

Dropout Screening & Early Warning

Tier 2 & 3

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Identifying At-Risk Students for Tier 2 & 3 Intervention

School dropout is an issue that impacts more than just the student who makes this decision; it also affects his or her family, the community, and society as a whole (Christle, Jolivette, & Nelson, 2007). There is an overwhelming amount of research that explains the harsh realities of how school dropout negatively impacts students for the rest of their life. For instance, students who drop out report higher levels of unemployment, lower wages, and greater health concerns later in life (Christle et al., 2007). Unfortunately, the negative effects do not stop there. Cassel (2003) reports that 50% of prison inmates are high-school dropouts and 80% are addicted to drugs and alcohol, which in turn impacts national income, taxes, social services, crime rates, and political participation (Christle et al., 2007). With these factors in mind, it is clear why dropout is a concern at the national level.

While it is clear that reducing the national dropout rate should be a goal, the solution is not as obvious. Because dropout is a process of gradual disconnection that can begin as early as the 1st grade (Sparks, 2013), researchers conclude that no single factor can be held responsible for a student dropping out of school (Christle, Jolivette, & Nelson, 2007). Nevertheless, a wide variety of variables have been found to correlate with school dropout, and identifying students as high risk has become a crucial topic in efforts to reduce the dropout rate. The first section of this report will discuss the variables which are associated with dropout. The second section will discuss the creation of dropout screening procedures and tools. The third section will briefly examine several examples of these screening procedures, which are often called early warning systems.

What Variables Are Associated with Dropout?

There is a wide range of variables correlated with dropout. Three main indicators, known as the ABC's of disengagement, are attendance, behavior, and course performance (or academic achievement) have been a primary focus (Mac Iver & Mac Iver, 2009), but a wide range of additional variables have been identified as being correlated with dropout, including factors from family support, to engagement, to student mobility.

The A-B-C Dropout Factors

Attendance. Attendance, or absenteeism, is the first factor in the ABC's of drop out (Balfanz & Chang, 2013; Frazelle & Barton, 2013), and is linked to dropout at all levels (e.g., elementary, middle, and high school; Hammond, Linton, Smink, & Drew, 2007). Absenteeism is a problem nation-wide, with 5-7.5 million students chronically absent from schools each year (Balfanz & Chang, 2013). Chronic absence is defined as missing 10% of school, which is equivalent to approximately 18 days (Balfanz & Chang, 2013). Below the level of chronic absence, studies have identified students with less than 80% attendance as being at an increased risk of dropping out (Balfanz, Wang, & Byrnes, 2010; Heppen,

O’Cummings, & Therriault, 2008; Neild, Balfanz, & Herzog, 2007). Balfanz and Chang (2013) state that absences occur for three reasons: discretion, aversion, and barriers. Discretion is credited to students’ and parents’ lack of understanding the importance of attendance. Aversion is when students avoid school due to bullying or academic issues. Barriers represent lack of health care or transportation, preventing the student from being in school regularly. It is important to understand the reason for the student’s absence in order to develop a proper intervention for each individual student.

Student absences are a major issue that school administrators must address; therefore, many schools implement a 20 absences rule (Reyes, 1993). This rule states that after 20 absences, the school reserves the right to dismiss the student from that school. Some schools also have mandatory reporting to truancy officers, or the courts. However, this act might also have a detrimental effect on the graduation potential of the student, as student mobility leads to greater academic and behavioral problems, as well as peer issues and a greater risk for dropout (Editorial Projects in Education Research Center, 2004). Students who have dropped out report missing too many days of school, and having difficulty catching up as the second most reported reason for dropping out (Pinkus, 2008). Hayes (2000) reports that without putting an intervention in place for the student at the new school, transferring schools is not beneficial. Therefore, it is important to identify the reasons that these students are absent and guide them back into the classroom rather than forcing them to transfer to another school.

Behavior. Behavior is the second factor in the ABCs of drop out (Balfanz & Chang, 2013; Frazelle & Barton, 2013). Student behavior can be measured in many ways within the school system. For example, problem behavior can consist of behaviors such as truancy, cutting class, and/or drug or alcohol abuse (Ruebel, Ruebel, & O’Laughlin, 2002); suspensions at the high school level (Balfanz et al., 2010; Christle et al., 2007; Suh, Suh, & Houston, 2007); unsatisfactory behavior marks in elementary school (Neild et al., 2007; Sparks, 2013); or office discipline referrals (Klare, 2008). Despite the discrepancy between research groups in determining what constitutes problem behavior, it is important for each school to determine that criteria on their own. Pinkus (2008) suggests that each school analyze historical data from their dropouts in order to determine what the most critical factors were in making that decision for their population of students.

