IES PRACTICE GUIDE

Dropout Prevention

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The goal of this practice guide is to formulate specific and coherent evidence-based recommendations for use by educators addressing the challenge of reducing dropping out, a challenge that lacks developed or evaluated packaged approaches. The guide provides practical, clear information on critical topics related to dropout prevention and is based on the best available evidence as judged by the review panel. Recommendations presented in this guide should not be construed to imply that no further research is warranted on the effectiveness of particular strategies for dropout prevention.

IES PRACTICE GUIDE

Dropout Prevention

September 2008

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Dropout Prevention

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Introduction

This guide is intended to be useful to educators in high schools and middle schools, to superintendents and school boards, and to state policymakers in planning and executing dropout prevention strategies. The target audience includes school administrators as well as district-level administrators. This guide seeks to help them develop practice and policy alternatives for implementation. The guide includes specific recommendations and indicates the quality of the evidence that supports these recommendations. In addition, we have provided a description of some ways each recommendation could be carried out. Our examples should not be construed as the best or most effective ways to carry out each recommendation. Rather, the examples illustrate practices that were noted by previously implemented dropout prevention programs as having had an impact on staying in school, progressing in school, or completing school. Readers need to note that the specific ways in which the practices were implemented varied widely based on each school's context.

We, the authors, are a small group with expertise in various dimensions of this topic. Several of us are also experts in research methodology. The evidence we considered in developing this document ranges from experimental evaluations of dropout prevention programs to expert analyses of dropout prevention practices. For questions about what works best, high-quality experimental and quasi-experimental studies—such as those meeting the criteria of the What Works Clearinghouse (http://www.whatworks.ed.gov)—have a privileged position. In all cases, we pay particular attention to patterns of findings that are replicated across studies.

The process for deriving the recommendations began by collecting and examining research studies that have evaluated the impacts of dropout prevention programs. This review relied heavily, but not exclusively, on the existing reviews of dropout prevention programs that meet the evidence standards of the What Works Clearinghouse (WWC).

Dropout prevention interventions almost always include multiple components. This bundling of components presents challenges when reviewing levels of evidence for each recommendation because evidence of the impact of specific intervention components on dropping out cannot formally be attributed to one component of an intervention. Identification of key components of each intervention therefore necessarily relied, to a significant degree, on the panel's expert judgment.

Following the identification of key components of individual interventions, the interventions and key components were placed in a working matrix that facilitated the identification of features that were common to multiple interventions and therefore logical candidates as generally successful practices.

The panel determined the level of evidence for each recommendation by considering the effects of the intervention as determined by the WWC (table 1), the intensity of each component toward the impacts found in the evaluation, and the number of evaluations conducted for interventions that included the component.

Strong refers to consistent and generalizable evidence that a dropout prevention programs causes better outcomes.[1]

Moderate refers either to evidence from studies that allow strong causal conclusions but cannot be generalized with assurance to the population on which a recommendation is focused (perhaps because the

1. Following WWC guidelines, we consider a positive, statistically significant effect or large (greater than 0.25) effect size as an indicator of positive effects.

Table 1. Institute of Education Sciences levels of evidence for practice guides

Strong	In general, characterization of the evidence for a recommendation as strong requires both studies with high internal validity (i.e., studies whose designs can support causal conclusions) and studies with high external validity (i.e., studies that in total include enough of the range of participants and settings on which the recommendation is focused to support the conclusion that the results can be generalized to those participants and settings). Strong evidence for this practice guide is operationalized as: • A systematic review of research that generally meets the standards of the What Works Clearinghouse (WWC) (see http://ies.ed.gov/ncee/wwc/) and supports the effectiveness of a program, practice, or approach, with no contradictory evidence of similar quality; OR • Several well-designed, randomized controlled trials or well-designed quasi-experiments that generally meet the standards of the WWC and support the effectiveness of a program, practice, or approach, with no contradictory evidence of similar quality; OR • One large, well-designed, randomized controlled, multisite trial that meets the WWC standards and supports the effectiveness of a program, practice, or approach, with no contradictory evidence of similar quality; OR • For assessments, evidence of reliability and validity that meets the Standards for Educational and Psychological Testing.[a]
Moderate	In general, characterization of the evidence for a recommendation as moderate requires studies with high internal validity but moderate external validity, or studies with high external validity but moderate internal validity. In other words, moderate evidence is derived from studies that support strong causal conclusions but where generalization is uncertain, or studies that support the generality of a relationship but where the causality is uncertain. Moderate evidence for this practice guide is operationalized as: • Experiments or quasi-experiments generally meeting the WWC standards and supporting the effectiveness of a program, practice, or approach with small sample sizes and/or other conditions of implementation or analysis that limit generalizability and no contrary evidence; OR • Comparison group studies that do not demonstrate equivalence of groups at pretest and therefore do not meet the WWC standards but that (a) consistently show enhanced outcomes for participants experiencing a particular program, practice, or approach and (b) have no major flaws related to internal validity other than lack of demonstrated equivalence at pretest (e.g., only one teacher or one class per condition, unequal amounts of instructional time, highly biased outcome measures); OR • Correlational research with strong statistical controls for selection bias and for discerning influence of endogenous factors and no contrary evidence; OR • For assessments, evidence of reliability that meets the Standards for Educational and Psychological Testing[b] but with evidence of validity from samples not adequately representative of the population on which the recommendation is focused.
Low	In general, characterization of the evidence for a recommendation as low means that the recommendation is based on expert opinion derived from strong findings or theories in related areas and/or expert opinion buttressed by direct evidence that does not rise to the moderate or strong levels. Low evidence is operationalized as evidence not meeting the standards for the moderate or high level.

a. American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (1999).

b. Ibid.

findings have not been widely replicated) or to evidence from studies that are generalizable but have more causal ambiguity than offered by experimental designs (e.g., statistical models of correlational data or group comparison designs for which equivalence of the groups at pretest is uncertain).

Low refers to expert opinion based on reasonable extrapolations from research and theory on other topics and evidence from studies that do not meet the standards for moderate or strong evidence.

The What Works Clearinghouse standards and their relevance to this guide

The panel relied on WWC evidence standards to assess the quality of evidence supporting educational programs and practices. The WWC addresses evidence for the causal validity of instructional programs and practices according to WWC standards. Information about these standards is available at http://ies.ed.gov/ncee/wwc. The technical quality of each study is rated and placed into one of three categories:

- *Meets Evidence Standards* for randomized controlled trials and regression discontinuity studies that provide the strongest evidence of causal validity.
- *Meets Evidence Standards with Reservations* for all quasi-experimental studies with no design flaws and randomized controlled trials that have problems with randomization, attrition, or disruption.
- *Does Not Meet Evidence Screens* for studies that do not provide strong evidence of causal validity.

Following the recommendations and suggestions for carrying out the recommendations, appendix D presents more information on the research evidence from the WWC-rated evaluations to support the recommendation.

We appreciate the efforts of Kristin Hallgren and Brian Gill, MPR staff members who participated in the panel meetings, characterized the research findings, and drafted the guide. Kristin Hallgren had primary responsibility for drafting the guide and revising it. We also thank Duncan Chaplin for helpful feedback and reviews of earlier versions of this guide.

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Dropout Prevention

Overview

Each year more than half a million young people drop out of high school, and the rate at which they drop out has remained about the same for the last 30 years, even as spending on education has increased significantly.[1]

For society as a whole, helping young people stay in and complete high school is a worthwhile objective. Dropouts typically earn less than graduates: the average earnings difference is estimated to be $9,000 a year and $260,000 over the course of a lifetime.[2] The economic consequences of dropping out may continue to worsen as jobs for low-skilled workers dry up.[3] Dropouts contribute only about half as much in taxes as do high school graduates.[4] They draw larger government subsidies in the form of food stamps, housing assistance, and welfare payments.[5] They have a dramatically increased chance of landing in prison, and they have worse health outcomes and lower life expectancies.[6]

This guide presents a series of six recommendations for reducing dropout rates (table 2). The recommendations are divided into three categories: (i) diagnostic processes for identifying student-level and schoolwide dropout problems; (ii) targeted interventions for a subset of middle and high school students who are identified as at risk of dropping out; and (iii) schoolwide reforms designed to enhance engagement for all students and prevent dropout more generally (see table 2).

The first recommendation advises schools and districts to utilize data systems that support a realistic diagnosis of the number of students who drop out and that help identify individual students at high risk of dropping out. This recommendation is essential for diagnosing the extent to which schools will need to implement strategies to address dropping out. In addition, the implementation of any of the subsequent recommendations will involve continually returning to the individual student data to monitor the success of the strategy and to adjust approaches as needed.

The panel viewed increasing student engagement as critical to preventing dropping out. Engagement involves active participation in learning and schoolwork as well as in the social life of school. While dropping out typically occurs during high school, the disengagement process may begin much earlier and include academic, social, and behavioral components.[7] The trajectory of a young person progressing in school begins in elementary grades, where students establish an interest in school and the academic and behavioral skills necessary to successfully proceed. During the middle school years, students' interest in school and academic skills may begin to lag, so that by the time students transition to high school, students who are at risk of dropping out may need intensive individual support or other supports to re-engage them in the purpose of education. Educators and policymakers need to consider how to implement intermediate strategies aimed at increasing student engagement.

Engagement includes both behavioral and psychological components. Attendance, class participation, effort in doing

1. Heckman and LaFontaine (2007); Warren and Halpern-Manners (2007).

2. U.S. Bureau of the Census (2006); Rouse (2007).

3. Carnevale and Desrochers (2003).

4. Rouse (2005).

5. Waldfogel, Garfinkel, and Kelly (2007).

6. Moretti (2007); Muennig (2007).

7. National Research Council (2004); Finn (1989).

schoolwork, and avoidance of disciplinary actions (notably suspensions) are behavioral indicators of engagement, while interest and enthusiasm, a sense of belonging, and identification with the school constitutes psychological engagement.[8] Both aspects of engagement have been associated with dropping out of school.[9] Attendance in school activities and feeling a sense of belonging in the school community are both critical components of school engagement and should be addressed as part of dropout prevention or intervention strategies.

Recommendations two, three, and four suggest targeting students who are the most at risk of dropping out by intensively intervening in their academic, social, and personal lives. Many students do not require special attention to prevent them from dropping out. Successful identification of the students who are in fact at risk can permit the implementation of intensive targeted interventions. The three targeted recommendations are complementary to each other, and the panel suggests employing them together.

Recommendations five and six suggest comprehensive, schoolwide reform strategies aimed at increasing engagement of all students in school. These might be adopted in schools with unusually high dropout rates, where a large proportion of the student population is at risk. These recommendations recognize the fact that dropping out is not always or entirely a function of the attitudes, behaviors, and external environment of the students—that dysfunctional schools can encourage dropping out. When the school is part of the problem, recommendations five and six propose ambitious efforts to change the environment, curriculum, and culture of the school. Recommendation five provides strategies for personalizing the school environment in an effort to address the problem of anonymity and provide all students with a sense of belonging. Recommendation six builds on this suggestion by encouraging schools to provide students with meaningful learning through a consistent emphasis on postsecondary opportunities.

The panel believes that the greatest success in reducing dropout rates will be achieved where multiple approaches are adopted as part of a comprehensive strategy to increase student engagement. Although some of these strategies may have the capacity to improve graduation rates at the margin when implemented individually, the panel strongly recommends a strategic approach that integrates multiple recommendations and has the potential to make a bigger difference.

It is important for the reader to remember that the levels of evidence ratings delineated in table 2 above are not a judgment by the authors of this practice guide of how effective each of these six recommended practices will prove to be when implemented in a school, nor are they even a judgment by the authors of what prior research has to say about their effectiveness. As noted in appendix A, these levels of evidence ratings reflect judgments by the authors of the quality of the existing research literature to support a causal claim that when these recommended practices have been implemented in the past, positive effects on dropout reduction have been observed. They do not reflect judgments by the authors about the relative strength of these positive effects or the relative importance of these individual recommendations.

An example may help illustrate this distinction. Recommendation 1 has a "low" level of evidence rating. This means that there

8. Christenson (2002); Fredericks, Blumenfeld, and Paris (2004).

9. Jessor, Turbin, and Costa (1998); Newmann, Wehlage, and Lamborn (1992); Rumberger and Larson (1998).

Table 2. Recommendations and corresponding levels of evidence to support each

Recommendation	Level of evidence
Diagnostic	
1. *Utilize data systems that support a realistic diagnosis of the number of students who drop out and that help identify individual students at high risk of dropping out.* States, districts and schools should develop comprehensive, longitudinal, student level databases with unique IDs that, at a minimum, include data on student absences, grade retention, and low academic achievement. Data should be reviewed regularly, with a particular emphasis before the transitions to middle school and high school.	**Low**
Targeted interventions	
2. *Assign adult advocates to students at risk of dropping out.* Adult advocates should have an appropriate background and low caseloads, and be purposefully matched with students. Adequate training and support should be provided for advocates.	**Moderate**
3. *Provide academic support and enrichment to improve academic performance.* Help students to improve academic performance and re-engage in school. This should be implemented in conjunction with other recommendations.	**Moderate**
4. *Implement programs to improve students' classroom behavior and social skills.* Students should establish attainable academic and behavioral goals and be recognized when they accomplish them. Schools can teach strategies to strengthen problem-solving and decision-making skills, and partner with community-based agencies to provide students with supports to address external factors affecting social and behavioral interactions.	**Low**
Schoolwide interventions	
5. *Personalize the learning environment and instructional process.* A personalized learning environment creates a sense of belonging and fosters a school climate where students and teachers get to know one another and can provide academic, social, and behavioral encouragement.	**Moderate**
6. *Provide rigorous and relevant instruction to better engage students in learning and provide the skills needed to graduate and to serve them after they leave school.* Engagement can be increased by providing students with the necessary skills to complete high school and by introducing students to postsecondary options.	**Moderate**

Source: Authors' compilation based on analysis described in text.

are few existing studies designed to test, in a discrete and valid way, the connection between utilizing diagnostic data systems and dropout reduction. Nonetheless, the authors of this practice guide, based on expert judgment and knowledge of practice, consider utilizing diagnostic data systems to be an important component of a well-implemented dropout prevention intervention. Hence, although its level of evidence rating is considered low, it is included here as one of our six recommended practices.

Scope of the Practice Guide

The purpose of this practice guide is to provide evidence-based recommendations on preventing dropping out. These recommendations are intended to promote student engagement with school, suggesting practical ways in which administrators can structure efforts aimed at individual students, schoolwide communities, or ideally both.

