Reviewing outcomes: Using DIBELS to evaluate a school's core curriculum and system of additional intervention in kindergarten

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Citation:

Good, R. H., Kaminski, R. A., Smith, S., Simmons, D., Kame'enui, E., & Wallin, J. (In press). Reviewing outcomes: Using DIBELS to evaluate a school's core curriculum and system of additional intervention in kindergarten. In S. R. Vaughn & K. L. Briggs (Eds.), *Reading in the classroom: Systems for observing teaching and learning*. Baltimore: Paul H. Brookes.

Draft: 11/15/02, 9:40 AM

School-based data on basic early literacy skills can help shape and define the application of research-based principles, strategies, and materials in classrooms (Baker & Smith, 2001; Good, Kaminski, Simmons, & Kame'enui, 2001; Good, Simmons, & Kame'enui, 2001; Simmons, Kuykendall, King, Cornachione, & Kame'enui, 2000). Assessment systems and technology, such as the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, Good & Kaminski, 2002) assessment system, can provide a critical catalyst in changing early literacy practices. At a time when attention is being drawn increasingly to the performance of students on the state's high stakes tests, teachers and administrators want to know how best to change beginning reading outcomes. School-based data on basic early literacy skills can assist a school team in evaluating and planning components of effective beginning reading programs, including professional development, instruction, curriculum materials, and supplemental materials.

Dynamic Indicators of Basic Early Literacy Skills (DIBELS). The DIBELS assessments are intended to provide school-based data to inform instruction and to review school level outcomes. The measures are intended to be brief and repeatable. There are over 20 alternate forms of each measure, and each measure is designed to take approximately 1 minute to administer. For a benchmark assessment, 2 to 4 measures are administered. Additional information about the DIBELS measures and a free download of the measures are available at dibels.uoregon.edu.

Professional development. One of the primary goals of professional development is to help develop "reflective practitioners" (Bowman, Donovan, & Burns, 2001). Research that links professional development, the realities of the classroom, and the use of student data gives teachers new ways of reflecting on their teaching and choice of materials (Baker & Smith, 2001; Smith, Baker, & Oudeans, 2001; Baker & Smith, 1999).

School-based reports from the DIBELS Data System provide a basis to periodically evaluate the professional development needs of a school. The reports can become vehicles for teacher change by operationalizing four principles of effective professional development (Baker & Smith, 1999). First, a clear focus is created with concrete, realistic, and challenging *goals* for

improved child performance on critical basic early literacy skills – labeled "benchmarks" and validated by large-scale studies (Good, Gruba & Kaminski, 2001). Second, there is a professional development focus on both technical and conceptual components of *instruction* with clear, unambiguous linkage between critical basic early literacy skills and DIBELS measures (Good, Kaminski, Simmons, & Kame'enui, 2001). Third, change is enhanced through grade-level discussion of teacher reports where collegial relationships and necessary *support systems* are created to effect instructional and programmatic decisions based on data. Finally, teachers can frequently see the *effects* of their instructional changes on student performance with compelling visual representations in the teacher reports.

Instruction. The performance of children not meeting benchmarks prompts teachers to examine factors over which they have control, such as instructional strategies. For example, increasing the explicitness of teacher talk and frequency of review produced noticeable differences in children who had not met the winter benchmark for Initial Sound Fluency (Baker & Smith, 1999).

Curriculum. DIBELS school reports indicate the percentages of students needing additional intervention. A high percentage of children needing intensive intervention indicates a concern about the core curriculum provided to all kindergarten students. The core curriculum is the curriculum or program used with all children in the general classroom setting. For example, in the fall, a high percentage of very low scores indicate inadequate early literacy experiences before entering kindergarten. In the winter or spring of kindergarten, high percentages of low scores indicate that the general curriculum in the first half of kindergarten is not working for most of the children. In either case, a high percentage of children requiring intensive intervention highlights the need to use the most effective curriculum available as the core curriculum (Simmons et al., 2000).

Supplemental materials and programs. In order to meet kindergarten benchmarks, many kindergarten curricula require supplemental materials and programs that can augment the skills targeted in kindergarten. Supplemental programs and materials are available. For example, some

programs, such as *Ladders to Literacy* (O'Connor, Notari-Syverson, & Vadasy, 1998), *Road to the Code* (Blachmann, Ball, Black, & Tangel, 2000), and *Phonemic Awareness in Young Children* (Adams, Foorman, Lundberg, & Beeler, 1998), can be integrated into a variety of kindergarten programs and provide teachers with suggestions for additional supports in every lesson. School reports can assist a school-based early literacy team in evaluating their kindergarten curriculum and determining if additional supplemental materials and programs are need to increase the effectiveness of the core program with respect to the core components of early literacy.

System of additional intervention. Even with high quality implementation of effective core curriculum and strategies, some children will need even more instructional support or additional intervention. For example, *Phonological Awareness Training for Reading* (Torgesen & Bryant, 1994) was created as an additional intervention for grades K-2 to be delivered in small groups. Interventions for children needing intensive support are characterized by careful attention to instructional design issues such as careful example selection, explicit instruction, and scaffolding of instructional support. Although research-based programs are readily available, evidence of a program's effectiveness does not guarantee that the program will work for each and every child with substantial and intensive needs. The progress of children needing intensive support should to be monitored frequently to evaluate and modify the instructional support to meet each and every child's needs. The ongoing process of implementing, evaluating, modifying, and implementing the modification is described in Good, Gruba, and Kaminski (2001).

School-based reports can assist in evaluating the system of additional intervention. The school-based early literacy team can then evaluate whether students at risk for poor reading outcomes are being identified early enough and provided with interventions effective enough to change their learning trajectories. The school can also evaluate whether sufficient resources are invested in the prevention of learning difficulties, and whether selected interventions are effective enough and implemented with sufficient integrity.

In addition, the documentation of positive and consistent progress for at-risk children can be used to validate and justify the school's allocation of resources for prevention. For example, in order to meet the kindergarten early literacy goals, one school provided an additional 40 minutes in an extended day program for children who were not making adequate progress in the regular classroom program (i.e., K Plus). Institutionalizing the model required allocation of instructional, transportation, and space resources in the district. DIBELS documentation of the effectiveness of the K Plus program not only provided a justification to central administration for the use of the resources, the school-based reports also prompted use of the model by other schools in the district to meet the needs of children with intensive instructional needs (Baker & Smith, 1999). A supplemental curriculum, Optimize, was developed by another project to be used within a K Plus program to meet the needs of children requiring strategic or intensive levels of instructional support (Simmons et al., 2000).

In short, a school-based assessment system provides frequent and sensitive information on how well children are progressing in learning critical basic early literacy concepts to guide professional development, inform instruction, allocate resources, and select materials and programs.

Reviewing Outcomes in an Outcomes Driven Model

Reviewing outcomes with school-based reports is one step of an Outcomes-Driven Model of educational decision-making (Good, Gruba, & Kaminski, 2001). The Outcomes-Driven Model is based on a problem-solving model (see Deno, 1989; Shinn, 1995) and the initial application of the problem-solving model to early literacy skills (Kaminski & Good, 1998). The Outcomes-Driven Model was developed to provide a *prevention-oriented* assessment and intervention decision-making system designed to preempt early reading difficulty and ensure adequate progress, step-by-step, toward outcomes that eventually result in established, adequate reading achievement. The Outcomes-Driven Model accomplishes steps to outcomes through a set of five educational decisions: (a) identifying need for support, (b) validating need for support, (c)

planning support, (d) evaluating and modifying support, and (e) reviewing outcomes, as depicted in Figure 1.

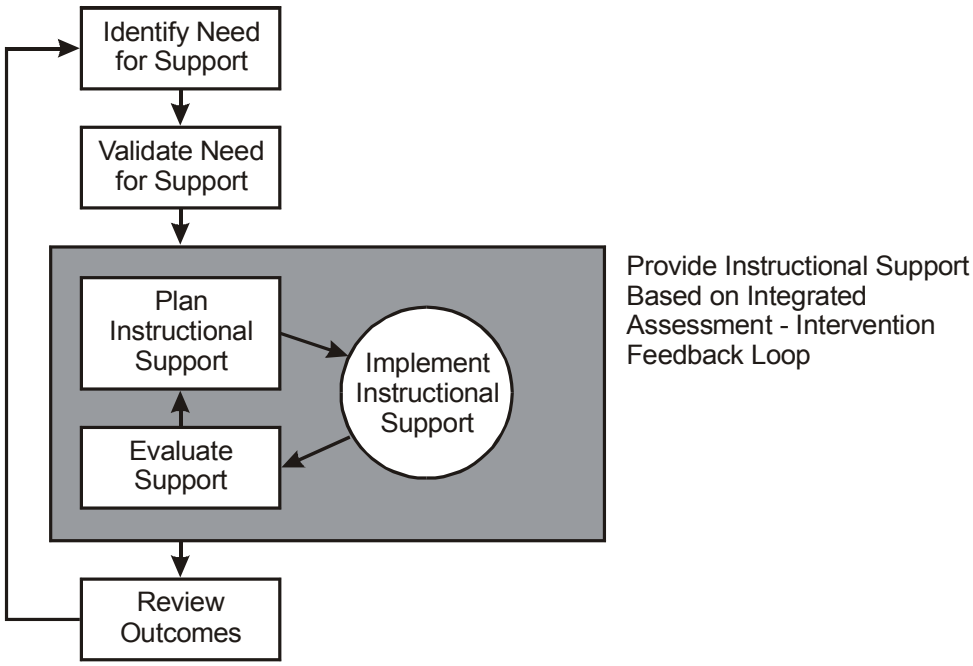

Figure 1. Reviewing outcomes step within an Outcomes Driven Model. (From Good, R. H., Gruba, J., & Kaminski, R. A. (2002). Best Practices in Using Dynamic Indicators of Basic Early Literacy Skills (DIBELS) in an Outcomes-Driven Model. In A. Thomas & J. Grimes (Eds.), Best Practices in School Psychology IV (pp. 699-720). Bethesda, MD: National Association of School Psychologists; reprinted by permission.)

The first step in the Outcomes-Driven Model is focused on identifying children early who may need additional instructional support to meet a benchmark goal. To identify need for support, a benchmark assessment using selected DIBELS probes is administered to all children in the school three times per year -- at the beginning, middle, and end of the school year. The benchmark assessment identifies individual students who are at risk for reading difficulty and may need additional instructional support to achieve the next benchmark goal. The benchmark assessment also provides information regarding the performance of all children in the school with respect to benchmark goals that can be used in the reviewing outcomes step described later.