Regardless of the definition and measures of problem behavior, it is consistently cited as being positively correlated with dropout – that is, as problem behavior increases, the risk for dropout increases (Balfanz et al., 2010; Christle et al., 2007; Fall & Roberts, 2012; Frazelle & Barton, 2013; French & Conrad, 2001; Klare, 2008; Neild et al., 2007; Protheroe, 2009; Rueble et al., 2002; Sparks, 2013; Suh et al., 2007). It is important to note, however, that disciplinary infractions alone are not cause for drop out. A study by Suh et al. (2007) identified students who had been suspended at least once as having a heightened risk of dropping out related to 16 different factors. Among those factors related to poor behavior, they also found that when peers were planning on graduating and students had a positive regard towards teachers, their chances of graduating were higher. These indicators serve as protective factors that may keep students in school even when problem behavior is high. This evidence alludes to the fact that students with poor behavior can either increase or decrease their risk of dropping out, contingent on other environmental and personal factors.

Course performance. Course performance is the final ABC of drop out warning signs (Balfanz & Chang, 2013; Frazelle & Barton, 2013). Course failure, academic success, and course success are all terms that are used to describe a student’s performance on course work, which is measured by individual grades and overall GPA. Academic success has consistently been reported as a primary factor in calculating students’ drop out risk (Balfanz et al., 2010; Heppen et al., 2008; Heppen & Therriault, 2008; Neild et al., 2007; Pinkus, 2008; Reyes, 1993), and has been indicated as a contributing factor at all levels (e.g., elementary, middle, and high school; Hammond et al., 2007). While researchers agree that course suc-

cess plays an important role in students' decisions to drop out, there are various criterion that a student must reach throughout his/her academic career in order to be determined "on-track" for graduation.

Beginning as early as the primary elementary grades, early warning systems can identify children at risk of dropping out with 75% accuracy, using second semester grades as well as reading and math levels in combination with student behavior (Sparks, 2013). Sparks (2013) states that those students with math and reading skills below grade level are at an increased risk of dropping out later, as well as students whose GPAs are at or lower than 1.2 by the spring semester of first grade. At the sixth grade level, failing grades in math, reading, or both are significant signs that the student will drop out at some point (Klare, 2008; Neild et al., 2007). By ninth grade, the criterion are less specific, but still state that two or more failed courses, a GPA lower than 2.0, and too few credits to move on to 10th grade (retention) indicate an elevated risk for dropping out (Balfanz et al., 2010; Heppen et al., 2008; Heppen & Therriault, 2008).

Now with the advent of standardized academic achievement tests, these scores may also be used to predict student likelihood of dropout in a way similar to grades. Because these tests are given annually, they might serve as a way to track student progress and standings in relation to other peers. It should be mentioned that grades are a more reliable predictor of dropout, as they measure student progress over time and do not rely solely on the student's performance on one day in a given year (Bruce, Bridgeland, Fox, & Balfanz, 2011).

Demographic Variables

A variety of demographic variables may also be used to attempt to predict the likelihood of a student dropping out of school.

Race and ethnicity. National drop out statistics demonstrate that White and Asian students drop out at a rate below the national dropout average, while Hispanic and Black students drop out at a higher rate (Hayes, 2000). This statistic is interesting considering that when controlling for ability and socioeconomic status (SES), Black and Hispanic students drop out less frequently than White students (Cratty, 2012). Cratty (2012) also found that dropout is more closely correlated with SES than math and reading ability. These results indicate that race and ethnicity do not play a direct role in dropout rate; rather, the SES and students' abilities are better indicators. (See the Strategy Brief on School Climate.)

Socioeconomic status. Many studies have found that students from low SES families drop out more often than students from high SES families (Christle et al., 2007; Hayes, 2000; Nowicki, Duke, Sisney, Stricker, & Tyler, 2004), which is true at all levels of education (Hammond et al., 2007). Clearly some students may drop out of school in order to earn money to support themselves and their families.

However, it is not this fact alone that puts these students at a higher risk for dropping out. Placing students in low academic tracks, negative peer relationships, and poor neighborhood environments are all factors that detrimentally affect students from low SES families. Academic tracking is a method in which teachers group students with similar abilities together in hopes of creating more homogeneous groups of students. Weblow, Urick, and Duesbery (2013) found that minorities and low SES students are disproportionately placed in lower tracks, making them 60% more likely to drop out than other students.

Another factor that affects low SES students more than high SES students is peer rejection. French and Conrad (2001) found the 82% of peer-rejected students from high SES families graduated while only 55% of rejected students from low SES families did, suggesting that students from more advantaged families are better suited to cope with negative social interactions. Finally, Reyes (1993) states that students

from high poverty neighborhoods with high crime rates and levels of dropout are equally disadvantaged in school because these children often attend schools with fewer resources and less experienced teachers.