This practice guide recommends steps for educators, administrators, and policymakers to reduce dropping out. The guide aims to identify effective practices contributing to staying in school and completing high school with a regular diploma. It does not address "recovery" practices designed to bring dropouts back to school or to help them earn a General Educational Development (GED) certificate. Nor does it discuss rule-based efforts to keep students in school longer, such as raising the age at which students are permitted to drop out or increasing the enforcement of truancy laws. Although such efforts may in some instances reduce dropout rates, this guide is focused on strategies that increase students' motivation to stay in school rather than penalizing them for not staying in school.

The suggestions in this guide are intended to be school-based practices that address students' academic, behavioral, and personal needs. While the panel feels strongly that early interventions in preschool and elementary grades can establish a critical foundation for school engagement, this guide addresses more immediate precursors to dropping out that can be implemented at the middle or high school level. In the same vein, while the panel acknowledges the importance of efforts to address the multiple contexts in which students live, the guide does not address practices that involve community- or family-based interventions.

The promising results of some dropout prevention programs and school reform initiatives suggest the possibility that graduation rates across the country might be measurably improved by implementing their strategies on a larger scale. The challenge for the panel, in creating this guide, was to distill the evidence from specific programs into a set of more general strategies. The aim of the guide is not to endorse specific branded interventions, but to identify a set of strategies and practices that are key components of interventions that have demonstrated promise in reducing dropout rates.

Dropout prevention interventions almost always include multiple components, and the effects of specific intervention components on dropping out cannot be causally attributed to one component of an intervention. To assess the importance of specific components and strategies, the panel reviewed the implementation reports of interventions that have been rigorously evaluated to document the components of each intervention. It then grouped interventions that included similar components to derive the six recommendations, and referred to implementation reports to provide accurate suggestions for how schools might successfully carry out each recommendation. The panel considered the extent to which various components were described—in implementation reports or by developers—as significant aspects of the intervention (see appendix D).

Schools and districts may have challenges in implementing the panel's recommendations in a way that is as effective as the model programs that were reviewed for this guide. Initiation of targeted, schoolwide, and long-term strategies should include a plan to ensure high-quality implementation of the strategies. High-quality implementation of the strategies,

individually and as part of a larger, comprehensive plan, will require investments in professional development for staff, not only to promote staff skills but also, where necessary, to change staff behaviors and attitudes.

Administrators, staff, and policymakers may not see immediate benefits of the fruits of their dropout prevention efforts; schoolwide reforms and efforts with middle school students, for example, may take years to produce measurable improvements, even if implemented effectively. Nevertheless, the recommendations in this guide derive from the characteristics of dropout prevention programs, school reforms, and policy interventions that have shown promise to reduce dropping out. While these programs vary in their specific components, they have features in common that suggest general strategies for educators and policymakers trying to reduce dropout rates.

Checklist for carrying out the recommendations

Recommendation 1. Utilize data systems that support a realistic diagnosis of the number of students who drop out and that help identify individual students at high risk of dropping out

☐ Use longitudinal, student-level data to get an accurate read of graduation and dropout rates.

☐ Use data to identify incoming students with histories of academic problems, truancy, behavioral problems, and retentions.

☐ Monitor the academic and social performance of all students continually.

☐ Review student-level data to identify students at risk of dropping out before key academic transitions.

☐ Monitor students' sense of engagement and belonging in school.

☐ Collect and document accurate information on student withdrawals.

Recommendation 2. Assign adult advocates to students at risk of dropping out

☐ Choose adults who are committed to investing in the student's personal and academic success, keep caseloads low, and purposefully match students with adult advocates.

☐ Establish a regular time in the school day or week for students to meet with the adult.

☐ Communicate with adult advocates about the various obstacles students may encounter—and provide adult advocates with guidance and training about how to work with students, parents, or school staff to address the problems.

Recommendation 3. Provide academic support and enrichment to improve academic performance

☐ Provide individual or small group support in test-taking skills, study skills, or targeted subject areas such as reading, writing, or math.

☐ Provide extra study time and opportunities for credit recovery and accumulation through after school, Saturday school, or summer enrichment programs.

Recommendation 4. Implement programs to improve students' classroom behavior and social skills

☐ Use adult advocates or other engaged adults to help students establish attainable academic and behavioral goals with specific benchmarks.

☐ Recognize student accomplishments.

☐ Teach strategies to strengthen problem-solving and decision-making skills.

☐ Establish partnerships with community-based program providers and other agencies such as social services, welfare, mental health, and law enforcement.

Recommendation 5. Personalize the learning environment and instructional process

☐ Establish small learning communities.

☐ Establish team teaching.

☐ Create smaller classes.

☐ Create extended time in classroom through changes to the school schedule.

☐ Encourage student participation in extracurricular activities.

Recommendation 6. Provide rigorous and relevant instruction to better engage students in learning and provide the skills needed to graduate and to serve them after they leave school

☐ Provide teachers with ongoing ways to expand their knowledge and improve their skills.

☐ Integrate academic content with career and skill-based themes through career academies or multiple pathways models.

☐ Host career days and offer opportunities for work-related experiences and visits to postsecondary campuses.

☐ Provide students with extra assistance and information about the demands of college.

☐ Partner with local businesses to provide opportunities for work-related experience such as internships, simulated job interviews, or long-term employment.

Recommendation 1. Utilize data systems that support a realistic diagnosis of the number of students who drop out and that help identify individual students at high risk of dropping out (diagnostic).

Regularly analyzing student data is the critical first step both for determining the scope of the dropout problem and for identifying the specific students who are at risk of dropping out and should be considered for extra services or supports. The effectiveness of programs to reduce dropping out depends on whether they are provided to the students who are most in need, and whether they are designed to meet student needs. Programs designed to target students at risk of dropping out need a way to identify the population they wish to serve.

In addition, in some high schools, large proportions of students fail to graduate. Schools where data indicate that very large proportions of students are at risk of dropping out should consider adopting systemic, schoolwide changes alongside targeted programs for individual students who are at the highest risk of dropping out. An initial diagnostic assessment can help determine whether the scope of the problem merits schoolwide interventions alongside interventions targeted to students at particular risk of dropping out. Even then, comprehensive school reform models will still need to identify students who need extra help through targeted programs.

Level of evidence: Low

The panel judged the level of evidence for this recommendation as *low* because there have been no studies that directly evaluate the effect of using data on staying in school, progressing in school, or completing school. The panel believes, nonetheless, that this recommendation is a critical component in identifying students for whom the subsequent recommendations of this practice guide are targeted. The effectiveness of the targeted and schoolwide interventions in the recommendations that follow will depend on the extent to which they are based on an accurate assessment of the dropout problem. In addition, it is critical that updated, real-time data be used to evaluate the quality of implementation of any of the recommended practices.

Brief summary of evidence to support this recommendation

The critical first step for preventing dropping out is understanding who is at risk of dropping out.[1] Implementing a generic program without assessing the extent of the problem and accurately identifying the students who need it is ill advised. Dropout interventions should be matched to the characteristics, climate, and practices of the school and its students who are at risk of dropping out.[2] Schools need to identify accurately the specific students who need intervention, and choose interventions that align with an accurate assessment of the problem. Responding to symptoms may be ineffective if the source of the problem is not understood. For example, schools with chronic

1. Kronick and Hargis (1998); Morton (1998); Skromme, Van Allen, and Bensen (1998).

2. Duttweiler (1995); Wehlage et al. (1989).

attendance problems may be tempted to implement stronger attendance monitoring, Attendance monitoring may be necessary, but the schools also need to collect information on why students are not attending if they are to effectively address the problem.[3]

The development of comprehensive, longitudinal, student-level databases that include unique student IDs has permitted researchers to identify factors associated with dropping out. Such databases now permit school personnel to better identify the individual students at risk of dropping out, and to identify them earlier.[4] Researchers agree that student absences, grade retention, and low academic achievement are indicators for dropping out,[5] and research shows that critical transition points such as the move from middle school to high school are difficult for already struggling students.[6] Low socio-economic status and behavioral problems are also known risk factors for dropping out.[7]

How to carry out this recommendation

Districts and schools should use student data to answer four questions: (1) What is the scope of the dropout problem? (2) Which students are at high risk of dropping out? (3) Why do individual students drop out? (4) When are students are at risk of dropping out? Schools should designate a staff member or team to regularly monitor data on incoming students, existing students, and students who recently left school. This task should not just be a review of data. It should include regular monitoring and following up with students when needed, which could be done through student advisories or adult advocates (see recommendation 2).

1. Use longitudinal, student-level data to get an accurate read of graduation and dropout rates. Historically, states have often overestimated graduation rates and underestimated dropout rates by establishing generous definitions that do not provide a complete picture of the number of students who drop out.[8] Definitions of dropout rates are sometimes not clearly connected to definitions of graduation rates, which can lead to contradictory impressions depending on whether graduation rates or dropout rates are examined. To respond to the dropout problem, states, districts, and schools first need an accurate understanding of its scope. This requires, ideally, the use of longitudinal student databases with unique statewide identifiers for individual students, that follow them from high school entry to graduation or dropout and that include all public, charter, and private schools to account for school or district transfers. Such longitudinal databases allow policymakers to measure

3. Dynarski and Gleason (1998).

4. Farmer and Payne (1992); Kronick and Hargis (1998); Roderick (1993); Suh, Suh, and Houston (in press); Vallerand, Fortier, and Guay (1997); Wehlage (1989).

5. Battin-Pearson et al. (2000); Barrington and Hendricks (1989); Garnier, Stein, and Jacobs (1997); Ensminger and Slusarick (1992); Jimerson, Anderson, and Whipple (2002); Alexander, Entwisle, and Horsey (1997); Finn and Rock (1997); Morris, Ehren, and Lenz (1991); Rumberger (1995); Allensworth and Easton (2005).

6. Allensworth and Easton (2007); Roderick and Camburn (1999).

7. Goldschmidt and Wang (1999); Rumberger and Larson (1998); Ekstrom et al. (1986); Phelan (1992); Rumberger (1987); Suh, Suh, and Houston (in press).

8. See Engberg and Gill (2006) for an example of how this works in one state. Dropout rates in Pennsylvania have been calculated by dividing the total number of students who officially dropped out in a 12-month period by the total enrollment in grades 7–12 during that period. This produces very low dropout estimates for two reasons. First, many dropouts are not officially reported as dropouts. Second, the denominator includes large numbers of students who are not old enough to drop out (such as those in 7th and 8th grade).

graduation and dropout rates using sensible definitions: Graduation rates can be defined as the percentage of students who graduate within four, five, or six years of entering high school, and dropout rates can similarly be defined as the percentage of students who leave school without graduating after four, five, or six years since entering high school. The National Governors Association (NGA; 2005) recently endorsed the development of consistent and accurate measures that use student-level data longitudinally to accurately measure graduation and dropout rates. The U.S. Department of Education (2008) also recently endorsed the NGA approach to be used nationwide.[9]

2. Use data to identify incoming students with histories of academic problems, truancy, behavioral problems, and retentions. Student absences, grade retention, low academic achievement, and behavior problems are strong indicators of dropout risk.[10] At a minimum, schools should review incoming students' attendance records, grade retention, disciplinary records, and academic assessments. Schools should review additional information about students from previous teachers about level of motivation, academic potential, social skills, or difficulty to teach. Because elementary teachers interact regularly with the same group of students, this approach may be especially useful in middle schools to assist students with the transition between elementary and middle school.

3. Monitor the academic and social performance of all students continually. Schools should monitor student progress by regularly reviewing student transcripts, test scores, and discipline referrals. Schools can use this type of data to identify students who recently experienced a life event, academic challenges, or other social or behavioral problems that may indicate a higher risk of dropping out. The burden of data monitoring can be reduced by using automated alerts in the electronic data systems to call attention to students whose behavior or progress suggests increased risk of dropping out.[11]

4. Review student-level data to identify students at risk of dropping out before key academic transitions. Research suggests that students are more likely to drop out of school following a transition to high school, but they can be flagged early for risk of dropping out.[12] Schools should pay particular attention to students who have failed courses, encountered frequent disciplinary problems, or been chronically absent in early high school, middle school, and even elementary school.

5. Monitor students' sense of engagement and belonging in school. Data collection and monitoring about school climate or the nature of teacher-student interactions can help schools identify areas for improvement. Schools can survey students periodically or conduct purposefully selected small group interviews to learn about student perceptions of school climate and their sense of belonging and engagement. Surveys or focus groups can cover topics such as the supportiveness of the school environment, perceptions of safety, academic rigor, and interactions with adults and other students.[13] Data collected can be used to monitor school climate and help identify where to focus re-

9. U.S. Department of Education (2008).

10. Battin-Pearson et al. (2000); Barrington and Hendricks (1989); Garnier, Stein, and Jacobs (1997); Ensminger and Slusarick (1992); Jimerson, Anderson, and Whipple (2002); Alexander, Entwisle, and Horsey (1997); Finn and Rock (1997); Morris, Ehren, and Lenz (1991); Rumberger (1995); Allensworth and Easton (2005).

11. Neild, Balfanz, and Herzog (2007); Allensworth and Easton (2005).

12. Allensworth and Easton (2007); Roderick and Camburn (1999).

13. For examples of school climate surveys in practice, see Austin and Benard (2007), Chicago Public Schools (2007), and Willms and Flanagan (2008).

form efforts and whether current efforts are effective in improving school climate and engagement.

6. Collect and document accurate information on student withdrawals. Departure codes often disguise the real reasons why students become disengaged or drop out of school.[14] If data on school leavers is not specific or accurate, administrators will not be able to assess the real problems and possibly not pursue appropriate dropout prevention practices. Administrative codes such as "left school" offer little help to administrators working to understand how many students drop out and why. At the same time, student mobility also contributes to the problem, but is not always documented accurately. Codes indicating a transfer to another school should be used only when enrollment in the other school has been verified. Districts need unique IDs for students and policies for assigning them at the state level so that dropout rates are neither over nor undercounted.

Potential roadblocks and suggested approaches

The sheer volume of data generated in school systems is one roadblock. Increased resources, such as staff for data entry or systemwide technology updates, can help surmount it, but finding these resources may be difficult given other budgeting priorities. Nonetheless, the panel highlights these roadblocks in an effort to underscore the importance of data in preventing dropping out.

1. Systems and procedures to update data are slow and outdated. Districts and schools with outdated data systems will encounter problems consolidating and analyzing student-level data.

Suggested Approach: Integrated, real-time, longitudinal data systems now exist that can provide educators and administrators with timely and comprehensive information on each student.

