

District Reform Support Network

GETTING AHEAD OF THE CURVE:

How Race to the Top-District Grantees Use Leading Indicators to Promote, Support & Sustain Personalized Learning



The District Reform Support Network (District RSN) is funded through a U.S. Department of Education contract with AEM corporation to provide technical assistance to Race to the Top-District grantees. The District RSN's purpose is to support the Race to the Top-District grantees as they implement reforms in education policy and practice, learn from each other, and build their capacity to sustain these reforms.

The District RSN is also setting the groundwork for distributing lessons learned and sharing promising practices from the Race to the Top-District initiative with all educators, especially those implementing similarly bold education reform initiatives.



Table of Contents

Introduction	Page	4
What Leading Indicators Are	Page !	5
Levels of Leading Indicators	Page	7
Characteristics of Quality Leading Indicators	Page	9
How to Create Quality Leading Indicators	Page	11
District Technical Capacity for Leading Indicators	Page	15
Tips for Creating & Using Leading Indicators	Page	16
Key Resources	Page	17
References	Page	18

INTRODUCTION

Often, results from annual standardized tests are too late to impact student learning and course-correct where necessary. Students benefit when teachers are capable of making real-time adjustments to instruction. To make deft adjustments, districts need to collect and use data to monitor, measure, and show real-time progress towards outcomes for strategic decision-making that leads to sustainable changes. This is particularly true for districts implementing personalized learning.

In an effort to support districts trying to develop and enhance personalized learning systems, this brief provides concrete and practical guidance on how to create and use leading indicators as an integral part of a continuous improvement process. Several Race to the Top-District (RTT-D)¹ grantees are highlighted in order to demonstrate ways in which districts can effectively use leading indicators to monitor and measure progress toward their personalized learning outcomes at the student, educator, and system levels.

Personalized learning means instruction that is aligned with rigorous college- and career-ready standards so that the pace of learning and the instructional approach are tailored to the needs of individual learners. Learning objectives and content, as well as the pace, may all vary depending on a learner's needs. In addition, learning activities are aligned with specific interests of each learner. Data from a variety of sources (including formative assessments, student feedback, and progress in digital learning activities), along with teacher recommendations, are often used to personalize learning (Secretary's Final Supplemental Priorities and Definitions for Discretionary Grant Programs, 2014, Fed. Reg. 79 FR 73425 2014).

¹ Since 2012, the U. S. Department of Education has awarded \$510 million to 21 districts and consortia of districts through the Race to the Top-District education reform initiative to implement personalized learning.

WHAT LEADING INDICATORS ARE

Leading indicators originated in the business and economic sectors, where they have been used for decades to predict outcomes. Some districts have adopted leading indicators to monitor and measure progress. Leading indicators can be defined as "systematically collected data on an activity or condition that is related to a subsequent and valued outcome, as well as the processes surrounding the investigation of those data and the associated responses."² In other words, leading indicators can provide early signs of progress.³

Leading indicators can help districts hone strategies and conditions that lead to improved student achievement results by providing districts with necessary information for tracking the conditions for personalized learning⁴ and by helping districts make data-informed decisions that lead to sustained improvements in student learning.⁵ Like formative assessments, leading indicators measure progress on an ongoing basis and provide critical data that districts can use proactively to change practice and improve the trajectory of progress toward an outcome.

Unlike summative assessments (i.e., lagging indicators), which confirm trends after learning or a change has occurred, leading indicators inform progress along the way.⁶

² Supovitz, J., Foley, E., & Mishook, J. (2012). In Search of Leading indicators in Education. *Education Policy Analysis Archives*, 20 (19), p. 2.

³ Foley, E., Mishook, J. Thompson, J., Kubiak, M. Supovitz, J., & Rhude-Fasut, M.K. (2008). *Beyond Test Scores: Leading Indicators for Education*. Providence, RI: Brown University, Annenberg Institute for School Reform, p. 3.

⁴ Johnson, J., Kendziora, K., & Osher, D. (2012). *RTT-D Guidance: Implementing Performance Metrics for Continuous Improvement that Support the Foundational Conditions for Personalized Learning.* Washington, DC: American Institutes for Research.

