4] • Eighth-grade predictor: of those who failed math and/or English, 77 percent dropped out (Neild & Balfanz, 2006).[5] • Ninth-grade predictor: receiving more than one F (based on semester marks) in core academic subjects together with failing to be promoted to 10th grade is 85 percent successful in determining who will not graduate on time (Allensworth & Easton, 2005). **Credits Earned:** • Ninth-grade predictor of dropout cites earned fewer than two credits during ninth grade; 10th grade (earned fewer than five credits during 10th); 11th grade (earned fewer than five credits during 11th); 12th grade (earned fewer than three credits during 12th grade) (Neild & Balfanz, 2006). • Credit accumulation in freshman year is highly predictive of four- and six-year graduation outcomes. For example, 84 percent of freshman earning 12 or more credits are on track to graduate in four years, while 10 percent of students earning two credits are on track (Parthenon Group, 2005). **Failing Grades:** • Sixth-grade predictor: more than half of sixth graders who receive a poor final grade from their teachers in behavior eventually leave school (Balfanz & Herzog, 2005). • Eighth-grade predictors: receiving a failing grade in math and/or English coupled with missing school more than 80 percent of the time (Neild & Balfanz, 2006).[6] • Classroom grades were found to more successfully predict which sixth graders would someday drop out of Philadelphia schools than standardized test scores did (Balfanz & Herzog, 2005).	Neild & Balfanz, 2006; Jerald, 2006; Allensworth & Easton, 2005; Parthenon Group, 2005; Balfanz & Herzog, 2005; Rumberger, 2004; Lee & Burkham, 2000

Note: Across the research, the top three high yield indicators appeared to be: failing core academic courses in secondary school, failure to be promoted to next grade level, and low attendance.

[4] This statistic, when paired with one or two other indicators—attend school less than 80 percent of the time, and receive a poor final grade from their teachers in behavior—strongly predicts which students will eventually leave school.

[5] When failing math and/or English in eighth grade was coupled with missing school more than 80 percent of the time, it provided a very strong predictor of dropout, resulting in at least a 75 percent probability that a student would drop out (Neild & Balfanz, 2006).

[6] When failing math and/or English in eighth grade was coupled with missing school more than 80 percent of the time, it provided a very strong predictor of dropout, resulting in at least a 75 percent probability that a student would drop out (Neild & Balfanz, 2006).

Table 4. Academic Indicators of High School Dropouts (continued)		
Academic Indicator	**Notes on Indicators**	**Studies**
	Test Scores: • Neild & Balfanz (2006) include eighth grade in predictor and notes for 10th grade on-time students, indicator of dropout is eighth grade reading scores at the second grade level or below. Also notes that students who drop out as ninth or 10th graders had equivalent of fifth grade-level scores or below on SAT-9 reading and/or math tests while in eighth grade. **Proficiency:** • Reading Proficiency: Parthenon Group's methodology/calculation shows school proportion of each of five categories of eighth-grade ELA performance (L1, LL2, HL2, L3, L4) as statistically significant in predicting graduation rate at a school (Parthenon Group, 2005). • Math Proficiency: Parthenon Group's methodology/calculation shows school proportion of each of five categories of eighth grade ELA performance (L1, LL2, HL2, L3, L4) as statistically significant in predicting graduation rate at a school (Parthenon Group, 2005). • Math Proficiency: Lee & Burkham (2000) found schools offering fewer math courses below level of Algebra I reduced odds of dropout by 28 percent; those offering Calculus reduced odds by 55 percent.	
Failing to be promoted/overage	• Includes eighth grade in predictor; as a ninth grade predictor if not promoted to 10th grade on time (Neild & Balfanz, 2006). • Overage and undercredited (OA-UC) students in New York City are at least two years off-track relative to expected age and credit accumulation toward earning a diploma. Eighty-four percent of students who are 16 years old with fewer than eight credits end up leaving the system (this examines the period June 2001-2005) (Parthenon Group, 2005). • Sixty-four percent of students who had repeated a grade in elementary school and 63 percent of those who had been held back in middle school left school without a diploma. According to Alexander et al. (2003), being held back trumps all for dropout indicators.	Neild & Balfanz, 2006; Parthenon Group, 2005; Rumberger, 2004; Alexander et al., 2003
Absenteeism (truancy, attending school less frequently, etc.)	• Sixth grade predictor: More than half of sixth graders who attend school less than 80 percent of the time will eventually drop out (Balfanz & Herzog, 2005). • Includes eighth grade in predictor (attends less than 80 percent of the time) and ninth grade (attends less than 70 percent); 10th grade (attends less than 80 percent); 11th grade (attends less than 60 percent); 12th grade (attends less than 30 percent) (Neild & Balfanz, 2006). • Of those eighth graders who attended less than 80 percent of the time, 78 percent dropped out (Neild & Balfanz, 2006).	Jerald, 2006; Neild & Balfanz, 2006; Allensworth & Easton, 2005; Balfanz & Herzog, 2005; Newmann et al., 1992; Finn, 1989; Wehlage et al., 1989