2. Bureaucratic or organizational obstacles may hinder information sharing between the district and schools, school to school, or within schools.

Suggested Approach: Districts can centralize data collection and dissemination to schools on a monthly or quarterly basis so that schools can regularly monitor student progress. Districts can also set up systems to promote the sharing of information across grade levels within feeder patterns of schools, such as using unique student IDs, to increase staff accountability for students moving from elementary to middle school and from middle to high school. Schools can adopt policies that promote regular communication about student data. For example, attendance office staff can update teachers about students who have had many absences, or early warning systems can use attendance data combined with and information about course failures, which do not require waiting for district or state data, to identify students at risk of dropping out.

3. Data codes do not accurately reflect student mobility, in part because of stigmas about schools with high numbers of dropouts. District and school administrators cannot adequately design and implement dropout prevention practices if the data underestimate the extent of the problem.

Suggested Approach: Districts and schools need to adjust data codes to include reasons for leaving. Students should not be counted as transferring to another school unless the receiving school has formally verified the student's enrollment. Central office staff can occasionally conduct audits of withdrawal data to verify the accuracy of the data.

4. Staff may become burdened with extra data monitoring responsibilities.

14. See, for example, Engberg and Gill (2006).

Suggested Approach: Early warning systems should be automated to the extent possible, to avoid additional burden on staff. Electronic systems should include programs that automatically flag students showing a high risk of dropping out, as indicated by substantial attendance problems, course failures, grade retention, and behavioral problems. Schools can create a team of individuals including attendance staff, counselors, adult advocates (see recommendation 2), and other relevant staff to monitor data from different sources, such as attendance and course failure data, in an effort to spread responsibility and use the data thoughtfully.

Recommendation 2. Assign adult advocates to students at risk of dropping out (targeted intervention).

Personal and academic needs can be addressed through a meaningful and sustained personal relationship with a trained adult. The adult should be responsible for addressing academic and social needs, communicating with the families, and advocating for the student. The adult and student should have time to meet regularly. Training for adult advocates is essential.

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation as *moderate*. The panel examined five experimental studies of four dropout interventions that included an adult advocacy component.[15] While the design quality of several of these studies was of sufficient quality to allow a high level of evidence rating, two important features of this set of five studies, in the aggregate, suggested a moderate rating instead. First, and most important, while three interventions included adult advocates as a key component, none of these five studies assessed the discrete effect of using adult advocates on dropout prevention outcomes. In all five cases the use of adult advocates was bundled with other intervention components with no independent assessment of individual component effects.

Second, across all five studies, there was a fairly wide variation in observed effects on dropout prevention and staying in school. For example, of the three studies that included adult advocates as a key component, only two interventions demonstrated positive or potentially positive effects on staying in school or progressing in school.[16] The third intervention showed no discernible effect on staying in school.[17] The generalizability of these findings is somewhat limited because the extent of evidence for each effectiveness rating was small for all three interventions. However, these three interventions demonstrated effectiveness in a variety of settings, including middle schools and high schools across several states. The panel also considered a fourth intervention that included a case worker for participating students, but the role of this adult was less substantial than the intensive role played by the adult advocate in the other three interventions.[18] This fourth intervention showed no discernible effects on progressing in school and completing school.

Brief summary of evidence to support the recommendation

Students at risk of dropping out often have significant personal, family, and social barriers that interfere with the ability to go to school and do well.[19] Research suggests that students who have ongoing relationships with adults feel a greater sense of school membership, attachment, and involvement.[20] Additional benefits of adult-student relationships include reduced risky behaviors, reduced absentee rates, improved grades, and improved

15. Larson and Rumberger (1995); Sinclair et al. (1998); Sinclair, Christensen, and Thurlow (2005); Shirm, Stuart, and McKie (2006); Quint et al. (2005).

16. Larson and Rumberger (1995); Sinclair et al. (1998).

17. Quint et al. (2005).

18. Shirm et al. (2006).

19. Dynarski and Gleason (1998); Rumberger (2004).

20. Wehlage (1989); Wehlage et al. (1989).

communication and social skills.[21] The adult advocate helps students overcome these barriers by assisting the student in addressing academic, personal, and emotional needs. The advocate can model positive and respectful behavior and offer guidance, stability, and assistance in making intelligent choices.

In at least three interventions that have been rigorously evaluated, adult advocates played a key role in fostering school engagement by providing students with opportunities to develop a sense of belonging at school and by providing accountability for academic or behavioral progress.[22] In each intervention, students participating in treatment groups that included intensive meetings with an adult advocate assigned to the student showed promising improvement in outcomes related to dropout prevention.

In one intervention adult advocates worked intensively with high-risk and disabled Latino students in one junior high school.[23] The adult-student relationship rested on four key principles: accountability for student progress, accepting students "as they are," attending to the complex needs of students at risk of dropping out, and offering flexibility and individualization to the student. The aim of the intervention was to build a trusting relationship in which students felt a sense of belonging and identification with another adult and ultimately with the school. The study found that students who participated in the treatment group earned more credits toward graduation, demonstrated reduced absenteeism, and improved their grades relative to those in the control group.

A second intervention also demonstrated the promising effects that adult advocates can have on outcomes related to dropout prevention.[24] Implemented in middle and high schools, the intervention includes an adult monitor who works intensively with students to provide academic support, conflict resolution skills, and recreational and community service exploration. Students in the treatment group earned more credits toward high school completion than students in the control group and were less likely to have dropped out of school at the end of the first follow-up year.

Other interventions also incorporate adult mentors, but with differing levels of intensity of the relationship between the adult and the student.[25] The evaluations of these other interventions did not examine the primary outcomes related to dropping out: staying in school, progressing in school, or completing school.

How to carry out this recommendation

Assign an adult advocate to work individually with students who are at a high risk of dropping out. The adult advocate acts as a case manager who interacts with the student daily, and could be a resource teacher, community member, or a social worker. The adult advocate should offer guidance on matters inside and outside of school, model positive behavior and decision-making skills, and be an encouraging and trusted person in the student's life. The adult helps address obstacles that prevent students from progressing

21. Pringle et al. (1993); Cragar (1994); Sipe (1996); McPartland and Nettles (1991); Grossman and Garry (1997).

22. Larson and Rumberger (1995); Sinclair et al. (1998); Quint et al. (2005).

23. Larson and Rumberger (1995).

24. Sinclair et al. (1998).

25. See LoSciuto et al. (1996); Harrell, Cavanaugh, and Sridharan (1998).

in school. Here the panel provides specific suggestions regarding who adult advocates should be, how schools might use adult advocates, and the types of daily responsibilities adult advocates might expect to undertake.

1. Choose adults who are committed to investing in the student's personal and academic success, keep caseloads low, and purposefully match students with adult advocates. The adult advocate needs to be able to devote time and energy to multiple facets of the student's life. Although teachers can act as advocates, teachers are unlikely to have the time needed for the advocacy relationship. School counselors might serve as advocates, but the large caseloads of most school counselors typically preclude an intensive advocacy relationship. The adult advocate could be a resource teacher, community member, or social worker. The adult advocate should be based primarily at the school, and should embody key personal characteristics, including persistence, belief in the ability of all students to succeed, a willingness to work cooperatively with families and school staff, and advocacy and communication skills.[26]

Building trust is critical for the development of the relationship between the student and the adult. With this in mind, advocates should not have caseloads larger than 15 students, and matches should take individual student needs into account so that the adult can effectively advocate on the student's behalf and adapt activities according to the student's interests and goals.[27] Purposefully matching students and adults increases the likelihood that the relationship will thrive. Increasing school engagement depends on the commitment and practices of adults in the school.[28] It is important to provide advocates whom the students feel they can identify with, including advocates who reflect the cultural and ethnic diversity of the students they are mentoring.[29]

2. Establish a regular time in the school day or week for students to meet with the adult. It takes time for meaningful relationships between adults and students to have an impact.[30] Consistent meetings between the advocate and the student provide accountability and the opportunity for the advocate to suggest guidance or praise successes. Students also need time to communicate frustrations or details about personal encounters. Such conversations merit regular meeting times in order to establish a trusting relationship. The amount of time needed for meetings depends on the severity of the student's problems: some need daily meetings, while weekly meetings may be sufficient for others.

3. Communicate with adult advocates about the various obstacles students may encounter—and provide adult advocates with guidance and training about how to work with students, parents, or school staff to address the problems. Adult advocates should be prepared to help students overcome obstacles that may range from transportation to school to poor relationships with teachers. The adult may spend time working with the student on attendance by conducting intensive attendance monitoring, possibly including contacting the student directly or contacting parents if the student is not in class. The adult can help the student develop career goals and postsecondary plans (see recommendation 6). Adults can work with students on academic progress by monitoring the completion of homework assignments, or with teachers to learn about the

26. Larson and Rumberger (1995); Sinclair et al. (1998).

27. Sinclair et al. (1998); McPartland and Nettles (1991); Smink (1990).

28. Weinberger (1992); Wehlage et al. (1989).

29. Larson and Rumberger (1995).

30. Gunn and King (2003); Letgers et al. (2002).

student's academic difficulties. Advocates may even help the student's family by referring the parent to potential jobs or school training programs, or by making appointments or providing transportation to social service agencies.

Orientation and training for adults are critical to the success of a student-advocate relationship.[31] Training for advocates should include information about resources available to assist the student and family. Proper training of adult advocates may be particularly important during times when the student is struggling with academic or behavior problems and may not be interested in meeting with the advocate. In addition, training and support can help alleviate burnout caused by the time and emotional demands, on even those staff who are interested in this role.

Potential roadblocks and suggested approaches

1. Many schools lack ongoing systems and processes for meeting with students. School schedules leave little room for discussions about life events, struggles, frustrations, and possible solutions.

Suggested Approach: Administrators should consider reallocating daily schedules to provide a specific period for adult advocate-student meetings to occur, or requiring meetings to occur during breaks within the school day, such as lunch or advisory periods. Allocating enough time for the student and adult advocate to meet is the key to building the relationship; superficial meetings rarely result in trusting (and useful) relationships. Administrators can also be supportive of the flexibility advocates may need in meeting with students.

2. Schools may find that staff or other adults are not available or not interested in working with students as adult advocates.

Suggested Approach: Schools should not force staff to be advocates if they are not interested in or committed to developing a trusting relationship with the student. Ideally the adult should be available before, during, or after school hours to work full time as an advocate. Resource constraints may limit administrator ability to implement this type of intensive relationship (see roadblock 4). Schools can consider partnering with local social service agencies or faith-based organizations to provide adult advocates.

3. Resistance from staff who think that students already receive adult advocacy from school counselors. School counselors (as their jobs are typically defined) and teachers may not have adequate time to address individual student needs to the extent recommended, and may assume that this type of intensive mentoring and engagement is someone else's problem.

Suggested Approach: Administrators first need to clearly define and explain the role of the advocates for the staff so that the advocates can effectively work with teachers and counselors on behalf of the student. Administrators also must encourage a cultural shift that shares responsibilities for fostering student success among all school staff.

4. Insufficient resources are available to hire staff as advocates.

Suggested Approach: Not all students in a school are in need of an advocate. One way to keep costs manageable is to ensure that other recommendations in this guide are effectively implemented so that the students who are most at risk of dropping out are the ones who are assigned advocates. For instance, better identification of those who are in need (recommendation 1) can allow more efficient targeting of limited staff time, and personalizing the learning environment within the school (recommendation 5) can reduce

31. Grossman and Garry (1997); Sipe (1996).

the number of students who need an adult advocate.

5. Staff perceptions that students at risk of dropping out are receiving special treatment despite poor academic performance, absenteeism, or other negative behavior.

Suggested Approach: Administrators need to be the most enthusiastic supporters of the adult advocates. This includes clearly explaining the role of the advocate to staff and encouraging advocates and teachers, counselors, or other staff members to work together for the benefit of the student. Administrators should seek input and feedback from both teachers and advocates about student progress so that improvements within the school can be implemented. Schools can also adopt more flexible policies for the advocates in helping students. For example, changing student schedules mid-year typically is not accommodated, but may be required for a struggling student.

6. Students might not want to meet with an adult advocate.

Suggested Approach: The job of the adult advocate is to establish and maintain a trusting relationship with the student. This will likely require persistence on the part of the adult, and highlights the importance of the adult advocate's taking responsibility for the success of the student. If the student is not interested in meeting, it is the adult's responsibility to find the student and establish a relationship or to determine an alternative approach for helping the student that the student agrees to.

Recommendation 3. Provide academic support and enrichment to improve academic performance (targeted intervention).

Providing academic supports helps improve academic performance and re-engage students in school. The panel suggests that this recommendation be implemented in conjunction with other recommendations in this practice guide.

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation as *moderate* because of the varying effect of different interventions on dropping out and the varying level of intensity of academic supports among the evaluated interventions. The panel considered 12 rigorous studies of 8 dropout interventions that included an academic support component. Four interventions included academic support as a substantial component of the intervention. Among the studies of these interventions, two found positive or potentially positive effects on progressing in school.[32] However, the relationship between the components in these interventions and outcomes associated with dropping out, a key consideration in making a "moderate" or "high" level of evidence rating, is uncertain because at least two studies of two interventions that included academic support as a key component found no discernible effects on outcomes related to dropout prevention. The panel also considered five rigorous studies of four interventions that included academic supports as smaller component of the intervention.[33] Of these studies, effects ranged from not discernible to positive.

Brief summary of evidence to support the recommendation

Research shows that low academic performance, absenteeism, and grade retention are related to dropping out.[34] Providing academic supports, such as tutoring or enrichment programs, helps address skill gaps and offset a cycle of frustration, and can enrich the academic experience for students who may be bored or disengaged.[35] Academic struggles may also play a role in students feeling alienated from school, so incentives such as leadership opportunities in academic areas or rewards for improved performance may help increase academic and student engagement.[36]

Interventions aimed at preventing dropping out primarily incorporate academic support components in one of two ways: 1) by offering more intensive in or out of school programs, or 2) through homework assistance or tutoring programs. Both types of academic support are intended to help students reach proficiency levels in key academic areas, but because these strategies differ and are often offered in conjunction with other services, the evidence from interventions employing these strategies varies.

32. Dynarski and Wood (1997); Kemple, Herlihy, and Smith (2005).

33. Constantine et al. (2006); Dynarski et al. (1998); Sinclair et al. (1998); Sinclair, Christensen, and Thurlow (2005); Larson and Rumberger (1995).

