JOHN W. GARDNER CENTER *for Youth and Their Communities*

Using Early Warning Systems to Predict and Prevent Dropout

What is an Early Warning System?

An Early Warning System uses indicators to identify students at risk of not graduating high school, with the ultimate goal of providing them with additional supports to help them get back on track. Districts and schools develop these indicators based on their assessment of what students need to be on the path to graduate. An effective Early Warning System employs indicators that are:

- efficient predictors of high school graduation,
- relevant to the school district, and
- linked to supports.

Schools and districts across the country are increasingly utilizing Early Warning Systems to enable data-driven decision making to improve the success of students and schools.

In 2008-2009, 75.5% of students in the United States graduated from high school on time; in California, the rate was 71%.[1] While some of the remaining students eventually graduated, most dropped out of high school altogether. Since research shows that "dropping out of school is the final stage in a dynamic and cumulative process of disengagement from school"[2], an Early Warning System's power lies in its ability to identify students while there is time to get them back on track. As a result, Early Warning indicators are commonly used in the 8th or 9th grade.

Developing Indicators to Predict Dropout

To develop dropout indicators, schools may analyze data on students' schooling history, such as GPA, standardized test scores, attendance, disciplinary behaviors, mobility, as well as demographic characteristics. However, research shows that academic characteristics—particularly GPA and course failures—are the strongest predictors of high school completion; meanwhile, demographic characteristics, such as gender, ethnicity, and family background, offer little additional predictive power.[3]

The effective use of an Early Warning System requires the participation of both districts and schools. Districts and schools determine indicators by studying graduation and dropout patterns in conjunction with longitudinal student data. Developing early warning indicators involves identifying the age or grade at which districts and schools are interested in intervening and then using a set of factors to identify which are most predictive of high school graduation. Subsequently, the district considers what threshold or cutoff should be used for each of these variables (i.e., if GPA best predicts high school graduation, at what GPA should we begin to identify students?). Exhibit 1 illustrates Early Warning System indicators developed by select school districts.

[1] Public School Graduates and Dropouts from the Common Core of Data: School Year 2008–09. Robert Stillwell; National Center for Education Statistics; May 2011

[2] Hauser, R. and Koenig, J.A. (2011). *High School Dropout, Graduation, and Completion Rates: Better Data, Better Measures, Better Decisions.* National Academies Press. Retrieved July 2011 from http://books.nap.edu/catalog.php?record_id=13035

[3] Allensworth & Easton, 2005; Balfanz & Neild, 2006; National Research Council and National Academy of Education, 2011

Exhibit 1. Early Warning Indicators Developed by Select School Districts

Chicago Public Schools: 9th grade "on-track" indicators: (1) Having one or no semester F grades in core courses; (2) Earning five or more credits freshman year (minimum needed to be promoted to 10th grade).
School District of Philadelphia: 8th grade indicators: (1) Attendance less than 80% and/or (2) Failed English or math.
Portland Public Schools: Focused on "Academic Priority Students" (D or F in a core course in 9th grade or failed to meet proficiency in "two out of three standards") and "late entrants" (entered the district in 10th grade or later).
Baltimore City Schools: 6th grade indicators: (1) Missing 20 or more days of school, (2) Failing English, or math, or both and/or a failing average for English, math, science, and social studies, (3) Being at least one year overage (suggesting an earlier retention), and (4) Being suspended for three or more days.

Note: Some districts examined the same indicators across multiple grade levels, not just those specified here. This list is not intended to be exhaustive. For further information see National Research Council and National Academy of Education, 2011.

Once districts and school identify appropriate indicators they develop a system of rules to:
- Flag high-risk students;
- Determine the intervals at which data on these indicators should be collected and examined;
- Identify the exact flow of the information: who gets the information, when they get it, how it is presented to them, and how they use it;
- Ensure that teachers and administrators can access the information to inform instruction;
- Use a variety of supports that are school-wide, target certain students, or individual students[4]

Limitations of Early Warning Indicators

Although research has been fairly conclusive about which early warning indicators are most informative, students who reach tenth grade without exhibiting any conventional warning signs are often not captured by these systems. One reason is that additional predictors of academic success, such as student motivation and tenacity, family involvement, instructional quality and school climate, are either inconsistently collected or have not been empirically proven to predict individual graduation rates. Another challenge of existing early warning indicators is that although attendance and course performance are indicators of dropping out, they are not necessarily the *cause* of student dropout. Identifying the root causes of these indicators is extremely resource-intensive.

Future of Early Warning Systems

As students who have benefited from the Early Warning System graduate, it will be important to assess the efficacy of the different Early Warning Systems to evaluate whether the systems are targeting students most in need of intervention. Another next step would be to further research additional types of student characteristics that may indicate student success. Finally, expansion of Early Warning Systems to include college readiness indicators would enable a bolder analysis of both student graduation and college readiness.

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[4] For more information about the development and implementation of Early Warning Systems, see JGC's *Early Warning Systems: Ideas & Examples for Implementation* Policy Factsheet. http://gardnercenter.stanford.edu