⁵ Supovitz, J., Foley, E., & Mishook, J. (2012). In Search of Leading indicators in Education. *Education Policy Analysis Archives*, 20 (19).

⁶ Foley, E., Mishook, J. Thompson, J., Kubiak, M. Supovitz, J., & Rhude-Fasut, M.K. (2008). *Beyond Test Scores: Leading Indicators for Education*. Providence, RI: Brown University, Annenberg Institute for School Reform, p. 2.

WHY LEADING INDICATORS MATTER

Drawing on RTT-D grantees' practical experience, there are three key benefits to districts that use leading indicators to personalize learning:

- Leading indicators can capture a broad range of data for districts to monitor and measure personalized learning at the individual, classroom, and system levels.
 Districts implementing personalized learning need access to data that provide an indepth picture of a student, ranging from traditional measures (e.g., academic, behavior, attendance) to harder-to-measure and equally-important data, such as socialemotional learning. Research shows that districts can use leading indicators to capture a broad range of data from multiple sources beyond test scores at multiple levels, such as student, educator, and system.^{7 8}
- Leading indicators can provide timely data that enable districts to make strategic and proactive decisions to improve personalized learning continuously. Districts implementing personalized learning need to intervene early and often to ensure that students "are meeting their individualized learning outcomes and making mid-course adjustments to personalized learning systems at the district, school, and classroom levels."

Research shows that, because leading indicators are built to collect data in short time periods (e.g., 6, 9, or 12 weeks), they provide districts with the ongoing data they need to make datainformed proactive and strategic decisions.⁹

• Leading indicators offer evidence that districts can use to share their story of personalized learning with multiple stakeholders. Districts often need strategic communication to help stakeholders understand, accept, and embrace changes that break from traditional approaches to schooling, such as personalized learning. Districts can use leading indicator data to tell their story about what they are trying to achieve and the progress they are making in implementing personalized learning. For example, Assistant Superintendent Regina Renaldi describes one way that RTT-D Grantee St. Vrain Valley School District (SVVSD) uses leading indicators beyond monitoring and measuring progress to "communicate to business partners and other innovators our reiteration and revision of the Innovation Center strategy." Likewise, IDEA Public Schools recognizes the value of using leading indicators to build strong community and external support to sustain their Race to the Top-District projects beyond the grant.

⁷ Johnson, J., Kendziora, K., & Osher, D. (2012). *RTT-D Guidance: Implementing Performance Metrics for Continuous Improvement that Support the Foundational Conditions for Personalized Learning.* Washington, DC: American Institutes for Research.

⁸ Supovitz, J., Foley, E., & Mishook, J. (2012). In Search of Leading indicators in Education. *Education Policy Analysis Archives*, 20 (19).

⁹ Supovitz, J., Foley, E., & Mishook, J. (2012). In Search of Leading indicators in Education. *Education Policy Analysis Archives*, 20 (19).

LEVELS OF LEADING INDICATORS

There are three basic types of leading indicators that reflect the *level* or unit of analysis of the data collected: student, educator, and system. Research emphasizes the use of leading indicators at all three of these levels simultaneously for the continuous monitoring of personalized learning.¹⁰ This approach is non-linear with multiple activities happening simultaneously at the district, school, classroom and student levels.¹¹ For **IDEA Public** Schools, this multi-level approach affords them the opportunity for "ongoing reflection on progress at the district level and drilling down to school, classroom, and student level progress." Each level of leading indicators is discussed in further detail below, with examples provided from Race to the Top-District grantees.

STUDENT

Student-level leading indicators are the most common and can be classified further into two sub-categories: cognitive and non-cognitive. Cognitive leading indicators include academic measures of success, such as standardized test scores and formative assessment results, while non-cognitive leading indicators are non-academic and include areas such as social-emotional, health, 21st Century learning skills, and predictive educational measures, such as attendance, behavior, or course completion.