34. Lee and Burkam (2003); Rumberger (1995); Rumberger and Thomas (2000); Rumberger and Palardy (2005); Rumberger and Larson (1998).

35. Balfanz, McPartland, and Shaw (2002).

36. Wehlage (1989); National Research Council (2004); Quint et al. (2005); Larson and Rumberger (1995).

Two interventions that have been rigorously evaluated provide evidence that students at risk of dropping out who receive academic support through specific courses may be effective. One intervention, a whole school reform model for high schools, offers additional reading or math courses for students who need additional support.[37] The reading course works in conjunction with other core reading courses offered at the school, and incorporates educational software as an important component of the curriculum. This intervention also includes summer school and Saturday school components for students to both accumulate credits and receive academic help. Students from the intervention schools made larger improvements on academic credits and promotion than students from the comparison group. However, because the intervention contains several large-scale whole school reform efforts, it is important to note that the effects of the intervention on dropping out may not be attributable to academic support components.

A second intervention offers remedial reading programs for students as part of the daily schedule. However, the intervention itself differs from other interventions in that it is an alternative high school model where students are also provided opportunities for credit accumulation and independent study.[38] Thus, while the academic support through a specific remedial reading program may be effective for preventing dropping out, the type of school in which the evaluation occurred was somewhat different than that of other schools.

The effectiveness of academic support in the form of tutoring or homework assistance can vary and may depend on the other services offered by the programs. Three different interventions that have been rigorously evaluated provide tutoring for students, either during or after school. One experimental study that included more than 1,100 students examined an intervention that includes tutoring among a variety of other strategies, such as financial assistance or postsecondary planning, but demonstrated no discernible effects.[39] Another intervention included tutoring four days a week for 1–2 hours daily, as part of a combination of services designed to help low-income and potential first-generation college students complete high school, and a rigorous evaluation of the program found that students participating in the program completed school at a significantly higher rate.[40] Mentors provide homework assistance, in varying amounts and intensity, for groups of 12 students—as part of another intervention that showed positive effects on staying in school.[41] Finally, two interventions that had positive or potentially positive effects on dropping out have the adult advocate (see recommendation 2) provide academic support or assistance for students when needed (recommendation 2).[42]

Evaluations of other interventions that include tutoring and after school homework assistance have also been conducted, but have not measured staying in school, progressing in school, or completing school.[43]

How to carry out this recommendation

1. Provide individual or small group support in test-taking skills, study skills, or targeted

37. Kemple et al. (2005).

38. Dynarski and Wood (1997).

39. Shirm et al. (2006).

40. Constantine et al. (2006).

41. Dynarski et al. (1998).

42. Larson and Rumberger (1995); Sinclair et al. (1998); Sinclair, Christenson, and Thurlow (2005).

43. See Cardenas et al. (1992); Harrell et al. (1998); Mehan et al. (1996).

subject areas such as reading, writing, or math. Individual or small group support provides a comfortable place for struggling students to learn and helps students persist in challenging courses. Academic support can happen through one-on-one interactions or small group interactions, and can include test-taking and study skills or enrichment courses. Enrichment courses, in particular, offer opportunities for students to receive additional support. These types of courses, about 10–12 weeks in length, target a particular subject area such as reading, writing, or math and include teaching strategies designed to engage students such as whole class discovery lessons or differentiated individual and small group instruction.[44] Academic support can be conducted by adults or by peers, and can occur during advisory periods, lunch, or during study skills periods built into the schedule.

2. Provide extra study time and opportunities for credit recovery and accumulation through after school, Saturday school, or summer enrichment programs. Summer programs, after school, or Saturday school sessions may offer students personalized opportunities to improve academic skills.[45] After hours and summer school programs address several primary academic needs for students at risk of dropping out, including support for students during the transition from middle school to high school, credit accumulation, and academic enrichment aimed at increasing engagement. Students who fail to pass required courses require support to catch up on both academic skills and credit accumulation. After school or summer school programs can fulfill both needs. In this type of program, students should work closely with teachers either individually or in small groups to complete coursework or credits required to graduate.[46] Schools can also provide students at risk of dropping out with summer school enrichment programs that increase engagement. These programs can take place on school campuses, at district offices, or at partner sites such as local postsecondary institutions or community colleges. During the program, which can last 4–6 hours per day for four to six weeks, students should be exposed to a variety of experiences that target key academic areas such as math, science, or reading.[47]

Potential roadblocks and suggested approaches

1. There is no time in the school day to add another academic program.

Suggested Approach: Schools may want to consider offering enrichment activities or academic support at times different from core classes so that students do not miss key curriculum while they are receiving support. Schools can offer enrichment courses as electives, or offer additional support during advisory periods at the beginning or end of the day. Another alternative to providing academic support during the school day is to select students to participate in after school or summer school programs aimed at providing support to develop academic skills or earn credits toward graduation.

2. Students do not want to participate in tutoring outside of scheduled classes.

Suggested Approach: Given the difficulties at-risk students may already have with attendance, it is more realistic to schedule a support class rather than expect students to attend tutoring sessions during typical social times at school such as lunch.

3. It may be hard to find tutors.

Suggested Approach: Administrators can be creative in implementing solutions for individual or small-group tutoring by

44. Kemple et al. (2005); Kemple and Herlihy (2004).

45. Roderick and Engel (2001).

46. Kemple et al. (2005).

47. Snipes et al. (2006).

establishing partnerships with local community organizations and postsecondary institutions, recruiting parent or business volunteers, or using staff in the school who express interest. In some schools at-risk students may be eligible for supplemental services prescribed under NCLB: Supplemental Educational Services are available to low-income students who attend schools that have missed adequate yearly progress for three years. In most school districts those services have not been fully subscribed, with particularly low participation rates in high schools.[48]

48. Stullich et al. (2006); U.S. Government Accountability Office (2006).

Recommendation 4. Implement programs to improve students' classroom behavior and social skills (targeted intervention).

Schools can help students identify, understand, and self-regulate their emotions and interactions with peers and adults. Doing so can help to mitigate problematic and disruptive behavior both in and out of the classroom by teaching students how to interact and communicate positively. An additional benefit of this type of skill development is to help students consider long-term consequences. Several of the dropout prevention programs that have shown promise in increasing students' persistence in school specifically seek to develop these kinds of skills. And activities that require students to take on new responsibilities and interact with engaged classmates can promote school membership and develop a sense of self-efficacy.

Level of evidence: Low

The panel judged the level of evidence for this recommendation as *low* because of the varying effectiveness of different interventions and the varying level of intensity of efforts to improve students' classroom behavior and social skills among the evaluated interventions. The panel considered six rigorous studies of five dropout interventions that included efforts to equip students with such skills.[49] One intervention included a problem-solving curriculum as a substantial feature of the program, and the evaluation of the intervention demonstrated potentially positive effects on staying in school and progressing in school.[50] However, the external validity of the study is low because it included fewer than 100 students from one school. Two other interventions also had potentially positive effects on staying in school, but the effort to improve students' classroom behavior and social skills was a somewhat less critical component of these interventions.[51] Finally, two rigorously evaluated interventions showed no discernible effects on progressing in school.[52] The varying effects of the interventions and the varying intensity of the efforts to improve classroom behavior or social skills among the interventions' components preclude a strong rating.

Brief summary of evidence to support the recommendation

School engagement includes a component of behavior and a component of identification with school.[53] Disruptive behavior is correlated with dropping out.[54] Dropout prevention interventions have sought to develop students' problem-solving and life skills based on the need to enhance student abilities to behave positively during school, thereby increasing a sense of school affiliation and engagement.[55]

49. Larson and Rumberger (1995); Sinclair et al. (1998); Sinclair, Christensen, and Thurlow (2005); Shirm et al. (2006); Dynarski et al. (1998); Snipes et al. (2006).

50. Larson and Rumberger (1995).

51. Sinclair et al. (1998); Sinclair, Christensen, and Thurlow (2005); Dynarski et al. (1998).

52. Shirm et al. (2006); Snipes et al. (2006).

53. See Voelkl (1997); Finn (1989); National Research Council (2004).

54. Rumberger (1995); Rumberger and Palardy (2005); Rumberger and Larson (1998); Swanson and Schneider (1999); Goldschmidt and Wang (1999).

55. Rumberger and Larson (1998).

Developing these skills goes beyond ensuring students are not disruptive in class, however. It teaches students about how to build positive relationships with peers or staff. This allows students to engage meaningfully in school, such as by taking initiative to seek help from school staff[56] or becoming involved with social or extracurricular aspects of school.[57] It also helps students learn how to avoid potentially harmful behaviors outside school.

In two rigorously evaluated interventions, students met with small groups during after school seminars to discuss problem-solving strategies, personal challenges, or how to avoid participating in risky behaviors. This feature was offered in conjunction with a variety of other services. For one of the interventions, an experimental evaluation was conducted that included more than 1,100 students in seven school districts, and examined the effects of life-skills training in combination with post-secondary planning, recreational activities, and educational services. However, students participating in the program did not progress in school any faster than students in the comparison group. On the other hand, in another rigorously evaluated intervention where students worked with a group of 12 students to discuss personal, family, or social issues, fewer students from the treatment group dropped out of school compared with students from the comparison group.[58]

Adult advocates can also help equip students with behavioral or social skills through one-on-one or small group interactions (recommendation 2). In one intervention students participated in a 10-week problem-solving course facilitated by adult advocates that included topics such as problem recognition, brainstorming solutions, and controlling anger. Students who participated in the intervention were more likely to remain enrolled in school than students in the comparison group.[59] As part of their work with students in another intervention, adult monitors worked with students monthly to reflect on solutions to hypothetical or real problems. Students who participated in this intervention were less likely to drop out of school after one year in the program, and earned more credits toward graduation than students in the comparison group.[60]

Other interventions that include curricula designed to improve students' classroom behavior or social skills have shown promise in addressing high-risk behaviors associated with dropping out, but have not been evaluated specifically in terms of staying in school, progressing in school, or completing school.[61] This program component typically is an in-class weekly curriculum facilitated by teachers, and is designed to teach students conflict resolution, anger management, or problem-solving skills through discussion, activities, or role play.

How to carry out this recommendation

1. Use adult advocates or other engaged adults to help students establish attainable academic and behavioral goals with specific benchmarks. Part of the school's role in

56. See Nelson-LeGall and Jones (1991).

57. For a discussion of the positive relationship between social extracurricular involvement and academic achievement, see Cooper et al. (1999), Gerber (1996), Marsh and Kleitman (2002), and Melnick, Sabo, and Vanfossen (1992).

58. Dynarski et al. (1998).

59. Larson and Rumberger (1995).

60. Sinclair et al. (1998); Sinclair, Christensen, and Thurlow (2005).

61. See LoSciuto et al. (1996); Harrell et al. (1998); Bacon (2002); Farrell et al. (2003); Allen et al. (1997); Hecht et al. (2003).

helping at-risk students develop interpersonal skills is guiding students as they determine short- and long-term goals. Adult advocates (recommendation 2), mentors, teachers, or counselors can help students at risk of dropping out determine realistic goals for interacting with peers and teachers at school, academic progress, or related areas for improvement (see below).[62] Students, particularly those in middle school, can take responsibility for their behavior by setting personal benchmarks such as "turn in daily homework" or "attend all classes in one week."

2. Recognize student accomplishments. School administrators and staff can provide frequent positive rewards and recognition for accomplishments based on the student's progress toward goals. In this way, students are rewarded for small successes, since daily attendance or a "C" grade may be a significant accomplishment for at-risk students. Staff can hold recognition ceremonies or make positive calls home to acknowledge meeting goals, improving attendance, or exceptional school work.[63]

3. Teach strategies to strengthen problem-solving and decision-making skills. Schools can integrate problem-solving or decision-making curricula with existing curricula or have students participate in a life-skills course. The panel agreed that the development of emotional and social competence can be encouraged by requiring all entering 9th grade students to participate in a skills-development course as a part of high-school reform effort. Schools can also target students for participation in small-group seminars to help them develop these skills, an effort that can be facilitated by adult advocates or by other staff teams during advisory periods.[64] Schools can select an existing curriculum or develop their own. The panel recommends that students be exposed to topics such as problem recognition and evaluation, goal setting, planning and organization, anticipating roadblocks, and controlling anger and expressing emotion. The emphasis should be on developing cooperative learning skills and positive relationships with staff, teachers, and students.[65]

4. Establish partnerships with community-based program providers and other agencies such as social services, welfare, mental health, and law enforcement. The root cause of problematic classroom behavior or social skills for students who are at risk of dropping out may be external social factors. Coordination with social service, child welfare, and law enforcement agencies to help meet students' needs outside of school alleviates problems that present themselves during school hours.[66] For example, a student at risk of dropping out may need assistance finding a drug rehabilitation program. Working with this type of program could provide critical support for a student's needs outside of school and result in improved interactions at school.

Potential roadblocks and suggested approaches

1. Limited resources for new courses.

Suggested Approach: Incorporating lessons aimed at improving classroom behaviors or social skills does not have to be an all-or-nothing endeavor. Teachers can model positive communications with

62. Larson and Rumberger (1998).

63. Larson and Rumberger (1998); Cardenas et al. (1992).

64. See Dynarski et al. (1998); Larson and Rumberger (1998); LoScuito et al. (1996); Allen et al. (1997); Bacon (2002); Sinclair et al. (1998); Sinclair, Christensen, and Thurlow (2005); Hecht et al. (2003); Farrell et al. (2003); Shirm et al. (2006).

65. Snipes et al. (2006).

66. Larson and Rumberger (1998); Snipes et al. (2006); Shirm et al. (2006); Harrell et al. (1998).

students every day and incorporate positive examples of such skills into any curricular area. The panel recommends that staff receive professional development on how to work with students in this capacity (see roadblock 2). Schools that are considering schoolwide reforms as part of addressing dropout prevention can incorporate these strategies into the restructuring plan.

2. Teachers and staff may stereotype at-risk students and assume that "those kids can't be helped." Behavior-related disruptions create problems for schools and for at-risk students. Fights with teachers or peers can result in suspension or expulsion, and staff spending more time dealing with behavior and less time on instruction and learning. Keeping students with behavior problems in school can create a disincentive for teachers and administrators who must deal with these problems. This often results in encouraging at-risk students to leave school[67] rather than address the root of the behavior problem.

Suggested Approach: The panel strongly encourages schools or districts to provide staff with professional development on how to build at-risk students' classroom behavior and social skills. Evidence connecting professional development to reduced dropout rates is limited, but it is difficult for students to develop such competencies without staff who model these skills when interacting with students.

