PRINCIPAL Leadership

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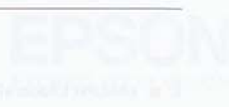### MORE *PL* AT principals.org

Podcast
Interview with Douglas Reeves

Feature Article
Teacher Leadership Roles
By Joellen Killion

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DESIGNING

PREVIEW   Implementing an evidence-based instructional model began with training teacher leaders.

The model incorporates higher-level thinking skills to better prepare students for long-term success.

The results from their efforts will guide improvements in instruction and the model itself.

t is a challenge for schools with large populations of students from low-income, migrant, and international families to ensure that every student reaches proficiency on challenging state academic achievement standards and state academic assessments. Traditionally, schools across the country have tended to cope with this challenge by offering a narrower curriculum and focusing only on improving students' "low-level literacy" skills (Bransford et al., 2000)—reading, writing and mathematics—because currently only those results get reported in federal school accountability reports.

At Overland High School in suburban Denver, CO, we used an evidence-based instructional model to meet this challenge, and preliminary results from our systemic schoolwide curriculum reform are promising. Over the past six years, Overland's total enrollment has stayed static but has undergone major demographic changes as the student community has changed from predominately White and middle-class to a diverse population from different social, economic, ethnic, and racial backgrounds and a poverty rate of 41%. Students at Overland come from more than 60 countries and speak more than 54 different languages. Overland's campus is also home to Prairie Middle School. The demographics of the two schools are similar because they both serve students from the community that surrounds the campus.

Although college preparedness and academic excellence are hallmarks of the school district, student performance at Overland has continued to decline over the past six years when compared with the state and district performance. Given these overall trends, the achievement of the 2000 cohort of students and the 2001 cohort over five years as they moved from middle to high school showed a stagnant or declining trend across the two schools.

The Learn by Design Model

Research on how students learn has shown that using an explicit plan-teach-monitor-adjust instructional model with rigorous curricula that enables teachers to learn effective instructional strategies, has structures for mentoring and active monitoring, and has accountability measures in place can raise the achievement of every student (Balasubramanian, Wilson, & Cios, 2006; Grier, 2002). Overland uses the Learn by Design Model as a conceptual framework for developing teacher excellence and increasing student achievement. This model is assessment-driven, technology-infused, and activity- and project-based and identifies the needs of underperforming students (Balasubramanian, 2007). It is grounded in cognitive and neuroscience theories on learning and motivation (Bransford et al., 2000; Goleman, 2006).

LEARNING

By Nathan Balasubramanian, Jana L. Frieler, and Elliott Asp

The model has two components. (See figure 1.) First, it adopts the backwards-design approach that was developed by McTighe and Wiggins (2005) by using an embodied theory—a specific template of activities and protocols that move from prewriting and pretesting (step 1) through an inquiry scenario (step 3) and guided-inquiry hands-on activities (step 5) to a postwrite and posttest (step 7)—to align curriculum, assessment, and instruction to promote student-centered learning. Second, to develop students' higher-level literacy skills, this model targets five areas—critical thinking, problem solving, mathematical reasoning, inference making, and visualizing and modeling—so that teachers can explicitly plan, teach, and monitor student learning of these essential life skills.

Professional Development

Key to any reform effort is the commitment to professional development. Teachers at Overland meet weekly in professional learning communities (PLCs) to have purposeful conversations about how students learn (DuFour & Eaker, 1998); therefore, it made sense to create an additional PLC to support the Learn by Design curriculum reform process. The lead trainers for this PLC—two administrators and two faculty members—provided 25 hours of face-to-face professional development that was designed to help the teachers who taught the freshman class during the 2007–08 school year

integrate the reform within their respective departments.

Thirteen teacher leaders from four subject areas—English, mathematics, science, and social studies—were trained in the Learn by Design Model during summer 2007. To demonstrate their understanding of the model, the teachers developed curriculum plans for the first quarter of the 2007–08 school year and submitted them to the principal. The plans were graded independently by the lead trainers using a 100-point grading rubric to determine whether they aligned with the model. Analyses of the summary results are available at http://doers.us/lbd_faqs.html.