These results indicate that SES is not the sole reason that students choose to drop out of high school but indicates that there is a correlation between the two when taking other factors into consideration. In fact, Reyes (1993) found that home factors, such as maternal education, income level, and parents' marital status did not impact dropout rates, as both successful and dropout students in the study were from similar family situations. These results suggest that no single factor is responsible for dropout alone; rather, the combination of risk factors and individual protective factors of the student are what ultimately determine which students remain in school and which ones drop out.

Disability status. At the middle and high school level, disabilities and/or emotional disturbance has been linked to dropping out (Hammond et al., 2007). In the 2008-2009 school year, 22% of students with disabilities dropped out, with the highest rates of dropout occurring for students with emotional disturbance (Snyder & Dillow, 2012). Due to the low rates of students with disabilities who attend college or some sort of postsecondary institution after dropping out of high school (Newman, Wagner, Cameto, & Knokey, 2009), it is very important to keep these students in school, as 12 out of the 20 fastest growing jobs require at least an associate's degree (Bureau of Labor Statistics, 2010).

Other Variables

In addition to the ABCs, and demographic variables, there are other variables which are also sometimes used in dropout prediction.

Grade retention. Retention is the act of having a student repeat their current year of schooling due to unmet educational or social standards (Reschly & Christenson, 2013). Grade retention is often cited as one of the leading reasons that students drop out of high school (Balfanz et al., 2010; Christle et al., 2007; Rueble et al., 2002); in fact, Hammond et al. (2007) found that retention was linked with dropout in multiple studies across elementary, middle, and high school. Researchers have indicated that 78% of all dropouts have been retained at least once (Jimerson, 2001), and after two retentions the chances of the student dropping out increases to almost 100% (Shepard & Smith, 1990). Roderick (1994) found that 70% of retained students dropped out, while only 27% of students who were not retained chose to drop out. Retention is not only linked to dropout, but also to poor life outcomes. Jimerson (1999) reports that retained students receive lower paychecks and are employed at a lower rate than equally low-achieving but promoted students. These students are also linked to higher rates of substance abuse and criminal behavior. (See the Strategy Brief on Grade Retention and Demotion.)

School climate. In addition to factors within the student, certain school characteristics increase the chances of students dropping out. Christle and colleagues (2007) documented differences between high schools with high versus low rates of dropout. The key school variables that they noted were: school climate, administrative experience, and family involvement. In terms of school climate, researchers noted that schools with high dropout rates differed in the cleanliness and condition of the school, with more negative ratings of both. There was also more supervision in schools with lower dropout rates, and a lower student to teacher ratio. Administratively, Christle and colleagues (2007) found that teachers and personnel dressed more professionally at schools with lower dropout rates and had more positive interactions with students than at schools with high rates of dropout. Administrators at schools with low dropout rates also identified themselves as working at the school for longer periods of time than administrators at schools with higher dropout rates. Finally, administrators at low dropout rate schools identified a higher level of parental engagement as well as a greater need for reduced dropout rates than

administrators at schools with higher levels of student dropout. These findings emphasize the importance of the school climate and the potential benefit of school climate surveys in helping administrators better understand the dynamics of their schools. (See the Strategy Brief on School Climate & Culture.)

Engagement. Student engagement is quickly becoming viewed as the most instrumental variable in student dropout (Fall & Roberts, 2012). In an early study, Reyes (1993) found that students who dropped out differed from those who did not in terms of their academic satisfaction. Other studies also state the importance of student engagement and how the student values education (Appleton, Christenson, & Furlong, 2008; Christle et al., 2007; Logan-Greene, Nurius, & Thompson, 2012; Heppen et al., 2008; Klare, 2008; Rueble et al., 2002; Thompson & Gregory, 2010) and the family (Hammond et al., 2007), over demographic variables (Balfanz et al., 2010). One major shortcoming of this variable is the lack of consensus regarding how it is measured. For example, in the study by Christle et al. (2007) student engagement was simply observed by researchers in the classroom and rated on a scale of 1 (low) to 3 (high). Other researchers use more concrete definitions of the variable by measuring attendance vs. absenteeism (Heppen et al., 2008) or involvement in school activities (Klare, 2008).