The next step in the Outcomes-Driven Model is to validate that an individual student needs additional instructional support and that some other factor is not the reason for low performance. In the validating need for instructional support step, an examiner conducts brief repeated assessments of the target skill using alternate forms of the assessment under different conditions.

The next decision-making step in the Outcomes-Driven Model is to plan instructional support for those students whose need for support has been validated. A variety of research-based interventions and instructional strategies are available for teachers to choose from in providing additional instructional support for each of the foundational early reading skills. The school-based early literacy team can establish a plan for additional intervention based on the review of outcomes. To determine if the instructional strategies are appropriate, however, the next step of the Outcomes-Driven Model, evaluating support, is necessary. For students who need additional instructional support, weekly or monthly monitoring of progress is conducted using alternate forms of the appropriate DIBELS measure. If the student is making adequate progress to achieve the benchmark goal, the instructional supports are continued. If, however, evaluation of progress reveals that the student is not making sufficient progress to achieve the benchmark goal, a modification in the student's instruction to provide more support is indicated.

The final step of the Outcomes-Driven Model is to review outcomes. The purpose of the reviewing-outcomes step is to review the structure of supports the school has in place to achieve outcomes at both an individual-student level and at a systems level. The review of outcomes occurs at each benchmark assessment period. The review of outcomes for individual students provides information regarding a student's status with regard to the benchmark and whether or not the student has achieved the benchmark and no longer requires additional instructional support. At a systems level, the focus of this chapter, a review of outcomes addresses the overall effectiveness of the core curriculum and system of additional intervention in promoting the achievement of important reading outcomes for all children.

The Outcomes-Driven Model is intended to be a continuous, recursive model. At an individual level, an assessment-intervention feedback loop is embedded in the planning instructional support and evaluating and modifying instructional support steps of the model. Based on the student's progress toward an important goal, the instructional plan is changed, the implementation of instructional support is changed, the changes are evaluated, and the instructional plan is modified accordingly. The assessment-intervention feedback loop is satisfied when the student is making adequate progress toward the goal.

At a systems level, a recursive feedback process occurs as the outcomes of the instructional support system are reviewed from one benchmark period to the next and the system is thereby modified. A first concern is the core curriculum and instruction that serves as the educational foundation for the school. The educational system should have (a) an effective core curriculum and instruction, (b) procedures to identify students who need additional intervention, (c) a mechanism to deliver additional intervention (time, personnel, curriculum, space), and (d) procedures to escalate the amount of instructional support if needed to achieve benchmark goals. The organizing questions for the reviewing outcomes and this chapter are:

Organizing questions:

1. How do the beginning kindergarten skills of students in our school compare to other schools participating in the DIBELS Data System?
2. How do the early literacy skills of mid-year kindergarten students in our school compare to student's skills in other schools participating in the DIBELS Data System?
3. How effective is our core curriculum and instruction in supporting students who are entering kindergarten with benchmark skills to achieve the DIBELS Initial Sound Fluency goal in the middle of kindergarten?
4. How effective is our system of additional intervention in supporting students who are entering kindergarten at risk for reading difficulty to achieve the DIBELS Initial Sound Fluency goal in the middle of kindergarten?

5. How do the early literacy skills of end-of-year kindergarten students in our school compare to student's skills in other schools participating in the DIBELS Data System?
6. How effective is our core curriculum and instruction in supporting students who are on track in the middle of kindergarten to achieve the DIBELS Phoneme Segmentation Fluency goal by the end of kindergarten?
7. How effective is our system of additional intervention in supporting students who are at risk for reading difficulty in the middle of kindergarten to achieve the DIBELS Phoneme Segmentation Fluency goal by the end of kindergarten?

Format for School Report

A proposed format for a school report is provided in Appendix A. The school reported is intended to provide a means for a school-based early literacy team to appraise their early literacy outcomes, form a judgment about the effectiveness of their core curriculum and system of additional intervention, and begin to plan improvements in their curriculum and intervention if indicated. Because research-based early literacy instruction occurs within the complex host environment of schools, a school-based early literacy team is recommended to match resources with needs to form a system that works in the local context. Important participants on the school-based early literacy team include the principal, kindergarten and first grade general education teachers, remedial reading teachers, school psychologist, speech language pathologist, and other support personnel as available in the school. Each member of the team brings a different combination of skills, expertise and background that will be essential to a schoolwide system.

Important Caveats for the DIBELS Data System

This chapter will draw heavily on the information available from schools and districts participating in the DIBELS Data System. The DIBELS Data System enables us to place school and student performance in the context of the 300 plus school districts, 600 plus schools, and 32,000 plus students who are participating in the DIBELS Data System. The DIBELS Data System also allows us to examine very current information about student performance and outcomes. The DIBELS measures focus on the direct assessment of skills. As curriculum and

instruction in participating schools focuses increasingly on critical early literacy skills, the performance of students in participating schools can be expected to change. In this chapter, information from the 2001-2002 academic year will be featured. When across year outcomes are examined, information from the 2000-2001 and 2001-2002 academic years will be summarized. However, several caveats are appropriate when interpreting information from the DIBELS Data System.

A first caveat to be considered in interpreting information from the DIBELS Data System is that schools participating in the DIBELS Data System may not be representative of all schools in the country. Participating schools are likely to emphasize phonemic awareness, phonics, and fluency in their curriculum and instruction. Participating schools are likely to be teaching toward established benchmark goals in early literacy. Participating schools also are likely to be monitoring progress toward early literacy goals and modifying their instruction and curriculum based on student progress and outcomes. Participating schools also are likely to have adopted a research-based core reading curriculum. In each of the aspects, participating schools may not be representative of all schools. It is also possible that participating schools may be more likely to have experienced a history of poor academic performance in their schools and may be more motivated to make curricular and instructional changes.

A second caveat is that scores that participating schools enter into the DIBELS Data System are the product of the school's administration procedures and training. The DIBELS assessments are provided with detailed standardized administration and scoring directions. A web-based tutorial on administration and scoring is available, and many trainers are available around the country for training. However, there are no procedures in place to guarantee that schools using DIBELS and the DIBELS Data System are adhering to standardized procedures. If the accuracy of administration and scoring of the DIBELS measures is compromised, then interpretation of the scores is not possible.

A third caveat to consider is that scores from the DIBELS Data System are not inert ingredients that do not impact outcomes. Instead, DIBELS may be an active ingredient. DIBELS

scores may be used by schools to provide students at risk of poor reading outcomes with powerful and effective interventions. If we provide students at risk of reading difficulty with effective interventions resulting in successful reading outcomes, the prediction of risk has been ruined. In all trainings and web support, the importance of addressing skill deficits with effective interventions is stressed. Thus, if a student scores low on DIBELS Initial Sound Fluency, for example, with the concomitant indication of "at risk" status in the DIBELS Data System, but they achieve the end of kindergarten goal on DIBELS Phoneme Segmentation Fluency in spite of their "at risk" status in the middle of kindergarten, it may be that the prediction was inaccurate – or it may be that the prediction was thwarted by an effective intervention that was implemented to mitigate the student's at risk status.

Beginning of Kindergarten Instructional Recommendation

At the beginning of kindergarten, the DIBELS Initial Sound Fluency (ISF) and DIBELS Letter Naming Fluency (LNF) tasks are administered to all students in the school. At the beginning of kindergarten, an ISF score below 4 would be below the 20th percentile, and below 8 would be below the 40th percentile. For LNF, a score below 2 would be below the 20th percentile, and a score of 8 or higher would be at the 40th percentile or above. A student scoring below the 20th percentile on either measure would be considered at risk for difficulty learning to read. A student scoring at or above the 40th percentile would be considered at low risk of difficulty learning to read. In between the 20th and 40th percentile, a student can be considered at some risk. Of course, the core premise of a prevention system is that these judgments of risk can be changed with appropriate intervention to support student achievement of literacy goals. The cutoffs for risk and low risk status are presented in Table 1.

Table 1

Descriptive Levels of Performance in Beginning of Kindergarten

Variable	Performance	Descriptor
DIBELS Initial Sound Fluency	ISF < 4	At Risk
	4 <= ISF < 8	Some Risk
	ISF >= 8	Low Risk
DIBELS Letter Naming Fluency	LNF < 2	At Risk
	2 <= LNF < 8	Some Risk
	LNF >= 8	Low Risk

Note. At risk for reading difficulty is based on performance below the 20th percentile and some risk is based on performance below the 40th percentile using system-wide percentile ranks.

The possible combinations of risk status are enumerated in Table 2. For each combination of risk indicators, the percentile rank, conditional percent achieving subsequent goals, relative incidence, and instructional recommendation are provided. The fundamental purpose of the DIBELS assessment at the beginning of kindergarten is to identify children who may need additional intervention to achieve subsequent literacy goals. Thus, the primary information to consider is the student's risk reported as the conditional percent achieving subsequent literacy goals. Each literacy goal represents a level of skill on a core component of early literacy that predicts successful reading outcomes. Each percent is referred to as a conditional percent because it is the percent of children with similar risk status who achieved the early literacy goal. That is, the percent is conditional on or given that the student has the particular pattern of risk. The early literacy goals include the percent of children with similar risk status who achieve the (a) middle kindergarten goal of 25 on ISF, (b) end of kindergarten goal of 35 on DIBELS Phoneme Segmentation Fluency (PSF), (c) middle of first grade goal of 50 on DIBELS

Nonsense Word Fluency (NWF), and (d) end of first grade goal of 40 or more on DIBELS Oral Reading Fluency (DORF).

For example, a student who scores less than 4 on ISF and less than 2 on LNF would be identified as "at risk" on both indicators. Their performance would be at the 3rd percentile, meaning that 3 percent of students were at similar or greater risk of reading difficulty. Of the students who are "at risk" on both indictors, 9 percent meet the middle of kindergarten goal of 25 on ISF, 44 percent meet the end of kindergarten goal of 35 on PSF, 24 percent meet the middle of first grade goal of 50 on NWF, and 34 percent meet the end of first grade goal of 40 or more on the DORF. The average percent achieving subsequent early literacy goals was obtained by averaging the four conditional percents (i.e., 9, 44, 24, and 34). The average percent achieving subsequent early literacy goals for students identified as "at risk" on both indicators at the beginning of kindergarten was 27 percent. Thus, the average percent provides an overall indicator of degree of risk.