67. Rumberger (2004).

Recommendation 5. Personalize the learning environment and instructional process (schoolwide intervention).

A personalized learning environment creates a sense of belonging and promotes a sense of community. The panel agreed that students at risk of dropping out need academic, social, and behavioral encouragement from teachers and from the school community. A personalized learning environment fosters a school climate where students and teachers get to know one another.[68]

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation as *moderate* because of the inconsistency in the effects of the interventions on staying in school, progressing in school, and completing school. The panel considered seven studies of five dropout interventions that included a component designed to personalize the learning environment.[69] Interventions varied in how the student learning environment was personalized, and two interventions that demonstrated positive or potentially positive effects on outcomes related to dropping out included a school reform measure of creating a 9th grade academy.[70] Evaluations of these interventions suggest a moderate level of external validity as one intervention was conducted in 10 sites over six states and another intervention was conducted in three states. Despite the promising effects of efforts to personalize the learning environment by including features such as team teaching or school-within-a-school, the panel was unable to disentangle the effects of these specific components to determine the impact of the specific practice on dropping out, which resulted in the "moderate" evidence rating.

Brief summary of evidence to support the recommendation

Students attending large schools can become alienated and uninterested to the point where they feel little attachment to school and drop out.[71] Reforms aimed at creating smaller school environments have been found to be associated with more positive student achievement, school climate, school attendance, and graduation rates.[72] More specifically, a review of research by the National Research Council on effective schools and programs shown to reduce dropout rates concluded that the "evidence suggests that student engagement and learning are fostered by a school climate characterized by an ethic of caring and supportive relationships, respect, fairness, and trusts; and teachers' sense of shared responsibility and efficacy related to student learning."[73] The research review also found that student outcomes were most improved when a caring and supportive environment was combined with "academic press," or a focus on learning and high expectations for student achievement.[74] A personalized learning

68. See Quint et al. (2006) and Kemple et al. (2005).

69. Kemple and Snipes (2000); Kemple (2004); Dynarski and Wood (1997); Kemple et al. (2005); Quint et al. (2005); Dynarski et al. (1998).

70. Kemple and Snipes (2000); Kemple (2004); Kemple et al. (2005).

71. Wehlage et al. (1989); National Research Council (2004).

72. Lee and Smith (1995); Wasley et al. (2000); McMullan, Sipe, and Wolf (1994); Quint (2006).

73. National Research Council (2004), p. 103.

74. Ibid.

environment also serves as a platform for implementing other strategies (and recommendations in this practice guide) for at-risk students.

Students who receive personalized attention from teachers may be more engaged in learning because the teachers know what motivates individual students.[75] A high degree of personalization allows schools to focus intensely on why students are having difficulty, and actively work to address sources of difficulty. For example, teachers can more closely monitor student performance and behavior.

Other benefits of personalized learning communities include opportunities for innovative teaching and more engaging curriculum. Researchers suggest that interdisciplinary teaching teams for 9th graders can reduce dropout rates,[76] and interventions that include interdisciplinary teaching teams have shown positive effects on outcomes related to dropping out.[77] Personalized learning communities provide opportunities for more curriculum choice aimed at student engagement (recommendation 6).

Small learning communities are characteristic of several interventions that have shown promise at addressing outcomes related to preventing dropping out. One intervention that was evaluated using a randomized controlled trial with almost 1,800 students included a 9th grade academy in which 9th and 10th grade students are divided into grade level clusters that are taught by a core group of interdisciplinary teachers. Students who participated in the intervention dropped out less frequently than students in the comparison group, and earned more credits toward graduation.[78] Further, another intervention that was evaluated using a matched comparison group assigned students to a 9th grade academy, in which students were taught by interdisciplinary teams of teachers over four 80–90 minute periods over the course of the day. Students who received this intervention earned more credits over two years than students in the comparison group and were more likely to be promoted to 10th grade.[79]

One strategy that has shown promise is enrolling smaller numbers of students in schools. One intervention, an alternative high school model, suggests schools enroll no more than 500 students to help create a sense of community. The intervention was evaluated in a randomized controlled trial with more than 1,600 students, and showed effectiveness in keeping students in school and in helping students to progress in school, compared with students who did not participate in the intervention.[80] In addition, recent research on small schools in Chicago found that 9th graders attending small schools had better attendance rates and were more on track to graduate than students in other schools.[81]

The panel also noted one other intervention that was not evaluated specifically in terms of staying in school, progressing in school, or completing school. The program created small cohorts of transitioning students who remain together for core classes and homeroom, and created smaller learning communities.[82]

75. Lee and Burkam (2003).

76. Kerr and Letgers (2004); Quint (2006).

77. Kemple and Snipes (2000); Kemple (2004); Kemple et al. (2005).

78. Kemple and Snipes (2000); Kemple (2004).

79. Kemple et al. (2005).

80. Dynarski et al. (1998).

81. Kahne, Sporte, and de la Torre (2006).

82. Reyes and Jason (1991).

How to carry out this recommendation

Strategies designed to create a more personalized learning environment range from schoolwide reform of the traditional large, comprehensive high school to school-within-a-school model to team teaching. Schools that establish small learning communities may implement the other recommendations, but schools that do not wish to undertake whole-school reform efforts can undertake less ambitious strategies for personalizing the school environment.

1. Establish small learning communities. Small learning communities can be implemented for one grade level or as a whole school reform model. Schools might establish an academy for 9th grade students to ease the transition into the high school. In this type of small learning community, the students may be housed in a separate wing or floor of the school building, with core-academic teacher teams that share the same students.[83] An alternative model, which can be implemented in conjunction with a 9th grade academy, is for schools to establish a school-within-a-school, which is a thematically based small learning community of about 350 students who self-select which school they want to remain in for the duration of high school.[84] A similar type of reform can also be established in middle schools.[85] Each small learning community consists of an interdisciplinary team of teachers whom students work with throughout high school. District administrators can establish a third type of small learning community by authorizing the creation of a school that has lower student enrollment. These small schools operate as autonomous schools, but may include features such as a selective enrollment or professional or curricular development.[86] The other suggestions for creating a personalized learning environment may be part of reforms to establish small learning communities.

2. Establish team teaching. Pairing teachers as partners in the classroom has benefits for personalizing the learning environment. Not only can teachers conduct common lesson planning and decision-making about the classroom,[87] but students have access to more than one teacher who can offer individualized attention or new perspectives for the student. Other benefits for team teaching identified by the panel include teachers working one-on-one with students more often, since one teacher can teach and the other can provide direct student support during the lesson, a collegial support system for working with difficult students, and teachers establishing connections with the students that facilitate ongoing discussions of academic and behavioral progress with students and parents.

3. Create smaller classes. The panel agreed that lowering the number of students in the class allows for teachers to interact with students on an individual level more frequently. Having fewer students in the classroom also allows students to feel a greater sense of belonging in the classroom. The number of students per class can range from 18 to 30, depending on school size and staffing.[88]

4. Create extended time in the classroom through changes to the school schedule. Implementing innovative schedule features—such as block scheduling, extended class periods, or advisory and study periods—provides more time for student-teacher and student-student interactions during the day.[89] Students also have the opportunity to explore

83. Kemple and Snipes (2000); Kemple (2004).

84. Quint et al. (2006).

85. Reyes and Jason (1991).

86. Kahne et al. (2006).

87. Kemple and Snipes (2000); Kemple (2004).

88. Ibid.

89. Kemple and Snipes (2000); Kemple (2004); Kemple et al. (2005).

topics in greater depth in both groups as individuals working with the teacher.

5. Encourage students' participation in extracurricular activities. Teachers and staff should not assume that students will participate in activities on their own accord, and should personally invite students at risk of dropping out to school-related activities. The panel suggests that schools can accommodate the varying interests of students at risk of dropping out by providing extracurricular activities such as sports, clubs, after school field trips, guest speakers, postsecondary partnerships, or service groups. Schools could incorporate a question about interests in extracurricular activities in an exit interview or in surveys of students at risk of dropping out (recommendation 1) to inform them about what types of extracurricular clubs or groups could be formed.

Potential roadblocks and suggested approaches

1. Staff may resist restructuring the school to personalize the school environment. Teachers and staff who are asked to implement the changes may be less enthusiastic than administrators or district officials.

Suggested Approach: Strong and steady leadership may push restructuring ahead against staff inertia or resistance, but district administrators must provide professional development and collaborative planning time to establish support for school reforms and allow staff who wish to transfer the opportunity to do so.

2. Turnover of staff in key leadership positions can hamper progress. New leaders will have their own agendas and ideas about promising future directions. Districts that impose school restructuring efforts on schools (see roadblock 1) may encounter more resistance from principals and teachers and possibly staff turnover.

Suggested Approach: Soliciting principal and staff input first will reduce resistance. Developing realistic timelines for implementation also will improve support for change.

Recommendation 6. Provide rigorous and relevant instruction to better engage students in learning and provide the skills needed to graduate and to serve them after they leave school (schoolwide intervention).

As more states adopt high school exit exams, students must increasingly master academic content in order to graduate from high school. In addition, students must be prepared for postsecondary opportunities and careers beyond high school. Schools can implement reforms aimed at improving instruction to ensure students have the necessary skills to complete high school as well as the skills to succeed in college and the workplace. Reforms to provide relevant instruction emphasize professional development for teachers so that classroom instruction meets the needs of all students.[90]

Career and technical education (CTE) implemented to allow all students "multiple pathways" toward careers and higher education is a way to engage the student. Multiple pathways models consist of three components: college preparatory academic core classes, a choice of professional or technical core classes that offer academic and real world applications, and field-based learning.[91] This type of curriculum allows students to learn and apply essential academic concepts and skills for a functional purpose. Students are guided in discovering the value of academic concepts in future work-related endeavors. At the same time, all students also are exposed to career-based opportunities as part of their daily school experience.

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation as *moderate* because of the varying effects of interventions on measured outcomes, the limited number of evaluations that met WWC evidence standards, and the intensity of the career or pathway component of the interventions. The panel considered eight studies of seven dropout interventions that encouraged students to discover the purpose for completing school by incorporating career-related curricula, rigorous academic curriculum, or career-advising components into the school model.[92] Two studies of these interventions suggest that the effectiveness of career or pathway components is moderately generalizable: one intervention was evaluated in 10 sites across six states, and another intervention was evaluated in two large states. Discerning the extent to which these components accounted for effects on staying in school, progressing in school, or completing school was a notable challenge because at least four interventions also included schoolwide reform efforts (recommendation 5). Additionally, the effectiveness of the interventions was mixed: two of the interventions that included career-related curricula or pathways as a key component

90. Quint et al. (2005).

91. Kemple and Snipes (2000); Kemple (2004); Kemple et al. (2005).

92. Kemple and Snipes (2000); Kemple (2004); Constantine et al. (2006); Dynarski et al. (1998); Kemple et al. (2005); Quint et al. (2005); Snipes et al. (2006).

demonstrated positive effects on staying in school or progressing in school,[93] while other interventions that included components designed to encourage students to discover the purpose for completing school demonstrated relatively few effects.[94] While the panel considered the rigor of these evaluations, the challenge in attributing any effects directly to the career-related components resulted in a moderate rating.

Brief summary of evidence to support the recommendation

To improve the rigor and relevance of classroom instruction, teachers need ongoing ways to expand their knowledge and improve their skills. Researchers posit that developing professional learning communities where teachers collaborate on instructional design and provide collective feedback on their teaching, perhaps with the assistance of instructional coaches or mentors, may be a way to improve instructional practices.[95] School reforms that include multiple pathways can allow for such practices to be easily implemented.[96] Two interventions that were rigorously evaluated implemented strategies that provided professional development training for teachers.[97] One intervention, which was found to have positive impacts on staying in school, progressing in school, and completing school, provided on-site coaching for teachers related to the 9th grade curriculum.[98] A second intervention also provided workshops for teachers on innovative instructional practices for the classroom. However, the evaluation of this intervention demonstrated little to no impact on staying in school, progressing in school, or completing school.[99]

Traditionally, supporters of CTE argued that students who were not going on to college should focus on developing appropriate skills for the workplace. Opponents of CTE believed that all students should have the opportunity to be prepared for college through an academic core curriculum, and that CTE implicitly denied such opportunities to many students.[100] In either case, the curriculum must engage students in learning and teach them relevant skills.

Recently, however, some high school reform efforts have included both meaningful academic curriculum and a variety of job-related practical applications.[101] Career academies, focus schools, and curricula that permit students to choose majors seek to ensure that students gain relevant career and technical skills in high school without sacrificing the academic preparation that is necessary for college. Other benefits of career and technical education implemented via multiple pathways include preparation for civic involvement,[102] student achievement, including the development of problem-solving and analytical reasoning,[103] and personalization.[104] The multiple pathways approach to career and technical education involves more than just tacking on career and technical courses to an existing academic curriculum. It typically includes an effort to improve instruction in core academic courses as well as career

93. Kemple and Snipes (2000); Kemple (2004); Kemple et al. (2005).

94. Constantine et al. (2006); Dynarski et al. (1998); Quint et al. (2005); Snipes et al. (2006).

95. See Little (2003); Louis and Marks (1998); McLaughlin and Talbert (2001).

96. See Connell et al. (2006).

97. Kemple and Snipes (2000); Kemple (2004); Kemple et al. (2005); Quint et al. (2005).

98. Kemple and Snipes (2000); Kemple (2004); Kemple et al. (2005).

99. Quint et al. (2005).

100. Lucas (1999); Oakes (1986).

101. Sterns and Stearns (2007) ; Grubb (2007); Plank (2001); Stiles and Brady (2007).

102. Rogers, Kahne, and Middaugh (2007).

103. Rose (2007).

104. Quartz and Washor (2007).

and technical courses, aligning material and academic strands, and demonstrating the relevance of the academic courses to students—so that students are not only prepared for careers, but also better prepared for college than they might be under traditional high school programs.