For example, SVVSD has used student-level leading indicators to measure the progress and efficacy of part of their RTT-D project. Using RTT-D grant money, SVVSD established an *Innovation Center*, where high school students participate in project-based learning and internships with university and business partners. SVVSD uses student-level leading indicators to track their *Innovation Center* students' progress on short-term outcomes.¹²

Student-Level Leading Indicator

Number of students accessing course work in the Innovation Center to complete projects

Short-Term Outcome

10% increase in the number of students accessing course work and participating in work teams in the Innovation Center

Based on the data collected, teachers, counselors, other staff, and mentors are connecting students to opportunities in the *Innovation Center* and with real business partners. For other examples of student-level leading indicators that districts can adopt or adapt to measure student progress, see the *Key Resources* and *References* sections.

¹⁰ Continuous improvement is "a term used to describe the improvement life cycle in which district and school staff, along with community stakeholders (1) collect and analyze data; (2) set measurable and achievable goals; (3) plan for improvement using various strategies, resources, and actions; (4) implement benchmarks and deliverables; and (5) evaluate progress and modify practice if necessary. Although continuous improvement models typically follow this sequential approach over the course of a school year, for personalization to be effective, the approach must not be considered linear because activities often happen in parallel. It is carried out at multiple levels—district, school, classroom, and student" (Johnson, Kendrioza, & Osher, 2012, p. 2).

¹¹ Johnson, J., Kendziora, K., & Osher, D. (2012). *RTT-D Guidance: Implementing Performance Metrics for Continuous Improvement that Support the Foundational Conditions for Personalized Learning.* Washington, DC: American Institutes for Research, p. 2.

¹² Short-term outcomes can typically be achieved within 1-2 years. They are further discussed in the "How to Create Quality Leading Indicators" section of this brief.

EDUCATOR

Leading indicators at the educator level can be used to analyze progress on outcomes related to changes in practices by teachers, principals, or others engaged in the educational process. The two most common educator-level leading indicators are teacher and principal effectiveness.

For example, RTT-D Grantee Green River Regional Educational Cooperative (GRREC) uses the Concerns-Based Adoption Model (CBAM) as a framework for leading RTT-D changes in the districts in their consortium. GRREC measures teacher growth on the CBAM as a way to measure progress toward their short-term goal of increasing teachers' use of innovative practices.

Short-Term Outcome

ncreased percent of teachers using innovative practices hroughout the school year

GRREC uses the CBAM results to identify teachers who need support in the use of innovative practices. For example, cognitive coaches work with school teams using the **Design the Future of Learning Innovation Toolkit** to help these teachers use innovative

practices in their classrooms connecting their practices to their school's vision.

SYSTEM

System leading indicators measure progress toward system-level outcomes, which are commonly related to cultural and structural changes that endure beyond a project period. Because they are contextual in nature, reflecting local needs and interests, creating leading indicators aligned to system-level outcomes can *require* innovation.

Systems-Level Leading Indicator

Percent of students who are on-track to reach their personal goals as indicated by data in new data systems

Short-Term Outcome

Data-driven continuous improvement process in place and fully operational through new data systems and dashboards

For example, RTT-D Grantee Harmony Public Schools (HPS) is implementing new data tools to personalize learning. HPS uses systems-level leading indicators as evidence of progress toward system-wide use of these new data tools.

Harmony uses data from this system leading indicator to make strategic decisions about curriculum and the acquisition of resources for teaching and learning. For example, when students are not progressing at an acceptable rate toward meeting their personal goals, district and campus instructional leaders initiate discussions around the adaptability of current digital curriculum tools. Through feedback from teachers and interventionists, these leaders come up with recommendations for additional curriculum tools and resources to help students keep up with the expected growth and progress.

Educator-Level

on the CBAM

Leading Indicator

By spring 2015, 80% of teacher

CHARACTERISTICS OF QUALITY LEADING INDICATORS

Quality matters when developing leading indicators. High quality leading indicators are:

- Predictive
- Cognitive and non-cognitive
- Actionable
- Emphasize depth over breadth
- Quick wins

The above characteristics can be used as a checklist for developing, identifying, or evaluating leading indicators. This section highlights examples of high-quality leading indicators from RTT-D grantee **Puget Sound Educational Service District (PSESD)**. PSESD uses a multitude of leading indicators to measure college and career readiness as part of their **Start Strong - STEM Strong - Stay Strong Road Map Project**, a regional cradle-to-

college-and-career continuum. For the full set of PSESD Road Map indicators, **click here**.