Although the DORF goal represents the most crucial early literacy outcome for kindergarten and first grade, the intermediary goals represent teaching targets in route to the outcome. For students achieving the intermediary goals, the odds improve of reaching the DORF goal at the end of first grade as follows: (a) 87% of children achieving the ISF goal become readers, (b) 80% of children achieving the PSF goal become readers, and (c) 91% of children achieving the NWF goal become readers. Each early literacy benchmark goal achieved increases the odds of achieving subsequent early literacy goals. However, achieving only one of the early literacy goals is not sufficient. It is necessary to achieve all goals is important to be on track for successful reading outcomes.

The incidence column of Table 2 indicates whether the pattern of risk is relatively common, unusual, or extremely rare. If more than 2 percent of children display a particular pattern of risk, it would be considered "more common." If 0.9 percent to 2 percent of children display a pattern of risk, it would be considered "unusual." If fewer than 0.9 percent of children display a pattern of risk, it would be considered "extremely rare." The instructional

recommendation for students with each pattern of risk is reported in the final column of Table 2. For students with the odds against achieving subsequent goals unless provided with an appropriate, effective intervention, the recommendation is "Intensive - Needs Substantial Intervention." For students with the odds about 50 – 50 of achieving subsequent goals unless provided with an appropriate intervention the recommendation is "Strategic - Additional Intervention." Finally, for students with the odds in favor of achieving subsequent early literacy goals, the recommendation is "Benchmark - At grade level" indicating that continuing instruction with an effective, research-based core curriculum should be sufficient for those students to achieve subsequent early literacy goals.

Table 2

Instructional Recommendations for Individual Patterns of Performance on Beginning of Kindergarten DIBELS Benchmark Assessment

Initial Sound Fluency	Letter Naming Fluency	Pctile	Percent Meeting Later Goals					Incidence	Instructional Support Recommendation
			Mid K ISF	End K PSF	Mid 1 NWF	End 1 ORF	Avg.		
At Risk	At Risk	3	9	44	24	34	27	More Common	Intensive - Needs Substantial Intervention
Some Risk	At Risk	9	13	48	27	31	30	More Common	Intensive - Needs Substantial Intervention
At Risk	Some Risk	13	13	53	32	44	35	More Common	Intensive - Needs Substantial Intervention
Some Risk	Some Risk	19	18	58	33	45	39	More Common	Strategic - Additional Intervention
Low Risk	At Risk	25	26	57	30	43	39	More Common	Strategic - Additional Intervention
Low Risk	Some Risk	33	35	68	43	56	51	More Common	Strategic - Additional Intervention
At Risk	Low Risk	42	23	59	50	74	51	More Common	Strategic - Additional Intervention
Some Risk	Low Risk	50	30	71	51	75	57	More Common	Strategic - Additional Intervention
Low Risk	Low Risk	76	62	83	69	87	75	More Common	Benchmark - At grade level

Note. Percent meeting goal is the conditional percent of children who meet the (a) middle kindergarten goal of 25 on ISF, (b) end of kindergarten goal of 35 on PSF, (c) middle of first grade goal of 50 on NWF, and (d) end of first grade goal of 40 or more on DORF.

The decision utility of the instructional recommendations provided in the beginning of kindergarten is reported in Table 3. For students with a Benchmark – At grade level recommendation, the odds are 62% of achieving the middle of kindergarten goal of 25 or more on the DIBELS ISF measure, and their odds of severe difficulty with initial sounds are only 2%. The fundamental conclusion to be drawn at this point in the discussion is that recommendations of Intensive, Strategic, and Benchmark are meaningfully different in their risk status. The number of children entering kindergarten who are Intensive or Benchmark for a school provides an indication of the challenge faced by the school in supporting their children to achieve early literacy outcomes.

Table 3

Decision Utility for Beginning of Kindergarten DIBELS Benchmark Assessment in Identifying Phonemic Awareness Health and Severe Phonemic Awareness Difficulty in the Middle of Kindergarten

DIBELS Instructional Recommendation	Conditional Percent Achieving 25 or More on Middle of Kindergarten DIBELS ISF	Conditional Percent Achieving Less Than 10 on Middle of Kindergarten DIBELS ISF
Intensive - Needs Substantial Intervention	11%	46%
Strategic - Additional Intervention	27%	19%
Benchmark - At grade level	62%	2%

A key precept of the Outcomes Driven Model is that it is recursive and cyclical. Assessment at one point in time services to inform instructional recommendations for subsequent instruction at the same time that it provides information to review outcomes of instruction and learning opportunities that have come before. Thus, the beginning of kindergarten benchmark assessment provides both a basis to recommend amount of instructional support that is likely to

be needed in the first half of kindergarten and it provides a basis to review preschool and community outcomes for the children's preschool learning opportunities.

Reviewing Preschool and Community Outreach Outcomes

1. How do the entry-level skills of kindergarten students in our school compare to other schools participating in the DIBELS Data System?

The entry-level skills of students can be an indication of the community context, effectiveness of preschools in the community, and emphasis on early literacy skills in the community. In addition, entry level skills can reflect cultural and language factors within the larger community, such as parental or home language other than English, the degree of similarity or difference between the other language and English, the diverse levels of the child's and family's levels of proficiency in the other language and English, and differences between the language conventions and dialect spoken at home and the formal English used at school. In a sense, skills at the beginning of the kindergarten instructional sequence represent the outcome of the preschool instructional sequence.

DIBELS ISF of 8 or more and DIBELS LNF of 8 or more represent critical preschool goals that enable children to enter kindergarten with the odds in their favor of achieving subsequent early literacy goals. This is not to say that these are the only goals of preschool experiences, just that they should represent at least one goal of preschool and community experiences. Preschool materials and supports are published and available on the web (e.g., *Ladders to Literacy – Preschool*, O'Connor, Notari-Syverson, & Vadasy, 1998; www.readingrockets.org). Schools can assist in serving as a liaison with preschool and parent organizations to support preschool and community learning opportunities so children enter kindergarten with the level of literacy skills predictive of successful reading outcomes. A reasonable goal for preschool and community outreach efforts is for all students to enter kindergarten with a benchmark instructional recommendation. But, regardless of whether children enter kindergarten with benchmark skills or needing intensive instructional support, our

responsibility is to provide a core curriculum and a system of additional intervention that supports their achievement of crucial early literacy skills.

A school with a very high percentage of children entering kindergarten with a benchmark recommendation has an easier challenge in supporting all of their students to achieve subsequent early literacy goals. A school with a high percentage of children entering kindergarten with intensive instructional needs must adapt and adjust their core curriculum and system of additional intervention to address the challenge. With a high percentage of children with intensive instructional needs, there is no room for less than the most effective core curricula and the most carefully designed system of additional intervention. A normative context to evaluate the beginning kindergarten skills of students in a school compared to other schools is provided in Table 4.

Table 4

School-Based Normative Context for Evaluating Percent of Students in each Instructional Recommendation Category in Beginning of Kindergarten

School-Based, Percentile	Percent of Students in Instructional Recommendation Category in Beginning of Kindergarten		
	Intensive	Strategic	Benchmark
5	2	22	13
10	3	26	19
15	5	28	24
20	6	30	27
25	8	32	31
30	9	33	34
35	10	35	37
40	11	36	40
45	13	38	42
50	14	39	44
55	15	41	47
60	17	42	50
65	18	43	52
70	20	45	54
75	22	46	57
80	24	49	60
85	27	50	65
90	31	53	68
95	43	56	72
99	55	63	85

Note. Based on 382 schools with at least 40 students in kindergarten in 2001 – 2002. .

In Table 4, the first column provides a school-based percentile rank. Other columns provide the corresponding percent of students in each instructional recommendation category. The row corresponding to the 50th percentile provides an indication of pattern of performance in

a typical or median school. A typical school has 44 percent of children entering kindergarten with the odds clearly in their favor of achieving crucial early literacy goals. For an additional 39 percent of children, a clear statement of the odds is not possible. For children with a strategic instructional recommendation, a clear prediction is not possible. The odds are not clearly in their favor, nor clearly against. A typical school has 14 percent of children entering kindergarten at risk for difficulty learning to read. For children with an intensive instructional recommendation, the odds are clearly against achieving subsequent early literacy goals – unless we provide intensive interventions to change their reading trajectory early. However, there is substantial school-to-school variability in the entry skills of kindergarten students.

Table 4 can be read by locating a school's percent of children in an instructional recommendation category and identifying the corresponding school-based percentile rank. A percentile rank is interpreted as the percent of schools with as many or fewer students in the instructional recommendation category. For example, if a school has 63 percent of children with a benchmark instructional recommendation at the beginning of kindergarten, the school is at the 80^{th} to 85^{th} percentile compared to other schools in the DIBELS Data System. In other words, the school has more students in the benchmark category than 80 to 85 percent of schools in the system. Similarly, if a school has 40 percent of students with an intensive instructional recommendation in the beginning of kindergarten, the school has more students with intensive instructional needs than 90 to 95 percent of schools in the DIBELS Data System.

Middle of Kindergarten Instructional Recommendation

Reading risk and health indictors for the middle of kindergarten are summarized in Table 5. In the middle of kindergarten, students are expected to have established awareness of the initial sounds in words with a score of 25 or more on DIBELS Initial Sound Fluency. Additional indicators of adequate early literacy progress and low risk are LNF scores of 27 or more, a PSF score of 18 or more, and an NWF score of 13 or more. Students with ISF scores below 10 may be experiencing significant difficulty in learning the sound structure of English and are at risk of not achieving subsequent early literacy goals – unless substantial intervention support is

provided in the second half of kindergarten. Additional risk indicators are LNF below 15, PSF below 7, and NWF below 5.