The teacher leaders began implementing their curriculum plans in August 2007 and now teach more than 670 students (approximately two-thirds of the combined freshman-sophomore classes at Overland). The school implemented the Learn by Design Model with the freshman class in fall 2007 and has planned to scale up the project to include the other three grade levels by adding one grade level each year over a four-year period. The scope of the project is continually expanding and is limited only by changes in funding from supplementary sources. The 2007 first-semester student results from grades 9 and 10 biology and geometry showed growth ranging from 27% to 52% (normal growth is approximately 20%) on pre- and posttests across student categories and grades.

(A graph showing results by grade level and student demographic is available in the online version of this article at www.principals.org/pl.)

Major Components

The following components are essential to the Learn by Design Model and have contributed to its initial success. Teacher reflections from the training sessions illustrate how teachers became cocreators of knowledge and emerged as teacher leaders.

Emphasis on Writing

Even before teachers begin instruction, students are required to think about and respond to real-world scenarios by prewriting. This writing activity not only challenges students but also gives them an opportunity to demonstrate their learning in their own words and ensures that their prior knowledge is accurate. One teacher wrote that the prewrites "identify incomplete understanding, false beliefs, and naïve rendition of concepts" before formal instruction is given. When students respond to a similar but different scenario for a postwrite at the end of a unit, teachers know how well students can generalize and transfer their learning. In addition, the explicit focus on writing better prepares students for college because they practice and demonstrate their "communication, reasoning, personal interaction, and quantitative thinking skills" (Conley, 2005, p. 135).

Growth Model

In their reflections, all of the teacher leaders acknowledged the importance of pretests to show measurable student growth and progress. Pretests help teachers motivate students, increase students' self-esteem, encourage students to be more self-guided and more accountable for their learning targets, and help students know where they are and where they need to be by the end of a unit or chapter. Teachers also said that pretests are integral to differentiating instruction because they help teachers identify students' strengths and weaknesses and enable teachers to measure the effectiveness of their teaching methods. This element was guided by the third core area of *Breaking*

Ranks II (NASSP, 2004), which focuses on essential learning goals that are personal and relevant to students.

Intentionality

Hands-on guided inquiry must be intentionally connected to the content standards to be valuable. To ensure that connection, the revised two-dimensional 24-cell matrix in Bloom's taxonomy (Anderson & Krathwohl, 2001) is used to plan and organize the cognitive elements of instruction so that students can easily see the transition from simple to complex levels of thinking. To make it easier for teachers to align planning, instruction, and assessment, we reduced the 24-cell matrix to a 6-cell matrix and grouped the six levels of thinking into three categories—low (remember and understand), higher (apply and analyze), and highest (evaluate and create). We grouped the four types of knowing into two levels—low (factual and procedural) and high (conceptual and metacognitive).

Reflecting on the purpose of planning learning outcomes using the revised taxonomy, a teacher wrote, "The 2D Bloom's Taxonomy forces you to decide the type of knowing that your students are doing in addition to their level of thinking." Requiring teachers to use the two-dimensional matrix made them reflect and "make sure that the frameworks are being addressed, but also that you are designing for more complex levels of Bloom's taxonomy for your test and unit design," wrote another teacher. Developing this epistemological understanding to help students and teachers understand the value of creative and higher-order thinking is a valuable learning outcome in its own right (Balasubramanian & Wilson, 2007).

Value-Added Inquiry

Although it is important to have students know and be able to do things, it is also important that students value learning and its connection to the real world. The initial inquiry scenario is designed to engage and motivate students as they begin their formal study through simulations or hands-on activities. (See figure 1.) Reflecting on its importance, teacher volunteers wrote, "It grounds the facts and skills in a real-world application that

Figure 1.

Learn *by Design* Model

Focuses on *two* components as teachers and students become co-creators of knowledge

First component
Embodied Theory (aka ***7-Step Model***)

Second component
Higher-Level Literacy Skills

1. Critical Thinking
2. Problem Solving
3. Mathematical Reasoning
4. Inference Making
5. Visualization/Modeling

Student Achievement

PIVOT

Reflect

Metacognition

An iterative metacognitive cycle used by both teacher and student *throughout* the LBD Model

Stop

Think

Act

7

Postwrite and Posttest

6

Review

5

Guided Inquiry Hands-on Activity

4

Direct Instruction

3

Inquiry Scenario

2

Develop Vocabulary

1

Prewrite and Pretest

Diagnostic Assessment
Assessments *for* Learning

Formative Assessment
Assessments *as* Learning

Summative Assessment
Assessments *of* Learning

Cognition | Motivation | Cognition | Motivation | Cognition | Motivation

allows students to see the necessity of what they are learning. It also sets up the direct instruction that might follow." Inquiry also allows students to develop their own questions and have the joy of discovering something new on their own. Other teachers saw the value of taking advantage of teens' competitiveness and using it to increase engagement throughout the course. Overall, inquiry gives students more ownership of the content. As one teacher said, "Any step that helps students think is a valuable tool."