PREDICTIVE

Leading indicators are meant to indicate, in advance, achievement of a future outcome. Research provides a growing number of predictive leading indicators aligned to educational outcomes that districts can adopt or adapt, as described in the *Resources* section.^{13 14}

For example, PSESD draws on existing research on leading indicators for on-track high school graduation: *Attendance, Behavior, and Course Completion (ABC)*.¹⁵ Also known as the *Early Warning System (EWS)*, these research-based indicators are predictive of high school graduation. Specifically, sixth-grade students with one or more areas of concern in these indicators had a 25% or less chance of graduating from high school on time.

Predictive Leading Indicators

Less than 90% school attendance
"Unsatisfactory" behavior mark in at least one class
A final grade of "F" in math and/or English

Short-Term Outcome

Sixth-grade student is off-track for high school graduation

The **EWS Resources Repository** offers a set of resources and tools for districts to take action on the data collected for the ABC (i.e., Early Warning System) leading indicators.

¹³ Supovitz, J., Foley, E., & Mishook, J. (2012). In Search of Leading indicators in Education. *Education Policy Analysis Archives*, 20 (19), p. 6.

¹⁴ Johnson, J., Kendziora, K., & Osher, D. (2012). RTT-D Guidance: Implementing Performance Metrics for Continuous Improvement that Support the Foundational Conditions for Personalized Learning. Washington, DC: American Institutes for Research, p. 8.

¹⁵ Neild, R. C., Balfanz, R., & Herzog, L. (2007). An early warning system. Educational Leadership, 65(2), 28-33.

Cognitive Leading Indicator

Percent of students "ready to succeed in school by kindergarten" on the state test: Washington Kindergarten Inventory of Developing Skills (WaKIDS)

Short-Term Outcome

Percent of students demonstrating Kindergarten readiness

Non-Cognitive Leading Indicators

- Percent of children born weighing less than 5.5 pounds
- Percent of families reading to their children on a daily basis
- Percent of children meeting age-level expectation at the end of school

COGNITIVE AND NON-COGNITIVE

It is important to include both cognitive and non-cognitive leading indicators when measuring progress toward outcomes.^{13 14} Leading indicators that are cognitive include academic measures such as increased student achievement. Non-cognitive leading indicators include a broad array of other measures that are important for improving student achievement such as social-emotional skills, health, 21st Century skills, attendance, behavior, and course completion.

For example, PSESD uses both non-cognitive and cognitive measures from birth to career. They describe these different measures as *On-Track Indicators*, or cognitive, and *Contributing Indicators*, or non-cognitive. In its students' earliest years, PSESD measures kindergarten readiness through both cognitive and non-cognitive measures as shown in above.

ACTIONABLE

Leading indicators are intended to show evidence of progress toward outcomes and provide data that lead to strategic and proactive decisions.¹⁶ Actionable data can lead to the implementation of interventions and mid-course corrections that can improve the trajectory toward outcomes.

For example, PSESD measures college readiness using a common leading indicator: *percent of college bound students who complete the* Free Application for Federal Student Aid (FAFSA).

Studies also show that a lack of financial aid knowledge affects a student's likelihood of going to college,¹⁷ making FAFSA completion a critical leading indicator for college and career readiness. FAFSA completion is highly actionable because data are readily available and counselors can increase application completion easily. PSESD counselors collect FAFSA completion data and systematically identify students who need assistance in completing the application.

Actionable Leading Indicator Percent of students completing the Free Application for Federal Student Aid (FAFSA)

Short-Term Outcome

Percent of students who enroll in college

¹⁶ Supovitz, J., Foley, E., & Mishook, J. (2012). In Search of Leading indicators in Education. *Education Policy Analysis Archives*, 20 (19), p. 6.

¹⁷ Zarate, Maria Estela and Harry P. Pachon. (2006). *Perceptions of College Financial Aid Among California Latino Youth*. Los Angeles, CA: Tomas Rivera Policy Institute (TRPI).

DEPTH OVER BREADTH

Leading indicators that favor depth over breadth provoke inquiry and further investigation into root causes.¹⁶ Deep leading indicators provide data that reveal underlying processes and conditions that affect success. These data enable districts to work at a level of depth required to make improvements and sustain changes over time.