Table 5

Descriptive Levels of Performance in Middle of Kindergarten

Variable	Performance	Descriptor
DIBELS Initial Sound Fluency	ISF < 10	Deficit
	10 <= ISF < 25	Emerging
	ISF >= 25	Established
DIBELS Letter Naming Fluency	LNF < 15	At Risk
	15 <= LNF < 27	Some Risk
	LNF >= 27	Low Risk
DIBELS Phoneme Segmentation Fluency	PSF < 7	At Risk
	7 <= PSF < 18	Some Risk
	PSF >= 18	Low Risk
DIBELS Nonsense Word Fluency	NWF < 5	At Risk
	5 <= NWF < 13	Some Risk
	NWF >= 13	Low Risk

The odds of achieving subsequent early literacy goals for each pattern of risk factors are summarized in Table 6. In general, students with risk indicators in two or more areas may require intensive intervention to achieve early literacy goals. A recommendation for intensive intervention is made when the odds are against a student achieving subsequent early literacy goals without substantial support. For example, of students in the DIBELS Data System who had a deficit in ISF, were at risk on LNF, and who were at risk on PSF, only 14 percent reached the

first grade ORF goal of 40 or more words correct per minute. Patterns characterized by some risk or emerging skills received an instructional recommendation for strategic support. In general, students with a strategic support recommendation had odds of about 50-50 of achieving subsequent early literacy goals. Patterns characterized by established skills and low risk received a benchmark instructional recommendation. Students who are achieving benchmarks are on track for crucial literacy outcomes with the odds in their favor of achieving subsequent benchmark goals.

Table 6

Instructional Recommendations for Individual Patterns of Performance on Middle of Kindergarten DIBELS Benchmark Assessment

Initial Sound Fluency	Letter Naming Fluency	Phoneme Segmentation Fluency	Pctile	Percent Meeting Later Goals				Incidence	Instructional Support Recommendation
				End K PSF	Mid 1 NWF	End 1 ORF	Avg.		
Deficit	At Risk	At Risk	3	18	14	19	17	More Common	Intensive - Needs Substantial Intervention
Deficit	At Risk	Some Risk	7	34	13	21	23	Unusual	Intensive - Needs Substantial Intervention
Emerging	At Risk	At Risk	9	28	20	28	25	More Common	Intensive - Needs Substantial Intervention
Emerging	At Risk	Some Risk	11	41	17	22	27	More Common	Intensive - Needs Substantial Intervention
Deficit	Some Risk	At Risk	13	24	28	48	33	More Common	Intensive - Needs Substantial Intervention
Deficit	At Risk	Low Risk	15	60	21	25	35	Unusual	Intensive - Needs Substantial Intervention
Deficit	Some Risk	Some Risk	16	37	30	40	36	Unusual	Strategic - Additional Intervention
Established	At Risk	At Risk	17	45	32	31	36	Extremely Rare	Strategic - Additional Intervention
Emerging	Some Risk	At Risk	18	37	30	49	38	Unusual	Strategic - Additional Intervention
Deficit	Low Risk	At Risk	20	30	37	58	42	Unusual	Strategic - Additional Intervention
Established	Some Risk	At Risk	21	42	38	49	43	Extremely Rare	Strategic - Additional Intervention
Emerging	Some Risk	Some Risk	22	47	36	51	45	More Common	Strategic - Additional Intervention
Established	At Risk	Some Risk	24	52	38	47	45	Extremely Rare	Strategic - Additional Intervention
Emerging	At Risk	Low Risk	26	75	29	36	47	More Common	Strategic - Additional Intervention
Deficit	Low Risk	Some Risk	28	43	42	68	51	Unusual	Strategic - Additional Intervention
Deficit	Some Risk	Low Risk	29	66	41	55	54	Extremely Rare	Strategic - Additional Intervention
Emerging	Low Risk	At Risk	31	42	50	70	54	More Common	Strategic - Additional Intervention
Established	Some Risk	Some Risk	33	55	44	64	54	Unusual	Strategic - Additional Intervention
Established	At Risk	Low Risk	34	82	34	47	54	Unusual	Strategic - Additional Intervention
Emerging	Low Risk	Some Risk	38	53	53	80	62	More Common	Strategic - Additional Intervention
Emerging	Some Risk	Low Risk	44	82	47	59	63	More Common	Strategic - Additional Intervention
Established	Low Risk	At Risk	47	51	58	89	66	Extremely Rare	Benchmark - At grade level
Established	Low Risk	Some Risk	49	58	62	87	69	More Common	Benchmark - At grade level
Deficit	Low Risk	Low Risk	52	74	60	75	70	Unusual	Benchmark - At grade level
Established	Some Risk	Low Risk	54	88	56	69	71	More Common	Benchmark - At grade level
Emerging	Low Risk	Low Risk	64	88	68	83	80	More Common	Benchmark - At grade level
Established	Low Risk	Low Risk	86	93	80	93	89	More Common	Benchmark - At grade level

Note. Percent meeting goal is the conditional percent of children who meet the end of first grade goal of 40 or more on DORF. Based on *n* of approximately 32000 students, 638 schools, and 255 school districts.

Unusual and rare patterns may be indicative of either measurement error on the particular assessment, or potentially a problem with the integrity of the assessment process where retraining of the tester would be indicated. For example, a student with a deficit on ISF, at risk on LNF, but low risk on PSF is both an unusual pattern of performance, and one that is implausible. In order to obtain a score of 18 or more on PSF, students need to have an emerging understanding of the sound structure of English. It is implausible for them to be experiencing severe difficulty in identifying the initial sounds of words. Even though students with this pattern are likely to achieve the spring of kindergarten PSF goal, they are unlikely to achieve the middle of first grade NWF goal or the end of first grade DORF goal without additional intervention. If a school finds many children with this pattern, it may be indicative of a need to retrain the testers. Perhaps, for example, testers are mistakenly giving credit to children who are saying words slowly but not explicitly elongating each individual phoneme in the word. If there is confusion about this scoring rule, review and practice with the PSF scoring rule on elongating sounds in words would be appropriate (PSF Rule 8 in the *DIBELS Administration and Scoring Guide* available at dibels.uoregon.edu).

The decision utility of the DIBELS instructional support recommendations for the end of kindergarten PSF goal is summarized in Table 7. The crucial conclusion from examination of Table 7 is that students who achieve the middle of kindergarten goals in ISF, PSF, and LNF have the odds strongly in their favor of achieving the end of kindergarten goal, and are unlikely to experience severe difficulty with phonemic awareness skills at the end of kindergarten.

Table 7

Decision Utility for Middle of Kindergarten DIBELS Benchmark Assessment in Identifying Phonemic Awareness Health and Severe Phonemic Awareness Difficulty in the End of Kindergarten

DIBELS Instructional Recommendation	Conditional Percent Achieving 35 or More on End of Kindergarten DIBELS PSF	Conditional Percent Achieving Less Than 10 on End of Kindergarten DIBELS PSF
Intensive - Needs Substantial Intervention	29%	31%
Strategic - Additional Intervention	57%	9%
Benchmark - At grade level	88%	1%

Reviewing Middle of Kindergarten Outcomes

> 2. How do the early literacy skills of mid-year kindergarten students in our school compare to student's skills in other schools participating in the DIBELS Data System?

The purpose of the reviewing outcomes step in the middle of kindergarten is to take stock of the total package of preschool, community, and first half of kindergarten learning opportunities. There are three bases for evaluation to consider: (a) current middle kindergarten outcomes compared to middle kindergarten outcomes from prior years, (b) middle kindergarten outcomes compared to the middle kindergarten outcomes achieved by other schools participating in the DIBELS Data System, and (c) middle kindergarten outcomes compared to school-based, desired middle kindergarten outcome goals.

Comparison to prior middle kindergarten outcomes. A first basis of comparison for a school to evaluate their middle of kindergarten outcomes is to compare the current year outcomes with outcomes achieved in prior years. Figure 6 on Page 692 of Good, Gruba, and Kaminski (2001) is an example of using the DIBELS Data System to generate a histogram of 1998-1999 academic year literacy outcomes for comparison with a histogram of 1999-2000 academic year outcomes for the same grade and time of year. Another means of comparing outcomes from current year with those of prior years is the cross-year box plot also available from the View/Create Reports section of the DIBELS Data System. Differences in early literacy outcomes that are large, dramatic, and important are visually apparent using both approaches.

Comparison to middle kindergarten outcomes for other schools. A second basis for comparison is to evaluate middle kindergarten outcomes compared to other schools participating in the DIBELS Data System. A normative context for middle kindergarten outcomes is provided in Table 8. The middle kindergarten outcomes for a typical school are represented by the 50th percentile row. At the 50th percentile, half of participating schools achieve poorer outcomes, and half of participating schools achieve better middle kindergarten outcomes. A typical school has 54 percent of students at benchmark, 32 percent of students with a recommendation for strategic support, and 14 percent of students for whom intensive intervention is recommended. A school with fewer than 54 percent of students at benchmark in middle of kindergarten would have most schools achieving better outcomes. For example, if a school has only 40 percent of children at benchmark in the middle of kindergarten, the school would be at the 25th percentile compared to other schools. Most schools, (75 percent) have as many or more children achieving the middle of kindergarten goals. A similar interpretation is possible for intensive and strategic recommendations. For example, a school that has 40 percent of students receiving a strategic support recommendation would be at the 80th to 85th percentile compared to other schools in the number of students needing strategic support. In general, a high performing school would obtain a high percentile rank for benchmark, and low percentile ranks for the number of students requiring strategic and intensive intervention.

Table 8

School-Based Normative Context for Evaluating Percent of Students in Each Instructional Recommendation Category in Middle of Kindergarten

School-Based, Percentile	Percent of Students in Instructional Recommendation Category in Middle of Kindergarten		
	Intensive	Strategic	Benchmark
5	2	14	22
10	3	18	28
15	4	20	32
20	6	21	37
25	7	23	40
30	8	25	43
35	10	27	46
40	11	29	49
45	12	30	51
50	14	32	54
55	15	33	56
60	17	34	59
65	19	35	61
70	21	36	64
75	23	38	67
80	25	39	70
85	29	41	73
90	32	44	78
95	40	48	81
99	51	56	89

Note. Based on 404 schools with at least 40 students in kindergarten in 2000 – 2001 and first grade in 2001 – 2002. .

Comparison to desired middle kindergarten school outcomes. All evaluations of middle kindergarten outcomes should include a focus on the desired goal: All kindergarten children, 100

percent, regardless of initial risk status, should be at benchmark – on track for early literacy outcomes. By getting children on track for successful reading outcomes, and keeping them on track, we turn the words, "no child left behind" into reality.

