CTL Center on Teaching & Learning

UO DIBELS Data System

Zones of Growth for DIBELS® 8th Edition

Technical Report 2001

University of Oregon

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Zones of Growth for DIBELS® 8th Edition

This report describes the rationale for, and the calculation and utility of DIBELS 8th Edition Zones of Growth (ZOGs). ZOGs are a feature of DIBELS 8 that help users efficiently compare the reading skill growth of their students over the course of the school year to the growth of a nationally representative sample of students with similar beginning of the year (BOY) benchmark scores. ZOGs are intended to help users set realistic growth objectives for students and interpret student progress. This report describes (a) why users may find ZOGs useful, (b) how ZOGs were estimated, (c) how ZOGs promote databased decision-making, and (d) how ZOGs are integrated into the DIBELS Data System for an improved user experience.

Why are Zones of Growth Useful?

Educators, researchers, and policymakers are increasingly interested in better understanding and monitoring the growth of students' academic skills over time. Monitoring growth can serve multiple purposes. It can be used to promote accountability, inform data-based decisions, and facilitate collaboration within and between schools. Many schools now set individual growth goals for students to determine whether the student, and correspondingly, the teacher and school are making adequate yearly progress towards state or national standards. Some state accountability systems even automatically generate end of year growth targets for the summative assessment using student assessment data. Schools are also increasingly using multitier systems of support to improve student learning. In such systems, data on student growth may be used to inform decisions about resource allocation and instruction and intervention (January et al., 2018; Jenkins et al., 2007; Pentimonti et al., 2017). For instance, if a student is exhibiting signs of risk, the student may receive small group or one-on-one instruction.

DIBELS 8 ZOGs provide timely information about the rate at which a student's reading skill is growing, and normative information about the extent to which that growth is faster or slower than their peers with similar BOY skills. By comparing how much growth a student has made relative to normed growth trajectories, DIBELS 8 users can make inferences about whether a student is making adequate progress or requires additional support. For instance, if a student's growth on Oral Reading Fluency exceeds the growth of 90% of their similarly scoring peers, it likely suggests that the student is receiving adequate instructional support. In contrast, a slower trajectory may suggest additional support is warranted. In the following section, we explain how ZOGs are estimated, what they represent, and how they can promote databased decision-making.

How were DIBELS 8 Zones of Growth Estimated?

The data used to c ZOGs were collected during the 2017-2018 and 2018-2019 DIBELS validation studies. Each of these studies collected data on a nationally representative sample of students in kindergarten through grade 8. Combined, the two samples included a total of 8,997 students from 48 schools in all Census locales. Both samples are described in more detail in the DIBELS 8 technical manual. To calculate ZOGs, the two samples were combined for six DIBELS 8 measures: Phonemic Segmentation Fluency, Nonsense Word Fluency, Word Reading Fluency, Oral Reading Fluency, Maze, and the composite. Descriptions of, and technical details regarding these measures are provided in the DIBELS 8 technical manual. BOY benchmark scores from the combined sample were then placed into one of five *initial status* groups for each measure. These groups indicate whether a student scored:

1. Below the 20th percentile,
2. At or above the 20th percentile but below the 40th percentile,
3. At or above the 40th percentile but below the 60th percentile,
4. At or above the 60th percentile but below the 80th percentile, or
5. At or above the 80th percentile.

Once BOY scores were assigned to an *initial status* group, a gain score was computed for each student and measure by subtracting the BOY benchmark score from the EOY benchmark score. These gain scores were then used to identify ranges of *percentile gain*s within each group. That is, the gain scores in each group were evenly divided into quantiles, such that 20% of scores fall into the first quantile, the next 20% fall into the second quantile, and so on, resulting in five *growth zones* for each *initial* status group, each of equal size. The higher the percentile gain, the greater a student grew relative to other students in the same *initial status* group.