For example, a leading indicator on the PSESD Roadmap is *percent of families reading to their children on daily basis*. Research shows that students whose parents read to them at home were better readers than those whose parents did not,¹⁸ making this a predictive leading indicator. This leading indicator provokes a deeper probing into family conditions that affect school achievement and college and career readiness, including:

- » How much access do families have to books in their home language?
- » Do parents understand the importance of reading to their children in the early years?
- » Do families understand the importance of reading for academic success?
- » Are there social or financial supports needed for students living in poverty?

Depth Over Breadth Leading Indicator

to their children on a daily basis

Short-Term Outcome

Percent of students demonstrating reading proficiency by grade 3

¹⁸ Snow, C.E., Burns, M.S., & Griffin, P. (eds.) (1998). Preventing reading difficulties in young children. Washington, DC: National Academy Press.

QUICK WIN

Leading indicators that reflect "quick wins" can spur interest and confidence in leading indicators as an effective and efficient continuous improvement tool.¹⁹ Quick win leading indicators are highly visible, immediately beneficial, and valued by stakeholders. Quick win leading indicators are intended to show immediate results, engage and inspire, and create a sense of collective efficacy.

Quick Win Leading Indicator Percent of children enrolled in full-day kindergarten

Short-Term Outcome

Percent of students demonstrating proficiency on kindergarten reading standards

In PSESD, an early leading indicator of kindergarten readiness is the *percent of children enrolled in full-day kindergarten*. This indicator is a quick win for the following reasons:

Highly visible: Kindergarten is a highly visible grade level in communities.
 Kindergarten enrollment timelines and processes are often published in local media. Parents with young children typically have a high degree of awareness and anticipation of kindergarten.

¹⁹ Johnson, J., Kendziora, K., & Osher, D. (2012). RTT-D Guidance: Implementing Performance Metrics for Continuous Improvement that Support the Foundational Conditions for Personalized Learning. Washington, DC: American Institutes for Research, p. 8.

- » Immediately beneficial: The benefits of enrollment in full-day kindergarten are apparent during the year in which the student is enrolled (e.g., increased social skills, greater understanding of basic academic concepts), as well as in the grades immediately following kindergarten.
- » Valued by stakeholders: Full-day kindergarten is valued by two main stakeholders: educators and parents.
 Educators understand the value of foundational skills learned in kindergarten.
 Parents generally value kindergarten as a critical foundational step in their children's education.

HOW TO CREATE QUALITY LEADING INDICATORS

Alignment of short-term outcomes, long-term outcomes, and leading indicators is key in being able to use the data collected from leading indicators to show that you are on-track and making progress toward an outcome. This section describes a basic step-by-step process on how to create *quality* leading indicators *aligned* to long- and short-term outcomes. Figure 2, at the end of this section, provides an example of outcomes and a quality leading indicator developed through this process.

STEP 4

STEP 3

STEP 2

STEP 1

Identify a long-term outcome and/or sustainable change for personalized learning Identify a short-term outcome aligned to the long-term outcome for personalized learning

Identify or create

a leading indicator aligned to a short-term outcome for personalized learning

Review leading indicators for personalized learning to ensure quality

FIGURE 1. STEP-BY-STEP PROCESS TO CREATE LEADING INDICATORS ALIGNED TO OUTCOMES

STEP 1: IDENTIFY A LONG-TERM OUTCOME FOR PERSONALIZED LEARNING

First, you will identify a long-term outcome for personalized learning and map backwards to a short-term outcome and leading indicators. Long-term outcomes are typically achieved in 5 to 7 years. Starting with long-term outcomes allow you to start with the end in mind and map backwards from the future. This process increases the likelihood that long-term outcomes, short-term outcomes, and leading indicators will be aligned.

District-guiding frameworks, such as logic models or graduate profiles, are a great place to start for identifying long-term outcomes and ensuring alignment and coherence in your data collection and reporting efforts. For example, IDEA Public Schools uses a logic model to monitor and measure progress on their RTT-D projects. Increasingly, districts implementing personalized learning are communicating explicitly what students are expected to know and be able to do when they graduate using graduate profiles. RTT-D grantee Houston Independent School District (HISD) recently constructed the **HISD Graduate Profile**.