A multiple pathways approach to career and technical education is a key component of three interventions that have been rigorously evaluated. As a key feature of one intervention, students in grades 10–12 self-select a career-themed academy. In addition to core academic coursework, students in each academy are exposed to career-oriented courses and work-related awareness and developmental activities. The evaluation of this intervention, a quasi-experimental design using matched comparison groups, found that students who participated in the intervention were less likely to drop out of school and earned more credits toward graduation by the end of their 12th grade year.[105]

Another intervention incorporates career-focused themes in a similar fashion. Students self-select a theme-based academy and are exposed to both core academic courses and career-related opportunities. Students are taught employability skills in vocational and core courses and are provided with work-based learning opportunities through internships at local employer partners. Students also have access to enhanced career and college counseling. The evaluation of this intervention, a randomized controlled trial that included 11 schools, found that students who participated in the intervention earned more course credits in two years than students in the comparison group.[106]

A third intervention that includes a career-pathways component and has been rigorously evaluated demonstrated no discernible effects on staying in school.[107]

Despite the fact that career-based learning is a key component of two interventions found to have potentially positive or positive effects on outcomes related to dropping out, a key limitation is that this particular component is typically implemented in conjunction with the efforts to personalize the learning community. Thus, it becomes difficult to attribute positive effects on staying in school, progressing in school, or completing school to the career pathways model or to the larger school reform efforts.

Finally, evidence suggests that efforts to provide students with access to advisors who can provide individual assistance for students considering postsecondary options may help keep students in school. Rigorous evaluations of interventions that provided students with career development advising, college campus visits, and financial aid assistance demonstrated positive effects on completing school and staying in school.[108] The panel also noted one intervention, which was not evaluated for outcomes related to staying in school, progressing in school, or completing school, that selects academically promising students to participate in advanced-level college preparatory classes as a way to introduce students to postsecondary options.[109]

How to carry out this recommendation

1. Provide teachers with ongoing ways to expand their knowledge and improve their skills. Professional development workshops can be facilitated by grade-level team leaders, school-

105. Kemple and Snipes (2000); Kemple (2004).

106. Kemple et al. (2005).

107. Quint et al. (2005).

108. Constantine et al. (2006); Dynarski et al. (1998).

109. Mehan et al. (1996).

based coaches, or outside professional consultants.[110] Workshops can occur monthly or during the summer, and should cover instructional practices related to teaching curricular material content or classroom-based instructional practices such as cooperative learning strategies.[111] In addition, the panel suggests that professional learning communities, where teachers have allocated time to collaborate on curriculum development and classroom teaching, can provide an ongoing means for teachers to improve their practice.

2. Integrate academic content with career and skills-based themes through career academies or multiple pathways models. Students should have the opportunity to see the relevance of their academic work by applying academic skills to work-world problems. Large comprehensive high schools can create "schools within a school" around career-related themes such as health, business, or the arts. Students select the specific academy or pathway they would like to join. The curriculum within that academy includes core academic courses (such as math, science, English, and social studies) that use, whenever possible, examples and illustrations from the career theme.[112] The curriculum also includes occupation-related classes that focus on the academy's career theme.[113]

In contrast to comprehensive high schools that may need to incorporate academies representing multiple career options, schools of choice, such as charter and magnet schools, may adopt a focus on a single, specific career theme. The panel suggests that administrators in medium-size and large school districts could consider adopting choice-based high school assignments that allow every high school to specialize and every student to choose an appropriate school.

3. Host career days and offer opportunities to visit postsecondary campuses. The panel suggests that schools can invite community members who work in different fields to share their experiences in the workplace. Introducing students to these types of experiences encourages students to consider career and postsecondary options early. Schools can also expose students to college campuses by facilitating visits to college campuses that include discussions with admissions or financial aid officials.[114]

4. Provide students with extra assistance and information about the demands of college. First-generation college students and their families often find the process for navigating applications for college and financial aid difficult.[115] Students lack knowledge about college admissions processes and about the course requirements for major fields that can lead to a chosen career (pre-med majors typically must take four years of high school math).[116] Often they are unaware of sources of financial aid and do not apply to schools because they believe they cannot afford them.

Knowledgeable and supportive advisors can assist students in navigating the college and financial aid process and help overcome barriers associated with first-generation college attendance. Counseling regarding the college and financial aid application process is an important component to assist students at risk of dropping out.[117] Specific types of support might include providing postsecondary counselors to assist with the college application

110. Kemple and Snipes (2000); Kemple (2004); Quint et al. (2005).

111. Quint et al. (2005).

112. Kemple and Snipes (2000); Kemple (2004); Kemple et al. (2005).

113. See Kemple and Rock (1996).

114. Constantine et al. (2006).

115. St. John et al. (2002); Avery and Kane (2004).

116. Bridges et al. (2008).

117. Woloszyk (1996); Hayward and Tallmadge (1995); Bragg (1997); Bauer and Michael (1993).

process and financial aid applications, offering seminars about college admission requirements and financial aid opportunities, and offering SAT/ACT preparation programs.[118]

5. Partner with local businesses to provide opportunities for work-related experience such as internships, simulated job interviews, or long-term employment. Schools can provide opportunities for students to explore the value of education by establishing agreements with local businesses to provide simulated (or real) job interviews, internships, or long-term employment. These opportunities would provide practical on-the-job experience and exposure to employability skills in a range of occupations. Examples could include paid positions, school credit for internships, or work experience with a classroom-based component.[119]

Potential roadblocks and suggested approaches

1. Staff resist integrating career and technical education into academic curricula.

Suggested Approach: Staff resistance might be attributed partly to lack of knowledge about how to smoothly integrate academic content with career-related information. Professional development can help to overcome this obstacle.

2. State standards and college admission requirements discourage the integration of academic and career and technical education.

Suggested Approach: The range of options for high schools wanting to reform their academic courses is constrained by the expectations of college admissions officers and by state content standards. However, relevant career examples and academic courses that cover the expected content can be integrated into traditional course content, titles, and descriptions. Indeed, the aim of an integrated academic-career and technical program is to provide instruction that makes the academic and the career and technical work complementary rather than competing.

3. Students lack interest in attending college.

Suggested Approach: Curriculum reform that makes explicit the connection between academic skills and professional success should help to inspire greater interest in college, as should opportunities to have students visit colleges and interact with students and staff from colleges.

118. Constantine et al. (2006).

119. Kemple and Snipes (2000); Kemple (2004); Dynarski et al. (1998); Dynarski and Wood (1997).

Conclusion

The purpose of this practice guide is to provide educators, administrators, and policymakers with recommendations for addressing dropping out based on evidence. Recommendations in this guide are based on practices that have demonstrated impacts on outcomes related to dropping out.

Users of this guide should begin with a thorough assessment of the nature of dropping out in their schools. They can analyze data to design a comprehensive approach to dropout prevention that incorporates multiple recommendations and incorporates both targeted and schoolwide interventions. They also should examine the data over time and make adjustments to the implementation of these recommendations. The panel believes the practices are mutually supportive and strongly encourages users of this practice guide to implement multiple practices.

This guide focuses on practices that schools and districts can implement to reduce dropping out. Ultimately, students drop out for many reasons that relate to them as individuals, their families, and their neighborhoods. Parents and communities also need to do their part to tackle the problem comprehensively. However, the panel believes the practices recommended in this guide are a sound starting point to help educators do what they can to reduce dropping out.

Appendix A. Postscript from the Institute of Education Sciences

What is a practice guide?

The health care professions have embraced a mechanism for assembling and communicating evidence-based advice to practitioners about care for specific clinical conditions. Variously called practice guidelines, treatment protocols, critical pathways, best practice guides, or simply practice guides, these documents are systematically developed recommendations about the course of care for frequently encountered problems, ranging from physical conditions, such as foot ulcers, to psychosocial conditions, such as adolescent development.[1]

Practice guides are similar to the products of typical expert consensus panels in reflecting the views of those serving on the panel and the social decisions that come into play as the positions of individual panel members are forged into statements that all panel members are willing to endorse. Practice guides, however, are generated under three constraints that do not typically apply to consensus panels. The first is that a practice guide consists of a list of discrete recommendations that are actionable. The second is that those recommendations taken together are intended to be a coherent approach to a multifaceted problem. The third, which is most important, is that each recommendation is explicitly connected to the level of evidence supporting it, with the level represented by a grade (high, moderate, low).

The levels of evidence, or grades, are usually constructed around the value of particular types of studies for drawing causal conclusions about what works. Thus, one typically finds that a high level of evidence is drawn from a body of randomized controlled trials, the moderate level from well-designed studies that do not involve randomization, and the low level from the opinions of respected authorities (see table 1). Levels of evidence also can be constructed around the value of particular types of studies for other goals, such as the reliability and validity of assessments.

Practice guides also can be distinguished from systematic reviews or meta-analyses such as What Works Clearinghouse (WWC) intervention reviews or statistical meta-analyses, which employ statistical methods to summarize the results of studies obtained from a rule-based search of the literature. Authors of practice guides seldom conduct the types of systematic literature searches that are the backbone of a meta-analysis, although they take advantage of such work when it is already published. Instead, authors use their expertise to identify the most important research with respect to their recommendations, augmented by a search of recent publications to ensure that the research citations are up-to-date. Furthermore, the characterization of the quality and direction of the evidence underlying a recommendation in a practice guide relies less on a tight set of rules and statistical algorithms and more on the judgment of the authors than would be the case in a high-quality meta-analysis. Another distinction is that a practice guide, because it aims for a comprehensive and coherent approach, operates with more numerous and more contextualized statements of what works than does a typical meta-analysis.

Thus, practice guides sit somewhere between consensus reports and meta-analyses in the degree to which systematic processes are used for locating relevant research and characterizing its meaning. Practice guides are more like consensus

1. Field and Lohr (1990).

panel reports than meta-analyses in the breadth and complexity of the topic that is addressed. Practice guides are different from both consensus reports and meta-analyses in providing advice at the level of specific action steps along a pathway that represents a more-or-less coherent and comprehensive approach to a multifaceted problem.

Practice guides in education at the Institute of Education Sciences

The Institute of Education Sciences (IES) publishes practice guides in education to bring the best available evidence and expertise to bear on the types of systemic challenges that cannot currently be addressed by single interventions or programs. Although IES has taken advantage of the history of practice guides in health care to provide models of how to proceed in education, education is different from health care in ways that may require that practice guides in education have somewhat different designs. Even within health care, where practice guides now number in the thousands, there is no single template in use. Rather, one finds descriptions of general design features that permit substantial variation in the realization of practice guides across subspecialties and panels of experts.[2] Accordingly, the templates for IES practice guides may vary across practice guides and change over time and with experience.

The steps involved in producing an IES-sponsored practice guide are first to select a topic, which is informed by formal surveys of practitioners and requests. Next, a panel chair is recruited who has a national reputation and up-to-date expertise in the topic. Third, the chair, working in collaboration with IES, selects a small number of panelists to co-author the practice guide. These are people the chair believes can work well together and have the requisite expertise to be a convincing source of recommendations. IES recommends that at one least one of the panelists be a practitioner with experience relevant to the topic being addressed. The chair and the panelists are provided a general template for a practice guide along the lines of the information provided in this postscript. They are also provided with examples of practice guides. The practice guide panel works under a short deadline of 6–9 months to produce a draft document. The expert panel interacts with and receives feedback from staff at IES during the development of the practice guide, but they understand that they are the authors and, thus, responsible for the final product.

One unique feature of IES-sponsored practice guides is that they are subjected to rigorous external peer review through the same office that is responsible for independent review of other IES publications. A critical task of the peer reviewers of a practice guide is to determine whether the evidence cited in support of particular recommendations is up-to-date and that studies of similar or better quality that point in a different direction have not been ignored. Peer reviewers also are asked to evaluate whether the evidence grade assigned to particular recommendations by the practice guide authors is appropriate. A practice guide is revised as necessary to meet the concerns of external peer reviews and gain the approval of the standards and review staff at IES. The process of external peer review is carried out independent of the office and staff within IES that instigated the practice guide.

Because practice guides depend on the expertise of their authors and their group decision-making, the content of a practice guide is not and should not be viewed as a set of recommendations that in every case depends on and flows inevitably from scientific research. It is not only possible but also likely that two teams of recognized

2. American Psychological Association (2002).

experts, working independently to produce a practice guide on the same topic, would generate products that differ in important respects. Thus, consumers of practice guides need to understand that they are, in effect, getting the advice of consultants. These consultants should, on average, provide substantially better advice than an individual school district might obtain on its own because the authors are national authorities who have to reach agreement among themselves, justify their recommendations in terms of supporting evidence, and undergo rigorous independent peer review of their product.

Institute of Education Sciences

Appendix B. About the authors

Panel

Mark Dynarski is a vice president at Mathematica Policy Research, director of its Center for Improving Research Evidence, and its education area leader. Dr. Dynarski is a veteran in conducting randomized controlled trials for education research. He has over 20 years of experience conducting and managing research studies. He currently is directing the What Works Clearinghouse for the Institute of Education Sciences, for which he previously served as principal investigator of the dropout prevention area. He directed and contributed to some of the largest and most rigorous educational evaluations to date, including studies of the School Dropout Demonstration Assistance program, the Alternative Schools Program, Youth Fair Chance, the 21st Century Community Learning Centers program, and the national study of educational technology interventions.

Linda Clarke is the education and special projects director for the City of Houston and Mayor Bill White. She leads a citywide dropout program, Expectation Graduation, which has received national attention for its benefit to student lives and its community and business partnerships. Mrs. Clarke was the executive director of The Houston A+ Challenge, formerly the Houston Annenberg Challenge, and directed the largest sum of private money ever dedicated to school reform in the greater Houston area. She has worked as a teacher, principal, diagnostician, and districtwide instructional consultant for at-risk students. At a national level, Mrs. Clarke has worked in program design as a consultant for Phale Hale Educational Consulting of Washington D.C. to design and implement magnet programs at schools throughout the United States. Mrs. Clarke has served on numerous boards, and is a senior fellow of the American Leadership Forum and Changed Leadership Group at Harvard University.

Brian Cobb is a professor of education at Colorado State University. He received his Ph.D. in Vocational-Technical Education from the University of Illinois—Champaign–Urbana. His research focuses on secondary special education in transition and on quantitative research methodology.

Jeremy Finn, with a Ph.D. from the University of Chicago, is a professor of education at the State University of New York—Buffalo. He has long been concerned with issues of educational equity. His work on student engagement began with the publication of "Withdrawing from School" (*Review of Educational Research,* 1989). The publication explains how dropping out, and other forms of withdrawal, may have their roots in the earliest years of school and result from a history of interactions between the student and the institution. His studies of engagement-disengagement include "Academic Success Among Students At Risk for School Failure" (*Journal of Applied Psychology,* 1997) and the 2006 IES report "The Adult Lives of At-Risk Students: The Roles of Attainment and Engagement in High School." Dr. Finn has also conducted extensive research on the relationship between class size and student learning. He was part of the team that carried out the class-size experiment, Project STAR. The study demonstrated the immediate and long-term value of small class sizes in the elementary grades, including the impact on graduation rates.

