Handout: Providing Prescriptive Feedback

Context:
The need to provide effective feedback to learners is not something that is new or unique to implementing the CCSS. However, because of the design of the CCSS and the interest in supporting all learners to access high levels of rigor in learning, the role of prescriptive informational feedback is gaining a great deal of attention. Learners benefit from quality interactions through which they access valuable information about their performance is one supported by research.

The following information is a compilation of selected excerpts from the IES Practice Guide on Encouraging Girls in Math and Science. There are 5 key recommendations in this particular Practice Guide, but the 2nd recommendation pertains to providing **prescriptive feedback**. Course participants are encouraged to access the entire Practice Guide as the recommendations are interconnected. While the language of the Practice Guide does not refer to the CCSS, there are numerous connections that can be made. Regardless of the context in which you teach, there are a number of considerations you should make. The following reflective questions will help you surface the degree to which your current practice aligns with recommended best practice on this topic:

- ✓ I know the **research-based** reasons for providing prescriptive informational feedback?

Strongly agree   Somewhat agree   Disagree
- ➢ Comments:

- ✓ Based on research, I **pre-plan** how I will provide prescriptive information feedback to all students:

Strongly agree   Somewhat agree   Disagree
- ➢ Comments:

- ✓ I have pre-taught all students the **purpose for, methods of, and the teacher's role** in providing prescriptive informational feedback:

Strongly agree   Somewhat agree   Disagree
- ➢ Comments:

- ✓ I know the various common **non-examples** of prescriptive feedback and recognize how the can actually undermine research-based practice:

Strongly agree   Somewhat agree   Disagree
- ➢ Comments:

- ➢ I have pre-taught students the **importance of effort**, strategy utilization during learning, and the role of reflecting on mistakes to support future learning opportunities:

Strongly agree   Somewhat agree   Disagree

> ➢ Comments:

✓ I plan for peer-to-peer, teacher-student, teacher-class **discussion of mistakes** aimed at surfacing what steps learners are taking to arrive at their conclusions/answers/performances:

Strongly agree   Somewhat agree   Disagree
> ➢ Comments:

✓ I **differentiate** the forms and content of prescriptive feedback so that all students receive information that is comprehensible and can be applied in future performances to improve:

Strongly agree   Somewhat agree   Disagree
> ➢ Comments:

✓ I can produce a **wide range of artifacts** aligned with best practice which reflect how I provide prescriptive feedback to all students:

Strongly agree   Somewhat agree   Disagree
> ➢ Comments:

✓ I can produce data that demonstrates evidence of the positive impact that prescriptive feedback makes for students (individually and collectively):

Strongly agree   Somewhat agree   Disagree
> ➢ Comments:

Reflection Summary: Based on above reflective responses, write 4-5 statements demonstrating elements of effective prescriptive informational feedback **to yourself**. Avoid statements such as "nice try!" or "good job!" or "try again!"   Instead, write the feedback statements so that they include content on what has been attempted and what steps/process elements will need to be attended to in order for improved performance.

Prescriptive Feedback Intended for Yourself:
- 1
- 2
- 3
- 4
- 5

To help develop your own skill in providing prescriptive feedback for students, review the selected excerpts from the IES Practice Guide on Encouraging Girls in Math and Science (2007).

_____

Recommendation 2.

Teachers should provide students with prescriptive, informational feedback regarding their performance. Prescriptive, informational feedback focuses on strategies, effort, and the process of learning (e.g., identifying gains in children's use of particular strategies or specific errors in problem solving). Such feedback enhances students' beliefs about their abilities, typically improves persistence, and improves performance on tasks.

We recommend that teachers provide students with prescriptive, informational feedback regarding their performance in math and science courses. Prescriptive, informational feedback focuses on strategies, effort, and the process of learning. Examples include identifying gains in children's strategy use, praising effort, or identifying gaps or errors in problem-solving. Although this type of feedback overlaps with the type of feedback that teachers provide during formative assessment, this recommendation specifically targets feedback that focuses students' attention on their beliefs about why they did or did not perform well on a particular task. Prescriptive, informational feedback enhances students' beliefs about their abilities, typically improves persistence, and improves performance on tasks. In addition, students' beliefs about their abilities are related to their math- and science-related choices.

Level of evidence: Moderate

The panel judges the quality of the evidence on the relation between prescriptive, informational feedback and students' beliefs about their math and science abilities and their performance on math- and science-related tasks to be moderate, based on a set of small experimental studies using random assignment that focus specifically on children performing math or math-related tasks 34 and supporting research on the effects of different types of feedback on a variety of tasks.35 The supporting research on feedback includes many studies that vary in terms of design, including small experimental studies, longitudinal and cross-sectional correlational studies, and qualitative studies. Many of the experimental studies on the effects of different types of feedback have been conducted with children.

Brief summary of evidence to support the recommendation

Students often receive feedback regarding their performance in the form of grades, test scores, or statements from teachers regarding the accuracy of a response. However, all forms of feedback are not equal in their impact on students' beliefs about their abilities in a given domain, such as math or science, nor in their impact on performance. In particular, when teachers provide specific, informational feedback in terms of strategies, effort, and the process of learning (e.g., "you worked really hard at that subtraction problem"), rather than general praise (e.g., "good job") or feedback regarding global intelligence (e.g., "you're smart"), students' beliefs about their abilities and their performance are positively influenced.