> **Long-Term Outcome** Increased percent of students enrolled in college without remediation

STEP 2: IDENTIFY A SHORT-TERM OUTCOME ALIGNED TO THE LONG-TERM OUTCOME FOR PERSONALIZED LEARNING

Second, you will identify a short-term outcome aligned to the long-term outcome you identified in Step 1. Short-term outcomes can typically be achieved within 1-2 years. Short-term outcomes allow enough time for systematic data collection within fixed intervals of 6-9 weeks, data analysis and intervention, and collection of end-of-year summative assessment results. Consider short-term outcomes that are realistic, attainable, meaningful to your overarching goal (e.g., personalized learning), and aligned to your long-term outcome.

High school graduation is a clear example of a leading indicator aligned to the short-term outcome of college enrollment. To enroll in college, students must graduate from high school. (However, while they are clearly logically linked, other leading indicators would be needed to capture evidence of a student's ability to enroll in college courses without remediation.)

> **Short-Term Outcome** Percent of students who graduate high school on time

STEP 3: IDENTIFY OR CREATE A LEADING INDICATOR ALIGNED TO THE SHORT-TERM OUTCOME FOR PERSONALIZED LEARNING

Third, you will either identify or create a leading indicator aligned to a short-term outcome that you identified in Step 2. There are a growing number of leading indicators already identified in educational practice and research, particularly for student-level outcomes (See *Key Resources* and *References* sections at the end of this brief). Alignment between a short-term outcome and a leading indicator ensures that the evidence you collect provides the continuous monitoring data you need for determining whether you are on or off track toward achieving a desired result.

Leading Indicator

Percent of students who achieve reading proficiency by grade 3

STEP 4: REVIEW LEADING INDICATORS FOR PERSONALIZED LEARNING TO ENSURE QUALITY

Quality is at the heart of developing effective leading indicators. In this step, review the set of leading indicators you have created to ensure high quality. Using the *Characteristics of Quality Leading Indicators* (p. 9-12) as a reference, ask these questions as you review your leading indicators:

- Do the leading indicators include some that are *predictive*?
- Do the leading indicators include a balance of *cognitive and non-cognitive* measures?
- Do the leading indicators provide data that *lead to action* to improve progress toward the outcome?

- Do the leading indicators provide *deep* data that cause inquiry into root causes?
- Do the leading indicators provide some data that are *"quick wins"*?

Check for Quality (Actionable)

Leading Indicator: Scores on student mastery report Action: Deep dive work session with instructional team

In summary this four-step process provides basic guidance on the development of leading indicators. Figure 2 (below) illustrates a leading indicator example developed through the backwards-mapping process. Ideally, districts will create robust sets of leading indicators aligned to outcomes that are an integral part of their continuous monitoring processes. For example, RTT-D grantee Lindsay Unified School District (LUSD) offers two tools developed for their RTT-D project that ensure alignment between long-term results, short-term results, and leading indicators: RTT-D Performance Indicators, Baseline Data, and Goals and LUSD RTT-D Logic Model Performance Indicators.



FIGURE 2. EXAMPLE STEP-BY-STEP PROCESS OF CREATING ALIGNED OUTCOMES AND QUALITY LEADING INDICATORS

DISTRICT TECHNICAL CAPACITY FOR CREATING AND USING LEADING INDICATORS

Creating and using leading indicators as a long-term strategy for supporting and sustaining personalized learning requires that districts have the capacity to collect, store, and use data effectively. Recent studies show that districts using leading indicators effectively have also developed technical capacity in five key areas including:^{20 21}

- Data warehouse technology that combines storage, access, and reporting tools
- A system of standardized summative and formative assessments that includes state test results as well as local standardized test and formative assessment data

- Data collection, input, and analysis practices that are easy to access and use
- Time and supports to foster data-informed discussions, including set-aside time, structures, and processes for regular discussions about and examinations of data
- A data culture, in which data-informed decision making is a regular practice

Sustainability of any practice, including personalized learning, requires careful attention of the practice *and* the conditions in which it is implemented. Districts interested in creating and using leading indicators can also consider technical capacity building as an important part of the work.