Table 4. Academic Indicators of High School Dropouts (continued)		
Academic Indicator	**Notes on Indicators**	**Studies**
Transition to ninth grade aggravates academic problems	• Transition into high school is marked by increased disengagement and declining motivation, particularly for low-performing students (National Research Council, 2004).	Neild & Balfanz, 2006; Parthenon Group, 2005; National Research Council, 2004; Legters et al., 2002; Roderick & Camburn, 1999
Student progression through high school	• Fifty-seven percent of students in NYC who fail to graduate in four years are retained in their freshman year, and 85 percent are retained the first two years of high school (Parthenon Group, 2005).	Parthenon Group, 2005
Failure to meet school's designated graduation requirements	• For a four-year graduation track, in terms of those students earning 0–11 credits, about 70 percent drop out, while about 25 percent do not pass any Regents exams (for NYC). For those students earning 33 or more credits, the likelihood of dropping out is decreased—less than five percent are shown as dropping out, while most go on to earn four or more Regents (data from Class of 2005 Cohort) (Parthenon Group, 2005).	Parthenon Group, 2005
English Language Learners (ELLs)	• For NYC (June 2005) 19 percent of OA-UC students enter high school with overage and literacy challenges. Fifty-two percent of OA-UC students enter high school "on-age" but with literacy challenges. Parthenon Group's "ELL Proportion" indicator is the percentage of students in 9th grade who are ELL (Parthenon Group, 2005).	Parthenon Group, 2005
Special education	• Methodology/calculation shows percentage of students in ninth grade who are special education students (Parthenon Group, 2005).	Parthenon Group, 2005
Student–teacher ratio	• Calculates as ratio of high school teachers to high school students (Parthenon Group, 2005).	Jerald, 2006; Parthenon Group, 2005
Proportion of classes taught by highly qualified teachers	• Methodology/calculation lists as percentage of math and English classes (separate variables) taught by teachers defined as "highly qualified" in the subject by the state of New York (Parthenon Group, 2005).	Parthenon Group, 2005
Class size	• Jerald notes that several studies of high schools with smaller enrollments exhibit lower dropout rates (Jerald, 2006).	Jerald, 2006; Parthenon Group, 2005

Table 4. Academic Indicators of High School Dropouts (continued)		
Academic Indicator	**Notes on Indicators**	**Studies**
Discipline problems and at-risk behaviors (includes poor classroom behavior or engagement; bad relationships with teachers and peers; suspensions, etc.)	• Students with poor prior achievement and behavior are more likely to fail during transition years (Jerald, 2006). • In the Finn study, status risk students who were disengaged (defined in the study as classroom attendance, coming to class on time, working hard in class, completing assignments, engaging in extracurriculars, etc.) were less likely to enter into or persist in a post-secondary program of study (Finn, 2006). • More than half of sixth graders with the following three criteria eventually left school: attend school less than 80 percent of the time; receive a poor final grade from their teachers in behavior; and fail either math or English (Balfanz & Herzog, 2005).	Jerald, 2006; Finn, 2006; Balfanz & Herzog, 2005

*Neild and Balfanz's study looks at data from the Class of 2000 over time.