Once a school has identified their middle kindergarten early literacy outcomes and how their outcomes compare with prior years and other schools, the next step is to examine the factors that contribute to those outcomes, especially factors that can be altered to improve outcomes. One factor to consider is the entry level skills of kindergarten students. Another consideration is the effectiveness of the core curriculum and instruction provided in the first half of kindergarten with respect to early literacy skills in general and phonemic awareness skills in particular. A third consideration is the effectiveness of the system of additional intervention that is in place in the first half of kindergarten to support children at risk of poor reading and literacy outcomes to achieve benchmark goals.

Reviewing Core Curriculum Outcomes in First Half of Kindergarten

3. How effective is our core curriculum and instruction in supporting students who are entering kindergarten with benchmark skills to achieve the DIBELS Initial Sound Fluency goal in the middle of kindergarten?

Effective core curriculum and instruction should support most students who are on track to achieve the next benchmark goal. That is, most students who are at benchmark at the beginning of kindergarten should achieve the middle of kindergarten benchmark goals with an effective core curriculum and instruction. A normative context for evaluating a school's core curriculum and instruction in the first half of kindergarten is provided in Table 9. In Table 9, the percent of children in each instructional recommendation category at the beginning of kindergarten who achieve the middle kindergarten ISF goal is compared across schools. For example, a typical school at the 50th percentile supports 62 percent of their children who were at benchmark at the beginning of kindergarten to achieve the ISF goal. It is important to keep in mind that these outcomes are for those students who were on track at the beginning of

kindergarten. A typical school has 54 percent of children on track at the beginning of kindergarten, and, of those children who are at benchmark, a typical school supports 62 percent to achieve the ISF goal.

Table 9

School-Based Normative Context for Evaluating Conditional Percent of Each Instructional Recommendation Category Achieving Middle of Kindergarten DIBELS ISF Goal

School-Based, Percentile	Percent of Students in Instructional Recommendation Category who Achieve Middle Kindergarten ISF Goal		
	Intensive	Strategic	Benchmark
5	0	4	22
10	0	7	30
15	0	11	38
20	0	13	43
25	0	15	47
30	0	17	50
35	0	19	54
40	0	21	57
45	0	22	60
50	3	24	62
55	7	26	64
60	8	28	66
65	10	32	68
70	14	35	70
75	17	38	72
80	20	40	75
85	25	44	79
90	33	50	83
95	43	57	89
99	75	76	96

Note. Based on 382 schools with at least 40 students in kindergarten in 2001 – 2002. .

In comparison, if a school's core curriculum and instruction supports 90% of their students who were at benchmark to achieve the middle kindergarten ISF goal, the school would be at the 95th to 99th percentile compared to other schools. However, if a school supports only 30 percent of their students who were at benchmark to achieve the middle kindergarten ISF goal, the school would be at the 10th percentile compared to other schools in the effectiveness their core curriculum and instruction.

A different perspective on the school-based normative context is provided in Figure 2. In Figure 2, the distribution of middle kindergarten outcomes for children who were at benchmark at the beginning of kindergarten is provided by school as represented by the solid bars. On the horizontal axis is the percent of children achieving the middle kindergarten ISF goal. On the vertical axis is the number of schools that supported that percent of children to achieve the ISF goal. Consistent with the school-based percentile comparison, most schools supported 61 to 70 percent of at-benchmark students to achieve the middle of kindergarten ISF goal. The variability between schools is remarkable, however. Fourteen schools supported 91 – 100 percent of their at-benchmark students to achieve the ISF goal. Ten schools supported 0 – 10 percent of their at-benchmark students to achieve the ISF goal.

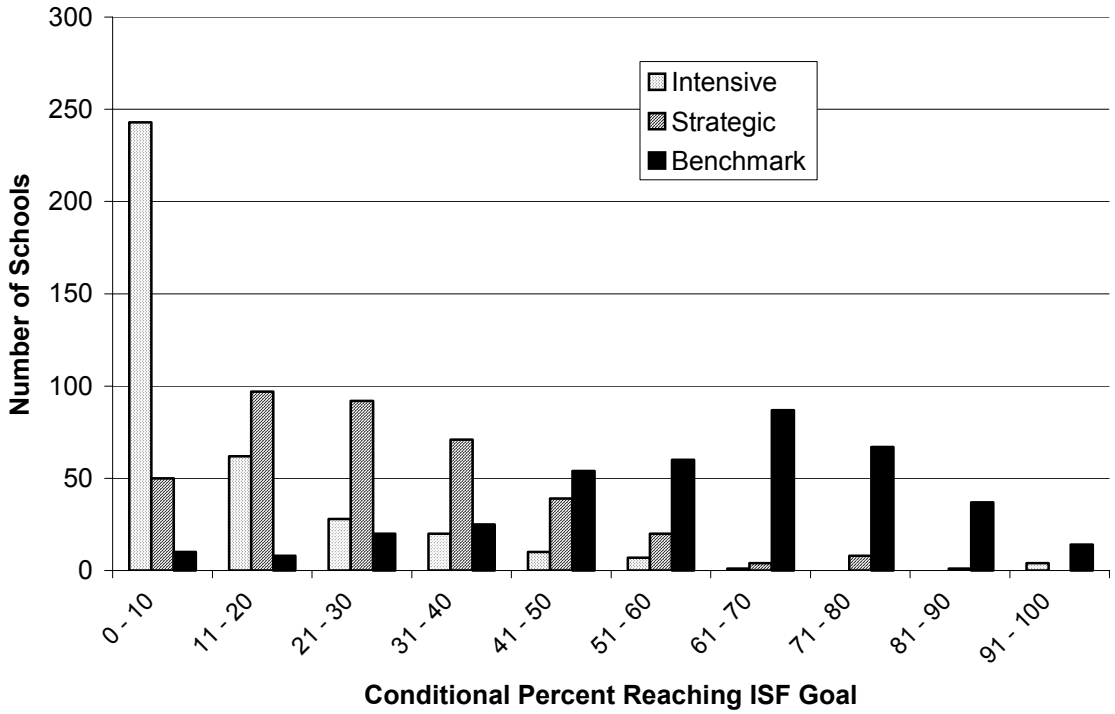

Figure 2. Distribution of schools with respect to the conditional percent of children achieving 25 or more sounds correct per minute on the middle of kindergarten ISF given instructional recommendation category in the beginning of Kindergarten.

Two reasons for the dramatic differences between schools in their middle kindergarten outcomes for at-benchmark students are plausible and should be examined by the school's early literacy team. A first explanation that should be considered and ruled out before examining other possible explanations is that there may have been systematic errors in administration and scoring of the DIBELS ISF measure. If the scores are not accurate, further interpretation is not appropriate. The *DIBELS Initial Sound Fluency Assessment Integrity Checklist* in the *DIBELS Administration and Scoring Guide* (available at dibels.uoregon.edu) should be used to evaluate the accuracy of administration and scoring of each tester in the school. In addition, a random sample of 10 percent of students can be retested to ensure that scores display adequate reliability.

If the scores are accurate, the most plausible explanation for school differences in middle kindergarten outcomes for benchmark students is differences in the effectiveness of the core

curriculum and instruction. It is not plausible that the school differences in middle kindergarten outcomes are attributable to the skills or background of the students in the school, because in this discussion we are examining only those students who were entering kindergarten with benchmark skills predictive of successful early literacy outcomes. The school differences are also not attributable to differences in the system of additional intervention – it is the role of the core curriculum and instruction to support students who are on track to achieve crucial early literacy outcomes.

When reviewing middle kindergarten outcomes, the early literacy team may determine that their school outcomes are typical (Table 9) and frequently occurring (Figure 2). However, the team must still ask, "Is typical good enough?" The key feature of the DIBELS assessments is their focus on core components of early literacy that are teachable. There are many published, research-based curricula and supplemental materials readily available to support instruction. As schools change the focus of their core curriculum and instruction, the distribution of middle kindergarten outcomes in Figure 2 can be expected to change as well. Perhaps the most important conclusion to draw from examination of Figure 2 is that most schools do not have an adequate focus on phonemic awareness in general and initial sounds of words in particular in the first half of kindergarten. For most schools, the core curriculum and instruction is not as effective as it could be in achieving the middle kindergarten ISF goal.

Of course, an alternative explanation to consider is that the DIBELS middle of kindergarten benchmark goal is too high. However, the DIBELS benchmark goals are established not based on norms, but based on odds of achieving subsequent literacy outcomes. For students identified as needing intensive intervention the odds were 26% of achieving 40 or more words read correct on the end of first grade DORF assessment. For students identified as strategic, the odds were 59%. Most important, for students meeting the middle kindergarten benchmark goals, the odds were 88% of reading 40 or more words correct per minute at the end of first grade on the DORF assessment.

A number of published supplemental materials are available with a variety of activities that can be used in the first half of kindergarten to teach and practice initial sounds in words. Selected materials and activities are described in Table 10. These activities range from game-like, engaging activities that combine movement and song to teach and practice initial sounds in words to carefully designed instruction that can help children who are struggling with phonemic awareness skills to understand the sound structure of our language.

Table 10

Examples of Initial Sound Activities in Commercially Available Curricula with Research Support

Curriculum	Activity	Page	Comment
Ladders to Literacy (Notari-Syverson, O'Connor, & Vadasy, 1998)	Sound Isolation	113	Game-like activities.
	Pretend Play	116	Phonemic awareness activities are not grouped by skill.
	Sound of the Week	119	
	First Sound Song	124	Appropriate for benchmark and strategic level support.
	Word to Word	134	
	First Sound Bingo	140	Three levels of instructional supports provided for every activity.
Phonemic Awareness in Young Children (Adams, Foorman, Lundberg, Beeler, 1998)	Unit 7. Initial and Final Sounds: 4 initial sounds activities	7a, 7b, 7c, 7d,	Game-like activities. First-sound activities are grouped together.
			Appropriate for benchmark and strategic level support.
Phonological Awareness Training for Reading (Torgesen, & Bryant, 1994)	Segmentation of initial phoneme.	Wordset 1	Repeated use of skills across different sets of words with games
	Matching words by similar beginning sounds.	Wordset 2-5	Systematic use of Lindamood technique of feeling how sounds are produced.
	Production of initial phonemes in words.		Appropriate for all levels of support in small groups.
Road to the Code (Blachmann, Ball, Black, & Tangel, 2000)	Embedded first sound instruction in segmentation activities.	Every lesson	Emphasis is on segmentation and letter-sound correspondence.
			Appropriate for all levels of support in small groups.
Sound Foundations (Byrne, & Fielding-Barnsley, 1993b)	The entire program focuses on first and last sounds	Every lesson	Matching words by initial or ending sounds. Uses 8 phonemes.
			Appropriate for benchmark and strategic support.

