Review of Literature on Implementing an Early Warning System

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Background

The Colorado Department of Education requested information on resources to help guide the implementation of an Early Warning System (EWS). In response to this request, REL Central at McREL reviewed literature that provided guidance on how to implement an EWS, although none of the articles or reports identified any research studies that evaluated the impact of EWS implementation. REL Central reviewed 13 reports, including three research reports, one white paper, and nine planning/implementation guides.

New research on dropout has provided districts with insight into indicators that can be used to identify students who are at risk of dropping out of school. Districts and educational software vendors have developed Early Warning Systems that allow educators to access data on these indicators to help identify students at risk of dropping out and to provide these students with preventative or intervention strategies to increase their chances of graduating. The following report summarizes strategies for implementing an EWS, as identified by districts, research organizations, and educational organizations. Four recommendations were commonly discussed throughout the literature:

1) establishing teams;

2) determining indicators and analyzing district data;

3) monitoring the EWS data; and

4) maintaining, evaluating and refining the EWS.

Establish Teams

The articles reviewed discussed the importance of establishing a team or teams of district and school staff and potential community members to help develop, implement and refine the EWS. Two types of teams were suggested - district and community teams who would guide plans for dropout prevention and school level teams who would use the data to provide supports to students.

District-Level Teams

Districts in the early stages of implementing an EWS, or other strategies for dropout prevention and graduation improvement, should consider establishing a team comprised of key members from local government agencies, local community representatives, district and school staff, and parents and students (Balfanz et al., 2009; MetisNet, 2008). For example, Shelton School District (n.d.) created a team comprised of a cross-section of members of the school community, including the superintendent, principals, counselors, learning support staff, school nurses, teachers, CTE, tribal representatives, juvenile court representatives, school psychologists, special education professionals, drug and alcohol intervention specialists, and research and data specialists. This team is tasked with advocating for dropout prevention and developing and monitoring goals related to the dropout prevention strategies and making refinements to the strategies or EWS as appropriate. Involving community members on the

team can help to encourage public support and bring in additional expertise in public relations, policy advocacy, and fundraising (MetisNet, 2008).

School-Level Teams

The literature recommends that school-level teams include a representation of school staff, including guidance counselors and other adult advocates, who meet regularly to review and discuss the data from the EWS and consider interventions to support the students identified as being at-risk of dropout, as well as gather additional information to determine underlying causes related to the at-risk indicators (Dynarski et al., 2008; MacIver et al., 2009; Therriault et al., 2010). For example, the team might solicit feedback from parents and other teachers to discuss life events of students who are struggling.

Determine Indicators/Analyze District Data[1]

Some larger school districts have conducted studies to identify indicators that can be used to predict the likelihood of a student dropping out of school. However, several resources suggest that districts conduct their own studies using their districts' data to determine which indicators are most predictive of high school dropout for their own students (Jerald, 2006; John W. Gardner Center for Youth and Their Communities, 2011; Shelton School District, n.d.) and to determine patterns of dropouts in their district, such as concentration in certain schools or certain groups of students (Dynarski, Clarke, Cobb, Finn, Rumberger, & Smink, 2008; Jerald; MacIver, Balfanz, Byrnes, 2009; MetisNet, 2008). These resources suggest conducting a longitudinal cohort study starting with indicators currently identified in the literature to determine high yield indicators, or combinations of indicators, and to further examine data to look at patterns such as particular grades, ELL students, students who previously dropped out, students with multiple risk factors, and schools with higher and lower levels of dropouts.

Monitor the Early Warning System Data

The 2008 IES Practice Guide *Dropout Prevention* judged the level of evidence for the use of data systems that support a realistic diagnosis of the number of students who drop out and help identify individual students at high risk of dropping out 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." (Dynarski et al. 2008; p. 12). However, the Guide recommends that schools regularly analyze student data to identify students who are at risk for dropping out and consider providing extra services and supports to these students. This process involves multiple steps, which include reviewing timely and relevant reports, providing staff time and training for data use, and assigning and monitoring interventions, each discussed in more detail below.

Reviewing Timely and Relevant Reports

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[1] As part of CDE's request for information on Early Warning Systems (EWS), REL central prepared a separate report that provides examples of studies that identify potential indicators for EWSs.

Two types of reports for examining data from an EWS are discussed in the literature: reports to identify students and reports that summarize district- and school-level data.

Reports to Identify Students

Student-level reports provided in a user-friendly format can be used to determine needed supports for students at risk of dropout (MacIver et al., 2009**;** Therriault et al., 2010). The research suggests that reports should classify students into categories or groups in order to identify appropriate prevention and intervention strategies for each group (John W. Gardner Center for Youth and Their Communities, 2011; MetisNet, 2008; The Parthenon Group, 2008; Therriault et al., 2010; Uekawa et al., 2010). These resources suggest that reports should group students based on:

- the indicators for which the students are flagged;
- the student's grade level (e.g., entering ninth grade vs. entering tenth grade); and/or
- individual student circumstances, such as off-track for graduation, late-entrant ELL student, and returning dropouts.