²⁰ Foley, E., Mishook, J. Thompson, J., Kubiak, M. Supovitz, J., & Rhude-Fasut, M.K. (2008). *Beyond Test Scores: Leading Indicators for Education*. Providence, RI: Brown University, Annenberg Institute for School Reform.

²¹ Supovitz, J., Foley, E., & Mishook, J. (2012). In Search of Leading indicators in Education. *Education Policy Analysis Archives*, 20 (19).

TIPS FOR CREATING & USING LEADING INDICATORS

- 1. Start with what you know: the measures you already have. Draw on the range of examples of leading indicators, particularly at the student level, identified in existing research and district practice. You will find multiple reports and studies that have identified leading indicators in the *Key Resources* and the *References* sections.
- 2. Develop leading indicators that address cognitive and non-cognitive factors as well as conditions and processes at the educator and systems levels that affect student achievement. Leading indicators can provide powerful data beyond test scores from a wide variety of sources.²²
- 3. Integrate leading indicators into your continuous improvement process. Leading indicators are not a stand-alone initiative. When integrated into a continuous improvement process, leading indicators can provide real-time evidence of progress toward important outcomes.
- 4. Build the technical capacity to use leading indicators effectively. Invest in the infrastructure to support and sustain the ongoing use of leading indicators.²³
- 5. Engage multiple stakeholder groups in the development of leading indicators, interpretation of data, and action planning on a regular basis. Share results with this group and beyond.²⁴

²² Johnson, J., Kendziora, K., & Osher, D. (2012). *RTT-D Guidance: Implementing Performance Metrics for Continuous Improvement that Support the Foundational Conditions for Personalized Learning*. Washington, DC: American Institutes for Research.

²³ Supovitz, J., Foley, E., & Mishook, J. (2012). In Search of Leading indicators in Education. Education Policy Analysis Archives, 20 (19), pp. 13-15.

²⁴ Johnson, J., Kendziora, K., & Osher, D. (2012). RTT-D Guidance: Implementing Performance Metrics for Continuous Improvement that Support the Foundational Conditions for Personalized Learning. Washington, DC: American Institutes for Research, p. 3.

KEY RESOURCES

RESOURCE	Performance Expectations and Indicators for Educational Leaders
AUTHOR	Council of Chief State School Officers
DATE	2007
WEBSITE	http://www.ccsso.org/Documents/2008/Peformance_Indicators_2008.pdf
DESCRIPTION	This companion guide supplements the Interstate School Leaders Licensure Consortium (ISLLC) Standards, offering multiple examples of leading indicators for leaders aligned to the Standards.
RESOURCE	What Matters for Staying On-Track and Graduating in Chicago Public High Schools: A Closer Look at Grades, Failures, and Attendance in the Freshman Year.
AUTHOR	Elaine M. Allensworth & John M. Easton
DATE	2007
WEBSITE	http://ccsr.uchicago.edu/sites/default/files/publications/07%20What%20Matters%20Final.pdf
DESCRIPTION	This report examines on- and off-track indicators to predict high school drop-out and college-going rates in the freshman year of high school.
RESOURCE	Teaching Adolescents to Become Readers: The Role of Non-Cognitive Factors in Shaping Performance: A Critical Literature Review
AUTHOR	Camille A. Farrington, Melissa Roderick, Elaine Allensworth, Jenny Nagaoka, Tasha Seneca Keyes, David W. Johnson, and Nicole O. Beechum
DATE	2012
WEBSITE	http://ccsr.uchicago.edu/sites/default/files/publications/Noncognitive%20Report.pdf
DESCRIPTION	This literature provides a comprehensive in-depth look at non-cognitive factors that would be helpful to districts interested in creating non-cognitive leading indicators for personalized learning.
RESOURCE	Building and Implementing a College Readiness Indicator System: Lessons from the First Two Years of the CRIS Initiative. In VUE, page 2.
AUTHOR	Oded Gurantz and Graciela N. Borsato
DATE	2012
WEBSITE	http://annenberginstitute.org/sites/default/files/VUE35a.pdf
DESCRIPTION	This article examines and identifies individual and setting-level indicators of college readiness.

Inclusion of this information does not constitute an endorsement by the U.S. Department of Education of any products or services offered or views expressed, nor does the Department of Education control its accuracy, relevance, timeliness or completeness.

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