Table 1
Letter Naming Fluency Zones of Growth by Grade

Grade	Initial Status Group	Zone of Growth	Raw Gain
0	1 (< 20th)	Average	20
		Above Average	29
		Ambitious	38
	2 (20 – <40th)	Average	24
		Above Average	32
		Ambitious	40
	3 (40 – <60th)	Average	20
		Above Average	27
		Ambitious	36
	4 (60 – <80th)	Average	13
		Above Average	19
		Ambitious	28
	5 (80th +)	Average	9
		Above Average	16
		Ambitious	23

To facilitate the interpretation of ZOGs, we then removed redundant information and provide descriptive labels for each zone. Table 1 provides an illustrative ZOG table for Letter Naming Fluency in kindergarten. Within each *initial status* group, a score that falls between the 40th and 59th percentile is described as falling within the *Average* growth zone. Similarly, scores that fall between the 60th and 79th percentile are described as *Above Average*, whereas scores above the 80th percentile are described as *Ambitious*. We do not describe *Below Average* growth,

both because it can be inferred from the other zones, and because users are unlikely to set below average growth targets for their students. The raw gain scores listed to the right of the description of each zone represent the minimum amount of growth for the zone. In Table 1, average growth for the first initial status group is any gain between 20 and 28 points.

How do ZOGs Promote Databased Decision-making?

The estimation procedure for DIBELS 8 ZOGs promotes databased decision-making in two primary ways. First, ZOGs can inform decisions about instruction and intervention by providing normative information about growth. This information is especially important in schools that implement multitier systems of support. When implementing multitier systems of support, educators need to evaluate the extent to which an instructional approach is working, so that it can be continued, discontinued, or intensified as needed. By themselves, traditional scores based on a single point in time have a limited ability to inform such decisions, because they describe a student's status rather than their growth. Even scores with excellent predictive validity can be limited in their ability to promote instructional decisions. For instance, a cut-score may accurately predict that a student is unlikely to meet end of year proficiency standards based on its relation to an external criterion measure. However, it is important to know how quickly a student is growing, even if they are not on track to meeting predefined criteria, because accurate inferences must still be made about the impact of instructional delivery.

ZOGs also promote inferences that account for a student's initial status. This is important when interpreting growth because prior research suggests that growth is often related to initial status, but not necessarily in a straightforward manner (e.g., Clemens et al., 2018, 2019; Fien et al., 2010). For example, Table 1 illustrates that expected growth on Letter Naming Fluency is likely to depend on the student's initial status. When comparing a given zone of growth (e.g.,

average) across initial skill groups, students with the highest initial scores (i.e., those in group 5) tend to improve less over the course of a year than students with the lowest initial scores (i.e., those in group 1). This pattern probably reflects the fact that students who enter kindergarten fluent or nearly fluent at letter naming have only so much room to improve on that skill over the course of the year. By contrast, students who have low letter naming fluency may grow extremely rapidly, especially if they are learning the English alphabet for the first time. The ZOGs also capture the non-linear complexity of real-world growth. For instance, students in group 2 tend to grow faster than students in group 3, but also faster than students in group 1, which is not is not necessarily intuitive. Similarly, *ambitious growth* for students in group 5 is faster than the *average* growth for most other groups, which may also come as a surprise given that these students were the highest scoring students at BOY. In short, ZOGs are useful because they provide DIBELS 8 users a straightforward metric of growth that accounts for differing patterns of growth across measures, grades, and initial ability level.

Zones of Growth in the DIBELS Data System (DDS)

The DDS offers a streamlined ZOG tool to help users set student growth goals and monitor progress. Using the DIBELS Zones of Growth Student Goal Data Entry tool, users can select an *average*, *above average*, *ambitious,* or custom growth goal for each student for a given measure. The DDS then provides the user with the target score in the "Goal" box. For example, in Figure 1, a user has selected an ambitious growth goal for Jamila, a grade 2 student. Jamila started the year with an ORF score of 31 and likely needs intensive intervention to meet end of year proficiency standards. If Jamila is able to achieve a score of 80 by the end of the year, she will have grown faster than 80% of students in the DIBELS norming samples, which is an ambitious target, but one we know is achievable by students.