Table 5. Social Indicators of High School Dropouts		
Social Indicator	**Notes on Indicators**	**Studies**
Pregnancy	• Students who gave birth within four years of starting high school represent 32.8 percent of dropouts and 18.7 percent of all students enrolled in school. Those who gave birth within five years represent 41.4 percent of dropouts and 25.5 percent of all students enrolled (Neild & Balfanz, 2006).	Neild & Balfanz, 2006
Juvenile justice placement (all students)	• Represents 14.4 percent of dropouts and 7.2 percent of all students in study (Neild & Balfanz, 2006).	Neild & Balfanz, 2006
Juvenile justice placement (males only)	• Represents 22.6 percent of all dropouts; 12.8 percent of all students enrolled in school in study (Neild & Balfanz, 2006).	Neild & Balfanz, 2006
Substantiated case of abuse or neglect	• Represents 2.8 percent of all dropouts and 1.8 percent of all students enrolled in school in study (Neild & Balfanz, 2006).	Neild & Balfanz, 2006
Foster care placement	• Represents 7.4 percent of all dropouts and 4.5 percent of all students enrolled in school in study (Neild & Balfanz, 2006).	Neild & Balfanz, 2006
Single parent and/or unsupportive homes	• This may include students with mothers/fathers who have dropped out of high school, have parents who provide low support for learning, etc. (Jerald, 2006).	Jerald, 2006
Adult responsibilities	• Students with adult responsibilities, such as becoming a parent, getting married, and holding a job, are more likely to leave school without a diploma (Jerald, 2006).	Jerald, 2006; McNeal, 1997
Race/ethnicity (e.g., Caucasian, African American, Asian American, Latino, other)	• There are 14 percent more African Americans and Latinos in the OA-UC populations than Caucasian and Asian (Parthenon Group, 2005).	Jerald, 2006; Parthenon Group, 2005
Gender (male vs. female, with males generally more likely to drop out)	• Includes eighth grade in predictor (Neild & Balfanz, 2006). • There are 11 percent more males in the OA-UC population than females. They study also notes that the proportion of females in student population for each school in study is statistically significant in predicting graduation rate at a school (Neild & Balfanz, 2006).	Jerald, 2006; Neild & Balfanz, 2006; Parthenon Group, 2005

Table 5. Social Indicators of High School Dropouts (continued)		
Academic Indicator	**Notes on Indicators**	**Studies**
Socioeconomic status/Free or reduced price lunch	• Forty percent of eighth grade students scored "at or above basic" in mathematics in 2000, compared to 76 percent of non-free lunch students. The percentages of students "at or above proficient" were 10 percent and 35 percent, respectively (Braswell et al., 2001). • The 2002 NAEP reading assessment reported that 60 percent of free-lunch eighth-grade students scored "at or above basic," compared to 84 percent of non-free lunch students. The percentages of students "at or above proficient" were 17 percent and 40 percent, respectively (Grigg et al., 2003). • The 2002 NAEP writing assessment reported that 74 percent of free-lunch eighth-grade students scored "at or above basic," compared to 91 percent of non-free lunch students. The percentages of students "at or above proficient" were 16 percent and 39 percent, respectively (Persky, Daane, & Jin, 2003).	Jerald, 2006; Finn, 2006; Grigg et al., 2003; Persky, Daane, & Jin, 2003; Braswell et al., 2001
Mobility (e.g., number of schools enrolled)	• According to Russell Rumberger of the University of California, Santa Barbara, students who move twice during their high school years are twice as likely not to graduate as students with consistent enrollment (2005).	Jerald, 2006; Rumberger, 2005

*Neild & Balfanz's study looks at data from the Class of 2000 over time.