Engagement places a heavy emphasis on personal desire to learn. Self-determination theory (SDT), in which the overall goal is to engage the student in educational activities (Hardre & Reeve, 2003) is a way to analyze and measure engagement. The Academic Self-Regulation Questionnaire (ASRQ) identifies the student's motivation for going to school by pinpointing items related to intrinsic reasons (i.e., "Because I enjoy the experience", "Because it's interesting"), identified regulation/extrinsic reasons ("Because I see the importance of learning", "Because I really appreciate and understand the usefulness of school"), and lack of self-determined motivation ("Because, basically, I have to—it's required", "I wouldn't go if I had a choice"; Hardre & Reeve, 2003). Studies on the SDT state that teachers who provide students with interesting activities and autonomy in the classroom help nurture motivation and desire to complete school rather than to drop out (Appleton et al., 2008; Hardre & Reeve, 2003). When controlling for SES and student achievement, Alivernini and Lucidi (2011) found that self-determined motivation had significant effects on dropping out of school.

Connell and Wellborn (1991) introduce another model of self-determination, known as the self-system model of motivational development (SSMMD), which ties contextual and internal variables. SSMMD examines how relationships within each social context meet the student's needs. Research on this model found that higher levels of parental and teacher support leads to increased self-perception and ultimately higher engagement and achievement. Using this model, all student identification with the school, as well as academic and behavioral engagement stems from parent and teacher support (Fall & Roberts, 2012). This is an important finding, as many researchers have identified a link between parents who did not graduate from high school and higher rates of dropping out, which often stems from parent views of school (Alexander, Entwisle, & Horsey, 1997).

While researchers are starting to narrow in on the importance of engagement, the apparent lack of engagement remains as an issue in the schools. Austin and Benard (2007) report that more than 40-60% of low-income, minority, and urban students are chronically disengaged in school. In order to change this the schools must create environments in which the students feel safe, respected, and have a sense of belonging (Austin & Benard, 2007). For students at risk for dropout due to low engagement or attendance, For example, Check and Connect is an evidence-based program that has shown positive effects for such populations (Appleton et al., 2008; Frazelle & Barton, 2013). (See the Strategy Brief on Student Engagement and Program Brief on Check and Connect.)

Measuring engagement can be difficult however, since it is made up of multiple factors which can include intrinsic and extrinsic student motivation, relationships, family and community expectations and support, as well as factors associated with the school such as climate. One shorthand method to ap-

proximate student engagement is to determine whether students are involved in non-required, extracurricular activities at school, while variety of other measures are also possible.

Mobility. School transitions are hard for children and are perceived as highly stressful to the child's development. However, results of research regarding whether these school transitions are actually detrimental to school success were inconclusive. More specifically, these moves appear to affect young children more than older children (Haveman, Wolfe, & Spaulding, 1991), and might actually have beneficial effects on high school students (Swanson & Schneider, 1999). Ultimately, Gasper, DeLuca, and Estacion (2012) found that over half of the correlation between mobility and dropout is explained by other characteristics of the child, however there was still a relationship between changing schools and dropping out.

These results allude to the fact that students who change schools generally share a host of other characteristics that are related to school dropout, including: family characteristics, low engagement, poor academic performance, low attendance rates, low grades, and high rates of behavioral problems (Lee & Burkam 1992). If the school change occurs along with other stressful events, such as divorce or placement in foster care, it might lead to less favorable outcomes. However, if the student tends to make friends easily and is popular among peers, a change in school placement alone – in the absence of other significant life stressors – might not be perceived as detrimental to the student's academic success.

Creating Dropout Screening Tools

The purpose of dropout screening is to identify students who have the potential to drop out of school, and then to intervene in an attempt to prevent that student from dropping out in the future. Several tools have been created that monitor multiple factors simultaneously to flag students who demonstrate elevated risk factors for dropout. These have a variety of names including early warning systems (for dropout), risk calculators, and dropout screening systems. However, regardless of the name of the procedure, the purpose is the same - to identify students who are at heightened risk of dropping out of school.

What is Screening?

"Screening is the process of collecting data to decide whether more intensive assessment [or intervention] is necessary. Implicit in screening is the notion that the student's difficulties may go unnoticed" (Salvia, Ysseldyke & Bolt, 2007). For example, teachers have long been aware that small vision or hearing problems with students not only could go unnoticed, but that without early and effective intervention these students would show diminished academic achievement, and could develop behavior problems. As they fall further and further behind and become more frustrated, these problems grow and these students may become disaffected from school. As a result, almost all schools require vision and hearing screening intended to identify students who have even minor vision or hearing problems so that those problems can be corrected before students show these negative outcomes.

Who is Screened?

Most often screening procedures in schools are designed to be used with an entire population of students. As a result, if all students are screened, this type of screening procedures is considered a Tier 1 procedure- applying to all students. In the case of dropout screening, that might include elementary and middle schools that feed into the high schools as well as the high schools themselves. However, this Tier 1 procedures is used to identify students who are at elevated risk, and as a result may need more intensive Tier 2 or Tier 3 interventions.

What Happens to Students Who Are at High Risk?