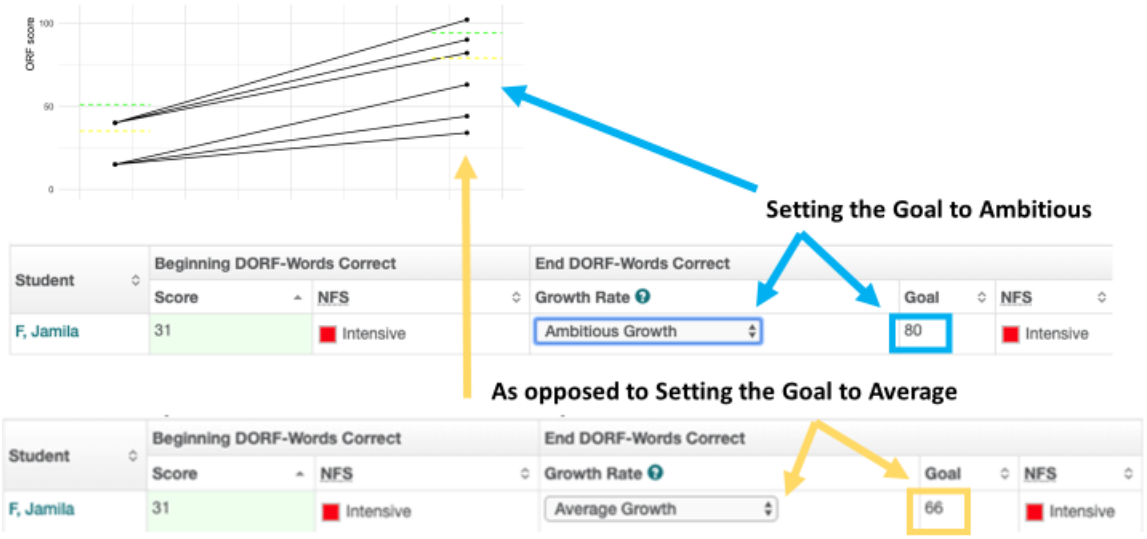


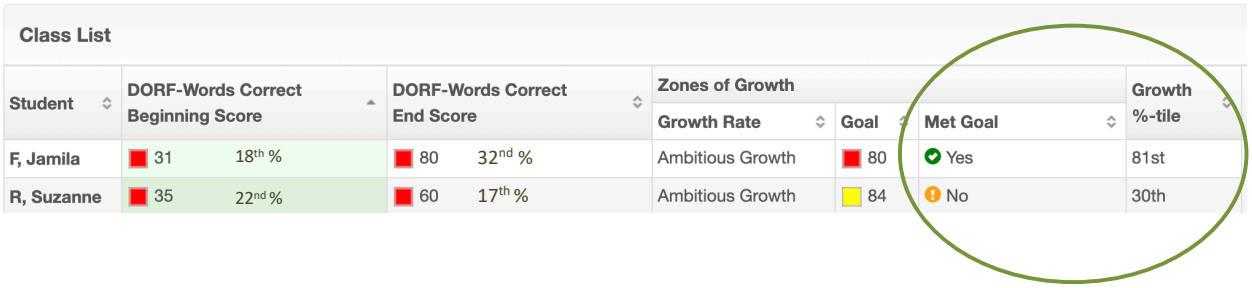
Figure 1. Illustration of DIBELS Data System growth goal setting tool.