Formative Assessment

Student learning cannot be reduced to student performance in summative and high-stakes assessments alone. Formative assessment practices are known to "raise scores...make teachers' work more satisfying...and learning enjoyable for students as a result of the innovations" (Black, Harrison, Lee, Marshall, & Wiliam, 2003, pp. 2–3). Formative assessments are a significant part of the embodied theory in the Learn by Design Model. Steps two through six—develop vocabulary, inquiry scenario, direct instruction, guided inquiry hands-on activity, and review—provide numerous opportunities and valuable feedback to promote student learning and address observed gaps. (See figure 1.) What evidence will you accept that students value, know, and are able to do? is the driving question in assessment. This question led one teacher to reflect that it "opened up the whole idea of assessments as learning tools." Formative assessments "will help me to create better assessments and to use my assessment scores to adapt my teaching," mused one teacher leader.

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Backwards Design

A good understanding of backwards design is fundamental to the best-practices discussion that teachers must have as they continue to improve instruction on the basis of student performance on common assessments. An emphasis on targeted and intentional teaching is meaningless without well-designed diagnostic, formative, and summative assessments. Overland's teacher volunteers received extensive training on how to align assessments with instruction and on how to use the assessment results. For the training, each teacher volunteer brought in a current assessment for a unit to examine with the group. First, they looked at the amount of time spent on each topic within each unit and how the amount of instructional time spent on each topic correlated with the assessment. Then they looked at the quality of the test to ensure that the higher-level literacy skills were also being assessed.

Simple comparative matrices showed that most of the tests that teachers brought were written at the factual and recall level. Teachers spent a considerable amount of time rewriting exams, aligning instruction, and incorporating questions that measured higher-level thinking for the school's common assessments. The teacher leaders also used simple item-analysis rubrics to align test items with their instruction. After instruction on how to write quality assessments, the items on diagnostic, formative, and summative assessments changed dramatically.

Metacognition

Throughout Learn by Design Model, teachers and students use the iterative metacognitive cycle—stop-reflect-think-act—to promote transfer: students apply the knowledge they gain in one subject to subsequent lessons in that subject and in other disciplines. One teacher summarized: "The teacher must have clear goals as to what and how the kids are going to learn. It is important to think of assessment as three dimensional and ongoing. Assessment is for the students too. Students need to learn how to assess themselves and how to grow in their own learning. This is the metacognitive piece that is essential to the LBD model." Another wrote, "As you move toward LBDM instruction, you are creating a learner-centered classroom that is positive, engaging, and one in which students receive feedback everyday in different forms. It also allows teachers to assess in many different ways."

Challenges and Next Steps

It takes tremendous resources to implement an explicit plan-teach-monitor-adjust instructional model. Teacher training, curriculum development,

and reflection take time and require financial and human resource support from the school and the district. It has been a challenge helping teachers move from teacher-centered to student-centered learning. Although our inter-grader reliability was very high, ensuring that the lead trainers knew what they were looking for as they evaluated teachers' curriculum plans took time. Keeping up with all the communication and follow-up required has been difficult for the lead trainers to incorporate into their normal work schedules. The huge expectations, including reporting pretest data and monitoring progress on student learning every three weeks, although valuable, is very time intensive.

The next steps include analyzing pre- and post-test results and sharing them with emerging teacher leaders. We want to see how these results and classroom instruction affect student performance and how they correlate with our state academic assessments. Using these results, we will modify instruction as well the model itself.

In addition, we would like to include more faculty members who teach freshman and sopho-more classes, and we will continue to collect data and use it to evaluate instructional effectiveness. Articulating with the feeder middle school is also one of our next goals. Despite all these challeng-es, we gain strength from the preliminary results of our faculty training and student performance. The commitment, ownership, and enthusiasm of these early-adopter teacher leaders in imple-menting this schoolwide systemic intervention is inspiring. PL

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