While there are many dropout identification tools available for schools, simply identifying students who are at risk for dropout is not the final goal. Once these students are identified, schools must implement research-based interventions to get these students back on-track for graduation. Thus, it is helpful to identify several programs to address each area that schools are monitoring (i.e., attendance, course performance, discipline) and have school teams be prepared to implement those interventions before screening procedures begin.

It is vitally important that whenever screening procedures are used, there be a clear and readily available procedure to intervene for each student who has been identified. To not take action would be unethical. A variety of strategies and specific programs have been developed to prevent students from dropping out of school. While the specific interventions designed to assist high risk students may vary considerably from school to school, they often would include a combination of:

- providing extra academic support and assistance;
- improving relationships with adults within the school, such as counselors and teachers;
- developing school relationships and communication with parents and family;
- providing positive reinforcement to the student for appropriate behavior;
- offering adult mentoring;
- establishing efforts to diminish truancy;
- assisting with transitions from middle to high school; and
- monitoring of progress on academic achievement and behavior.

See the engagement project Strategy Briefs (<http://k12engagement.unl.edu>) for more detail on many of these topics. A variety of these strategies might be included in individualized plans for each high risk student identified. Some of these interventions could also be employed with small groups of high risk students who might benefit from these interventions.

Errors in Screening

These procedures are intended to look for evidence of the signs or early symptoms of “problems” which may be associated with students dropping out. They employ variables correlated with dropout. They are usually designed to err on the side of over-identifying students, since the risk of missing students during the screening procedure who would later dropout is a far worse outcome than identifying some students who might not actually have been likely to dropout.

Choosing and Integrating Dropout Variables

As discussed earlier, three main indicators, known as the ABC’s of disengagement, have been a primary focus (Mac Iver & Mac Iver, 2009), but a wide range of additional variables have been identified as being correlated with dropout, including factors such as family support, engagement, and student mobility.

Most of the research that has been done to identify student variables related to student dropout has been correlational. This means that researchers have systematically investigated the relationship between variables; for example, the relationship between students from low SES families and dropout rates. This type of research does not manipulate variables to control for confounding factors, and as a result cannot be used to determine causal relationships. We simply do not understand the direct causes of dropout.

Weighting variables. As a result, those wishing to create a screening procedure for dropout must choose a number of variables highly correlated with dropout such as the variables discussed earlier. These variables are then included in a screening instrument, often with different weightings for the variables based on the strength of their correlation. Data is gathered about each of the included variables for each student in the population being screened. The result is usually a “score” for each student based on the variables and weightings that is an effort to identify the relative risk of that student dropping out of school. Since these scores often represent a continuous range of individual scores, the creators identify cutoff scores that they feel identify the highest level of risk. These predictions of relative risk are estimates and are unlikely to be 100% accurate, but nevertheless allow a way to identify students who are thought to be at the highest risk.

Availability of data. Much of the work on creating dropout-screening tools has been made possible by advances in the availability and sophistication of school data systems. Only recently have school data systems had the capacity to track a wide range of variables about students, and track these variables through time for specific students. These data systems have facilitated the research on variables which predict dropout, and have also permitted schools to implement relatively low cost screening procedures which would have been prohibitively expensive in the era of paper only school records. The recent focus of schools to gather and employ data for decision making to improve outcomes for students have emphasized these efforts.

While it might be possible to identify other methods, dropout screening has tended to focus on the variables that are most readily available and easy to access (e.g., grades or academic achievement scores; Heppen & Therriault, 2008), even though they are not necessarily the strongest predictors. The strength of prediction is bolstered by including a wide variety of variables that might contribute in combination to a stronger ability to predict than just a few variables. The variables also overlap to some degree (for example mobility may be related to both engagement and poverty as factors), but when added to the others, each may add an incrementally better ability of the overall screening procedure to predict dropout. These correlations permit predictions, but only with varying degrees of accuracy, and do not imply that these cause dropout.

Establishing Cut Points in Early Warning Systems

Typically, the screening procedures related to student dropout, often called early warning systems, are grounded in research-based variables that have are correlated with later school dropout. However, most screening tools have not been thoroughly researched. As a result their reliability and validity have often not been determined. However, what data exists supports the usefulness of these screening tools. Several of the screening tools available are described below. These tend to be relatively easy for schools to implement with minimal outside help. Although this list is not exhaustive, it introduces examples of some of the more prominent tools.

Early Warning Systems. Early warning systems (EWS) are tools that typically use readily available data. They analyze student data to determine whether or not students are on track for graduation (Heppen & Therriault, 2008). Early warning systems generally place a heavy emphasis on student data such as attendance, behavior, and course performance (ABC), which are routinely gathered by schools. As a result they require little additional data gathering effort, and do not require extra time for administration to students by teachers (Bruce, Bridgeland, Fox, & Balfanz, 2011). These systems allow for early detection of students at risk and allow schools to identify patterns in student data in order to develop meaningful interventions for flagged, or off-track, students (Heppen & Therriault, 2008).