Figures 2 and 3 illustrate two complimentary ways of using the DDS to evaluate growth goals after end of year (EOY) data has been collected and entered. Figure 2 depicts an evaluation of individual growth, and shows in the two rightmost columns that although Jamila, the grade 2 student illustrated in Figure 1, is still in the highest level of risk, she met the ORF goal set for her, and in doing so, grew at a rate higher than 81 percent of her peers with similar BOY skills. In contrast, Suzanne, who had a similar BOY score, showed below average growth, and did not meet the goal set for her. Figure 3 depicts one way to evaluate literacy growth at the systems level, and summarizes for a classroom or school the number and proportion of students with growth goals set, the number and proportion of students who met their goal, the number of students whose growth fell in each of the five growth zones, and the number of students who met their established goal, subset by goal type.

Summary

DIBELS 8 Zones of Growth provides users with a streamlined way of setting ambitious, yet achievable growth goals for all students and a robust and nuanced way of evaluating whether

students meet those goals. These data promote databased decision-making by helping teachers and schools make informed decisions about instruction and intervention and have confidence in knowing whether and to what extent an instructional approach is working, so that the approach can be continued, discontinued, or intensified as needed.



Class List

Student	DORF-Words Correct Beginning Score	DORF-Words Correct End Score	Zones of Growth			Growth %-tile
			Growth Rate	Goal	Met Goal	
F, Jamila	31 18th %	80 32nd %	Ambitious Growth	80	Yes	81st
R, Suzanne	35 22nd %	60 17th %	Ambitious Growth	84	No	30th

Figure 2. Depiction of DIBELS Data System individual growth evaluation report.

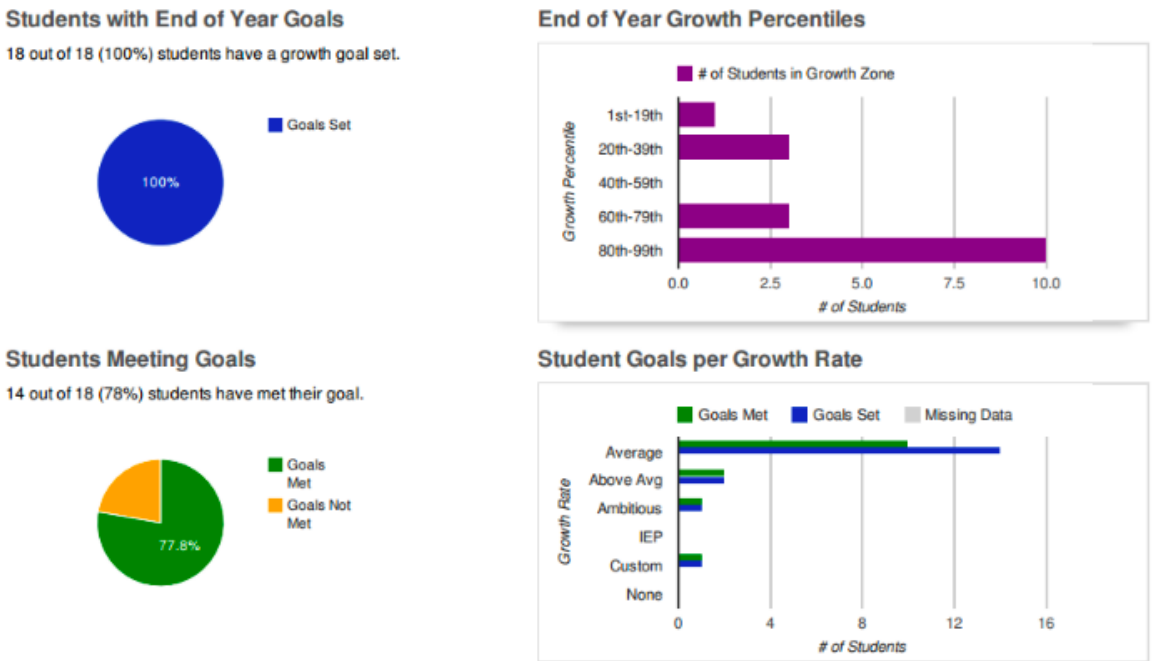


Figure 3. Depiction of DIBELS Data System systems-level growth evaluation report.

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