DROPOUT INDICATOR REFERENCES

Agodini, R., & Dynarski, M. (2004). Are experiments the only option? A look at dropout prevention programs. *The Review of Economics and Statistics 86*(1), 180-194.

Alexander, K. L., Entwistle, D. R., & Horsey, C. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education 70,* 87-107.

Allensworth, E., & Easton, J. Q. (2005). *The On-track indicator as a predictor of high school graduation.* Chicago: Consortium on Chicago School Research.

Allensworth, E., & Easton, J. Q. (2007). *What matters for staying on-track and graduating in Chicago Public High Schools: A close look at course grades, failures and attendance in the freshman year.* Chicago: Consortium on Chicago School Research.

Alliance for Excellent Education. (2007). *The crisis in American high schools.* Washington, DC: Author. Retrieved April 20, 2007, from http://www.all4ed.org/whats_at_stake/CrisisInHighSchools.pdf

American Youth Policy Forum. (1998). *Transitional environment (STEP) in some things do make a difference for youth.* Retrieved May 21, 2007, from http://aypf.org/publications/compendium

American Youth Policy Forum. (2006). *Every nine seconds in America a student becomes a dropout: The dropout problem in numbers.* Washington, DC: Author. Retrieved April 20, 2007, from http://www.aypf.org/publications/WhateverItTakes/WIT_nineseconds.pdf

Balfanz, R., & Herzog, L. (2005, March). *Keeping middle grades students on track to graduation: Initial analysis and implications.* Presentation given at the second Regional Middle Grades Symposium, Philadelphia, PA.

Balfanz, R., & Legters, N. (2006). Closing "dropout factories": The graduation-rate crisis we know, and what can be done about it. *Education Week 25*(42), 42-43.

Braswell, J. S., Lutkus, A. D., Grigg, W. S., Santapau, S. L., Tay-Lim, B., & Johnson, M. (2001). *The nation's report card: Mathematics 2000* (NCES No. 2001-517). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Bridgeland, J., Dululio, J. J., & Morison, K. B. (2006). *The silent epidemic: Perspectives of high school dropouts.* Washington, DC: Civic Enterprises.

Cobb, B., Sample, P., Alwell, M., & Johns, N. (2005). *The effects of cognitive-behavioral interventions on dropout for youth with disabilities.* Clemson, SC: National Dropout Prevention Center for Students with Disabilities.

Comprehensive School Reform Quality Center. (2006). *CSRQ Center report on middle and high school comprehensive school reform models.* Washington, DC: American Institutes for Research.

Croninger, R. G., & Lee, V. E. (2001). Social capital and dropping out of high school: Benefits to at-risk students of teachers' support and guidance. *Teachers College Record 103,* 548-581.

Darling-Hammond, L., & Youngs, P. (2002). Defining 'Highly Qualified Teachers': What does scientifically-based research actually tell us? *Educational Researcher 31*:9.

Education Week. (2006, June 22). *Diplomas count: An essential guide to graduation policy and rates.* Bethesda, MD: Author. Retrieved May 8, 2007, from http://www.edweek.org/ew/toc/2006/06/22/index.html

Epstein, J. L. (1995). School/family/community partnerships: Caring for the children we share. *Phi Delta Kappan 76*:9, 701-712.

Fashola, O. S., & Slavin, R. E. (1998). Effective dropout prevention and college attendance programs for students placed at risk. *Journal of Education for Students Placed at Risk 3*(2), 169 83.

Ferguson, R. (1991, Summer). Paying for public education: New evidence on how and why money matters. *Harvard Journal on Legislation 28*:2.

Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research 59,* 117-142.