In order to successfully utilize the ABCs as indicators of on- and off-track status, significant “cut-points” must be established. Cut points, also referred to as early warning system thresholds, are pre-determined criteria for identifying students as “on-track” for graduation, or at-risk for dropping out. These cut-points may differ based on age and type of school program (e.g., early education; middle school; high school), and can vary from school to school or district to district. Thresholds may seem arbitrary; however, schools set cut-points based on research and their individual experiences. Thresholds must be suited to fit the target population and trends in recent data. The lower the cut-point, the more students will be identified as at risk. While it may be acceptable to over identify the number of students at risk of dropout, it would be ideal to only identify those who would actually drop out. Under identification would be the least desirable outcome of screening.

Cut points for attendance. As a typical model, Bruce and colleagues (2011) offer research-based starting points for schools to follow. For attendance, the typical cut-point is often when the student is absent 10% of the year, or about 20 school days in a 180-day school year. It is up to the discretion of schools in how to monitor attendance, either by day or by class period, but they must calculate total days missed throughout the year. Students who meet the cut point for attendance should be identified for a possible intervention (Heppen & Therriault, 2008). Even if a student is flagged for attendance concerns, it does not necessarily mean that the student is “off-track”, it might mean that attention should be paid to that student and steps should be taken to investigate and reduce absenteeism.

Behavior Cut Points. For behavior, the typical cut-point is two or more infractions, which are often measured by office discipline referrals (ODR). Once students meet the cut-point for behavior, they are flagged as at-risk for dropout. Behavioral indicators are slightly more ambiguous than attendance and course performance, but they can reveal information about student success in school. For example, Nield, Balfanz, and Herzog (2007) reported that even one “unsatisfactory” behavior mark in 6th grade increases the risk of dropping out by 75%. Thus, focusing on student behavioral issues in school might uncover underlying academic or adjustment issues that might later lead to dropout.

Cut points for course performance. Creating cut-points for course performance is slightly more complex because there are various standards that can be followed from third grade to graduation. For example, some cut-points include reading below grade level by third grade, failing grades in math or English in 6th through 9th grade, an overall GPA less than 2.0, two or more failing grades freshman year, and failure to be promoted to 10th grade (Bruce et al., 2011). This is an example of an area in which schools must use discretion in determining cut-points that are appropriate for their students; more specifically, middle schools will not have the same cut-points as high schools. At the high school level, general cut-points include one or more F’s, specifically in the first semester, a GPA less than or equal to 2.0, and on- versus off-track status (Heppen & Therriault, 2008). This final indicator is determined by number of failing grades in the semester combined with total freshman credits accumulated (e.g., off-track status would be identified for students with less than 5.0 credits earned, one or more failing grades, or both). Some early warning systems use multiple combinations of these academic achievement indicators.

Research base. To better develop early warning systems, longitudinal studies were conducted in Baltimore, Boston, California, Chicago, and Philadelphia to determine the most important factors at various grade levels. In early grades, researchers found that students who could not read on grade level by third grade were four times more likely to drop out, and those unable to master basic skills were six times more likely. They also found that in fourth grade, GPA and classroom behavior indicated how well the students would perform seven years later on the California High School Exit Exam (CAHSEE), which ultimately determines whether the students will graduate or not.

Middle school indicators suggest that at the end of sixth grade, those students who exhibit any of the high-yield indicators suffer a 50% chance of graduating (Bruce et al., 2011). These high-yield indicators are: attendance less than 80% of the time; failing math and/or English; or a failing grade point average across math, English, social studies, and science (Bruce et al., 2011). Researchers also point out that those students who dropout often are failing either math or English, but not both. The earlier the student displays these signs, the more likely he/she is to not graduate. And of course the earlier a student can be flagged as being at high risk, the more likely that school interventions have a chance to be effective.

Examples of Screening Tools & Early Warning Systems

There are a number of these early warning systems available, but school administrators should adapt and change them to best fit their own school and student populations. Some states have begun to implement or support these types of early warning systems statewide. This is possible when states have adopted uniform statewide data systems across all school districts. This permits state wide data gathering and analysis across districts. This permits either states to employ an early warning system and send the resulting data back to the district for intervention, or districts to do their own analysis and intervention.

It is also important to be aware that even though a student is flagged on one or more of these indicators, that does not guarantee that the student will drop out without intervention; likewise, not all students who dropout are indicated by one of these variables. Schools must be aware and take appropriate steps when they see students showing warning signs, even if they are not at the threshold level on the early warning system.