Russell Rumberger is a professor of education in the Gevirtz Graduate School of Education at the University of California—Santa Barbara and director of the UC Linguistic Minority Research Institute (UC LMRI). He received a Ph.D. in Education and an M.A. in Economics from Stanford University in 1978 and a B.S. in Electrical

Engineering from Carnegie-Mellon University in 1971. He has been conducting research on school dropouts for the past 25 years and has written over 27 research papers and essays on the topic. He also served as a member of the U.S. Department of Education's National Institute of Statistical Sciences/Education Statistics Services Institute Task Force on Graduation, Completion, and Dropout Indicators (2004) and as a member of the National Research Council's Committee on Increasing High School Students' Engagement and Motivation to Learn (2003). He is currently directing the California Dropout Research Project, which is producing a series of reports and policy briefs about the dropout problem in California and a state policy agenda to improve California's high school graduation rate (http://lmri.ucsb.edu/dropouts/).

Jay Smink has been the executive director of the National Dropout Prevention Center at Clemson University since 1988 and serves as the executive director of the National Dropout Prevention Network, a professional organization of individual and institutional members representing education, business, and community leaders who are concerned with school dropout issues. He earned his M.Ed. in Industrial Education and D.Ed. in Educational Administration from Penn State. Dr. Smink is recognized as a national leader and authority on best practices and effective strategies for dropout prevention programs, including mentoring, service-learning, alternative schools, and career technical education. In addition, he is valued for his expertise on numerous administrative and instructional topics such as student learning styles, attendance and truancy, early identification of students at risk of school failure, and how to develop, implement, and evaluate dropout prevention, intervention, and recovery programs for struggling students.

Staff

Kristin Hallgren, a research analyst at Mathematica Policy Research, received her M.A. from the University of Washington. She specializes in teacher quality, and has worked on an IES-sponsored evaluation of teacher preparation models and an evaluation of the impact of teacher induction models. As a former educator, she implemented a schoolwide curriculum designed to facilitate stronger relationships among students and a safer educational community for staff and students, and worked with at-risk students in a summer school enrichment literacy program. Ms. Hallgren also served on a team to examine and implement curriculum for all levels of students in a humanities setting, including training colleagues on their implementation of excellent academic curriculum in a secondary setting.

Brian Gill received his Ph.D. and J.D. from the University of California—Berkeley, and is a senior social scientist at Mathematica Policy Research. He served as the lead author of *Rhetoric vs. Reality: What We Know and What We Need to Know About Vouchers and Charter Schools* (2007) and was lead author of a comprehensive report on Edison Schools, the nation's largest for-profit manager of public schools. He is now principal investigator for the National Evaluation of KIPP charter schools. He is leading an IES-sponsored study of the impact of supplemental educational services on student achievement. Dr. Gill has also contributed to the methodological literature on the accurate measurement of dropout and graduation rates.

Appendix C. Disclosure of potential conflicts of interest

Practice guide panels comprise individuals who are nationally recognized experts on the topics about which they are rendering recommendations. The Institute of Education Sciences (IES) expects that such experts will be involved professionally in a variety of matters that relate to their work as a panel. Panel members are asked to disclose their professional involvements and to institute deliberative processes that encourage critical examination of the views of panel members as they relate to the content of the practice guide. The potential influence of panel members' professional engagements is further muted by the requirement that they ground their recommendations in evidence that is documented in the practice guide. In addition, the practice guide undergoes independent external peer review prior to publication, with particular focus on whether the evidence related to the recommendations in the practice guide has been appropriately presented.

The professional engagements reported by each panel member that appear most closely associated with the panel recommendations are noted below.

There were no professional engagements or commitments reported by the panel members that were identified as a potential conflict of interest.

Appendix D. Technical information on the studies

To date, the What Works Clearinghouse (WWC) has reviewed 64 studies of 16 dropout prevention interventions. For the practice guide the panel examined the 21 studies that met WWC evidence standards or met standards with reservations. Because the practice guide aims to identify effective practices contributing to staying in school and completing high school with a regular diploma, the panel did not consider three studies of three interventions focusing on General Educational Development (GED) programs. In addition, the panel did not consider one study of a dropout intervention program designed specifically for teen mothers. Other dropout prevention interventions have been studied, but the panel focused on studies meeting WWC evidence standards in developing levels of evidence for the practice guide.

Dropout prevention interventions almost always include multiple components, and the effects of specific intervention components on outcomes related to dropping out cannot be causally attributed definitively to any particular component or components of an intervention. This creates a challenge for the practice guide, which aims to recommend general strategies not specific interventions. To assess the importance of different components and strategies, the panel began by reviewing the implementation reports of interventions that have studies that met WWC evidence standards to document the components of each intervention. We then grouped interventions that included similar components. The panel considered the extent to which various components were described in implementation reports or by developers as significant aspects of the intervention (table D1). The panel also took into account other interventions that have not been evaluated for outcomes related to dropping out but that contain components related to the recommendations, primarily as a demonstration of the broader use of particular strategies in different programs that serve students who are often at risk of dropping out.

While each recommendation was drawn from a broad set of evidence and programs, this appendix details the panel's key technical considerations in assessing the level of evidence for each recommendation. As such, although table D1 lists supplementary programs to demonstrate the broader use of particular strategies recommended by the panel, only those studies that met WWC standards are described in detail. The level of evidence for each recommendation was determined by considering the effects of the intervention as determined by the standards set by the WWC, the intensity of each component toward the impacts found in the evaluation, and the number of studies conducted of the intervention. Finally, expert opinion was taken into account for each recommendation.

Interventions: descriptions and impact evidence

Interventions showing positive or potentially positive impacts

Achievement for Latinos with Academic Success (ALAS). Larson and Rumberger (1995) conducted an evaluation of the ALAS program, which is a middle school intervention designed to address student, school, family, and community factors that affect dropping out. Each student is assigned a counselor who monitors attendance, behavior, and academic achievement. The counselor provides feedback and coordinates students, families, and teachers. Counselors also serve as advocates for students and intervene when problems are identified. Students are trained in problem-solving skills, and parents are

Table D1. Intensity of components of interventions related to recommendations

	1. Data analysis	2. Adult advocate	3. Academic support	4. Classroom behavior and social skills	5. Personalized learning environment	6. Help students discover purpose
WWC-rated interventions showing positive or potentially positive effects						
Achievement for Latinos with Academic Success (ALAS)						
Career Academies						
Check and Connect						
High School Redirection						
Talent Development						
Talent Search						
Twelve Together						
WWC-rated interventions showing no detectable impacts						
First Things First						
Middle College High School						
Project GRAD (Graduation Really Achieves Dreams)						
Quantum Opportunity Program						
Other interventions that did not meet WWC standards or did not evaluate outcomes related to dropping out						
Across Ages						
Advancement Via Individual Determination (AVID)						
CASA Striving Together to Achieve Rewarding Tomorrows (START)						
Coca Cola Valued Youth Program						
Keepin' It Real						
Responding in Peaceful and Positive (RIPP) Ways						
School Transitional Environment Program (STEP)						
Teen Outreach Program (TO)						
Too Good For Violence (TGFV)						

Note: Darker shades correspond to key characteristics while pale shades correspond to nonkey characteristics.

Source: Authors' compilation.

trained in parent-child problem-solving, how to participate in school activities, and how to contact teachers and school administrators.

The evaluation included 94 high-risk students who entered junior high school in Los Angeles as 7th graders in 1990, with 46 students randomly assigned to *ALAS* and 48 assigned to the control group. The study measured outcomes at the end of 9th grade (the last year of the intervention) and the end of 11th grade. For staying in school, the study showed statistically significant positive effects on some outcomes and no statistically significant negative effects. At the end of 9th grade, *ALAS* students were more likely than control students to be enrolled in school (98 percent compared with 83 percent). For progressing in school, the study showed statistically significant positive effects on some outcomes and no statistically significant negative effects. For students who remained in a district school, *ALAS* students were more likely than control students to be on track to graduate on time at the end of 9th grade (72 percent compared with 53 percent). The difference was statistically significant.

Career Academies. Kemple and Snipes (2000) and Kemple (2004) evaluated *the Career Academies* intervention. *Career Academies* are school-within-school programs operating within larger high schools. They offer curricula based on a career theme, academic coursework, and work experience through partnerships with local employers. Students take their career-related courses within the academy, which are often taught by a core team of academy teachers.

The Kemple and Snipes (2000) and Kemple (2004) evaluation was a randomized controlled trial that included a total of 1,764 students who applied to the entrance grade of nine *Career Academies*. The study measured outcomes at the end of a student's projected 12th grade year and then four years after a student's projected 12th grade year. The study found that *Career Academies* have a positive and statistically significant effect on dropping out. At the end of the student's projected 12th grade year, 21 percent of the *Career Academies* group and 32 percent of the comparison group had dropped out of school. *Career Academies* also had a positive and statistically significant effect on progressing through high school. At the end of the student's projected 12th grade year, *Career Academies* youth had earned an average of 19 credits and comparison youth had earned an average of 17 credits, and 40 percent of Career Academy youth and 28 percent of comparison youth had earned sufficient credits to graduate. There was no statistically significant difference between the percentage of high-risk *Career Academies* and comparison youth who earned a diploma.

Check and Connect. Sinclair et al. (1998) conducted an evaluation of the *Check and Connect* program. *Check and Connect* relies on close monitoring of school performance, as well as mentoring, case management, and other supports. The Check component of the program is designed to continually assess student engagement through close monitoring of student performance and progress indicators. The Connect component involves program staff giving individual attention to students, in partnership with school personnel, family members, and community service providers. Students enrolled in *Check and Connect* are assigned a monitor who regularly reviews their performance and intervenes when problems are identified. The monitor also advocates for students, coordinates services, provides ongoing feedback and encouragement, and emphasizes the importance of staying in school.

The evaluation included 94 Minneapolis high school students with learning,

emotional, or behavioral disabilities. Students were randomly assigned at the beginning of 9th grade, with 47 students assigned to the treatment group and 47 students assigned to the control group. Both treatment and control group received *Check and Connect* services in 7th and 8th grade, but only the treatment group students continued to receive services in 9th grade (their first year of high school). The study measured the effect of the intervention on staying in school and progressing in school. Ninth grade students enrolled in *Check and Connect* were significantly less likely than similar control group students to have dropped out of school at the end of the first follow-up year (9 percent compared with 30 percent). Students in *Check and Connect* earned significantly more credits toward high school completion during 9th grade than did students in the control group.

Sinclair, Christenson, and Thurlow (2005) conducted a second evaluation of *Check and Connect* that met WWC evidence standards with reservations. The study was a randomized controlled trial with an attrition rate of slightly more than 30 percent of those originally assigned. The post-attrition sample included 144 9th grade students from Minneapolis public schools with emotional or behavioral disabilities, including 71 students randomly assigned to the treatment group and 73 students randomly assigned to the control group. Treatment group students received *Check and Connect* services throughout high school, while control group received no *Check and Connect* services. The study measured the effect of the intervention on staying in school and on completing school. The study found that *Check and Connect* students were significantly less likely to have dropped out of school at the end of the fourth follow-up year (39 percent compared with 58 percent). The study also indicated that there was no statistically significant effect on on-time high school completion.

High School Redirection. High School Redirection is an alternative high school program for youth who are at risk of dropping out. The program emphasizes basic skills development and offers an intensive remedial reading program (Strategies and Techniques for Advancement in Reading) for students with serious literacy problems. The schools operate in economically disadvantaged areas. To foster a sense of community, the schools are small and teachers are encouraged to act as mentors as well as instructors. Dynarski and Wood (1997) conducted two studies of *High School Redirection* that met WWC standards. Both studies were randomized controlled trials in which applicants to the alternative school were assigned either to the intervention group, who were offered admission to the school, or to the control group, who were not. One site (Witchita, KS) included 358 applicants for the 1991/92 and 1992/93 school years; another site (Cinncinati, OH) included 902 applicants for the 1993/94 and 1994/95 school years. These studies showed no statistically significant effects of *High School Redirection* on staying in school, progressing in school (one site did not examine outcomes associated with progressing in school), or completing school.

A study of a third site (Stockton, CA) met WWC standards with reservations because a substantial number of control group students enrolled in the intervention school. This study found that *High School Redirection* youth were enrolled 39 more days on average in the first follow-up year than the control group. In addition, at the end of the third follow-up year, fewer *High School Redirection* youth had dropped out (43 percent compared with 53 percent). At the end of the fourth follow-up year, *High School Redirection* youth had, on average, earned more credits toward graduation than the control group—a difference that was statistically significant.

Talent Development. Kemple, Herlihy, and Smith (2005) evaluated *Talent*

Development High Schools, which is a school reform model for restructuring large high schools with persistent attendance and discipline problems, poor student achievement, and high dropout rates. The model includes both structural and curriculum reforms. It calls for schools to reorganize into small "learning communities"—including 9th grade academies for first year students and career academies for students in upper grades. It also emphasizes high academic standards and provides all students with a college-preparatory academic sequence. The evaluation was a quasi-experimental design that included multiple cohorts of entering 9th grade students from 11 schools in Philadelphia. Five schools implemented *Talent Development* and were matched to six similar Philadelphia schools that did not implement the program. Kemple, Herlihy, and Smith found that students using *Talent Development High Schools* earned an average of 9.5 course credits over the first two years of high school, while comparison group students earned 8.6 course credits. *Talent Development High Schools* students were more likely to be promoted to 10th grade than comparison students (68 percent compared with 60 percent). Both differences were statistically significant.

Talent Search. Talent Search aims to help low-income and first-generation college students complete high school and gain access to college through a combination of services designed to improve academic achievement and increase access to financial aid. Services include test-taking and study-skills assistance, academic advising, tutoring, career development, college campus visits, and financial aid application assistance. Constantine et al. (2006) conducted two studies of *Talent Search* that met WWC evidence standards with reservations. Both studies focused on participants who were 9th graders in the fall of the 1995/96 school year. One study of 10 *Talent Search* programs in Texas involved 10 *Talent Search* projects (each serving 10–20 high schools) and 4,027 participants, who were matched to 30,842 nonparticipants from the same high schools based on propensity score methods that matched students on 18 demographic, socioeconomic, and academic characteristics. This study showed potentially positive effects on completing school, as *Talent Search* participants completed school at a significantly higher rate than comparison group students (86 percent compared with 77 percent). The other study involved five *Talent Search* projects (each serving 10–20 high schools) and 900 participants, who were matched to 42,514 nonparticipants from the same high schools using propensity score methods. *Talent Search* participants completed school at a significantly higher rate than comparison group students (84 percent compared with 70 percent).