Finn, J. D. (1993). *School engagement and students at risk* (NCES 93-470). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Finn, J. D. (2006). *The adult lives of at-risk students: The roles of attainment and engagement in high school. Statistical analysis report.* U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Fruchter, N., Galletta, A., & White, J. L. (1992). *New directions in parent involvement.* New York: Academy for Educational Development.

Gibbons, G., (Ed.). (2006). *State of the states 2006.* Washington, DC: Stateline.org. Retrieved May 21, 2007, from http://www.pewtrusts.com/pdf/State_of_States_Report_2006.pdf

Gleason, P. & Dynarski, M. (2002). Do we know whom to serve? Issues in using risk factors to identify dropouts. *Journal of Education for Students Placed at Risk 7*(1), 25-41.

Greene, J. P., & Winters, M. A. (2005). *The effect of residential school choice on public high school graduation rates. Education working paper No. 9.* New York: Manhattan Institute for Policy Research.

Grigg, W. S., Daane, M. C., Jin, Y. & Campbell, J. R. (2003). *The nation's report card: Reading 2002* (NCES No. 2003-521). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Haveman, R. H., & Wolfe, B. L. (1994). *Succeeding generations: On the effects of investments in children.* New York: Russell Sage Foundation.

Haycock, K. (1998, Summer). "Good Teaching Matters...A lot." *Thinking K-16 3*:2.

Herlihy, C. (2007). *State and district-level supports for successful transition into high school.* Washington, DC: National High School Center. Retrieved May 21, 2007, from http://www.betterhighschools.org/docs/NHSC_PolicyBrief_TransitionsIntoHighSchool.pdf

Intercultural Development Research Association. (2004). *Coca-Cola valued youth program implementation booklet.* Second edition. San Antonio, TX: Author.

Jerald, C. (2006). *Identifying potential dropouts: Key lessons for building an early warning data system.* Washington, DC: Achieve, Inc.

Jerald, C. (2007). *Keeping kids in school: What research says about preventing dropouts.* Washington, DC: Center for Public Education.

Kemple, J. J., Herlihy, C., & Smith, T. (2005). *Making progress toward graduation: Evidence from the Talent Development High School model.* New York: MDRC.

Kemple, J. J., & Snipes, J. C. (2000). *Career Academies: Impacts on students' engagement and performance in high school.* New York: MDRC.

Kerr, K. A., & Legters, N. E. (2004). Preventing dropout: Use and impact of organizational reforms designed to ease the transition to high school. In Orfield, G. (Ed.), *Dropouts in America: Confronting the graduation rate crisis* (pp. 221-242). Cambridge, MA: Harvard Education Press.

Laird, J., DeBell, M., & Chapman, C. (2006, November). *Dropout rates in the United States: 2004.* U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Lee, V. E., & Burkham, D. T. (2000). *Dropping out of high school: The role of school organization and structure.* Paper presented for the conference Dropouts in America: How Severe Is the Problem? What Do We Know About Intervention and Prevention? at Harvard Graduate School of Education, Cambridge, MA, January 13, 2001.

Legters, N. E., Balfanz, R., Jordan, W. J., & McPartland, J. M. (2002). *Comprehensive reform for urban high schools: A talent development approach.* New York: Teachers College Press.

McNeal, R., Jr. (1997). Are students being pulled out of high school? The effect of adolescent employment on dropping out. *Sociology of Education 70,* 206-220.

National Center for Education Statistics. (2006). *The averaged freshman graduation rate for public high schools from the common core of data: School years 2002-03 and 2003-04* (NCES 2006-606). U.S. Department of Education, National Center for Education Statistics. Washington, DC.