The National High School Center Early Warning Intervention System

The National High School Center developed an Early Warning Intervention Monitoring System (EWIMS) Implementation Guide to be used in conjunction with their EWS tools (available at both middle and high school levels), which are available at <http://www.betterhighschools.org/ews.asp>. These screening tools focus on three main pieces of information: student attendance (missing 10% or more of instruction), course performance (number of failed courses and GPA), and behavior (referrals, in- or out-of-school suspension, or behavior grades; Therriault, O’Cummings, Heppen, Yerhot, & Scala, 2013). The guide walks readers through the seven-step process of using the EWS system and offers a timeline for ensuring that school administrators stay on track in identification of students and implementation of interventions. The guide is free of charge and is available at: <http://www.betterhighschools.org/documents/EWSHSImplementationguide.pdf>.

Michigan’s Dropout Challenge

Having evidence of a dropout problem in many schools, Mike Flanagan, the State Superintendent of Instruction for Michigan, challenged schools to take action. He started the “Superintendent’s Dropout Challenge” in 2009 in hopes to inspire change within the school districts (Michigan Department of Education, 2011). The challenge requires schools to: 1) register for the challenge; 2) review the previous year’s data regarding attendance, grades, discipline, credits, retention, and test scores; 3) identify 10-15 students demonstrating multiple warning signs using the NHSC tool (referenced above); 4) implement a research-based intervention to help those students; 5) monitor student academic, social, and emotional progress; and 6) engage the community, families, and students in solutions and supports. Since the start

of this challenge, there have been over 1,100 schools participating, with results indicating lower dropout rates (Michigan Department of Education, 2011). This demonstrates an example of how states can encourage schools to take action.

Dropout Early Warning System (DEWS)

The Louisiana statewide Dropout Early Warning System (DEWS) tracks students on four main factors: whether the student is over age for grade level (by two years), attendance (missing more than 10% of school days), behavior (behavior marks on 7% of days enrolled or more), and course performance (drop in GPA of 1.5 or more from current GPA of 2.0 or higher, drop in GPA of .5 or more from a previous GPA of less than 2.0, if the student has a current GPA less than 1.0, or if the student is receiving a D in a class; Bruce et al., 2011; Joubert, Joubert, & Thibodeaux, n.d.). This is an automatic system that sends email notifications twice a month to the principal, assistant principal, counselor, and superintendent of the district regarding the list of students at risk for dropout in ninth grade, as well as students at risk in grades 8-12 (Bruce et al., 2011; Joubert et al., n.d.). This system also sends information daily regarding new students who become at-risk. While this system might be beneficial for many school districts, it is not available for widespread dissemination.

School Disengagement Warning Index

Because of the many negative life outcomes of high school dropout, Henry, Knight, and Thornberry (2012) conducted a longitudinal study to examine the efficacy of an early warning system (i.e., School Disengagement Warning Index) focused on school disengagement and other problem behavior outcomes. This tool utilizes school data including: a) scoring “not proficient” in one or more areas on standardized tests, b) attendance (missing 20% or more of school days), c) performance in core classes (failing one or more core subjects), d) one or more suspensions, and e) grade retention. This system compiles the factors and calculates a total risk factor score giving students a score ranging from zero to five.

The researchers found that the School Disengagement Warning Index was a robust indicator of students who dropped out of high school. They also found that measures of disengagement based on school records have a large impact on problem behaviors across the three developmental stages examined: middle adolescence, late adolescence, and early adulthood. Finally, researchers found that school disengagement is linked to the student’s future crime, police contact, and drug and alcohol use. These negative long-term outcomes of dropout underscore the importance for educators to take strong action. The authors suggest that monitoring students in 8th and 9th grade and taking action as soon as risk factors emerge is the best way to approach the dropout crisis.

While these last two examples are not tools that are available online, they represent great examples of ways that EWS can be used to target specific populations of students. They also show how EWS can be tailored to meet the needs of the administration by providing periodic updates via email or using a simple summation system that can be easily created.

National Dropout Prevention Center for Students with Disabilities Tools

The National Dropout Prevention Center for Students with Disabilities (NDPC-SD) has created several tools to help schools analyze the factors that lead to student dropout. These tools include core data on academics, attendance, and a discipline tool; all of which serve to identify school-wide areas of concern (Klare, 2013). Core data represents a measure designed to help schools analyze graduation rates, dropout rates, attendance, assessment scores, and disciplinary referral rates simultaneously. This tool

requires up to 3 years of data in order for schools to track progress through time. The tool also exists in a 6-year format to allow for better data collection and analysis.