Reviewing System of Additional Intervention Outcomes in First Half of Kindergarten

4. How effective is our system of additional intervention in supporting students who are entering kindergarten at risk to achieve the DIBELS Initial Sound Fluency goal in the middle of kindergarten?

For students who are at risk for severe difficulty in learning to read, a system of additional intervention is necessary to achieve subsequent early literacy benchmark goals. An effective system of additional intervention supports more students who are at risk to achieve literacy goals. That is, for students who are identified as needing strategic or intensive intervention at the beginning of kindergarten, how effective is the school's system of additional intervention in supporting them to achieve subsequent early literacy goals?

A normative context to evaluate the effectiveness of the school's system of additional intervention is provided in Table 9. In particular, the column reporting the percent of children with intensive intervention recommendations and the corresponding school-based percentile provide a basis to evaluate a school's system of additional intervention. A typical school in the DIBELS Data System supports only 3 percent of children with an intensive instructional recommendation at the beginning of kindergarten to achieve the middle kindergarten ISF goal. A school that supports 0 percent of students with an intensive instructional to achieve the ISF goal would be at the 45th percentile, with a system of additional intervention as good or better than 45 percent of schools in the DIBELS Data System. A school that supports 75 percent of students with an intensive instructional to achieve the ISF goal would be at the 99th percentile.

The distribution of school outcomes for students with an intensive intervention recommendation is provided in Figure 2. Most schools support 0 – 10 percent of their children with an intensive recommendation in the beginning of kindergarten to achieve the middle of kindergarten ISF goal. These findings highlight a general need for a greatly improved system of additional intervention in the first half of kindergarten. With an effective system of additional intervention, these outcomes can be changed dramatically. In Figure 2, there are four schools that

are effective in supporting 91 – 100 percent of their students with an intensive intervention recommendation to achieve the middle kindergarten ISF goal.

End of Kindergarten Instructional Recommendation

The reading risk and health indictors for the end of kindergarten are summarized in Table 11. Students scoring in the deficit or at risk categories are likely to experience reading difficulty without effective intervention. Students scoring in the low risk and established categories are likely to achieve healthy (i.e., successful) reading outcomes with effective core instruction. At the end of kindergarten, the benchmark goal is established phonemic awareness, 35 correct phonemes per minute, on the DIBELS PSF measure. Additional indicators of adequate early literacy progress and low risk are LNF of 40 or more, and NWF of 25 or more. The possible patterns of performance on the DIBELS measures and the percent of children with the pattern who achieve subsequent early literacy goals are presented in Table 12. It is clear from an examination of Table 12 that achieving established phonemic awareness without making adequate progress on phonics skills is not enough to be on track for reading outcomes. LNF is also serving as a powerful indicator of difficulty achieving subsequent benchmark goals. Although it is an unusual pattern, students who are on track for phonemic awareness and alphabetic principle but who are at risk on LNF only have about 50 – 50 odds of achieving the DORF goal at the end of first grade.

Table 11

Descriptive Levels of Performance in End of Kindergarten

Variable	Performance	Descriptor
DIBELS Letter Naming Fluency	LNF < 29	At Risk
	29 <= LNF < 40	Some Risk
	LNF >= 40	Low Risk
DIBELS Phoneme Segmentation Fluency	PSF < 10	Deficit
	10 <= PSF < 35	Emerging
	PSF >= 35	Established
DIBELS Nonsense Word Fluency	NWF < 15	At Risk
	15 <= NWF < 25	Some Risk
	NWF >= 25	Low Risk

Table 12

Instructional Recommendations for Individual Patterns of Performance on End of Kindergarten DIBELS Benchmark Assessment

Letter Naming Fluency	Phoneme Segmentation Fluency	Nonsense Word Fluency	Pctile	Percent Meeting Later Goals			Incidence	Instructional Support Recommendation
				Middle 1 NWF	End 1 DORF	Average		
At Risk	Deficit	At Risk	2	8	19	13	More Common	Intensive - Needs Substantial Intervention
At Risk	Emerging	At Risk	6	15	24	19	More Common	Intensive - Needs Substantial Intervention
At Risk	Established	At Risk	10	17	25	21	More Common	Intensive - Needs Substantial Intervention
At Risk	Deficit	Some Risk	12	21	27	24	Extremely Rare	Intensive - Needs Substantial Intervention
At Risk	Established	Some Risk	13	27	33	30	More Common	Intensive - Needs Substantial Intervention
At Risk	Emerging	Some Risk	15	27	37	32	Unusual	Intensive - Needs Substantial Intervention
Some Risk	Deficit	At Risk	16	22	43	33	Unusual	Intensive - Needs Substantial Intervention
At Risk	Emerging	Low Risk	17	28	39	33	Extremely Rare	Strategic - Additional Intervention
Some Risk	Established	At Risk	18	26	46	36	Unusual	Strategic - Additional Intervention
Some Risk	Emerging	At Risk	20	28	46	37	More Common	Strategic - Additional Intervention
Some Risk	Deficit	Some Risk	22	24	56	40	Extremely Rare	Strategic - Additional Intervention
Some Risk	Emerging	Some Risk	23	35	55	45	More Common	Strategic - Additional Intervention
At Risk	Established	Low Risk	25	40	52	46	Unusual	Strategic - Additional Intervention
Low Risk	Deficit	At Risk	26	34	64	49	Extremely Rare	Strategic - Additional Intervention
At Risk	Deficit	Low Risk	27	36	63	49	Extremely Rare	Strategic - Additional Intervention
Low Risk	Emerging	At Risk	28	34	65	50	Unusual	Strategic - Additional Intervention
Some Risk	Established	Some Risk	30	41	60	50	More Common	Strategic - Additional Intervention
Some Risk	Deficit	Low Risk	33	41	62	51	Extremely Rare	Strategic - Additional Intervention
Low Risk	Deficit	Some Risk	33	41	65	53	Extremely Rare	Strategic - Additional Intervention
Some Risk	Emerging	Low Risk	35	53	65	59	More Common	Strategic - Additional Intervention
Some Risk	Established	Low Risk	38	56	68	62	More Common	Benchmark - At grade level
Low Risk	Established	At Risk	42	46	81	63	Unusual	Benchmark - At grade level
Low Risk	Emerging	Some Risk	44	51	79	65	More Common	Benchmark - At grade level
Low Risk	Established	Some Risk	48	52	79	66	More Common	Benchmark - At grade level
Low Risk	Deficit	Low Risk	52	59	80	69	Extremely Rare	Benchmark - At grade level
Low Risk	Emerging	Low Risk	55	68	87	78	More Common	Benchmark - At grade level
Low Risk	Established	Low Risk	79	81	92	87	More Common	Benchmark - At grade level

Note. Percent meeting goal is the conditional percent of children who meet the end of first grade goal of 40 or more on DORF. Based on *n* of approximately 32000 students, 638 schools, and 255 school districts.

In the DIBELS system, we have focused our instructional recommendations and goals on PSF and NWF as kindergarten outcomes and referred to LNF as a risk indicator. The problem is that there is ample, strong, and converging support for the importance and causal role of phonemic awareness and phonics skills in early literacy (National Reading Panel, 2000). However, the causal role of fluency with letter names is unclear. That LNF is a predictor is clear, why it is a predictor is less clear. It may be a measure of speed of cognitive processing or rapid automatized naming. Indeed, measures of rapid color naming, rapid shape naming, rapid object naming, and rapid number naming serve almost as well as predictors of risk. Alternatively, fluency with letter names may be an indirect measure of parental involvement. Early parental involvement in reading is manifested by knowledge of letters, while later parental involvement in reading may be manifested in time spent reading, support for reading, availability of reading materials, and so on.

The decision utility of the end of kindergarten instructional recommendations is reported in Table 13. Children with a benchmark instructional recommendation at the end of kindergarten have 87 percent odds of reaching the DORF reading goal of 40 or more words correct at the end of first grade. Students with a benchmark instructional recommendation have 2 percent odds of experiencing severe reading difficulty at the end of first grade.

Table 13

Decision Utility for End of Kindergarten DIBELS Benchmark Assessment in Identifying Reading Health and Severe Reading Difficulty at the End of First Grade

DIBELS Instructional Recommendation	Conditional Percent Reading 40 or More on Spring DORF	Conditional Percent Reading Less Than 20 on Spring DORF
Intensive - Needs Substantial Intervention	27%	34%
Strategic - Additional Intervention	57%	10%
Benchmark - At grade level	87%	2%

Reviewing End of Kindergarten Outcomes

> 5. How do the early literacy skills of end-of-year kindergarten students in our school compare to student's skills in other schools participating in the DIBELS Data System?

A school-based normative context to evaluate the percent of students with a benchmark, strategic, or intensive instructional recommendation is provided in Table 14. A typical (median) school has 15 percent of students with a recommendation for intensive intervention, 17 percent of students with a recommendation for strategic support, and 65 percent of students with a recommendation for benchmark instruction. Using Table 14, a school's early literacy team can evaluate their end of kindergarten outcomes compared to other schools using the DIBELS Data System. Strong kindergarten outcomes would have a high percentile rank for benchmark recommendations, and low percentile ranks for intensive and strategic recommendations. For example, a school with 80 percent benchmark, 15 percent strategic, and 5 percent intensive would be at the 75th to 80th percentile compared to other schools in the number of students with

benchmark skills, at the 40th percentile compared to other schools in the number of students with strategic recommendation, and at the 15th percentile compared to other schools in the number of students with an intensive intervention recommendation. The 15th percentile in this case would mean that 85 percent of schools have as many or more students with an intensive intervention recommendation.

Table 14

School-Based Normative Context for Evaluating Percent of Students in each Instructional Recommendation Category in End of Kindergarten

School-Based, Percentile	Percent of Students in Instructional Recommendation Category in End of Kindergarten		
	Intensive	Strategic	Benchmark
5	2	6	34
10	4	7	38
15	5	8	44
20	7	11	48
25	8	12	52
30	10	13	57
35	11	15	59
40	13	15	62
45	14	16	63
50	15	17	65
55	16	19	67
60	18	20	70
65	20	21	72
70	21	22	75
75	25	24	78
80	27	25	82
85	33	27	84
90	36	29	88
95	42	33	90
>99	50	39	91

Note. Based on 158 schools with at least 40 students in kindergarten in 2000 – 2001 and end of first grade in 2001 – 2002.