Therriault et al. (2010) suggest that data should be manageable and able to be sorted and organized as needed. They suggest that the data should be reported to identify individual students, understand patterns across students over time, and identify additional information needed to better serve flagged students (eg., information on students' levels of engagement, or home environment). Also, additional data should be gathered to determine why students are displaying at-risk characteristics. The authors suggest several questions for guidance on additional data collection such as:

- "Are there any patterns or reasons for absence among students who are flagged for attendance?
- In which classes or type of classes are flagged students enrolled (e.g., remedial reading or math courses)?" (p. 14)

Reports that Summarize District- and School-Level Data

In addition to analyzing student-level data, districts and schools should use data to answer questions that will inform systemic needs and underlying school factors related to dropout prevention in schools and districts (Allensworth & Easton, 2007; Balfanz et al., 2009; Data Quality Campaign, 2010; Dynarski, et al., 2008; John W. Gardner Center for Youth and Their Communities, 2011; MetisNet, 2008). The following were identified as important questions to address when analyzing data collected from an EWS:

- Which schools in the district have the fewest dropouts and are most effective at keeping students on track?
- Which schools have the highest level of dropouts? What school factors may be contributing to the number of students who are dropping out?
- What policies may be impacting the dropout rate (i.e., attendance, grading, grade promotion, disciplinary actions, legal dropout age)?
- Which drop-out risk factors are most common in which schools?

- What is the annual dropout and graduation rate in the district?
- Are there certain groups of students who seem to be at greater risk of dropping out?
- How many credits are earned by students who are dropping out (most credits needed, half to three quarters, less than half)?
- Are there courses in which failure is more likely to be associated with dropping out?
- Why do students drop out (e.g., seldom attend school, have behavior problems, life events, bored/frustrated/disillusioned, are not earning enough credits to be promoted and graduate, etc.)?
- Are students more likely to drop out after transitioning from middle to high school?
- What do students need based on the nature of their risks?
- How are students engaged in the school community?

Providing Staff Time and Training for Data Use

In order for staff to use the information provided by any data system, including an EWS, they will need time to review and discuss the data, and the ability to access and interpret the data (Learning Point Associates, 2006). Schools should provide time for regular conversations among staff to engage in common planning and solution building using the data (MacIver et al., 2009). Districts can strive to create a system that does not require too much staff time and which is interactive and programmable so that customized reports can be generated (MacIver et al.).

Assigning and Monitoring Interventions

The research recommends a multi-tiered approach for providing interventions (Balfanz et al., 2009; Jerald, 2006; et al., 2009; MetisNet, 2008; Shelton School District, n.d.; The Parthenon Group, 2008, Therriault, 2010). These tiers are primarily described as schoolwide and small- group and individualized strategies and may be categorized as transition, prevention, and intervention strategies. Balfanz et al. (2009) highlight the importance of integrating various student support strategies so that a comprehensive support system is available for students. A related suggestion is to create an inventory, including a coding scheme for intervention supports, which will allow interventions to be tracked in the database. These codes can be assigned to identify both the tier level and risk type of the students (Balfanz et al.; Shelton School District, n.d.). Additionally, the reviewed resources recommend using data to monitor the effects of interventions and identify gaps in available interventions (Balfanz et al.; Data Quality Campaign, 2010; Jerald, 2006; Shelton School District, n.d.; Therriault et al., 2010). Specifically, these resources suggest evaluating the interventions to address the following questions:

- Are there students who are receiving interventions that continue to show signs of risk? Are there students who were flagged and received interventions that were flagged again as dropout risks?
- What additional supports are needed for students whose needs were not met by the original interventions? Are there gaps in the interventions?

- What overall impact did the intervention have on students? Which interventions have been the most effective at reducing the dropout rate or increasing the graduation rate?
- Are the current efforts aligned, do they support each other or work against each other? Are there any duplicate efforts that could be streamlined?

Maintain, Evaluate and Refine the EWS

Maintain the EWS

In order to maintain any data system, districts need technical staff to structure, code, and enter data, and provide ongoing support and training to ensure that data are used appropriately (Learning Point Associates, 2006). Additionally, staff time will need to be devoted to ensuring data integrity, solving data inconsistencies, managing system-wide technology integration and updates, and maintaining security access to the system (Dynarski et al., 2008; Learning Point Associates, 2006; MacIver et al., 2009; MetisNet, 2008; Shelton School District, n.d.). The National Forum on Education Statistics (2005) released a *Forum Guide to Education Indicators* that provides details on important data quality considerations related to common educational indicators.

Evaluate and the Refine EWS

Therriault et al. (2010) recommend that districts reflect on the EWS implementation process and make refinements at least annually. This may include conducting additional analysis to refine the risk indicators using cohort data, analyzing the data to inform programming or policy decisions, and/or considering monitoring and reporting on at-risk students beginning in middle or elementary school (Balfanz et al., 2009; Data Quality Campaign, 2010; Jerald, 2006; Shelton School District, n.d.; Therriault et al., 2010).

Summary

REL central reviewed 13 reports, including three research reports, one white paper, and nine planning/ implementation guides that provided guidance on how to implement an EWS. Several common suggestions arose in these reports as outlined below:

- Establish district-level teams to advocate dropout prevention, develop and monitor goals related to dropout prevention strategies, and make refinements to the EWS as required.
- Establish school level teams who meet regularly to review and discuss data from the EWS and determine appropriate interventions for students who are flagged as at-risk.
- Conduct district studies to determine which indicators are most likely to predict potential dropouts.
- Develop timely and user-friendly student level reports to assist in identifying at-risk students.
- Develop district and school level reports to inform systemic needs.

- Provide staff time and training to support use of the EWS data.
- Assign interventions specific to the at-risk indicators for which the students were flagged, using a multi-tiered approach.
- Monitor the effectiveness of the interventions used for at-risk students.
- Provide the staff and structure needed to maintain an EWS.
- Conduct ongoing analysis to refine the EWS.

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