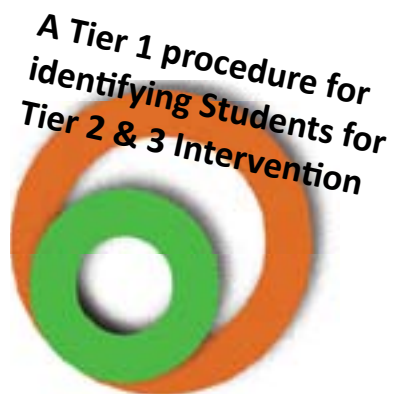
In order to identify each area individually, the center offers individual tools for each domain. The graduation and dropout tool serves to help schools track this information through graduation and dropout rate gaps and trends, demographic trends, and trends by grade. The attendance tool helps schools to track attendance and absences quarterly by offering attendance and absence rates and gaps, as well as a breakdown of attendance by the number of days absent. The academics tool tracks English/English Language Arts (ELA) and math course success through pass and failure rates as well as gaps. Finally, the discipline tool tracks office and disciplinary referral rates (ODR) by quarter as well as by the type of incident that necessitated the referral. All of these tools are available free of charge at their website, located at <http://www.ndpc-sd.org>.

NDPC-SD Student Risk Calculator

The NDPC-SD Risk Calculator was developed at the National Dropout Prevention Center for Students with Disabilities at Clemson University by Dr. Matt Klare. This tool helps schools identify at-risk students and place them in the appropriate intervention groups. This tool utilizes student-level data elements to predict a student's risk of dropping out of school and to identify the areas in which he or she might need interventions and supports in order to stay in school and succeed. The Risk Calculator is grounded in the scientific research that identifies various risk factors and predictors associated with dropping out of school and, conversely, with school completion. This tool analyzes student-level factors that relate to dropout, such as attendance, behavior, academic factors, and engagement (Klare, 2013). The risk calculator includes variables that have been correlated with dropping out of school by numerous researchers (Frazee & Barton, 2013; Hammond, Lincoln, Smink, & Drew, 2007; Neild et al., 2007; Ruebel, Ruebel & O'Laughlin, 2002; Thacker, 2009).

This tool calculates the individual level of risk (low, medium, high, and ultra-high) of dropping out for each student. Also, this tool provides information on areas that students might benefit from intervention and supports (e.g. attendance, behavior, math, reading). This tool is still in the preliminary stages of development but is similar in design to the early warning system developed by the National High School Center.

The Risk Calculator is an Excel workbook that uses commonly available student-level data. It is designed to accommodate up to 1000 students' data at a time but can be adapted to accommodate more students. Data may be exported from the schools student information system or it can be assembled by hand in an Excel file, formatted to match the Risk Calculator's data layout, and then pasted into the appropriate worksheet in the Calculator. The use of the readily available Excel program makes it feasible for small or rural individual schools to employ this procedure without the need for outside assistance.



One of the differences between the tools developed by the NDPC-SD versus the NHSC is the emphasis placed on special education rates and referrals. Each of the tools developed by NDPS-SD has a specific question regarding the number of students with disabilities. Therefore, if schools want to get a better idea of the discrepancy between students with and without disabilities in terms of graduation, dropout, atten-

dance, discipline, and assessment scores, the tools developed by the NDPC-SD would be very helpful. However, if a school is more interested in individual student risk factors overall, either the EWS or Student Risk Calculator are appropriate tools to use.

The on-track indicator

In 2005, the Consortium on Chicago School Research released a book describing the use of their on-track indicator to determine freshmen success in high school (Allensworth & Easton, 2005). The indicator system tracks two variables: course credits and course success. The standards specified in the book include the accumulation of five full course credits (enough to be promoted to 10th grade), as well as no more than one failing grade in core courses (Allensworth & Easton, 2005). Researchers found that 81% of students who were on track their freshman year graduated in four years, while only 22% of off-track students graduated. This shows that the tool is effective in accurately identifying 78% of students who will drop out by their senior year based on these two measures alone. A report by the Regional Education Laboratory identified five school districts in Texas who had successfully adapted the Chicago model to monitor student progress in their schools (Hartman, Wilkins, Gregory, Gould, & D'Souza, 2011), demonstrating both its adaptability and ease of use.

Conclusion

Understanding the various risk factors and how they may impact a student's success in school or their decision to drop out is very important. Identifying these factors and understanding which students are at-risk can help schools to take action early and reduce dropout rates. One method of doing this is to implement a universal, or school-wide, dropout screener. These screeners flag students at risk for individual or multiple variables and are helpful in keeping track of which students are in need of immediate assistance or intervention, which students should be watched carefully, and which students are on track for graduation.



Related Strategy Briefs

A variety of Engagement project Strategy Briefs support Tier 2 and Tier 3 intervention for students who are at risk of dropping out. See these at: <http://k12engagement.unl.edu>.

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