Reviewing Core Curriculum Outcomes in Second Half of Kindergarten

6. How effective is our core curriculum and instruction in supporting students who are on track in the middle of kindergarten to achieve the DIBELS Phoneme Segmentation Fluency goal by the end of kindergarten?

The primary purpose for evaluating end of kindergarten outcomes is to identify areas where the kindergarten program can be strengthened to improve outcomes. Less than desirable end of kindergarten outcomes may be due to (a) low early literacy skills in the middle of kindergarten, (b) core curriculum and instruction that is not providing an adequate focus and emphasis on essential components of early literacy, or (c) a system of additional intervention that is not providing adequate support to students who are at risk of difficulty learning to read. If students are on track in the middle of kindergarten, then the core curriculum and instruction should provide sufficient support for the students to achieve end of kindergarten early literacy goals. In other words, all or almost all students who are benchmark in the middle of kindergarten should achieve end of kindergarten early literacy goals if the core curriculum and instruction are adequate.

A normative context to evaluate the effectiveness of the core curriculum and instruction is provided in Table 15. A typical school at the 50th percentile of effectiveness of core curriculum and instruction supports 90% of their students with a benchmark instructional recommendation in the middle of kindergarten to achieve the end of kindergarten PSF goal of 35 correct phonemes per minute. A school with less than 90% of the benchmark students achieving the end of kindergarten goal has less effective core curriculum and instruction. Some schools had only 50% or fewer of their benchmark students achieving the end of kindergarten PSF goal. Those schools would be at the 5th percentile compared to other schools in the DIBELS Data System in terms of the effectiveness of their core curriculum and instruction.

Table 15

School-Based Normative Context for Evaluating Conditional Percent of Each Instructional Recommendation Category Achieving End of Kindergarten DIBELS PSF Goal

School-Based, Percentile	Percent of Students in Instructional Recommendation Category who Achieve End of Kindergarten PSF Goal		
	Intensive	Strategic	Benchmark
5	0	15	50
10	0	24	61
15	0	29	70
20	0	35	76
25	7	40	79
30	11	45	82
35	15	50	84
40	20	54	86
45	23	58	88
50	26	62	90
55	32	65	92
60	33	70	93
65	40	73	94
70	44	78	95
75	50	82	97
80	59	85	98
85	67	88	99
90	81	93	100
95	100	100	100
99	100	100	100

Note. Based on 404 schools with at least 40 students in kindergarten in 2000 – 2001 and first grade in 2001 – 2002. .

The school-to-school variability in outcomes for benchmark students is illustrated in Figure 3. The majority of schools support 91 – 100 percent of benchmark students to achieve the

end of kindergarten PSF goal. Some schools support only 31 – 40 percent of their benchmark students to achieve the end of kindergarten PSF goal. These differences in school outcomes cannot be attributed to the middle of kindergarten skills of the students – all students with a benchmark instructional recommendation have a level of skills in the middle of kindergarten predictive of achieving the end of kindergarten goal with effective core curriculum and instruction. The most plausible reasons for the poor outcomes are that (a) the core curriculum and instruction does not provide adequate emphasis on phonemic awareness, or (b) that the accuracy and integrity of the DIBELS testing has been compromised. The accuracy and integrity of the DIBELS scores can be evaluated with the Assessment Integrity Checklists in the *DIBELS Administration and Scoring Guide* and by retesting a sample of students to ensure that scores are reliable and accurate. When the core curriculum and instruction is determined to need improvement by the school-based early literacy team, a plan for changing or supplementing the core is indicated.

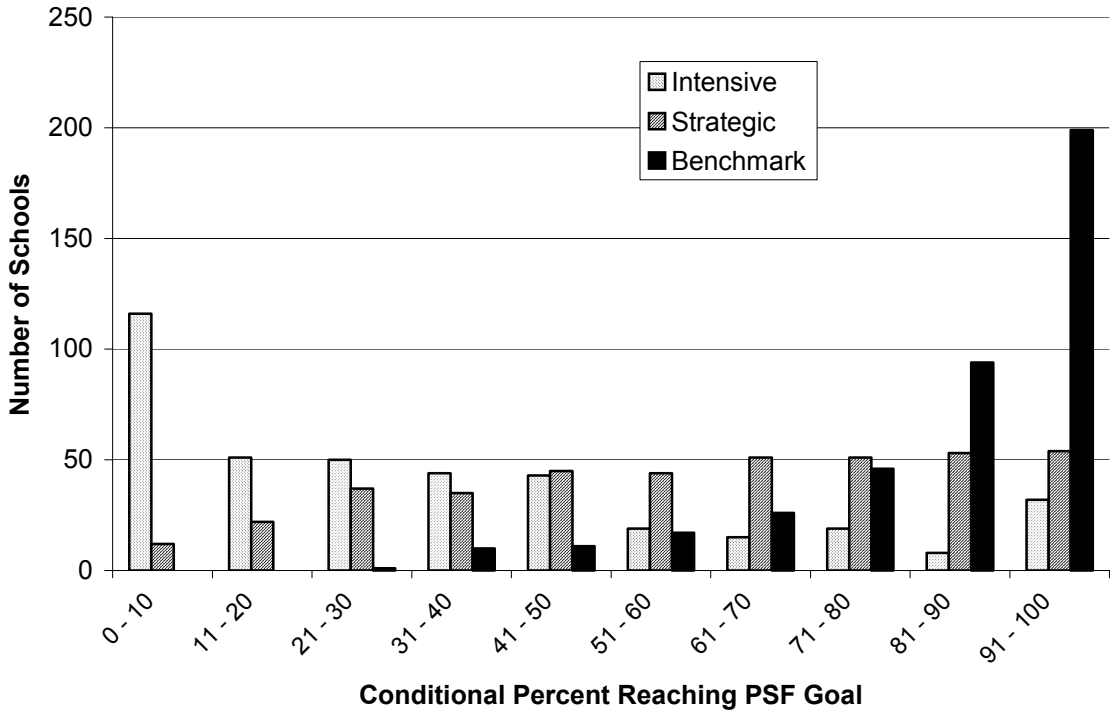

Figure 3. Distribution of schools with respect to the conditional percent of children achieving 35 or more sounds correct per minute on the end of kindergarten PSF given instructional recommendation category in the Middle of Kindergarten.

Reviewing System of Additional Intervention Outcomes in Second Half of Kindergarten

7. How effective is our system of additional intervention in supporting students who are at risk in the middle of kindergarten to achieve the DIBELS Phoneme Segmentation Fluency goal by the end of kindergarten?

In addition to effective core curriculum and instruction, a system of additional intervention is necessary for students who will require more instructional support than is available with the core curriculum and instruction to achieve crucial early literacy goals. A school-based, normative context to evaluate the effectiveness of the system of additional intervention is also available in Table 15. A typical system of additional intervention supported only 26% of children needing intensive intervention to achieve the end of kindergarten PSF goal. The school-to-school variability in effectiveness of systems of additional intervention is

illustrated in Figure 3. Many schools were effective in supporting 91 – 100 percent of students with intensive intervention needs to achieve the PSF goal in kindergarten. The question becomes, if those schools can provide intensive additional intervention and support their students to achieve early literacy goals, why not our school?

Discussion

Beginning reading programs in kindergarten typically include activities for developing phonemic awareness. However, examination of programs indicates great variability in the number and selection of phonological awareness skills to be taught, the extent to which the program targets phonological awareness skills most highly correlated with early reading acquisition, the pace of instruction, and the amount of instructional design and scaffolding of critical skills for at-risk learners (e.g., explicit instruction, systematic review, integration with other key early literacy skills) (Smith, Simmons, Gleason, Kame'enui et al., 2001; Simmons et al., 2000).

For example, the National Reading Panel (NRP) report indicated that teaching a few phonological awareness skills that are highly correlated to reading is preferable to teaching many skills. In addition, the NRP report indicated that blending and segmenting instruction had a greater effect on reading development than teaching multiple skills (2000). Moreover, the NRP concluded that the effects of phonemic awareness instruction were greater when the connection between phonological awareness and the sounds of letters was made explicit and integrated. Consequently, teachers need to check core beginning reading programs and supplemental materials at the kindergarten level to evaluate whether sufficient focus is placed on phoneme blending and segmenting and whether there is explicit integration between phonemic awareness instruction and letter-sounds. If many skills are taught with apparently equal emphasis, the curriculum is unlikely to be optimally effective. Even teachers who use supplemental programs whose efficacy has been established by empirical research, such as *Ladders to Literacy* and *Phonemic Awareness in Young Children*, may need to modify these highly-respected programs

to provide intensive intervention for students who need substantial support. When considering the number of phonological awareness skills to teach children with intensive instructional needs, first sound recognition is considered a pre-requisite step for segmentation and was the focus of effective preschool and kindergarten intervention studies (Byrne & Fielding-Barnsley, 1989, 1993a, 1993b).

In some instances, effective beginning reading curricula, like *Reading Mastery* (Engelmann & Bruner, 1995) and *Read Well* (Sprick, Howard, & Fidanque, 1998), are being used at the kindergarten level for all students with some success. However, even in schools with high-quality professional development that includes in-class coaching and highly effective curriculum we found the percentage of children reaching kindergarten and first-grade benchmarks not as high as we expected. Our tentative hypothesis is that although these two programs spend some time at the beginning of the year teaching phonological awareness blending and segmenting skills that more front-end instruction in phonological awareness is needed by some children in order to meet critical benchmarks and progress in a timely manner toward the ultimate outcome of oral reading fluency and comprehension in grade-level materials.

Optimal attention to research findings and a fine-grained response to instructional design principles are critical characteristics of core curriculum and supplemental materials for the most at-risk children. We also note that these characteristics are beneficial to all other children – those who need some additional instructional support or those who require nothing other than effective instruction in effective, research-based materials. It is our contention that fine-grained modifications of curricular materials are, although highly critical, tedious and time consuming. Such modifications may be beyond the skills and training of the many general classroom teachers, and may be appropriate targets for professional development experiences.

Lessons learned

It seems reasonable to close with some observations from our combined experience with school reform efforts.

1. Teacher perceptions and beliefs are not always accurate – data helps.

2. Changes in outcomes at one grade level precipitate changes in the next-grade level. That is, changing kindergarten outcomes affects first grade outcomes the following year.