Many teachers know that providing informational feedback helps create a positive learning environment. Indeed, the use of classroom formative assessment is linked to substantial learning gains.37 When teachers give informational feedback (e.g., pointing out to a

student a specific problem in her logic rather than simply noting that the answer is incorrect) students' achievement and attitudes improve.38 During whole-class instruction, when teachers combine positive comments with specific information about how to solve a problem, students are less likely to report that they engage in self-defeating behaviors (e.g., putting off doing their homework until the last minute) or avoid asking for help when they don't understand assignments.39

In addition, research suggests that positive substantive feedback that provides information about students' progress toward goals and progress in learning is related to children's motivational beliefs, such as their self-concept of ability and self-efficacy. An observational study of math classrooms illustrates how including such feedback during instruction can support students' self-efficacy in mathematics.40 Even though the **research demonstrates** the critical and potentially powerful role that appropriate feedback can play, it **does not appear that teachers typically use prescriptive, informational feedback**. In fact, a recent descriptive study of teacher feedback used in 58 third-grade mathematics classrooms suggests that the primary form of feedback teachers use during instruction is general praise, such as "that's very good," which does not provide any useful information to students.

Experimental work suggests that feedback given in the form of praise focused on global intelligence (e.g., "you're smart") may have a **negative impact** on future learning behavior in comparison to praise about effort (e.g., "you must have worked hard").42 Elementary school students who were given praise about their intelligence after correctly solving a problem were likely to attribute future failures to lack of ability, have lower interest, show less persistence on future tasks, and have a goal for future tasks of looking smart. In contrast, children who were given praise about their effort were more likely to believe that subsequent failure was due to lack of effort, show higher persistence on difficult tasks, and have a goal of mastering challenging tasks or concepts rather than just "looking smart." Thus, teacher feedback that attributes student success to effort (e.g., "you've been working hard") and task-specific ability (e.g., "you did very well at solving this division problem") strengthens self-efficacy beliefs about mathematics. These beliefs, in turn, influence a child's future **persistence on difficult tasks** and, ultimately, overall performance.

Finally, why is prescriptive, informational feedback important to enhancing girls' beliefs about their abilities? As discussed in the overview, girls tend to **lack confidence** in their math and science abilities even when they do well in math and science courses. Providing informative feedback focuses students' attention on what to do when they do not solve a problem correctly rather than letting girls attribute wrong answers to a lack of ability. When students experience success, providing informative feedback directs their attention to what **they did** to achieve that success (e.g., worked hard, tried multiple strategies, used the procedures in the correct order) rather than allowing girls to attribute that success to having a certain amount of ability.

How to carry out the recommendation

What can teachers do to make sure that the feedback they give students will help improve both their motivation to learn new material and their performance, even in the face of failure?

- Provide positive, substantive feedback to students as they solve problems to encourage students to correct misunderstandings and learn from their mistakes.43 Teachers should create a classroom environment in which learning, improving, and understanding are emphasized. In such an environment, when children give an incorrect answer, it becomes an opportunity for learning.

- Highlight the importance of effort for succeeding at difficult tasks. By attributing success to effort rather than to global intelligence, expectations for future success are supported. Praising general intelligence implies that natural intellectual gifts determine success (and failure) rather than effort; this can be a debilitating mindset for students when confronted with failure on a difficult task

- Keep a balance between learning on the one hand and performance on the other. Grades matter, but students who focus single-mindedly on their grades may come to care so much about performance that they sacrifice learning opportunities.

Potential roadblocks and solutions

Roadblock 2.1. Some teachers may find it difficult to focus on effort and strategy use rather than on performance. Too often, the attention of many students (and sometimes their parents) is on report card grades and exam scores. In addition, many teachers are required to assess and report performance in terms of grades or exam scores.

Solution. Teachers can draw attention to students' **efforts** when possible. When explaining exam scores or grades on an assignment, teachers can provide comments on effort and strategy. Teachers can routinely comment on the combined efforts of a class as students are working on assignments or projects.46 Feedback specific to individual students is best delivered in a one-on-one context.47 Teachers can also design assignments that reward effort. For example, students can be encouraged to submit drafts on which feedback can be given and then revised versions submitted for a grade.

Roadblock 2.2. Teachers whose schedules are already stretched may find it difficult in the course of the average school day to give each student detailed feedback on problem-solving and strategy use.

Solution. Feedback or praise does not need to be given all the time.48 In fact, informative feedback, and particularly praise focused on effort, should be given only when it is genuine. Giving students praise on simple tasks may undermine motivation. When praise is warranted, teachers can focus on effort, using phrases such as, "you worked really hard." Teachers can be strategic in when and how they provide detailed informative feedback. For example, it often is appropriate to give such feedback to an entire class

after a test or exam, especially when most students make a specific error. A class review after an assignment or test also is a good way to provide all students with informative feedback.

Roadblock 2.3. Many teachers rely heavily on standardized assessment techniques, which provide little feedback and can foster a performance rather than a learning orientation regarding scores.

Solution. Effective math and science programs provide continual, multiple assessments of student knowledge so that appropriate adjustments can be made throughout the year. Lessons should include formative and summative assessments of student progress, providing feedback to students long before the annual standardized assessments are taken. Teachers can also use peer feedback and critique as a classroom activity—providing clear criteria for feedback and critique to students at the outset.

Checklist for carrying out the recommendations

Recommendation 2: Provide prescriptive, informational feedback

- ✓ Provide students with feedback that focuses on strategies used during learning time, as opposed to simply telling them whether they got an answer correct.
- ✓ Provide students with positive feedback about the effort expended on solving a difficult problem or completing other work related to their performance.
- ✓ Avoid using general praise such as "good job" when providing feedback to individual students or an entire class.
- ✓ Make sure there are multiple opportunities for students to receive feedback on their performance.