Twelve Together. Twelve Together is a one-year peer support and mentoring program for middle and early high school students that offers weekly after school discussion groups led by trained adult facilitators. The program also offers homework assistance, which is typically provided by college students, and trips to local college campuses. One study of the *Twelve Together* intervention met WWC evidence standards with reservations because of differential attrition between the intervention and control groups. Dynarski et al. (1998) conducted a randomized controlled trial as part of a larger evaluation examining the effectiveness of 16 middle and high school dropout prevention programs. The study used a random assignment design and was conducted in nine middle schools in one California school district. It included 219 students. The study measured the outcomes of staying in school and progressing in school. It found that at the end of a three-year follow-up, 8 percent of *Twelve Together* students had dropped out of school compared with 13 percent of control group students. There was no

effect on progressing in school as measured by the highest grade completed.

Interventions showing no detectable impacts

First Things First. First Things First is a whole school reform that combines a number of components with a goal of improving school structure and instruction. *First Things First* reduces class sizes in language arts and mathematics classes and reorganizes schools into "small learning communities" of up to 350 students and their teachers. The small learning communities each have a guiding theme. Each student is assigned a faculty advisor who serves as a liaison between the school and the student's family. *First Things First* helps schools to set clear academic standards that are reflected in assessments that are administered regularly to measure student progress. Quint et al. (2005) conducted a study of *First Things First* that met the WWC evidence standards with reservations. The quasi-experimental research design included students from Houston high schools—three *First Things First* schools each matched to between 5 and 11 comparison schools. Quint et al. found no statistically significant differences between *First Things First* schools and comparison schools in the percent of 9th grade students who attended school the following year.

Middle College High Schools. Middle College High Schools are alternative high schools located on college campuses that aim to help at-risk students complete high school and encourage them to attend college. The schools offer a project-centered, interdisciplinary curriculum, with an emphasis on team teaching, individual attention, and development of critical thinking skills. Students are also offered support services such as counseling, peer support, and career experience opportunities. Dynarski et al. (1998) conducted a study of *Middle College High Schools* that met WWC evidence standards. The evaluation was a randomized controlled trial that included 394 students who were assigned to an intervention group that was offered admission to the alternative high school or to a control group that was not. The study found that by the end of the second year after random assignment, there was no statistical difference between the treatment and control group on staying in school or on completing school.

Project "Graduation Really Achieves Dreams" (GRAD). Snipes et al. (2006) conducted an evaluation of *Project "Graduation Really Achieves Dreams" (GRAD)*, which is an initiative for students in economically disadvantaged communities that aims to reduce dropping out and increase rates of college enrollment and graduation. *Project GRAD* offers high school students summer institutes and the prospect of four-year college scholarships to promote attending and completing high school. Each *Project GRAD* school has a scholarship coordinator who provides counseling, tutoring, and college admission preparation. *Project GRAD* also works with the feeder elementary and middle schools to address early problems by implementing an instructional discipline management system into the curriculum.

The evaluation of *Project GRAD* focused on three Houston high schools that were matched to 10 high schools in the district that did not implement *Project GRAD* but had similar performance on achievement tests and similar percentages of students in key demographic groups. Snipes et al. (2006) found no statistically significant differences between *Project GRAD* students and comparison group students for progressing in school, as measured by the number of credits earned during 9th grade or the rate they were promoted to 10th grade. The study also found no

statistically significant differences between *Project GRAD* students and comparison group students in the proportion who graduated, looking ahead at least three years.

Quantum Opportunity Program (QOP). QOP is an intensive and comprehensive program for high school–age youth that offers case management, mentoring, tutoring, and other education and support services. The program also offers financial incentives for participation in program activities. Participants enter *QOP* in the 9th grade and can receive services for four to five years, even if they drop out of school or move to another district.

A study conducted by Shirm, Stuart, and McKie (2006) of *QOP* met WWC evidence standards with reservations because of differential attrition between intervention and control groups. The evaluation was a randomized controlled trial that included 1,069 youth in seven school districts, with 580 *QOP* students and 489 control group students. The study measured the effect of the intervention on progressing in school and completing school. Shirm, Stuart, and McKie found no statistically significant difference between *QOP* and control group youth in their average credits earned toward graduation five years after they entered the program. The evaluation also found that *QOP* had no statistically significant effect on the likelihood that participants earned a high school diploma.

Summary of studies, by recommendation

Recommendation 1. Utilize data

The panel judged the level of evidence for this recommendation as *low* because there have been no studies that directly evaluate the effect of using diagnostic data on staying in school, progressing in school, or completing school. While the use of data to monitor student progress is a key component of several interventions reviewed by the WWC, the direct correlation between data analysis and dropping out is difficult to measure. The panel believes that this recommendation is an essential precondition to implementing effective dropout reduction strategies, however.

Recommendation 2. Assign adult advocates

The panel judged the level of evidence for this recommendation as *moderate* because two interventions showing positive or potentially positive impacts on reducing dropout rates include adult advocacy as a key component (table D2).

Achievement for Latinos with Academic Success (ALAS), a middle school intervention, assigns each participating student to a counselor who monitors attendance, behavior, and academic achievement. The counselor provides feedback and coordinates students, families, and teachers. Counselors also serve as advocates for students and intervene when problems are identified.

Similarly, high school students enrolled in *Check and Connect* are assigned a monitor who regularly reviews their performance and intervenes when problems are identified. The monitor also advocates for students, coordinates services, provides ongoing feedback and encouragement, and emphasizes the importance of staying in school.

First Things First includes a "family and student advocate system" as one of the three core components of the intervention. Each student in a *First Things First* school is assigned an advocate who serves as a mentor and liaison between the school and the student's family. Advocates work with about 15 students and meet with them weekly in groups and individually.

Table D2. Summary: Recommendation 2

Intervention with evaluation reviewed by WWC	Number of studies that met WWC evidence standards	Number of studies that met WWC evidence standards with reservations	Effect on staying in school	Effect on progressing in school	Effect on completing school
ALAS[a]	1	0	+	+	na
Check and Connect[a]	1	1	++	+	—
First Things First[a]	0	1	—	na	na
QOP	1	0	na	—	—

na is not applicable.

Note: (++) means positive effects, (+) means potentially positive effects, (—) means no discernible effects.

a. Interventions correspond to "key characteristics" of intervention related to recommended practice.

Source: Authors' compilation.

The *Quantum Opportunity Program (QOP)* includes case management and mentoring among its program components. While case management by an adult is considered to be a key feature of this intervention, the case manager is responsible for coordinating services and working intensively with students. However, the model differs slightly from other interventions featuring this component because case management services occur outside the school day. Thus, the case manager included in this intervention was not considered to be a school-based adult advocate like that of the other interventions and thus represented a minor component of the intervention. *QOP* showed no evidence of impacts on progressing in school or completing school.

Recommendation 3. Provide academic support

The panel judged the level of evidence for this recommendation as *moderate* because of the varying effect of different interventions on staying in school, progressing in school, or completing school, and the level of intensity of academic supports among the evaluated interventions (table D3).

The alternative high school program, *High School Redirection*, emphasizes basic skills development and offers an intensive remedial reading program (Strategies and Techniques for Advancement in Reading) for students with serious literacy problems.

Talent Development High Schools emphasize high academic standards and provide all students with a college-preparatory academic sequence. As part of the 9th grade academy, all first-year students complete a one-semester seminar that teaches strategies for meeting the increased academic demands of high school.

As part of their participation in the *Quantum Opportunity Program (QOP)*, students receive tutoring and other education and support services such as after school tutoring and computer-assisted instruction, with a focus on basic reading and math skills.

Table D3. Summary: Recommendation 3

Intervention with evaluation reviewed by WWC	Number of studies that met WWC evidence standards	Number of studies that met WWC evidence standards with reservations	Effect on staying in school	Effect on progressing in school	Effect on completing school
ALAS	1	0	+	+	na
Check and Connect	1	1	++	+	—
HS Redirection[a]	2	1	+–	+	—
Project GRAD[a]	0	1	na	—	—
QOP[a]	1	0	na	—	—
Talent Development[a]	0	1	na	+	na
Talent Search	0	2	na	na	+
Twelve Together	0	1	+	—	na

na is not applicable.

Note: (++) means positive effects, (+) means potentially positive effects, (+–) means mixed effects, (—) means no discernible effects.

a. Interventions correspond to "key characteristics" of intervention related to recommended practice.

Source: Authors' compilation.

Talent Search academic support services aim to improve academic achievement and increase access to financial aid. Services include test taking and study-skills assistance, academic advising, and tutoring.

During the one-year peer support program called *Twelve Together*, participants agreed to study regularly and work to improve their grades. Students receive homework assistance, which is typically provided by college students.

As part of the Connect component of the *Check and Connect* program, students receive tutoring from program staff, in partnership with school personnel.

At the high school level, each *Project GRAD* school has a scholarship coordinator who provides counseling, tutoring, and college admission preparation.

Students participating in *ALAS* receive individual academic support and tutoring from their assigned adult advocate.

Recommendation 4. Improve students' classroom behavior and social skills.

The panel judged the level of evidence for this recommendation as *low*. Despite the positive and potentially positive effects of the evaluated interventions, the social

Table D4. Summary: Recommendation 4

Intervention with evaluation reviewed by WWC	Number of studies that met WWC evidence standards	Number of studies that met WWC evidence standards with reservations	Effect on staying in school	Effect on progressing in school	Effect on completing school
ALAS[a]	1	0	+	+	na
Check and Connect	1	1	++	+	—
Project GRAD[b]	0	1	na	—	—
QOP	1	0	na	—	—
Twelve Together	0	1	+	—	na

na is not applicable.

Note: (++) means positive effects, (+) means potentially positive effects, (—) means no discernible effects.

a. Interventions correspond to "key characteristics" of intervention related to recommended practice.

b. The social and behavior training component of this intervention occurs in elementary and middle schools as a way to address early problems that might affect high school graduation.

Source: Authors' compilation.

and behavioral skills training component occurs with less intensity than other components of the interventions (table D4).

One responsibility of the *ALAS* advocates is to work with students on training in problem-solving skills such as problem recognition and definition, controlling impulsive reactions and anger, setting goals, and anticipating roadblocks and developing potential solutions to problems. *ALAS* students received 10 weeks of problem-solving instruction and two years of follow-up problem-solving prompting and counseling.

As part of the Connect component of the *Check and Connect* program, students participate in problem-solving skills training.

Among other *Quantum Opportunity Program (QOP)* services, students receive training on problem solving during their participation in *QOP*.

Middle and early high school students participating in *Twelve Together* attend weekly after school discussion groups led by trained adult facilitators that focus on problem solving and communication.

Project GRAD provides social and behavioral skills training to students at the elementary and middle school as a way to address early problems that might affect high school graduation.

Recommendation 5. Personalized learning environment

The panel judged the level of evidence for this recommendation as *moderate* because of the varying effects of the intervention on measured outcomes and the

Table D5. Summary: Recommendation 5

Intervention with evaluation reviewed by WWC	Number of studies that met WWC evidence standards	Number of studies that met WWC evidence standards with reservations	Effect on staying in school	Effect on progressing in school	Effect on completing school
Career Academies[a]	1	0	+	+	—
First Things First[a]	0	1	—	na	na
High School Redirection	2	1	+–	+	—
Middle College High School	1	0	—	na	—
Talent Development[a]	0	1	na	+	na

na is not applicable.

Note: (++) means positive effects, (+) means potentially positive effects, (+–) means mixed effects, (—) means no discernible effects.

a. Interventions correspond to "key characteristics" of intervention related to recommended practice.

Source: Authors' compilation.

lower intensity of components designed to personalize the learning environment (table D5).

To foster a sense of community, schools that adopt *High School Redirection* enroll no more than 500 students.

Schools implementing *the Talent Development* model reorganize into small "learning communities"—including 9th grade academies for first-year students and career academies for students in upper grades. This includes establishing a Ninth Grade Success Academy, which consists of small learning communities of students often housed in a separate wing or area of the school building. In at least one school in the evaluation, some students in 10th–12th grades were also part of a career-themed academy.

Students in a *Career Academy* model share several classes during the day and the same teachers from year to year. Teachers make a commitment to meeting with each other on a regular basis, and share in decision-making process for administrative and instructional issues. In addition, *Career Academies* courses are often block-scheduled during consecutive periods.

As alternative schools that are located on community college campuses, *Middle College High Schools* emphasize team teaching, individual attention, and development of critical thinking skills.

First Things First reduces class sizes in language arts and mathematics classes and reorganizes schools into small learning communities, which each have a guiding

Table D6. Summary: Recommendation 6

Intervention with evaluation reviewed by WWC	Number of studies that met WWC evidence standards	Number of studies that met WWC evidence standards with reservations	Effect on staying in school	Effect on progressing in school	Effect on completing school
Career Academies[a]	1	0	+	+	—
First Things First	0	1	—	na	na
Middle College High School[a]	1	0	—	na	—
Project GRAD	0	1	na	—	—
Talent Development	0	1	na	+	na
Talent Search[a]	0	2	na	na	+
Twelve Together	0	1	+	—	na

na is not applicable.

Note: (++) means positive effects, (+) means potentially positive effects, (—) means no discernible effects.

a. Interventions correspond to "key characteristics" of intervention related to recommended practice.

Source: Authors' compilation.

theme. Each student is also assigned a faculty advisor that serves as a liaison between the school and the student's family.

Recommendation 6. Future application of skills learned in school

The panel judged the level of evidence for this recommendation as *moderate* because of the varying effects of interventions on measured outcomes, the limited number of evaluations that met WWC evidence standards, and the intensity of the career or pathway component of the interventions (table D6).

Career Academies are school-within-school programs operating in high schools that offer career-related curricula based on a career theme, academic coursework, and work experience through partnerships with local employers.

Middle College High Schools are alternative high schools on college campuses that aim to help at-risk students complete high school and encourage them to attend college.

Talent Search aims to help low-income and first-generation college students complete high school and gain access to college through a combination of services designed to improve academic achievement and increase access to financial aid.

Talent Development High Schools include career academies for students in upper grades.

One component of the *Twelve Together* program is trips to local college campuses.

Project GRAD provides four-year college scholarships and summer institutes to promote attending and completing high school. Each *Project GRAD* school has a scholarship coordinator who provides college admission preparation.

Part of *the First Things First* program includes reorganizing schools into "small learning communities" of up to 350 students and their teachers. The small learning communities each have a guiding theme or "pathway."

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