National Center on Secondary Education and Transition. (2004). *Aligning school and community resources: Frequently asked questions.* Retrieved May 21, 2007, from http://www.ncset.org/topics/resources/faqs.asp

National High School Center. (2006). *Report on key practices and policies of consistently higher performing high schools.* Washington, DC: Author. Retrieved May 21, 2007 from http://www.betterhighschools.org/docs/ReportOfKeyPracticesandPolicies_10-31-06.pdf

National High School Center. (2007). *Meeting the needs of significantly struggling learners in high schools: A look at the Response-to-Intervention approach.* Washington, DC: Author. Retrieved August 27, 2007, from http://www.betterhighschools.org/docs/NHSC_RTIBrief_08-02-07.pdf

National Partnership for Teaching in At-Risk Schools. (2005). *Qualified teachers for at-risk schools: A national imperative.* Washington, DC: Author. Retrieved October 10, 2007, from http://www.ncctq.org/publications/partnership.pdf

National Research Council. (2004). *Engaging schools: Fostering high school students' motivation to learn.* Washington, DC: National Academies Press.

National Youth Employment Coalition. (2007). *Expand high quality alternatives and ensure funding follows the youth.* Washington, DC: Author. Retrieved May 25, 2007 from http://www.clasp.org/CampaignForYouth/PolicyBrief/ExpandHighQualityAlternatives.htm

Neild, R. C., & Balfanz, R. (2006). *Unfulfilled promise: The dimensions and characteristic's of Philadelphia's dropout crisis, 2000-2005.* Baltimore: Center for Social Organization of Schools, Johns Hopkins University.

Newmann, F. M., Wehlage, G. G., & Lamborn, S. D. (1992). The significance and sources of student engagement. In F. M. Newman (Ed.), *Student engagement and achievement in secondary schools* (pp.11-39). New York: Teachers College Press.

Orfield, G. (Ed.). (2004). *Dropouts in America: Confronting the graduation rate crisis.* Cambridge, MA: Harvard Education Press.

Organisation for Economic Co-Operation and Development. (2006). *Education at a glance.* Paris: Author.

Parthenon Group. (2005). *NYC Secondary Reform Selected Analysis.* New York: New York City Department of Education.

Persky, H. R., Daane, M. C., & Jin, Y. (2003). *The nation's report card: Writing 2002* (NCES No. 2003-529). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Philadelphia Youth Transitions Collaborative. (2006). *Turning it around: A collective effort to understand and resolve Philadelphia's dropout crisis.* Philadelphia: The William Penn Foundation. Retrieved August 27, 2007, from http://www.projectuturn.net/downloads/pdf/Turning_it_around_Project_U-Turn.pdf

Quint, J. (2006). *Meeting five critical challenges of high school reform: Lessons from research on three reform models.* New York: MDRC.

Reimer, M., & Smink, J. (2005). *Information about the school dropout issue: Selected facts & statistics.* Clemson, SC: National Dropout Prevention Center/Network.

Roderick, M. (1993). *The path to dropping out: Evidence for intervention.* Westport, CT: Auburn House.

Rumberger, R. (2002, June). Student mobility and academic achievement. *ERIC Digest* [EDO-PS-02-1]. Champaign, IL: Clearinghouse on Elementary and Early Childhood Education.

Rumberger, R. W. (2004). Why students drop out of school. In Orfield, G. (Ed.), *Dropouts in America: Confronting the graduation rate crisis* (pp. 131-156). Cambridge, MA: Harvard Education Press.

Steinberg, A., Johnson, C., & Pennington, H. (2006, November). *Addressing America's dropout challenge: State efforts to boost graduation rates require federal support.* Boston: Jobs for the Future.

Swanson, C. (2004). *High school graduation, completion, and dropout (GCD) indicators.* Washington, DC: Urban Institute.

Swanson, C. B., & Schneider, B. (1999, January). Students on the move: Residential and educational mobility in America's schools. *Sociology of Education 72*: 54-67.

Viadero, D. (2006, June 22). Signs of Early Exit for Dropouts Abound. *Education Week 25*(41S), 20.

Wehlage, G. G., Rutter, R. A., Smith, G. A., Lesko, N., & Fernandez, R. R. (1989). *Reducing the risk: Schools as communities of support.* Philadelphia: Falmer Press.

What Works Clearinghouse: http://www.whatworks.ed.gov/