3. Grade-level data across classrooms indicates much about the general way of doing business within a school.

4. Outcomes are stable and replicable unless big changes in curriculum, instruction, and system of additional intervention are made.

5. Evaluation of student outcome data can be used by schools to change reading outcomes, even when the schools have very different orientations to beginning reading instruction.

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Appendix A

DIBELS Reviewing Outcomes School Report Templates

for Beginning, Middle, and End of Kindergarten

DIBELS Reviewing Outcomes School Report Directions

1. Using the DIBELS Data System, the tables from this chapter, and the early literacy goals established by the school, complete the intensive, strategic, and benchmark columns of the school report.
2. As a school-based early literacy team, appraise the school performance and judge (a) whether school outcomes are satisfactory, (b) whether the core curriculum and instruction are satisfactory, and (c) whether the system of additional intervention is satisfactory.
3. As a school-based early literacy team, plan for changes and enhancements in (a) preschool liaison and community outreach, (b) core curriculum and instruction, and (c) system of additional intervention.

Glossary of Key Terms:

Percent in category – Specifies how many children are in each instructional category. For example, 67% benchmark means that two-thirds of the children in the school received an instructional recommendation of benchmark – on track for early literacy outcomes.

Percentile rank of percent in category – Provides a school-based normative context for percent in category. For example, 67% benchmark would be at the 85th to 90th percentile compared to other schools in beginning of kindergarten. A school with 67% benchmark would have student skills as high or higher than 85 to 90 percent of schools.

Percent of benchmark achieving goal – Provides a means to evaluate the core curriculum and instruction. Benchmark students should achieve subsequent goals with effective core curriculum and instruction.

Percentile rank of percent of benchmark achieving goal – Provides a school-based normative context to evaluate the effectiveness of the core curriculum. For example, a percentile rank above 50 indicates that the core curriculum is more effective than a median or typical school.

Percent of intensive and strategic achieving goal – Provides a means to evaluate the system of additional intervention. With an effective system of additional intervention more intensive and strategic students should achieve subsequent early literacy goals.

Percentile rank of percent of intensive and strategic achieving goal – Provides a school-based normative context to evaluate the effectiveness of the system of additional intervention. A percentile rank below 50 indicates that the system of additional intervention is more effective than a median or typical school.

DIBELS Beginning of Kindergarten Reviewing Outcomes School Report

<table>
<tr><td>Intensive</td><td>Strategic</td><td>Bench-mark</td><td>School-Based Early Literacy Team Appraisal</td></tr>
<tr><td colspan="4">Beginning Kindergarten Skills</td></tr>
<tr><td colspan="3">Percent in each instructional recommendation category:</td><td rowspan="2">How do the current beginning kindergarten skills of students in our school compare to last year?</td></tr>
<tr><td>(Cur/Las)</td><td>(Cur/Las)</td><td>(Cur/Las)</td></tr>
<tr><td colspan="3">School-based percentile rank of percent in each category:</td><td rowspan="2">How do the beginning kindergarten skills of students in our school compare to other schools participating in the DIBELS Data System?</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3">School-based, desired goal for percent in each category</td><td rowspan="2">How do the current beginning kindergarten skills of students in our school compare to the desired goal level of beginning kindergarten skills?</td></tr>
<tr><td>(Cur/Goal)</td><td>(Cur/Goal)</td><td>(Cur/Goal)</td></tr>
<tr><td colspan="4">What changes are planned for our system of preschool liaison and community outreach prior to the beginning of kindergarten?</td></tr>
</table>

Notes:

DIBELS Middle of Kindergarten Reviewing Outcomes School Report

<table>
<tr><td>Intensive</td><td>Strategic</td><td>Bench-mark</td><td>School-Based Early Literacy Team Appraisal</td></tr>
<tr><td colspan="4">Middle Kindergarten Skills</td></tr>
<tr><td colspan="3">Percent in each instructional recommendation category:</td><td rowspan="2">How do the current middle kindergarten skills of students in our school compare to last year?</td></tr>
<tr><td>(Cur/Las)</td><td>(Cur/Las)</td><td>(Cur/Las)</td></tr>
<tr><td colspan="3">School-based percentile rank of percent in each category:</td><td rowspan="2">How do the middle kindergarten skills of students in our school compare to other schools participating in the DIBELS Data System?</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3">School-based, desired goal for percent in each category</td><td rowspan="2">How do the current middle kindergarten skills of students in our school compare to the desired goal level of beginning kindergarten skills?</td></tr>
<tr><td>(Cur/Goal)</td><td>(Cur/Goal)</td><td>(Cur/Goal)</td></tr>
<tr><td colspan="4">Effectiveness of Core Curriculum in First Half of Kindergarten</td></tr>
<tr><td colspan="3">Percent of benchmark students in beginning K achieving ISF goal:</td><td rowspan="2">How does the effectiveness of our school’s core curriculum in the first half of kindergarten compare to last year?</td></tr>
<tr><td></td><td></td><td>(Cur/Las)</td></tr>
<tr><td colspan="3">School-based percentile rank for percent of benchmark students achieving ISF goal:</td><td rowspan="2">How does the effectiveness of our school’s core curriculum in the first half of kindergarten compare to other schools participating in the DIBELS Data System?</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3">School-based, desired goal for percent of benchmark students achieving ISF goal</td><td rowspan="2">How does the effectiveness of our school’s core curriculum in the first half of kindergarten compare to the desired goal level of effectiveness?</td></tr>
<tr><td></td><td></td><td>(Cur/Goal)</td></tr>
<tr><td colspan="4">What systems-level changes are planned for the core curriculum in the first half of kindergarten?</td></tr>
</table>

<table>
<tr><td>Intensive</td><td>Strategic</td><td>Bench-mark</td><td>School-Based Early Literacy Team Appraisal</td></tr>
<tr><td colspan="4">Effectiveness of System of Additional Intervention in First Half of Kindergarten</td></tr>
<tr><td colspan="3">Percent of intensive and strategic students in beginning K achieving ISF goal:</td><td rowspan="2">How does the effectiveness of our school’s system of additional intervention in the first half of kindergarten compare to last year?</td></tr>
<tr><td>(Cur/Las)</td><td>(Cur/Las)</td><td></td></tr>
<tr><td colspan="3">School-based percentile rank of percent of intensive and strategic students achieving ISF goal:</td><td rowspan="2">How does the effectiveness of our school’s system of additional intervention in the first half of kindergarten compare to other schools participating in the DIBELS Data System?</td></tr>
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<tr><td colspan="3">School-based, desired goal for percent of intensive and strategic students achieving ISF goal</td><td rowspan="2">How does the effectiveness of our school’s system of additional intervention in the first half of kindergarten compare to the desired goal level of effectiveness?</td></tr>
<tr><td>(Cur/Goal)</td><td>(Cur/Goal)</td><td></td></tr>
<tr><td colspan="4">What changes are planned for the system of additional intervention in the first half of kindergarten?</td></tr>
</table>

Notes:

DIBELS End of Kindergarten Reviewing Outcomes School Report

<table>
<tr><td>Intensive</td><td>Strategic</td><td>Bench-mark</td><td>School-Based Early Literacy Team Appraisal</td></tr>
<tr><td colspan="4">End Kindergarten Skills</td></tr>
<tr><td colspan="3">Percent in each instructional recommendation category:</td><td rowspan="2">How do the current end of kindergarten skills of students in our school compare to last year?</td></tr>
<tr><td>(Cur/Las)</td><td>(Cur/Las)</td><td>(Cur/Las)</td></tr>
<tr><td colspan="3">School-based percentile rank of percent in each category:</td><td rowspan="2">How do the end kindergarten skills of students in our school compare to other schools participating in the DIBELS Data System?</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3">School-based, desired goal for percent in each category</td><td rowspan="2">How do the current end kindergarten skills of students in our school compare to the desired goal level of end of kindergarten skills?</td></tr>
<tr><td>(Cur/Goal)</td><td>(Cur/Goal)</td><td>(Cur/Goal)</td></tr>
<tr><td colspan="4">Effectiveness of Core Curriculum in Second half of Kindergarten</td></tr>
<tr><td colspan="3">Percent of benchmark students in middle K achieving PSF goal:</td><td rowspan="2">How does the effectiveness of our school’s core curriculum in the second half of kindergarten compare to last year?</td></tr>
<tr><td></td><td></td><td>(Cur/Las)</td></tr>
<tr><td colspan="3">School-based percentile rank of percent of benchmark students achieving PSF goal:</td><td rowspan="2">How does the effectiveness of our school’s core curriculum in the second half of kindergarten compare to other schools participating in the DIBELS Data System?</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3">desired goal for percent of benchmark students achieving PSF goal</td><td rowspan="2">How does the effectiveness of our school’s core curriculum in the second half of kindergarten compare to the desired goal level of effectiveness?</td></tr>
<tr><td></td><td></td><td>(Cur/Goal)</td></tr>
<tr><td colspan="4">What systems-level changes are planned for the core curriculum in the second half of kindergarten?</td></tr>
</table>

<table>
<tr><td>Intensive</td><td>Strategic</td><td>Bench-mark</td><td>School-Based Early Literacy Team Appraisal</td></tr>
<tr><td colspan="4">Effectiveness of System of Additional Intervention in Second half of Kindergarten</td></tr>
<tr><td colspan="3">Percent of intensive and strategic students in middle K achieving PSF goal:</td><td rowspan="2">How does the effectiveness of our school’s system of additional intervention in the second half of kindergarten compare to last year?</td></tr>
<tr><td>(Cur/Las)</td><td>(Cur/Las)</td><td></td></tr>
<tr><td colspan="3">School-based percentile rank of percent of intensive and strategic students achieving PSF goal:</td><td rowspan="2">How does the effectiveness of our school’s system of additional intervention in the second half of kindergarten compare to other schools participating in the DIBELS Data System?</td></tr>
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<tr><td colspan="3">School-based, desired goal for percent in each category</td><td rowspan="2">How does the effectiveness of our school’s system of additional intervention in the second half of kindergarten compare to the desired goal level of effectiveness?</td></tr>
<tr><td>(Cur/Goal)</td><td>(Cur/Goal)</td><td></td></tr>
<tr><td colspan="4">What changes are planned for the system of additional intervention in the second half of kindergarten?</td></tr>
</table>

Notes: