GEORGIA DEPARTMENT OF EDUCATION

Kathy Cox, State Superintendent of Schools

Training for
Georgia Performance Standards

Day 6: Feedback, Commentary, & Evaluation

Content Facilitator's Guide
Science Grades K-2 & 8

We will lead the nation in improving student achievement.

Acknowledgements

This training program was developed by the Georgia Department of Education as part of a series of professional development opportunities to help teachers increase student achievement through the use of the Georgia Performance Standards.

Use of This Guide

The module materials, including a Content Facilitator's Guide, Power Point Presentation, and supplementary materials, are available to designated trainers throughout the state of Georgia who have successfully completed a Train-the-Trainer course offered through the Georgia Department of Education.

Materials (guides, presentations, etc.) will be available electronically on http://www.georgiastandards.org under the training tab after all trainings of Day Six have occurred. Consult trainer for availability. If you need the Power Point earlier or have questions, please contact Adrian Neely, aneely@doe.k12.ga.us, 404-463-1765, or Steve Rich, srich@doe.k12.ga.us, 404-463-1977.

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Overview

Module Rationale

This training extends and builds upon Days 1 through 5 of training.

Student work samples and teacher commentary, along with content standards and their elements, and tasks comprise the four parts of the Georgia Performance Standards. Day 6 focuses on the importance of teacher commentary, particularly feedback and guidance, as a means of helping students develop the metacognitive, self-evaluative skills necessary for real learning. Day 6 will also address research and issues in evaluating and assigning grades to student work.

Module Description

This module includes an instructor-led one-day session composed of large and small group activities, as well as practice in examining student work and in providing commentary.

Module Goal

Demonstrate a deep understanding of the new Georgia Performance Standards and the standards-based education approach, through thoughtful determination of learning goals for specific units of instruction, development of a balanced assessment plan that includes formative and summative assessments, and the design of instruction that will provide students with the knowledge, skills, and understandings necessary to achieve the learning goals. This goal shall be measured by student performance on progress monitoring and on standardized criterion-referenced tests.

Note that the goal will not be reached by any single day of training. It will take preparation and follow up to master this goal.

Day 6 Objectives By the end of Day 6 of training, participants will be able to:

1. Explain the importance of feedback in the standards-based education process.
2. Apply a common vocabulary to demonstrate understanding of assessment and evaluation processes.
3. Describe the characteristics of exemplary feedback.
4. Provide effective teacher commentary for student work.
5. Establish procedures to develop students' metacognitive, self-evaluative skills.
6. Establish protocols for examining student work collaboratively.
7. Discuss the effectiveness of grading practices in standards-based classrooms.
8. Begin to collect information for the standards feedback survey.

Module Sequence

Prior Preparation—Participants

- Each participant should bring 4 copies of a student work sample and 1 copy of the assignment that generated the work sample to the Day 6 workshop; include the standard(s) being assessed via this student work sample as well as 1 copy of each of the two permission forms.

Introduction

- Review of Goals of Assessment
- What is Exemplary Feedback? Activity
- Key Elements in a Model Learning Process
- Coming to Terms with Assessment
- Characteristics of Exemplary Feedback

Commentary

- Providing Teacher Commentary
- Oral Commentary
- Written Commentary

Protocols

- Guided Practice
- Procedures for Students
- Group Practice

Effective Grading and Reporting of Student Learning

- The Parachute Packing School
- Guidelines for Effective Grading
- More Effective Reporting

Where Do We Go from Here

- Feedback on the GPS
- What It's All About

Module Materials for Day 6 of Training

Content Facilitator's Kit contents:

- Content Facilitator's Guide (one for each leader)
- Complete set of slide transparencies (PowerPoint)

Other materials needed:

- Flipchart paper and markers
- Masking tape to post flipcharts
- Sticky notes in two colors
- Student work samples

Equipment:

- Overhead projector or computer and LCD projector

Recommended Resources: Feedback, Commentary, & Evaluation

Note: A more general list of resources for standards-based education is contained in the Day 1 materials.

Allen, D., and T. Blythe. (2004). *The Facilitator's Book of Questions: Tools for Looking Together at Student and Teacher Work.* New York: Columbia UP.

- This resource answers questions and provides information about using protocols for examining student and teacher work.

Andrade, H. (2000, Feb.). Using Rubrics to Promote Thinking and Learning. *Educational Leadership*, 56 (5), 13-19.

- An excellent resource on using rubrics to support student learning, this article outlines the importance of rubrics by providing insight into their purpose, various uses, and effective designs. The author stresses that rubrics can help educators assess student work quickly and efficiently and help support student grades. When properly designed and used correctly, rubrics can support both learning and the assessment process.

Assessment to Promote Learning. (2005, Nov.). *Educational Leadership*, 63 (3).

- The entire November 2005 issue of *Educational Leadership* focuses on assessment for learning. Articles by Jay McTighe and Ken O'Connor, Siobhan Leahy et al., Marilyn Burns, Jan Chappuis, and Tony Winger directly relate to the topics in the Day 6 training.

Black, P., and D. Wiliam. (1998, Oct.). Inside the Black Box: Raising Standards Through Classroom Assessment. *Phi Delta Kappan*.

- In this, one of the most often quoted articles on classroom assessment, Black and Wiliam make the case for formative assessment practices in the classroom.

Black, P., et al. (2004, Sept.). Working Inside the Black Box: Assessment for Learning in the Classroom. *Phi Delta Kappan*, 9-21.

- Paul Black, Dylan Wiliam, and others, revisit the ideas they initiated in their widely read article, "Inside the Black Box," in order to show how teachers and students have applied improved formative assessment strategies and raised student achievement.

Davies, A. (2000). *Making Classroom Assessment Work*. Merville, B C: Connections.

- This provides a thoughtful framework for ways teachers and administrators can reconsider how assessment is working in classrooms in order to connect research to what teachers can do in their classrooms.

Gregory, K., C. Cameron, and A. Davies. (1997). *Knowing What Counts*. Merville, B C: Connections.

- This series of seven books for use in middle grades and high school classrooms outlines practical ways for teachers to involve students in their own assessment. Additional information about Davies' work in assessment can be found at: www.connect2learning.com.

Guskey, T. (2004, Dec.). The Communication Challenge of Standards-Based Reporting. *Phi Delta Kappan*, 326-329.

- Guskey offers suggestions for developing standards-based report cards that describe students' levels of academic performance in meaningful ways to students, parents, and other stakeholders.

Hattie, J. (1999, 2 Aug.). "Influences on Student Learning," Inaugural Lecture: Professor of Education, University of Auckland, 29 pp.

- In this address, Hattie presents conclusions derived from his review of thousands of studies on learning and instruction. His conclusions strongly support the effective use of feedback in any model learning process.

http://intranet.cps.k12.il.us/Assessments/Ideas_and_Rubrics/ideas_and_rubrics.html

- This excellent site by the Chicago Public Schools provides information about rubrics for performance assessments, performance assessment tasks, and assessment resources, as well as a rubric bank.

http://pareonline.net

- *Practical Assessment, Research and Evaluation* (PARE) is an on-line journal supported, in part, by the Department of Measurement, Statistics, and Evaluation at the University of Maryland. Its purpose is to provide education professionals access to refereed articles that can have a positive impact on assessment, research, evaluation, and teaching practice.

http://www.rmcdenver.com/useguide/assessme/online.htm

- This site provides links to a variety of websites dealing with creating assessments, assessment strategies and definitions, rubrics, etc.

Kohn, A. (1994, Oct.). Grading: The Issue Is Not How but Why. *Educational Leadership*. http://www.alfiekohn.org/teaching/grading.htm.

- In this article, Alfie Kohn asks whether traditional grading is really necessary or useful and makes a strong case for supportive assessment in place of traditional grades.

Langer, G. M., and A. B. Colton. (2005, Feb.). Looking at Student Work. *Educational Leadership*, 62 (5), 22-26.

- In this article, Langer and Colton make the case for collaborative analysis of student learning.

Little, J., et al. (2004, Nov.). Looking at Student Work for Teacher Learning, Teacher Community, and School Reform. *Phi Delta Kappan,* 185-192.

- Little, et al., describe several examples of teachers working together to examine student work; and from these examples, they determine common elements of successful practice. In addition, they discuss three dilemmas and ways to deal with them.

Lockwood, R., and J. McLean. (1996). *Why We Assess Students—And How*. Thousand Oaks, CA: Corwin.

- This book is a powerful, easy-to-read resource that describes types of assessments, the strengths and weaknesses of each type, uses of kinds of assessment data, and the cautions to be observed while interpreting assessment results. The book includes discussions on criterion-referenced testing and alternative or authentic testing methodologies. The last chapter demonstrates how to develop an ideal assessment program.

Marzano, R. (2000). *Transforming Classroom Grading*. Alexandria, VA: ASCD.

- Grading has the *potential* for being a valuable learning tool to help both students and teachers clearly see how they can improve; however, this potential is seldom realized. In this book, Marzano presents viable alternatives to traditional assessment that are grounded in research yet practical at the same time.

Marzano, R., D. Pickering, and J. McTighe. (1993). *Assessing Student Outcomes: Performance Assessment Using the Dimensions of Learning Model.* Alexandria, VA: ASCD.

- Marzano et al., make the case that performance tasks should be developed to help students achieve deep learning and promote active construction of knowledge. This book contains numerous examples of performance tasks, as well as several chapters on the construction of rubrics both to score performance and to provide useful feedback to students.

McTighe, J. (1996, Dec.; 1997, Jan.). What Happens Between Assessments? *Educational Leadership*, 54 (4), 6-12.

- McTighe illustrates the effective use of performance assessments, including the use of necessary and appropriate feedback.

Miller, D. (2005, Oct.). *The Joy of Conferring: One-on-One with Young Readers*. Portland, ME: Stenhouse.

- This 75-minute DVD includes clips of actual reading conferences with young children, as well as information about how to establish a successful independent reading program in an early elementary classroom. A viewing guide accompanies the DVD.

Reeves, D. (1997). *Making Standards Work: How to Implement Standards-Based Assessments in the Classroom, School and District*. Denver: Advanced Learning.

- An examination of the undeniable evidence of the importance of using performance assessment as part of an educator's daily life, this book leads the reader through the steps of creating and using performance assessments to determine students' achievement throughout the school year. The author advocates using performance assessments that contain real-world scenarios, multiple tasks, and clear, consistent scoring guides.

Sage Advice: The Wisdom of Crowds. (2005, Apr.). *Edutopia*. http://www.edutopia.org/php/keyword.php?id-005.

- In this column, teachers acknowledge that report cards rarely provide a complete picture of a student's performance. These teachers then suggest a number of different ways of conveying a more complete picture of how students are doing.

Stiggins, R. (2004, Sept.) New Assessment Beliefs for a New School Mission. *Phi Delta Kappan*, 22-27.

- In this article Stiggins debunks common myths and misconceptions regarding assessment and makes a case for assessment *for* learning.

Stiggins, R. (2001). *Student-Involved Classroom Assessment*, 3rd ed. Upper Saddle River, NJ: Prentice-Hall.

- An important resource for leaders who want to help teachers create quality classroom assessments, this third edition of Stiggins' acclaimed textbook shows how classroom assessment can be used to build student confidence and to increase student performance; presents ways to use different assessment methods to reach achievement goals; and builds on Stiggins' practical guidelines for developing quality classroom assessment practices.

Stiggins, R. (2002, June). Assessment Crisis: The Absence of Assessment FOR Learning. *Phi Delta Kappan*, 83(10), 758-765.

- Written by Rick Stiggins, president of Assessment Training Institute, Inc. in Portland, Oregon, and often considered the country's most renowned researcher and speaker on assessment, this article sums up the research on classroom assessment with a connection to school improvement.

Stiggins, R. (2005). *Student-Involved Assessment FOR Learning*, 4th ed. Upper Saddle River, NJ: Prentice-Hall.

- In the fourth edition of his book Stiggins continues to present teachers and school leaders with valuable and usable information on assessment *for* learning.

www.ieq.org/Portal/Stud_assess.html

- The student assessment section of the IEQ Teacher Resource Portal provides education program planners and teacher development specialists with access to web-based resources such as case studies, descriptions of alternative approaches to primary school assessment, sample test instruments, and classroom strategies that can be used to link assessment and instructional practice.

www.nwrel.org/assessment

- This excellent site provides a wealth of materials, including *Toolkit98*, which contains tutorials "designed to assist classroom teachers to become better assessors of student learning. Primary users of Toolkit98 are intended to be those who have the responsibility to coordinate and facilitate professional development in assessment for teachers."

Agenda

This is a one-day course, with approximately 6 hours of instructional time.

Introduction
- Review of Goals of Assessment
- What is Exemplary Feedback? Activity
- Key Elements in a Model Learning Process
- Coming to Terms with Assessment
- Characteristics of Exemplary Feedback

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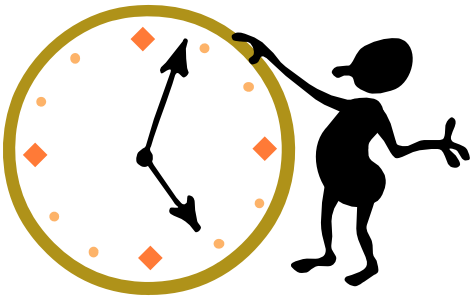


Introduction

Overview

During the introduction, participants will share characteristics of good feedback they have experienced, determine the importance of feedback in a model learning process, come to terms with the vocabulary of assessment, provide feedback about their conceptual understanding of commentary, and then compare the characteristics of good feedback they derived from experience to the characteristics specified by Grant Wiggins.

Objectives

- Explain the importance of feedback in the standards-based education process.
- Apply a common vocabulary to demonstrate understanding of assessment and evaluation processes.
- Describe the characteristics of exemplary feedback.

Activities

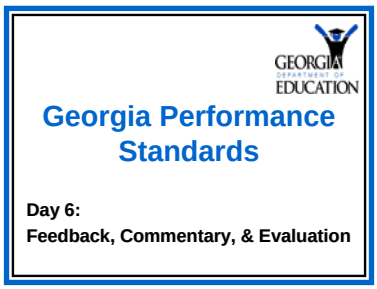
- Review of Goals of Assessment
- What is Exemplary Feedback? Activity
- Overview of Key Elements in a Model Learning Process
- Coming to Terms with Assessment
- Characteristics of Exemplary Feedback

Materials

- Overhead projector or computer and LCD projector
- Transparencies or PowerPoint presentation
- Flipchart paper and markers
- Masking tape to post flipcharts
- Sticky notes

1. Show slide.

Slide

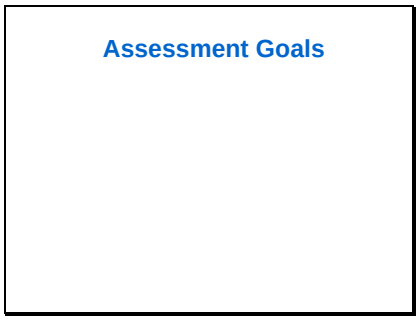


2. Welcome participants to Day 6 of GPS training.

Review of Goals of Assessment

Slide

1. Show slide, but do not click.



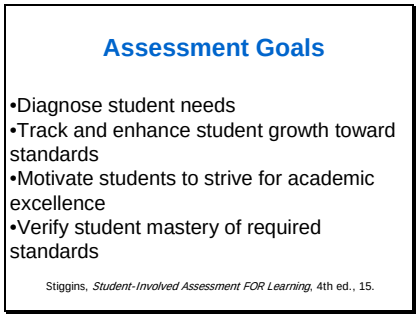
2. Present: **On Day 2 of training, we focused on assessment *for* learning. Today's workshop builds on the knowledge and skills we acquired and practiced during Day 2.**

Chart paper and markers

3. Ask: **What overall goals of assessment *for* learning can you remember from Day 2?** Record participants' responses on chart paper at the front of the room.

4. Present: **These are all good goals for assessment, but let's take a look now at what Rick Stiggins suggests as the four overall goals of assessment *for* learning.**

5. Click so that information appears on the slide.



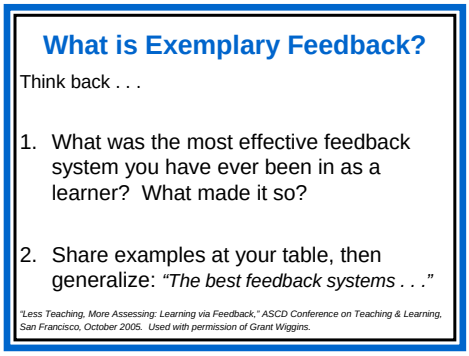
6. Present: **To meet these assessment goals, we must make effective use of feedback and guidance. This first part of today's workshop focuses, in more depth, on these goals of assessment *for* learning; or, to be more specific, on defining, recognizing, and incorporating feedback and guidance in order to positively affect student learning**.

What is Exemplary Feedback? Activity

1. Present: **Feedback is an integral part of any efficient learning process, but we don't often stop to ask ourselves just what constitutes effective feedback. Let's take a few minutes to think back to individual learning situations where we experienced effective feedback. You'll find an organizer for this activity on the next page and in the Appendix.**

Slide

2. Show slide.



3. Present: **Don't limit yourselves to school learning situations. Think about the different skills or knowledge you've acquired in your lifetime. What was the most effective feedback situation you experienced as a learner? What made it effective? When you've thought of the most effective feedback system, share with your table group.** [Allow time for participants to come up with personal examples at their tables.]

4. Present: **Now, in your table groups, generalize or inductively determine some criteria for effective feedback. What are the common characteristics of effective feedback?** [Allow time for participants to come up with some common characteristics in their table groups.]

Chart paper and markers

5. Ask: **What are the common criteria of the effective feedback that you've determined?** [As participants share their responses, list those responses on chart paper.]

What Is Exemplary Feedback?

1. Think back to your many prior experiences with learning via feedback, *both in and out of school*. What was the *best feedback situation you have ever encountered as a learner*? What features of the feedback—*not* any initial "teaching" or the content of the course or style or your interests—made the learning so **effective**? How did you receive and use the feedback and what made this approach so useful?

   Briefly describe the feedback system below:

2. In sharing your recollections and analyses with your colleagues, build **a list of generalizations that follow** from the accounts. What do the best feedback situations have in common? In other words, what must be built in "by design" for any learning experience to be maximally **effective** for students?

The best learning from feedback is characterized by . . .

"Less Teaching, More Assessing: Learning via Feedback," ASCD Conference on Teaching & Learning, San Francisco, October 2005. Used with permission of Grant Wiggins.

6. Present:
   - **Let's take these examples of exemplary feedback and see whether we can organize them into a model learning process using metaphors such as sports and music.**
   - **If we consider the teacher as "coach," the students would be . . .** [allow participants to respond before saying] **athletes.**
7. Show slide.

Slide

Athletes

8. Present:
   - **Now, assume you're the new basketball coach, you have five players who have indicated that they want to be on your team, and your first game is two weeks away. Since traditionally basketball games pit players from one squad against players of about the same skill level from the opposing squad, what will you need to do first?** [Look for responses such as "have try outs" or "watch the basketball players play to determine their ability levels."]
   - In some way you're going to pre-assess potential team members, so let's list that as the first element in a model learning process.

Slide

9. Show slide. [Click once to reveal 1st element.]

Key Elements in a Model Learning System

- Initial engaging experience/pre-assessment
- Establish explicit performance targets
- Initial teaching, show models and exemplars
- Design practice and assess progress toward target
- Provide ongoing feedback, guidance and immediate opportunities to use it
- Opportunities to self-assess and self-adjust
- Repeated feedback and guidance, opportunities to adjust, as needed
- Set high standards

"Less Teaching, More Assessing: Learning via Feedback," ASCD Conference on Teaching & Learning, San Francisco, October 2005. Used with permission of Grant Wiggins.

10. Present:

- **If the players are going to be successful, they are going to work to improve particular parts of their game in order to improve their scoring. If, for example, one team member has an average of 6 out of 10 free throws per game, h/she might set a goal of improving of 7 out of 10 free throws successfully made per game.**

Click to show next line of slide.

- **This then is the second element of a model learning process, providing or setting performance goals. Coaches that are effective ensure that everyone has clarity about the desired performance results.**
- **How might the coach help the player reach this goal?** [Allow time for responses such as "provide instruction" or "model free throw shooting" or "teach him/her how to shoot better," then click to show next line of slide.]
- **Initial teaching or modeling, then, is the next element of a model learning process. In striving for exemplary performance, the learner must know what exemplary performance looks like.**
- **Once the coach teaches or models, what should happen next?** [Allow time for responses such as "practice" or "the player tries to do what the coach has shown her/him" or "the player gives it a try," then click to show next line of slide.] **Design practice and assess progress backward from the ultimate transfer demands while providing multiple opportunities to learn and apply the same skill in context.**
- **So far we have pre-assessment, establishing performance goals, teaching or modeling, and initial tries or practice. What's the next step in the process?** [Allow time for responses such as "coach shows the player what s/he's doing right and what s/he's doing wrong" or "coach gives feedback".]

Click to show next line of slide.

- **This is where feedback enters the learning process, and this initial feedback comes from the coach; but since the coach can't be on the court for every free throw attempt with every member of the team, feedback from the coach alone isn't sufficient. What needs to happen?** [Allow time for responses such as "the player has to be able to self-correct"]

Click to show next line of slide.

- **Ultimately, the coach wants basketball players who can self-assess and self-adjust on the course during a game.**
- **Do you think every basketball player on the team will improve the first time the coach models a better shot, gives feedback, and sends the player out on the court? Probably not.**

Click for the next line on the slide.

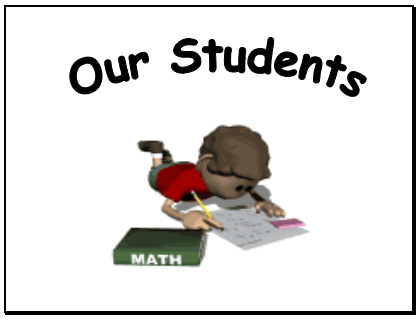
- **The final element in a model learning process, then involves repeating feedback and guidance, with opportunities to adjust, for as long as necessary.**
- **You can find a list of these key elements in a model learning process on the next page.**

Key Elements in a Model Learning Process

- Initial engaging experience/pre-assessment
- Explicit performance goals are provided
- Initial teaching, modeling, and display of exemplars
- Design practice and assess progress toward target
- Provide ongoing feedback, guidance and immediate opportunities to use it
- Opportunities to self-assess and self-adjust
- Repeated feedback and guidance, with opportunities to adjust, as needed
- Set high standards

"Less Teaching, More Assessing: Learning via Feedback," ASCD Conference on Teaching & Learning, San Francisco, October 2005. Used with permission of Grant Wiggins.

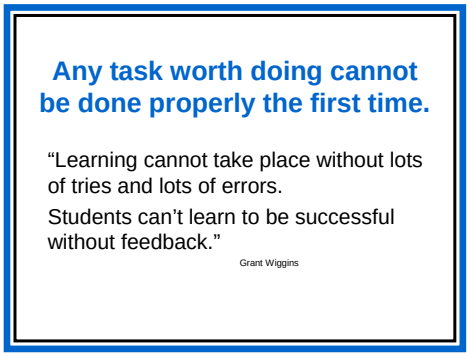
Slide



11. Ask: **Should the elements of the model learning process be the same?** [Question is rhetorical and does not require response, but expect participants to nod or indicate "yes."] Questions to consider: How do the examples compare to our work with student? Should the elements of the model learning process be the same?

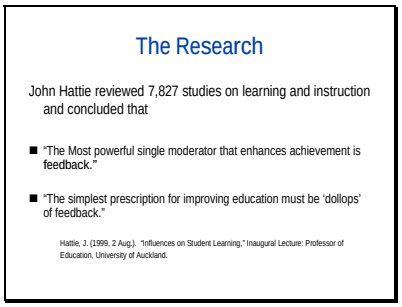
Slide

12. Present: **At an ASCD conference on teaching and learning, Grant Wiggins stated that any task designed to allow students to demonstrate understanding, any task worth doing, "cannot be done properly the first time." Wiggins asserts that learning cannot take place without lots of tries and lots of errors. Furthermore, he believes that students "can't learn to be successful without feedback."**



13. Present: **Anecdotally, this makes sense. But from the beginning of our GPS training, we have stressed research-based best practices; so let's take a quick look at what the research says.**

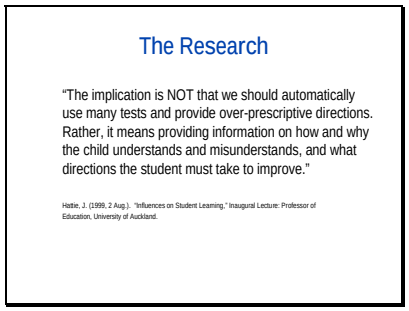
Slide 19. Show slide.



Article 20. Present:

- **Groundbreaking work reported in 1998 and 2004 by Paul Black and Dylan Wiliam clearly supports feedback and assessment for learning. Their 2004 article, "Working Inside the Black Box: Assessment for Learning in the Classroom," is reprinted, with permission, in the Appendix. We strongly recommend that you take the time to read this important article.**
- **Although not as well known as Paul Black and Dylan Wiliam, John Hattie is a leading researcher in teaching and learning. In his research, Hattie has worked to determine the factors that have the greatest impact on teaching and learning.**
- **Hattie looked at the effects of computers and other technology, the effects of class size, and the effects of television viewing, just to name a few.**
- **He found that "the most powerful single moderator that enhances student achievement is feedback."**
- **Ultimately, Hattie concluded that "a combination of goal setting plus feedback is most effective—goals and challenging goals are mutually supportive. The greater the challenge the higher the probability of the student seeking, receiving, and assimilating feedback."**

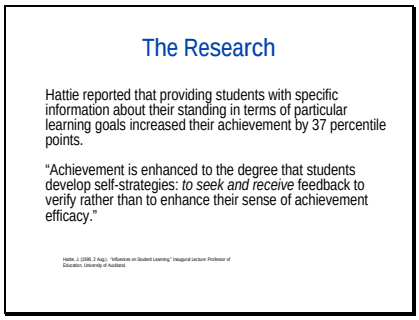
Slide 21. Show slide.



22. Present:

- **Hattie also found that not all forms of feedback are equally effective. Feedback that has the most positive effect on learning includes reinforcement, corrective comments, remediation, and/or diagnosis.**
- **This feedback provides a student with information about what s/he understands and/or misunderstands, as well as information about what that student needs to do to improve.**
- **Extrinsic rewards, delayed feedback, and/or punishment, however, have little or no positive effect on student learning.**

Slide 23. Show slide.



24. Present:

- **The positive effects of feedback Hattie found were not insignificant; with feedback, achievement increased by 37 percentile points.**
- **Perhaps most significant of all, Hattie notes that "Achievement is enhanced to the degree that students develop self-strategies."**
- **In other words, the ultimate goal of feedback is to improve students' self-assessment skills in order to make students responsible for their own learning**.

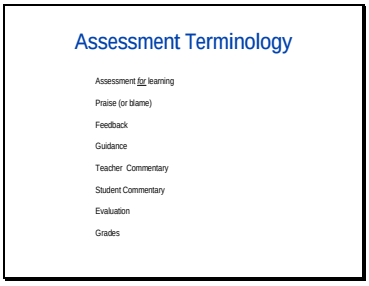
25. Transition: **Before we proceed any further, we need to make sure we're all using a common vocabulary when we talk about assessment.**

Coming to Terms with Assessment

1. Say: **If we're going to work effectively today, we need to make sure we're all talking about the same concepts when we use particular terms**.

2. Show slide.

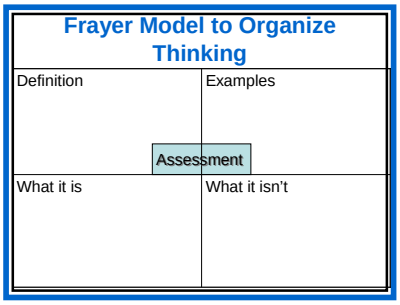
Slide



3. Ask: **What do we mean when we say "assessment for learning," "praise (or blame)," "feedback," "guidance," "teacher commentary," "student commentary," "evaluation," and "grades"?**

4. **We will use a Frayer model to organize our thinking. Use the terms from the previous slide in the appropriate spaces.**

Slide



5. Say: **Take five minutes to discuss these terms at your tables**. [Allow 5 minutes, and then ask participants to respond.]
6. Present: **We seem to have basically the same definitions for these terms, but for the sake of efficiency, let's standardize our definitions.**

7. Go over definitions from the Handout on page 27 with participants, then say:
   - **These are the definitions we'll be using today.**
   - **It's also important to note that effective teacher commentary is often comprised of some feedback, some guidance, and some praise; and while <u>feedback is effective alone</u>, neither guidance nor praise is effective in helping students develop skills in self-assessing and self-adjusting <u>unless</u> the guidance and/or praise is provided <u>along with feedback</u>.**

Slide

8. Transition**: Much of today's workshop will involve hands-on group work—actually examining student work and providing commentary, but before we move on to those activities, we need to establish overall criteria for exemplary feedback.**

Frayer Model for Organizing Assessment Terms

Assessment Terminology

Use these words in the appropriate places.
Assessment <u>for</u> learning
Praise (or blame)
Feedback
Guidance
Teacher commentary
Student commentary
Evaluation
Grades

Definition	**Examples**
Assessment <u>For</u> Learning	
What it is	**What it isn't**

Assessment Terminology

assessment for learning: assessment to promote greater learning that not only guides instruction but also involves students in the process

praise (or blame): affirmation (or the opposite)

feedback: descriptive comments about what student is/is not doing

guidance: providing information about what to do next; steps or strategies to try in order to improve and progress toward learning goals

teacher commentary: oral or written comments made by the teacher that provide feedback to the student regarding his/her progress toward the specified learning goals; comments may include praise in addition to feedback and will often include guidance in addition to the feedback

student commentary: oral or written self-reflective, metacognitive comments made by the student that self-assess his or her progress toward the specified learning goals and that provide feedback to the teacher in terms of student understanding; as a result of effective self-assessment, students develop the skills necessary to self-adjust and become more independent learners

evaluation: the process of making judgments about the level of student understanding or performance

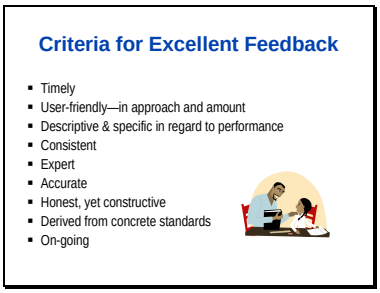
grades: numbers or letters used to translate the evaluative judgments for reporting purposes

Characteristics of Exemplary Feedback and Commentary

Slide

1. Present: **At the same conference on teaching and learning mentioned earlier, Grant Wiggins presented a list of criteria for excellent feedback. This list is on the next page.**

2. Show slide.



Slide

3. Present: **The first two criteria may require some elaboration. What do you think Wiggins means by "timely" and "user-friendly"?** [Allow participants time to respond before continuing.]
4. Present:

- **While our responses may differ slightly, we all need to agree that feedback must be timely enough to aid students as they learn. Think back to the basketball player. If the coach had watched the student practice his/her free throw practice, but waited a week or two to provide feedback, would the player's game have improved in the meantime? Would s/he have been able to prepare adequately for the upcoming game?**

- **In *Making the Most of College*, Harvard students overwhelmingly report that the single most important ingredient for making a course effective is "timely" feedback—getting rapid response on assignments and quizzes.**

- **Likewise, feedback is most effective in what Hattie calls "dollops"—frequent small bits that address particular learning goals. If the coach provides feedback on every aspect of a player's game at once, it's too much for the player to assimilate. Too much feedback can be as ineffective as too little.**

- **According to Grant Wiggins, teachers should not only be giving feedback, they should be seeking feedback from their students constantly. He recommends pausing every 7-10 minutes during a lecture, class discussion, or learning activity to solicit immediate feedback on how well students understand. In other words, teach for 7 minutes and then put up a problem for the students to solve.**

Criteria for Excellent Feedback

- Timely
- User-friendly—in approach and amount
- Descriptive & specific in regard to performance
- Consistent
- Expert
- Accurate
- Honest, yet constructive
- Derived from concrete standards
- On-going

"Less Teaching, More Assessing: Learning via Feedback," ASCD Conference on Teaching & Learning, San Francisco, October 2005. Used with permission of Grant Wiggins.

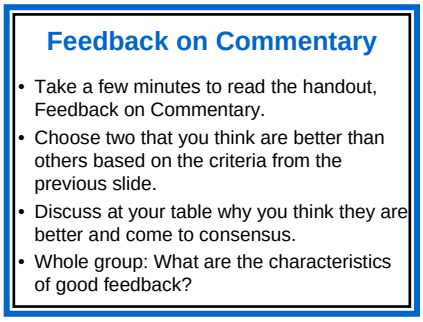
5. Ask: **Are there any of the other criteria you'd like to discuss before we move on**?

- **If your car did not pass the emissions test, what feedback do you want from the technician? You do not want to hear, "Bring it back when it is better." You want to know what exactly is wrong and how to get it fixed. You want the technician to tell you specifically what is wrong with your car. Good feedback is exact and specific.**

6. Present: **Let's do a quick check to see whether we can recognize good commentary when we see it.**

- **Remember, effective commentary may be feedback alone or feedback with praise and/or guidance. Praise or guidance alone, however, is not effective commentary.**

Slide 7. Show slide.



8. Present: **Feedback should cause thinking and provide guidance on how to improve. Look at the sample comments on the next page. There is also a copy in the Appendix. Choose comments that are most likely to advance learning.**
9. **Let's work together in groups to develop a rubric for good commentary. You set up the rubric in your own format and be prepared to share it with the whole group.**

- What characteristics do they share?

Trainer's Note: Give participants time to read the comments, discuss their thinking and determine what characterizes good feedback.

- After participants have read through the ten comments, have them choose two that will provide a student with better feedback. Have them come to consensus at their table about two exemplary examples of feedback commentary.
- Extension if you have time: Have them choose one example of feedback that will not benefit a student and explain how to make it better.
- Use a chart to write down participants ideas about good feedback and discuss ideas.

10. Conclude: **By checking for understanding and misunderstanding regularly, teachers can modify instruction to meet students' needs sooner rather than later.**
11. Transition: **Providing effective commentary takes practice, which is what we're going to do next. Do you have any questions about this first part of the workshop before we go on?** [Allow for questions.]

Feedback on Commentary

Feedback should cause thinking and provide guidance on how to improve. Look at the sample comments below. Choose comments that are most likely to advance learning.
What characteristics do they share?

Sample Comments

1. "Steven, the start you have made is very pleasing and the detail in your answers is improving. Read your responses again and see if you think they are complete. In other words, is all of the relevant information there?"
2. "Louis, although you've used a green traffic light on everything—and I don't doubt your confidence with it – you need to include more scientific words and phrases in your answers."
3. "Look back at the way we completed a bar graph of temperatures yesterday and pinpoint the mistake you are making. Either try again or come and see me for help."
4. "Caroline, generally your answers show a good understanding of the topic of habitat. Start to add a few more of your own thoughts and ideas if you can."
5. "This is generally fine but you are mixing up the terms erosion, deposition, and weathering. Look at the glossary we made and use it to check through this piece again."
6. "Sam, you seem to know what a plant cell is and you can distinguish between this and an animal cell. Can you suggest why a plant cell is different from an animal cell? Could this be an advantage for the plant cell?
7. "Craig, a disappointing attempt. You have already shown me that you can do these calculations. Please go through and complete your corrections by next week. Can I be of any help?"
8. "Sunita, you have completed a lot of work and it is very neatly done. However your answers could be more sensitive."
9. "There are two key aspects that you need to work on. You must show all your work so that we both know you understand all the stages to get the answers. Also you must keep up with the work in class even if you have to finish it at home."
10. "Excellent revision for your test, Lisa, and it got you a good result. You are making mistakes with accurately labeling. Target: to explore and correct accurately labeling the diagrams."
11. "Jermaine, five of the twenty problems are incorrect. Find them and correct them."

Characteristics of a good comment:

Modified from 2006 NSTA session on "Assessment for learning: putting it into practice" by Dylan Wiliam, Educational Testing Service

Commentary

Overview

In this section, participants will practice providing commentary for samples of student work, generalize this practice to student commentary [providing students with the skills they need to self-assess and self-adjust], and work with a protocol for collaboratively evaluating student work.

Objectives

- Conduct a Curriculum Topic Study
- Provide effective teacher commentary for student work.

Activities

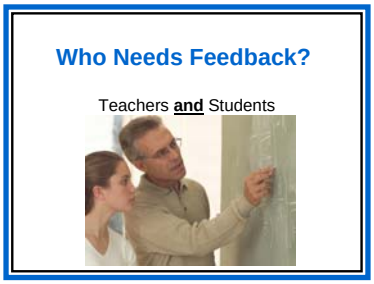
- Providing Teacher Commentary
- Oral Commentary
- Written Commentary
- Assessment Probes
- Error Analysis

Materials

- Overhead projector or computer and LCD projector
- Transparencies or PowerPoint presentation
- Samples of student work

Providing Teacher Commentary

Slide

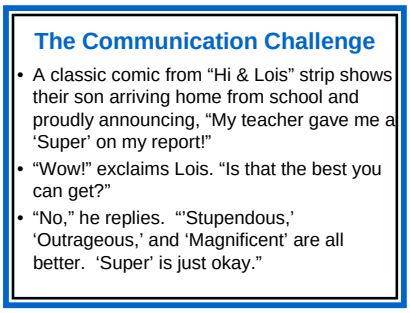


1. Present: **Teacher commentary may be oral or written. Regardless, all effective teacher commentary will accomplish certain goals.**

2. **Communication of what is meant by the commentary should be clear to students and parents. Misinterpreting commentary can give the wrong impression. The example on the slide comes from a Phi Delta Kappan article, "The Communication Challenge of Standards-Based Reporting" by Thomas R. Guskey. (December, 2004)**

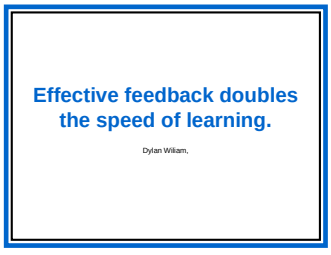
3. **It highlights one of the greatest challenges facing educators today: describing students' level of academic performance in meaningful ways to parents and others.**

Slide



4. **We will be discussing grading and reporting to parents later in the workshop**.
5. **Let's continue our discussion of Teacher Commentary.**

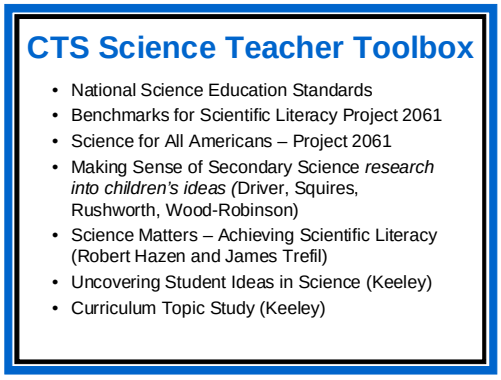
Dylan Wiliam explains <u>that effective feedback doubles the speed of learning!</u>

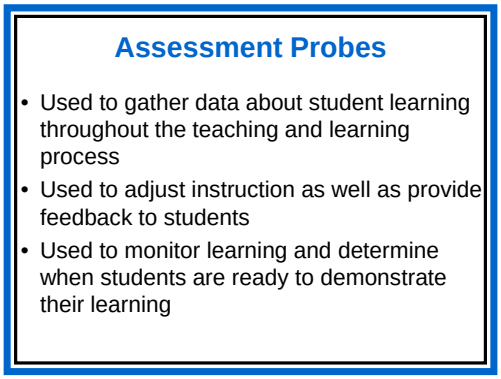


Assessment Probes

Slide 6. Show slide.

Present: **Prior to conducting and reviewing an assessment probe, let's conduct a Curriculum Topic Study on Sound to study the research on student's thinking and their possible misconceptions. We should start with student preconceptions in mind before teaching a new topic.**

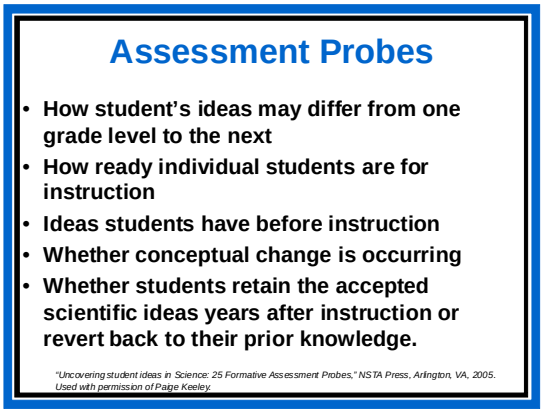




7. Present: **Let's look at two forms of analyzing student work to determine feedback and plan commentary.**
8. **These are the points on the following slide.**

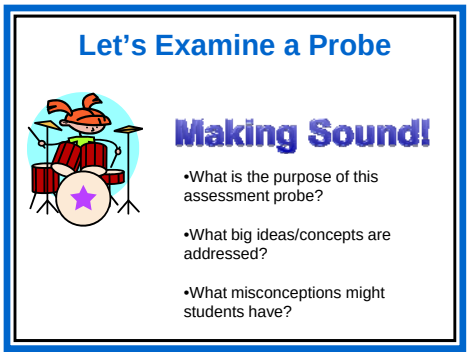
Slide

- **How student's ideas may differ from one grade level to the next**
- **How ready individual students are for instruction**
- **Ideas students have before instruction**
- **Whether conceptual change is occurring**
- **Whether students retain the accepted scientific ideas years after instruction or revert back to their prior knowledge.**



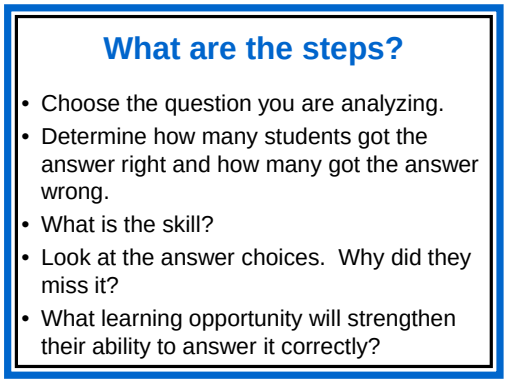
9. Show slide.
10. **Let's look at a few questions that lead a teacher to understand what information an assessment probe can reveal.**
11. **The purpose of this assessment probe is to elicit ideas student have about sound production. This tasks probes to determine if students recognize that sound results from vibrations produced by an object or by objects or materials in contact with the object listed.**

Slide



12. **Once you know who knows, you can then provide learning opportunities to the students who need a deeper understanding of the concept of sound production.**
13. **For K-2, related ideas in Benchmarks for Science Literacy for students to understand are, "Things that make sound vibrate". For middle grades, students should understand that vibrations in materials set up wavelike disturbances that spread away from the source.**
14. **Let's look at some data from the administered probe.**

Slide 15. Show slide.

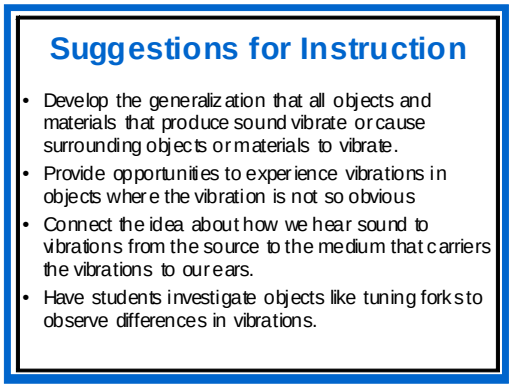


What do you do next? How do you plan your instruction?

Let's consider that your students answered with these percentages. How would you plan the instruction for them? Work in your groups to make those plans now. What suggestions do you have for instruction?

A student answers the question correctly because they understand the concept.

You integrate the assessment with the instruction to keep the learning on track.



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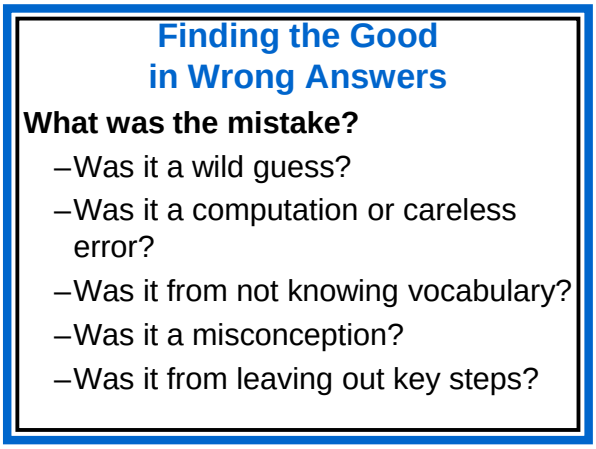


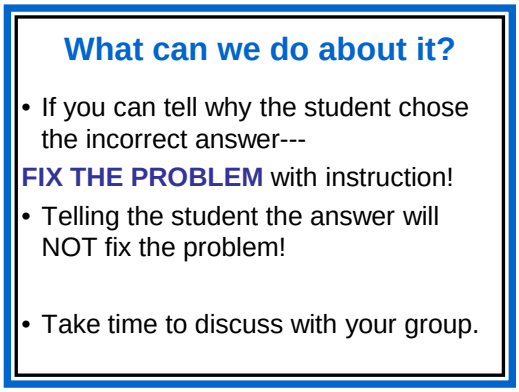
Remember, students at the elementary level often learn about sound through the context of musical instruments. As a result, students may become context-bound in their understanding of how sound is produced and may fail to generalize across different examples.
Students at the middle school level begin to understand abstract notion of air as a source of vibration resulting from contact with an object. The probe is useful at this level to determine whether through prior instruction students developed generalizations about sounds resulting from vibrations or if the context they learned ideas in limited their understanding about sound production.

Slide 17. Show slide.

After you give a test, the real work begins. What did they miss? What did they get correct? Did it give you a clear picture of what a student knows and the depth of their understanding? Why did they get it right and why did they get it wrong?

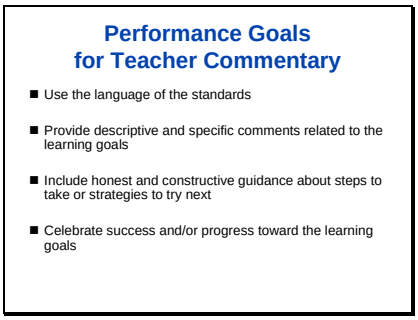
What can you gain by molding your next step in instruction by examining the evidence from the correct and incorrect answer?

Slide 18. Show slide.



Telling a student an answer does not lead to understanding. Planning learning opportunities that lead to a deeper understanding or that clear up a misconception take time. It is very valuable time. The goal is that the student understands. The goal is not a timeline.

Slide 25. Show slide.



26. Present:

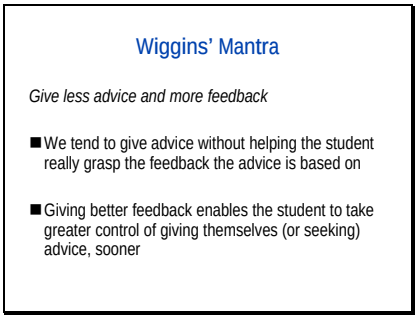
- **All effective teacher commentary uses the language of the standards. Keep in mind that the GPS involve conceptual teaching and learning.**
- **In writing commentary, no single standard or element has to be stated verbatim. The language of the standards will be pervasive, however, in the performance goals for an assignment or unit of instruction, and consequently, in any commentary related to the assignment.**

- **Students in any discipline need to be familiar with the vocabulary from that discipline. As such, the language of the discipline, which is explicit in the standards and elements, should be the language of the classroom on a daily basis.**

- **In addition, effective teacher commentary includes specific and descriptive feedback, guidance regarding what to do next, and praise that is specifically related to progress toward the learning goals.**

27. Present: **Before we go on, take a look at Wiggins' Mantra.**

Slide 28. Show slide.

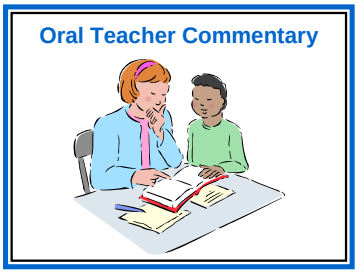


29. Present: **Based on his work in schools, Wiggins' concludes that teachers often tell students what to do, how to change something, etc., too soon and too often. If students don't become proficient in looking at and describing their own work, they won't become effective self-assessors and self-adjusters. Therefore, if we err, we should err on the side of more feedback, less guidance.**

30. Say: **Now let's take a look at some examples of effective teacher commentary**.

Oral Teacher Commentary

Slide
1. Say: **The first performance goal for teacher commentary is that it uses the language of the standards.**
2. **When speaking to a student about work, always use the language that is specific to the goal of the work, or standard.**
3. **The teacher and the student should speak in those terms.**

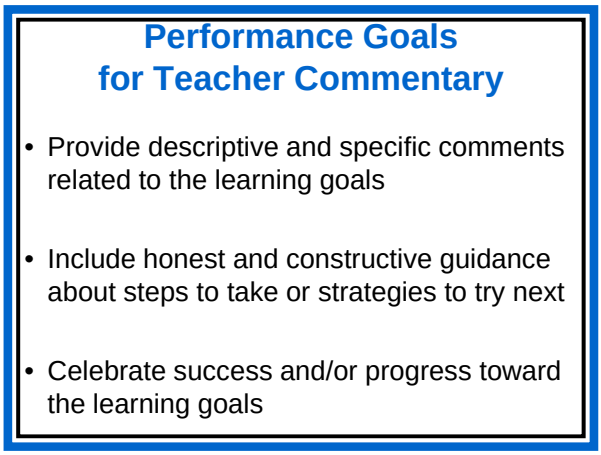


Slide **Oral Teacher Commentary**

4. Say: **In the clip the teacher and student discuss such topics as conversion from Fahrenheit to Celsius and miles to kilometers. This was a requirement the teacher imposed on the work done by this specific class. It is not in the Georgia Performance Standards and is not in the testing descriptions of the CRCT that students in sixth grade will do these conversions. Metric or SI units are more precise and are used in science. The student only consulted one source for information and she reported only the standard units. The teacher reminded her of the report requirement.**
   - **Describe what you saw. What did you see the teacher do? What did you see the student do?** [Allow time for participants to respond.]
   - **Did the conference meet the performance goals for good commentary? Let's take another look at those goals one by one to check.**

5. Say: **Now let's look at the performance goals for teacher commentary at the same time.**

Slide 6. Show slide.



7. **Why might it be beneficial to include praise ALONG WITH the feedback and guidance?** [Allow time for participants to respond.]

8. Ask: **Can praise ever be ineffective?** [Allow time for participants to respond.]

9. Present:

- **Praise (or blame) is not effective <u>without feedback</u>. Students need specific, descriptive information about what they do well or what they do not do well. The same thing can be true of guidance. Guidance without feedback is ineffective.**

- **In addition, praise may be detrimental if it is undeserved. Praising a student for what s/he does well or for progress toward the learning goals is beneficial, but students will see right through undeserved praise.**

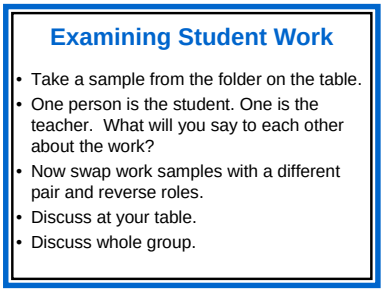
10. Ask:

- **What can we conclude about the oral commentary?** [Allow time for participants to respond, but have some specific examples ready to provide if the participants have difficulty. Be sure to make the point that throughout the conference, the teacher checks for understanding and for misconceptions.]
- **Overall, what can we conclude about oral commentary in general?** [Allow time for participants to respond.]

11. Ask: **How and/or when might we use oral commentary to enhance student learning in our own classrooms?** [Allow time for participants to respond, but have some specific examples ready to provide if the participants have difficulty.]

Slide Folder with work

- **Take a sample from the folder on the table.**
- **One person is the student. One is the teacher. What will you say to each other about the work?**
- **Now swap work samples with a different pair and reverse roles.**
- **Discuss at your table.**
- **Discuss whole group.**



12. Present:

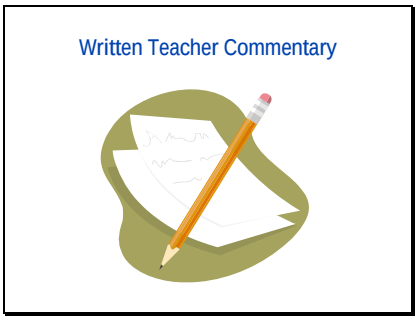
- **We can't complete any discussion of oral commentary without addressing the issue of time. We all know that lengthy student-teacher conferences are not possible with every student on every assignment, but oral commentary is essential for improving student learning.**
- **In your table groups, brainstorm ways you might incorporate or adapt oral commentary in your classrooms. You have 5 minutes to brainstorm in your table groups, and then we'll share ideas.** [Allow 5 minutes, and then ask groups to share.]

Written Teacher Commentary

1. Say: **Now let's move on to an example of written teacher commentary.**

Slide

2. Show slide.



3. Present:

- **Turn to pages where you'll find the sample of student work.**
- **For the purposes of this activity, we will use the same student work for grades K-2 and 8.**
- **Take a minute to read the student work.** [Allow time for participants to read student work.]

Written Teacher Commentary, Examples in Folders

Some of these tasks and copies of student work were obtained from the National Association of Educational Progress (NAEP-- http://nces.ed.gov/nationsreportcard/) database. This national standardized test is given to randomly selected classes of fourth and eighth grade students in the United States.

First Grade Task:

S1E2. Students will observe and record changes in water as it relates to weather.

Explain why the Earth never runs out of rain.

Second Grade Task:

S2L1. Students will investigate the life cycles of different living organisms.

Put the stages of a frog's life cycle in order.

Fourth Grade Task:

S4E2. Students will model the position and motion of the earth in the solar system and will explain the role of relative position and motion in determining sequence of the phases of the moon.

Find four ways the Earth is different from the Moon.

Fifth Grade Task:

S5E1. Students will identify surface features of the Earth caused by constructive and destructive processes.

Explain how new rocks form when a volcano erupts.

Written Teacher Commentary, Examples in Folders

These tasks and copies of student work were obtained from the National Association of Educational Progress (NAEP-- http://nces.ed.gov/nationsreportcard/) database. This national standardized test is given to randomly selected classes of fourth and eighth grade students in the United States.

Eighth Grade Tasks:

S8P4. Students will explore the wave nature of sound and electromagnetic radiation.
Lightning and thunder happen at the same time, but you see the lightning before you hear the thunder. Explain why this is so.

S8P2. Students will be familiar with the forms and transformations of energy.
Is a hamburger an example of stored energy? Explain why or why not.

S8P1. Students will examine the scientific view of the nature of matter.
Tom's younger brother is learning how to read a thermometer and asks, "Why does the red stuff in the thermometer go up when it gets hot outside?" What is a correct explanation that Tom can give his brother?

S8P1. Students will examine the scientific view of the nature of matter.
Maria has one glass of pure water and one glass of salt water, which look exactly alike. Explain what Maria could do, without tasting the water, to find out which glass contains the salt water.

S8P2. Students will be familiar with the forms and transformations of energy.
For each example of the sources of electrical energy listed below, describe an advantage and a disadvantage of relying on that energy source for a large part of our country's electrical energy.
Solar, Nuclear, Hydroelectric, Fossil Fuels

S8P4. Students will explore the wave nature of sound and electromagnetic radiation.
Gerald, standing at one end of a classroom, rings a bell. Lena, standing at the other end of the same room, hears essentially the same sound as Gerald.

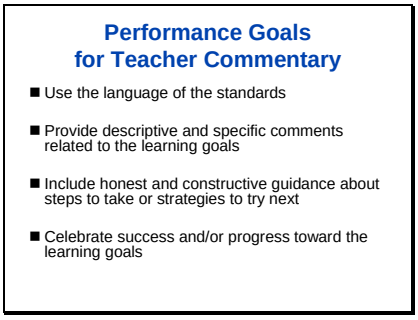
a. What causes the sound made by the bell?
b. How does the sound travel across the room to Lena's ears?

S8P4. Students will explore the wave nature of sound and electromagnetic radiation.
While practicing for a play, a student standing on the stage of a large, empty auditorium shouts loudly and hears her voice echo throughout the room. Later, the same student is on the stage of the same auditorium, which is now full of quiet people. The student shouts again, just as loudly. This time however, she does not hear an echo. Explain why she hears an echo the first time and why she does not hear an echo the second time.

4. Present: **The task, the standards, and the written commentary are in folders**. **Let's look at these in detail**.
5. **Remember to use the Performance Goals and feedback ideas when you look at the samples.**

Slide

6. Show slide.

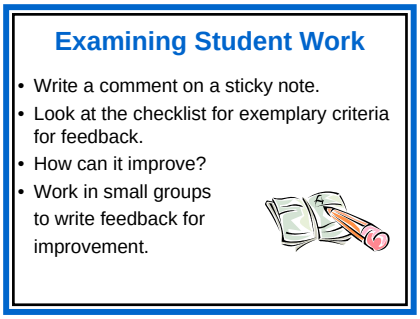


Folder of Student Work Samples

Highlighter markers

7. Present: **Compare the standards and the commentary and highlight or circle the language of the standards that you find in the commentary**. [Allow participants time to highlight.]

Slide



8. Ask: **Does this section of commentary meet the first performance goal for teacher commentary?** [Allow participants to respond.]

9. Present: **Now, in your table groups, critique this same section of commentary in terms of the other three performance goals for teacher commentary. Use sticky notes to make the task more student-friendly.** [Allow 3-5 minutes.]

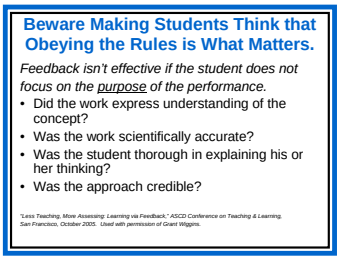
10. Ask: **What did you determine?** [Allow participants to respond.]

11. Present:
- **Recall, however, that feedback and teacher commentary are most effective in small "dollops." Too much feedback at once is as ineffective as too little feedback.**
- **How might we provide feedback on these learning goals without overwhelming the student?** [Allow participants to suggest strategies. Expect responses such as: "Comment on different learning goals on different drafts at different stages of the writing process."]

12. Ask: **What other suggestions do you have for specific accurate feedback for the student?** [Allow participants time to respond.]

13. Present: **Before we move on to some guided practice in writing commentary, we need to consider one additional point**.

Slide 14. Show slide.



15. Present:

- **In all academic content areas, we need to be mindful of the purpose of a product or performance, regardless of whether that performance involves research, writing a report, explaining a procedure, or collecting and analyzing data**.
- **In a discrete knowledge and skills curriculum, we might write commentary on specific elements in isolation; however, in a conceptual curriculum, we need to focus on the larger concepts such as "Can the student effectively use tables and graphs to report results?" "Does the student demonstrate that he or she can draw conclusions from data or results?" "Can the student interpret the findings?"**
- **In other words, we shouldn't become so focused on individual trees that we lose sight of the forest.**
- **As Wiggins reminds us, "feedback isn't effective if the student does not focus on the purpose of the performance." In other words, if the purpose of an assignment is to demonstrate clear understanding of how traits are passed on to successive generations, then the feedback should reflect the purposes of the performance.**

16. Ask: **Do you have any questions or are you ready to write commentary for a sample of student work?** [If participants have questions, address them before proceeding.]

Protocols

Overview

In this section, participants will practice with a protocol for collaboratively evaluating student work. They will generalize practice to student commentary so that they can provide students with the skills they need to self-assess and self-adjust.

Objectives

- Establish procedures to develop students' meta-cognitive, self-evaluative skills.
- Establish protocols for examining student work collaboratively.

Activities

- Guided Practice
- Procedures for Students
- Group Practice

Materials

- Overhead projector or computer and LCD projector
- Transparencies or PowerPoint presentation
- Samples of student work
- Sticky notes in two colors
- Posters of student work samples for guided practice
- Collaborative protocol

Guided Practice

1. Present:

- **Remember, nothing worth doing is done perfectly the first time. Providing effective teacher commentary takes practice and involves trial and error.**
- **Just as in the model learning process we discussed earlier, we've established performance goals for teacher commentary; we've experienced initial teaching and modeling; and now we're ready for some guided practice with feedback.**

2. Present: **We're going to follow a specific protocol for this activity. When examining student work collaboratively with your building or system colleagues, you'll want to establish protocols similar to the one we're using today or to one of the protocols described in detail in the Facilitator's Guide for the Day 3 training module. The protocol we're using today is adapted from one developed by the Chicago Learning Collaborative and the Annenberg Institute for School Reform. You can find a virtual example of this protocol at www.lasw.org/. There is also a link to this website on the School Improvement page of the DOE website.**

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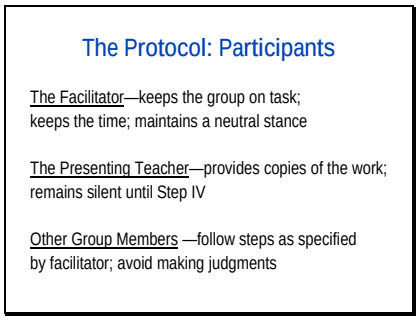

4. Present: **For today's guided practice, I will serve as the facilitator for the whole group. I will also provide the sample of student work. You will work in your table groups and follow the steps of the protocol as I indicate.**

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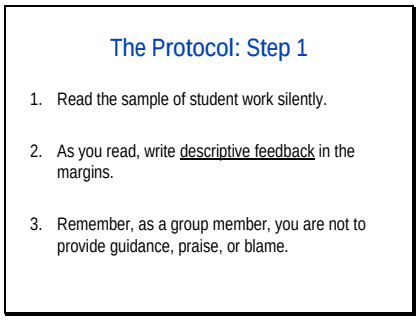

6. Present:

- **In Step 1 of the protocol, you will work individually. As you read the student sample silently, write descriptive feedback in the margins.**
- **To make sure you're writing descriptive feedback, it may help to preface your comments with "I see…" and then write what you see in the student work. For example, you might write, "I see statements concerning …"; "I see comments about …."**
- **Try to remain neutral in your comments at this stage in the protocol; in other words, avoid making any positive or negative judgments—praise or blame—about what you see; also try to avoid providing guidance or suggestions for what to do to improve the work. For example, try to avoid comments such as "Good job organizing your ideas"; OR "You need to focus more on…."**
- **Remember, the purpose at this stage of the protocol is to describe just what you see without making any judgments. When working collaboratively to examine student work, we are discussing work that has been generated in our classroom or the classroom of a colleague. As such, we need to follow clearly defined procedures that will maintain a sense of professionalism and prevent anyone from feeling criticized personally. Maintaining this collegial atmosphere is a primary task of the facilitator.**
- **You have 10 minutes to complete Step 1 of the process. Please do not consult with one another at this stage.** [Allow 10 minutes, and then go to the next step.]

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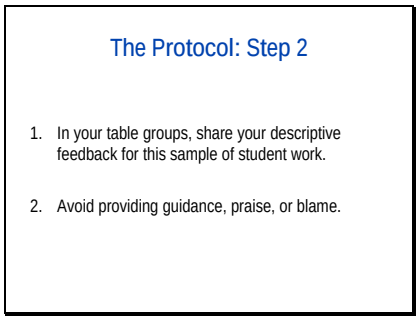

8. Present: **In step 2 of the protocol, we share the descriptive feedback that we have noted individually. You may add to your notes if you wish. Again, at this stage in the protocol, your discussion should center on what you "see" in the student work. Continue trying to remain neutral in your comments, avoid making any positive or negative judgments—praise or blame—about what you see, and avoid providing guidance or suggestions for what to do to improve the work. You have 10 minutes for Step 2.** [Allow 10 minutes, then go to the next step.]

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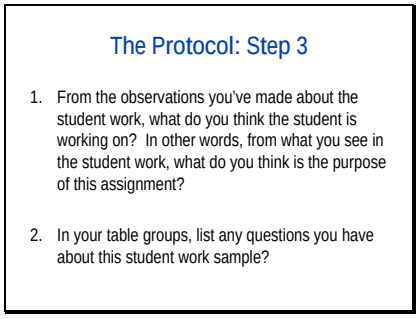

10. Present:

- **Step 3 of the protocol requires that you speculate about the purpose or focus of the assignment that generated this student work. From what you see, what might the learning goals for the assignment be?**
- **Work in your table groups to answer the questions in the first part of Step 3. You have 5 minutes for this, and then we'll address the second part of Step 3 all together.** [Allow 5 minutes.]

11. Ask:
- **What did your groups decide? What do you think the primary purpose of this student work is?** [Allow time to participants to present their ideas.]
- **If the student sample meets the learning goals or fulfills the primary purpose of the assignment, do you think a reader should be able to determine that purpose or the overall learning goals?** [Answers may vary, but in general, the primary purpose or overall learning goals will usually be discernable in effective student work.]

12. Ask: **What questions do you have about the student work?** [Again, answers may vary, but expect participants to ask about the standards being addressed, the task, etc.]

13. Say: **Let's move on to the next step of the protocol.**

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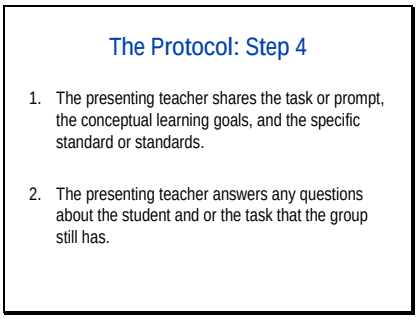

Sample Task

15. Present:

- **Since we don't have a presenting teacher in this guided practice, I'll assume that role and provide you with the task, the learning goals, and the standards for this student sample.**
- **Please note that I'm not providing a rubric for this student work at this time. This is intentional. While I am providing the criteria necessary for you to access whether the student meets the learning goals, during the actual learning process, I want to keep <u>feedback</u> separate from <u>evaluation</u>. In other words, at this point I don't want to confuse teacher commentary with scoring or grading the student.**
- **Likewise, I would provide the student with the criteria and the descriptors for what it will take to "meet the standard" on those criteria, but without any points or grade attached and without the other "does not meet" levels of performance. This promotes the idea that even though they may do so in different ways and at different rates, ALL students are expected to meet the learning goals.**
- **Also note that I may not provide the student with the criteria for the other levels of the rubric at this point in the learning process, but I would draft those criteria as a part of my unit planning; and when providing feedback to the student, I would use language specific to the other levels of the rubric to describe what the student has accomplished and what the student has not <u>yet</u> accomplished.**
- **For years we've been told to provide the grading rubrics when we make the assignment, so this is a big change in mindset for all of us. Current research, however, advocates separating feedback from evaluation for a variety of reasons.**
- **Allowing students to participate in the development of a rubric can be a valuable learning tool, and rubrics that grow out of classroom work often make better sense to student learners.**
- **Furthermore, by providing the students with just the criteria for <u>meeting</u> the standards, we preclude having students decide to "work for a B," or be "happy with a C."**
- **In addition, students can become anesthetized by rubrics to the point that they use the descriptors as a check list, whether or not they have met the criteria.**
- **Finally, the practice of initially providing students with just those criteria for meeting the standards supports the basic tenets of the Georgia Performance Standards—1) the standards are for all students; 2) students have the entire course to meet the standards; 3) it's all about growth; and 4) if a student does not meet the standard on the first or second try, we provide more feedback and more tries until s/he does.**

16. Say: **Please note that this student work sample was produced prior to the implementation of the GPS. For purposes of this guided practice, I've included the scenario that includes a teacher's assigned task, specific circumstances for the assignment, and GPS relevant standards. The purpose and learning goals that I've selected may be very different from those of the actual assignment. For your guided practice, assume that this was the assigned task.**

17. Say:
- **Notice the clearly stated purpose of this assignment. The learning goals derived from the standards are easily discernable.**
- **Can you see the language of the standards in this task? What particular words are taken directly from the standards?**
- **Do you have any questions about the task or the standards?** [Address any questions.]

18. Present: **Let's move on to the final step of the protocol.**

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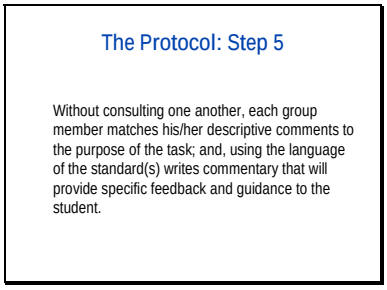

20. Present:
- **In the final step of the protocol, you have 10 minutes to write one or more "dollops" of commentary specific to the learning goals delineated in the task. These "dollops" of commentary must include descriptive feedback, but at this point in the protocol, you may also include some praise as well as guidance about what steps to take next in order to progress toward the learning goals of the assignment.**
- **Write each "dollop" on a separate yellow sticky note. This is an individual activity. Please do not consult one another during this step.**
- **Keep the performance goals for effective teacher commentary in mind as you write your commentary. I'll put that slide up again so you can refer to it.**
- **When you have finished, please attach your "dollops" of feedback to an appropriate place on the work sample poster closest to your table**. [Allow 10 minutes.]

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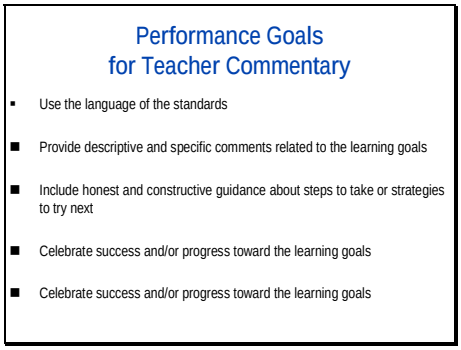

22. After 10 minutes, present:

- **For this guided practice to be effective, you need feedback. The process for giving and receiving feedback should mirror the process you followed for the "dollops" of commentary that you wrote for the student sample.**
- **The feedback you give and receive on the "dollops" of commentary you wrote should**
  - **Use the language of the performance goals for teacher commentary, and**
  - **Provide descriptive and specific comments related to the learning goals.**
- **You may also choose to**
  - **Include honest and constructive guidance about steps to take or strategies to try next, and**
  - **Celebrate success and/or progress toward the learning goals.**

23. Present:

- **Following a "gallery walk" format, move around the room, read the "dollops" of commentary posted on the walls, and provide feedback on these "dollops" of commentary.**
- **Use a different color of sticky note for your feedback and post your feedback adjacent to the relevant commentary.**
- **Begin with the poster to the right of the one on which you posted your own commentary, move in a clockwise direction, and end with the poster on which you posted your own commentary.**
- **You have 10-12 minutes to complete your feedback.** [Allow 10-12 minutes before proceeding.]

24. Present: **Let's debrief this process**.

- **What worked well?**
- **What changes might we make in the protocol to improve the process?**
- **Why is this process important for teachers to experience?**
- **How can this process improve student learning**?
- **When and where might you use teacher commentary in your own classrooms?**
- **How might you use this process to help students become better assessors of their own work and the work of their peers?**

25. Present: **We need to address a few final questions before we move on**.

- **How often should we provide feedback to our students?** [The correct response is constantly, on a daily basis.]
- **Will all the feedback be lengthy?** [The correct response is "no"; feedback is most effective in frequent "dollops."]
- **How often should we provide more detailed commentary?** [There's no single correct answer to this question; however, commentary should be a regular part of the learning process.]
- **How can this process improve student learning?**

Procedures for Students

1. Present:

- **Commentary is part of assessment *for* learning rather than of assessment *of* learning.**
- **Remember the basketball player and the musician. The goal of teacher commentary, both oral and written, is to provide the student with the knowledge and skills to self-assess and self-adjust.**
- **To maximize student learning, not only do we need to provide effective feedback and commentary, we also need to train students to provide effective feedback and commentary for their own work and the work of their peers. The player needs to evaluate her/his own game and make adjustments during a game. The musician needs to listen to his/her own playing in order to adjust during a concert.**

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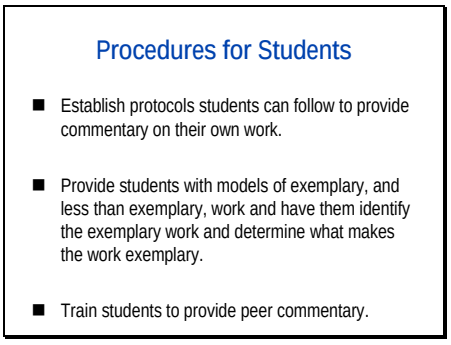


3. Present:

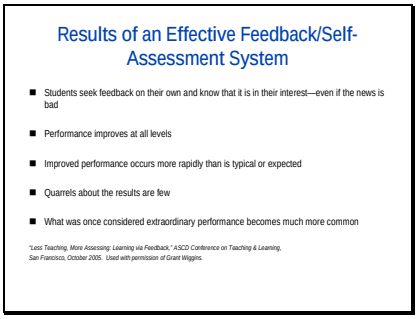
- **We can adapt or modify the protocol we just used in order to train students to provide feedback and commentary on their own work and the work of their peers.**
- **We can provide students with exemplary models of products or performances, along with products or performances that are not exemplary, and have the students work in groups to determine what makes an exemplary product or performance.**
- **What other strategies can you think of that will help students become adept at self-assessing their own work in order to adjust and improve that work?** [Allow time for participants to respond.]

4. Present:

- **When asked how anyone could possibly have the time to provide and solicit effective commentary, Grant Wiggins responded that "the rush to teach results in less learning." He added that we shouldn't confuse "coverage" with "everyone getting it," and that rather than reteaching whenever a student doesn't get it, we should be providing more feedback and commentary, more assessment *for* learning.**
- **Indirectly, Wiggins is affirming the importance of conceptual teaching and learning.**
- **Our ultimate goal should be our own planned obsolescence—to help our students become proficient enough in assessing and adjusting their own learning that they no longer need us!**

5. Present: **Providing feedback and commentary so that students learn to self-assess and self-adjust may be another change in mindset for many of us. As such, we may experience frustration as we venture beyond our comfort zones; but the results of an effective feedback/self-assessment system speak for themselves.**

Slide 6. Show slide.



7. Transition: **As I've said multiple times today, nothing worth doing can be done without practice, trial and error, and feedback. I asked you to bring multiple copies of a piece of student work with you today. We're going to practice writing commentary for those student work samples right now**.

Group Practice

1. Present:

- **You were asked to bring four copies of a student work sample.**
- **Please organize yourselves into groups of no fewer than three persons and no more than four persons. These groups may be smaller than those you usually work with in your building or your system, but this size allows us to accomplish more in a relatively short period of time.**
- **Still, you may not have enough time to write commentary for everyone's student work. Follow the protocol for one student sample at a time, and finish as many as you can in the time allotted.**
- **We'll follow the same protocol we used in the guided practice. A copy of this handout is on the following page.**

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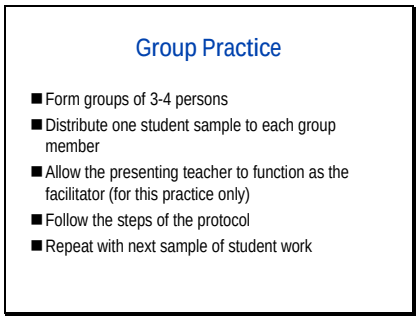


3. Say: **You have 1 hour for this group practice**.

Protocol for Collaborative Writing of Teacher Commentary

The Participants

The Facilitator—keeps the group on task; keeps the time; maintains a neutral stance
The Presenting Teacher—provides copies of the work; remains silent until Step IV
Other Group Members —follow steps as specified by facilitator; avoid making judgments

Step 1

- Read the sample of student work silently.
- As you read, write descriptive feedback.
- Remember, as a group member, you are not to provide guidance, praise, or blame.

Step 2

- In your group, share your descriptive feedback for this sample of student work.
- Avoid providing guidance, praise, or blame.

Step 3

- From the observations you've made about the student work, what do you think the student is working on? In other words, from what you see in the student work, what do you think is the purpose of this assignment?
- In your group, list any questions you have about this student work sample.

Step 4

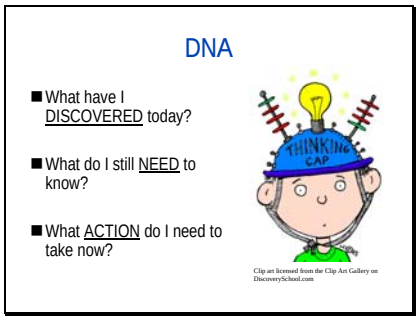
- The presenting teacher shares the task or prompt, the conceptual learning goals, and the specific standard or standards.
- The presenting teacher answers any questions about the student and/or the task that the group still has.

Step 5

- Without consulting one another, each group member matches his/her descriptive comments to the purpose of the task; and, using the language of the standard(s) writes commentary that will provide specific feedback and guidance to the student.

Debrief—Share your commentaries within your group and provide each other with descriptive feedback in terms of performance goals for effective commentary.

Slide 4. Show slide [after the hour for Group Practice].



5. Present:

- **To conclude the commentary section of today's workshop, let's think about what we've done.**
- **What have you discovered today about providing teacher commentary?** [Allow time for participants to share.]
- **What do you still need to know?** [Allow time for participants to share.]
- **What action do you need to take as a result of this training?** [Allow time for participants to share.]

6. Conclusion: **Providing effective teacher commentary and developing our students' skills in self-assessing and self-adjusting enhance student learning and, as a result, improve student achievement. As one of the four parts of the Georgia Performance Standards, teacher commentary must be a part of our implementation plans. Begin with what's doable, then practice and work collaboratively to develop consistency in your commentary.**

Effective Grading and Reporting of Student Learning

Overview	In this section participants will revisit the parachute packing school before taking a look at what the experts have to say about effective grading and reporting.
Objective	➢ Discuss the effectiveness of grading practices in standards-based classrooms.
Activities	➢ The Parachute Packing School ➢ Guidelines for Effective Grading ➢ More Effective Reporting
Materials	➢ Overhead projector or computer and LCD projector ➢ Transparencies or PowerPoint presentation

The Parachute Packing School

1. Present: **Most of you will remember our first visit to the parachute packing school on Day 3 of GPS training**.

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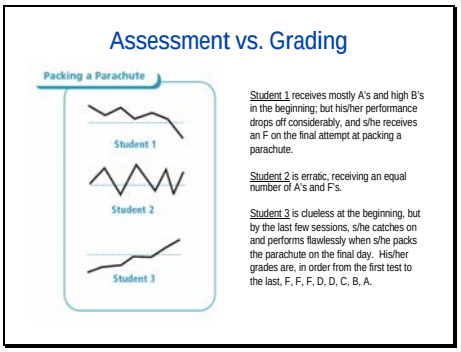

3. Present:

- **Three students enroll in an eight-day class in parachute packing. At the end of each day of instruction, each student packs a parachute and the teacher provides feedback and guidance to enhance student learning.**
- [Click to reveal 1st bullet.] **Student 1 receives mostly A's and high B's in the beginning; but his/her performance drops off considerably, and s/he receives an F on the final attempt at packing a parachute.**
- [Click to reveal 2nd bullet.] **Student 2 is erratic, receiving an equal number of A's and F's.**
- [Click to reveal 3rd bullet.] **Student 3 is clueless at the beginning, but by the last few sessions, s/he catches on and performs flawlessly when s/he packs the parachute on the final day. His/her grades are, in order from the first test to the last, F, F, F, D, C, B, A, A.**
- **Which student would you want to pack your parachute?**

- **But if we assume that the parachute packing school follows common grading practices, what grades would each of these students receive?** [Student 1 a B, Student 2 a C, Student 3 an F.]

- **Why is that?** [Because we average grades.]

- **The last student, who shows the greatest growth in skills and knowledge, finishing with a flawless performance, fails the course because all the grades are averaged.**

- **This illustrates a basic flaw in our current grading paradigm: if the GPS provide year-long learning goals and if we're concerned about student growth toward those goals, do we really want to fail our students who demonstrate mastery at the end of a course of instruction?**

4. Transition: **Picture those cans you can buy at joke stores. You take off the lid and all these worms pop out; and once they're out, you just never can get them to fit back into the can. Well, today we're going to take the lid off a can of worms called grading.**

Guidelines for Effective Grading

1. Present:

- **The Georgia Department of Education does not prescribe the grading practices for any school system; grading policies are determined at the local level. We would be remiss, however, if we omitted all discussion of grading in a standards-based classroom.**
- **Grading practices are firmly established in our schools. Letter grades, percentages, and quality points seem safe and familiar. Students, parents, administrators, and other stake-holders rely on these familiar marks to depict, clearly and concisely, a student's academic standing.**
- **The Belgian Nobel laureate Maurice Maeterlinck once said, "At every crossroads on the path that leads to the future, tradition has placed 10,000 men to guard the past." We certainly can't expect change in our long-standing grading practices to occur overnight; we can, however, begin a dialogue by examining what some of the experts in the field have to say about effective grading and reporting in a standards-based classroom**.

2. Present:

- **At the ASCD Summer Conference on Differentiated Instruction, Carol Ann Tomlinson and Ken O'Connor teamed to present "Principles of Effective Grading and Reporting**."
- **We're going to examine, briefly, some of these principles, as well as principles espoused by other experts such as Thomas Guskey and Rick Stiggins.**

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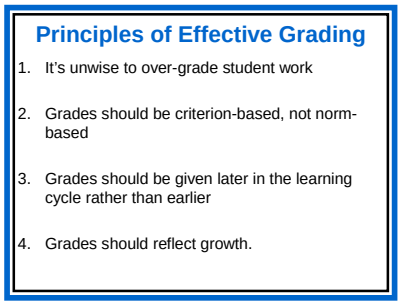

(Facilitator's Note: Each line will appear separately after a click. Each section will explain the line.)

4. Present: **First, it's unwise to over-grade student work. According to Tomlinson and O'Connor:**

- **It's best not to grade pre-assessments because students haven't had the opportunity to learn.**
- **Grade on-going assessments—drafts, works in progress, skill development—sparingly because students need the opportunity to practice, analyze work, and learn from their errors in a safe context.**
- **Use summative assessments—culminating performance tasks, final projects, and revised drafts— as primary data for grading.**
- **Record some work simply as done or not done.**

5. Ask: **Are these strategies we can begin to implement in our classrooms?**

Click slide

6. Click to reveal the next bullet, then present:

- **Norm-based grading systems that are based on a bell curve result in a negative learning environment with winners and losers. This has negative consequences for both struggling and advanced learners. Struggling learners may receive low grades when they are compared with stronger, more advanced learners; but, on the other hand, advanced learners may receive high grades for being the best in the class without being challenged, exerting effort, or showing growth.**
- **Instead, grades should be based on clearly specified criteria, criteria that are inherent in performance standards.**
- **Tomlinson and O'Connor argue that teachers should never grade on a curve. They cite Thomas Guskey, who states that "Grading on the curve makes learning a highly competitive activity in which students compete against one another for the few scarce rewards (high grades) distributed by the teacher. Under these conditions, students readily see that helping others become successful threatens their own chances for success. As a result, learning becomes a game of winners and losers; and because the number of rewards is kept arbitrarily small, most students are forced to be losers."** (In Thomas Guskey, ed., *Communicating Student Learning: The 1996 ASCD Yearbook*, ASCD, 1996, 18-19).
- **Can you see the worms beginning to explode out of the can?**

7. Click to reveal the next bullet, then Present:

Click slide

- **The most accurate depiction of students' learning is the most current information, so it makes sense to grade later in the learning cycle rather than earlier.**
- **The learning goals in the GPS are for all students. If a student does not reach a goal on the first or second try, assigning that student a failing grade and moving on is not the answer. Instead, we should provide more feedback and allow that student to try again**.

Click slide

8. Click to reveal the next bullet, then Present:
   - **Grading for growth is an essential principle in a standards-based classroom; but shifting from current practice to grading for growth, releases a whole lot of worms.**
   - **Worm #1, Are we grading for growth if we average grades?**
   - **Worm #2, What's the effect of the zero factor on grading for growth?**
   - **Worm #3, When we begin talking about grading for growth, how do we address issues of fairness?**
   - **Remember those 10,000 men guarding the past? While grading for growth is optimal, we can expect initial resistance from students, parents, or other stakeholders who are concerned about class rank, scholarships, or college admissions.**

9. Present: **As teachers, our input into the decision-making process will vary, but before we look at the final principle, let's take a few minutes in our table groups to explore ways we might begin to align our grading practices with standards-based teaching and learning**.

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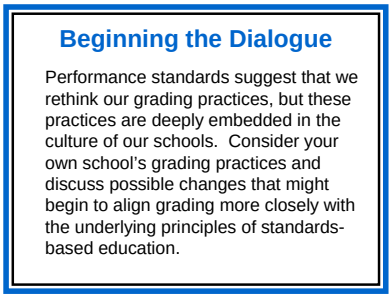
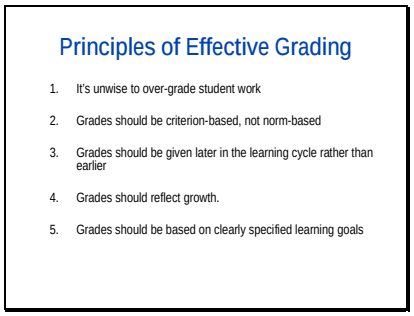


11. Say: **The first steps are often the most difficult. Focus on what's doable. We'll share ideas in 10 minutes**. [Allow 10 minutes, then ask participants to share some of their ideas.]

Slide 12. Show slide.



13. Present:

- **At first glance, the final principle doesn't appear to require much discussion because the nature of performance standards demands that we base grades on clearly specified learning goals; but our reporting of grades complicates the matter.**
- **Exactly what does a B or an 85 on a quarterly grade report tell us about what a student has learned or about what that student still needs to work on?**
- **In a science class, for example can we tell from this B or that 85 whether the student has mastered organizing scientific information using data tables, but may still have problems interpreting results? Can we tell whether the student understands the organization of tissues into organs and organs into systems?**
- **Our current reporting practices often make it difficult to get an adequate picture of student progress.**

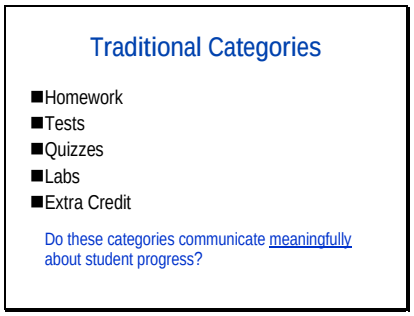
14. Transition: **Do you think there might be better ways of reporting grades?**

More Effective Reporting

15. Present: **In *Transforming Classroom Grading*, Bob Marzano suggests using a "topics-focused" grade book that separates assessments into categories of knowledge and skills. Report cards, then, can reflect the same categories**.

16. Present: **Tony Winger, an instructional coach at Littleton High School in Colorado, has worked with teachers to create a reporting system that provides a more complete and descriptive picture of student progress**.

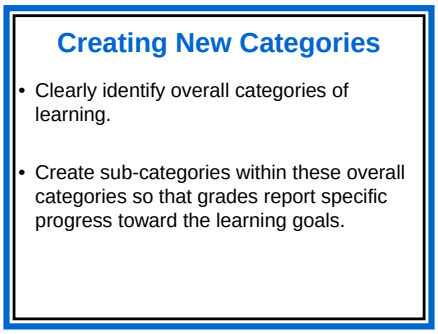
Slide 17. Show slide.



18. Present:

- **Winger began by looking at the more traditional categories we use when we record grades and asking whether these categories provide meaningful communication about a student's progress toward standards-based learning goals.**
- **He answered with a resounding** [Click to reveal graphic] **"NO"!**

Slide 19. Show slide.



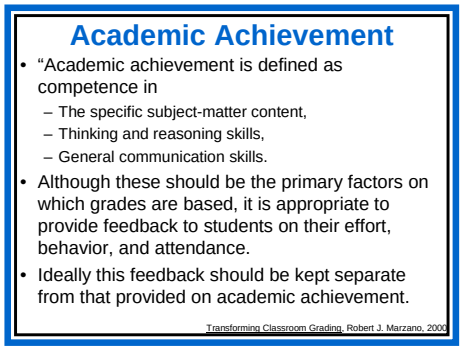
20. Present:

- **Winger then worked to determine a new way to categorize grade books and report cards.**

- [Click to reveal 1st bullet.] **First he asked teachers to identify the overall categories of learning indicated in the standards.** [Click to reveal 2nd bullet.] **Next he had teachers break these categories down into their component parts.**

- **In addition, Winger instructed teachers to separate the academic factors from the non-academic factors that often "fog" the picture we have of actual student learning. These non-academic factors might include such things as "class participation" and "responsibility for learning."**

Slide 21. **In <u>Transforming Classroom Grading</u> Robert Marzano writes about relevant grading policies for academic achievement.**



22. Present:
- **As Marzano notes in *Transforming Classroom Grading*, this new type of non-traditional grade book requires more pages because each student has a separate page.**
- **Report cards also have to be larger in order to include these descriptive categories.**
- **More information about non-traditional grade books is available in a number of resources, including Chapter 11 of Rick Stiggins' *Student-Involved Assessment FOR Learning*, Marzano's *Transforming Classroom Grading*, and Tony Winger's article, "Grading to Communicate," in the November issue of *Educational Leadership*.**
- **Many systems in Georgia are already developing new report card formats to reflect student progress toward the learning goals more clearly and effectively.**
- **Forsyth County, for example, has implemented standards-based report cards in Kindergarten through 2nd grade, with a 3rd grade pilot in five schools this year. You can see their answers to frequently asked questions, under the Teaching and Learning Department on their website at www.forsyth.k12.ga.us.**

23. Ask:
- **Are any of your school systems developing new report card formats?** [Allow participants to respond and describe what their systems are doing, if applicable.]

24. Ask: **How might more non-traditional reporting formats impact student achievement?**

25. Transition: **This is a great deal of information to assimilate in a short period of time. Remember, our goal today is to begin a dialogue. We've opened the can and let out a number of worms that will continue to slither around. As we implement the GPS in our classrooms, our schools, and our local systems, we'll be faced with a number of decisions regarding effective grading and reporting practices that can best reflect, clearly and accurately, student learning. The sooner we begin a dialogue about reporting in a standards-based classroom, the better. After all, the early bird does catch the worm.**

Where Do We Go From Here

Overview

Participants will discuss a survey they will use to convey information about Georgia Performance Standards implemented in Phase II. The workshop will wrap up with a slide show representing the importance of improving achievement for all students.

Objective

- Gather information and prepare for Standards Feedback Survey.

Activities

- Feedback on the GPS
- What It's All About

Materials

- Overhead projector or computer and LCD projector
- Transparencies or PowerPoint presentation
- Survey for Standards Feedback

Feedback on the GPS

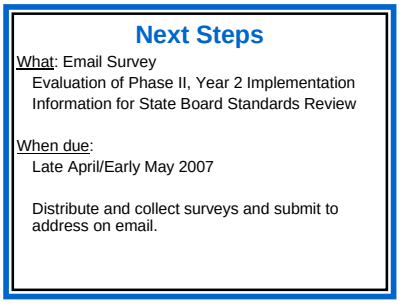
1. Present:

- **Last fall we asked you to begin keeping critical comments about particular standards (e.g., gaps that need filling, elements that are problematic, terms that need defining, etc.), as well as information about any tasks, strategies, assessments, etc., that worked especially well, suggestions for teachers/instructional leaders in Phase II who will be implementing the following year, and thoughts or ideas about the second year of your implementation; etc.**
- **The State Board of Education will be reviewing the GPS this spring, and any comments you share with us will provide information for this review.**

*[Local System Trainer's note: When redelivering Day 6, refer participants to the survey, set a date and procedures for participants to return the surveys to you, then skip to the next section, "**What It's All About**".]*

2. Show slide.

Slide



3. Present: **Please ask your colleagues to complete and return the survey to you. Compile the information. Directions on how to submit suggestions and concerns will be emailed to you.**

The Survey

The State Board of Education will be reviewing the GPS early next summer. We need your feedback on the GPS for this review and on the implementation of the GPS to use as we implement Phase II and Phase III. You may copy and paste the document from the CD, which will allow you to increase space for your responses as needed.

1. **List any terms or concepts in the GPS that you found to be ambiguous or confusing.**

2. **Identify and explain any gaps in the GPS within a specific grade or course. By gaps, we mean knowledge, skills, or concepts that were absent but that were needed.**

3. **Identify and explain any gaps in the GPS between grades or courses. Do not include gaps that might be present between QCC and GPS that will be eliminated when GPS are fully implemented.**

4. **Identify any parts of a standard and its elements that you would change in some way if you could; explain why you would make each change.**

5. **Describe the topics/components of the GPS training that worked the best in terms of helping you implement the GPS.**

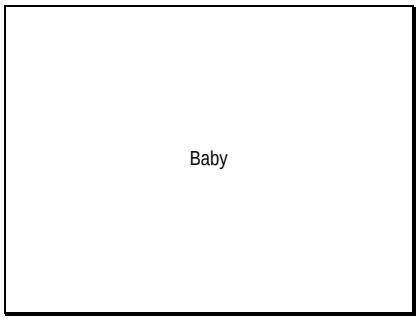
6. **Describe the topics/components of the GPS training that did not work in terms of helping you implement the GPS.**

What It's All About

1. Present:

- **Elephants have unusually long gestation periods . . . around 625 days or 1.7 years. If we consider the length of time from conception to birth, it's safe to say that the GPS has had an even longer period of gestation.**
- **But last August, our baby entered the world as we began Phase I of the GPS implementation**.

Slide 2. Show slide.

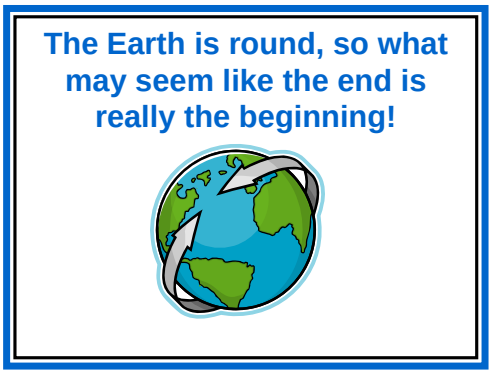


3. Present: **You've had the responsibility for the care and feeding of this "brainchild" for the past year or so.**

4. Click to reveal words on slide and Say: **We've come a long way with this baby, and we've experienced a variety of feelings and emotions: moments of frustration, "aha" moments, moments of satisfaction, and probably at least a few moments when each of us has wondered whether it's all worth it.**

5. **We're going to end today with a short slide show, a slide show that explains far better than words ever could, just why we all do what we do. This slide show concludes today's workshop, so before we begin, we'd like to say . . .**

Slide 6. Show slide.



7. Say: . . . **thanks for all you do.**

Appendix

Feedback on Commentary

Feedback should cause thinking and provide guidance on how to improve. Look at the sample comments below. Choose comments that are most likely to advance learning.
What characteristics do they share?

Sample Comments

1. "Steven, the start you have made is very pleasing and the detail in your answers is improving. Read your responses again and see if you think they are complete. In other words, is all of the relevant information there?"
2. "Louis, although you've used a green traffic light on everything—and I don't doubt your confidence with it – you need to include more scientific words and phrases in your answers."
3. "Look back at the way we completed a bar graph of temperatures yesterday and pinpoint the mistake you are making. Either try again or come and see me for help."
4. "Caroline, generally your answers show a good understanding of the topic of habitat. Start to add a few more of your own thoughts and ideas if you can."
5. "This is generally fine but you are mixing up the terms erosion, deposition, and weathering. Look at the glossary we made and use it to check through this piece again."
6. "Sam, you seem to know what a plant cell is and you can distinguish between this and an animal cell. Can you suggest why a plant cell is different from an animal cell? Could this be an advantage?
7. "Craig, a disappointing attempt. You have already shown me that you can do these calculations. Please go through and complete your corrections by next week. Can I be of any help?"
8. "Sunita, you have completed a lot of work and it is very neatly done. However your answers could be more sensitive."
9. "There are two key aspects that you need to work on. You must show all your work so that we both know you understand all the stages to get the answers. Also you must keep up with the work in class even if you have to finish it at home."
10. "Excellent revision for your test, Lisa, and it got you a good result. You are making mistakes with accurately labeling. Target: to explore and correct accurately labeling the diagrams."

Characteristics of a good comment:

Modified from 2006 NSTA session on "Assessment for learning: putting it into practice" by Dylan Wiliam, Educational Testing Service

What Is Exemplary Feedback?

1. Think back to your many prior experiences with learning via feedback, *both in and out of school*. What was the *best feedback situation you have ever encountered as a learner*? What features of the feedback—*not* any initial "teaching" or the content of the course or style or your interests—made the learning so **effective**? How did you receive and use the feedback and what made this approach so useful?

   Briefly describe the feedback system below:

In sharing your recollections and analyses with your colleagues, build **a list of generalizations that follow** from the accounts. What do the best feedback situations have in common? In other words, what must be built in "by design" for any learning experience to be maximally **effective** for students?

The best learning from feedback is characterized by . . .

"Less Teaching, More Assessing: Learning via Feedback," ASCD Conference on Teaching & Learning, San Francisco, October 2005. Used with permission of Grant Wiggins.

Frayer Model for Organizing Assessment Terms

Assessment Terminology

Use these words in the appropriate places.
Assessment <u>for</u> learning
Praise (or blame)
Feedback
Guidance
Teacher commentary
Student commentary
Evaluation
Grades

Definition	**Examples**
Assessment <u>For</u> Learning	
What it is	**What it isn't**

Assessment Terminology

assessment for learning: assessment to promote greater learning that not only guides instruction but also involves students in the process

praise (or blame): affirmation (or the opposite)

feedback: descriptive comments about what student is/is not doing

guidance: providing information about what to do next; steps or strategies to try in order to improve and progress toward learning goals

teacher commentary: oral or written comments made by the teacher that provide feedback to the student regarding his/her progress toward the specified learning goals; comments may include praise in addition to feedback and will often include guidance in addition to the feedback

student commentary: oral or written self-reflective, metacognitive comments made by the student that self-assess his or her progress toward the specified learning goals and that provide feedback to the teacher in terms of student understanding; as a result of effective self-assessment, students develop the skills necessary to self-adjust and become more independent learners

evaluation: the process of making judgments about the level of student understanding or performance

grades: numbers or letters used to translate the evaluative judgments for reporting purposes

Written Teacher Commentary, Examples in Folders

Some of these tasks and copies of student work were obtained from the National Association of Educational Progress (NAEP-- http://nces.ed.gov/nationsreportcard/) database. This national standardized test is given to randomly selected classes of fourth and eighth grade students in the United States. Some of these tasks come from Maine's Released Items Assessment from 2002.

Eighth Grade Tasks:

S8P4. Students will explore the wave nature of sound and electromagnetic radiation.
Lightning and thunder happen at the same time, but you see the lightning before you hear the thunder. Explain why this is so.

S8P2. Students will be familiar with the forms and transformations of energy.
Is a hamburger an example of stored energy? Explain why or why not.

S8P1. Students will examine the scientific view of the nature of matter.
Tom's younger brother is learning how to read a thermometer and asks, "Why does the red stuff in the thermometer go up when it gets hot outside?" What is a correct explanation that Tom can give his brother?

S8P1. Students will examine the scientific view of the nature of matter.
Maria has one glass of pure water and one glass of salt water, which look exactly alike. Explain what Maria could do, without tasting the water, to find out which glass contains the salt water.

S8P2. Students will be familiar with the forms and transformations of energy.
For each example of the sources of electrical energy listed below, describe an advantage and a disadvantage of relying on that energy source for a large part of our country's electrical energy.
Solar, Nuclear, Hydroelectric, Fossil Fuels

S8P4. Students will explore the wave nature of sound and electromagnetic radiation.
Gerald, standing at one end of a classroom, rings a bell. Lena, standing at the other end of the same room, hears essentially the same sound as Gerald.

a. What causes the sound made by the bell?
b. How does the sound travel across the room to Lena's ears?

S8P4. Students will explore the wave nature of sound and electromagnetic radiation.
While practicing for a play, a student standing on the stage of a large, empty auditorium shouts loudly and hears her voice echo throughout the room. Later, the same student is on the stage of the same auditorium, which is now full of quiet people. The student shouts again, just as loudly. This time however, she does not hear an echo. Explain why she hears an echo the first time and why she does not hear an echo the second time.

Written Teacher Commentary, Examples in Folders

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First Grade Task:

S1E2. Students will observe and record changes in water as it relates to weather.

Explain why the Earth never runs out of rain.

Second Grade Task:

S2L1. Students will investigate the life cycles of different living organisms.

Put the stages of a frog's life cycle in order.

Fourth Grade Task:

S4E2. Students will model the position and motion of the earth in the solar system and will explain the role of relative position and motion in determining sequence of the phases of the moon.

Find four ways the Earth is different from the Moon.

Fifth Grade Task:

S5E1. Students will identify surface features of the Earth caused by constructive and destructive processes.

Explain how new rocks form when a volcano erupts.

Questions to Ask When Examining Student Work

Describe

- What knowledge and skills are assessed?
- What kinds of thinking are required (for example, recall, interpretation, evaluation)?
- Are these the results I (we) expected? Why or why not?
- In what areas did the student(s) perform best?
- What weaknesses are evident?
- What misconceptions are revealed?
- Are there any surprises?
- What anomalies exist?
- Is there evidence of improvement or decline? If so, what caused the changes?

Evaluate

- By what criteria am I (are we) evaluating student work?
- Are these the most important criteria?
- How good is "good enough" (the performance standard)?

Interpret

- What does this work reveal about student learning and performance?
- What patterns are evident?
- What questions does this work raise?
- Is this work consistent with other achievement data?
- Are there different possible explanations for these results?

Identify Improvement Actions

- What teacher actions are needed to improve learning and performance?
- What student actions are needed to improve learning and performance?
- What systemic actions at the school/district level are needed to improve learning and performance (such as changes in curriculum, schedule, grouping)?

From Wiggins and McTighe, Schooling by Design: Mission, Action, and Achievement, 2007. ASCD, Alexandria, VA.

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Suggested Reading: "Working Inside the Black Box"

Please note: PDK does not hold the copyright to the Black and Wiliam, et al., article. Reprinted below is the original article, published in the UK in 2002. Certain word choice, punctuation, and spelling adhere to British rules rather than American rules. Copyright information appears at the end of the article.

Department of Education & Professional Studies **King's College, London**

Working inside the black box
Assessment for learning in the classroom

Paul Black, Christine Harrison, Clare Lee, Bethan Marshall & Dylan Wiliam

Assessment for learning is any assessment for which the first priority in its design and practice is to serve the purpose of promoting students' learning. It thus differs from assessment designed primarily to serve the purposes of accountability, or of ranking, or of certifying competence. An assessment activity can help learning if it provides information to be used as feedback, by teachers, and by their students, in assessing themselves and each other, to modify the teaching and learning activities in which they are engaged. Such assessment becomes 'formative assessment' when the evidence is actually used to adapt the teaching work to meet learning needs.

The starting point: from *Inside the Black Box*

In 1998 we published this article's predecessor *Inside the Black Box* (Black *&* Wiliam, 1998b). Since then we have learnt a great deal about the practical steps needed to meet the purpose expressed in the article's subtitle: *Raising standards through classroom assessment*.

The first part of *Inside the Black Box* set out to answer three questions. For the first of these: *Is there evidence that improving formative assessment raises standards?* The answer was an unequivocal yes, a conclusion based on a review, by Black *&* Wiliam (1998a), of evidence published in over 250 articles by researchers from several countries. There have been few initiatives in education with such a strong body of evidence to support a claim to raise standards.

This positive answer led naturally to the second question: *Is there evidence that there is room for improvement?* Here again, the published evidence gave a clear and positive answer, presenting a detailed picture which identified three main problems. The first was that the assessment methods that teachers use are not effective in promoting good learning. The second was that grading practices tend to emphasize competition rather than personal improvement. The third problem was that assessment feedback often has a negative impact, particularly on students with low attainments who are led to believe that they lack 'ability' and are not able to learn.

However, for the third question the answer was less clear: *Is there evidence of how to improve formative assessment?* Whilst the evidence provided many ideas for improvement, it lacked the detail that would enable teachers to implement them in classroom practice. It was argued that what teachers needed was: *A variety of living examples of implementation, by teachers with whom they can identify and from whom they can both derive conviction and confidence that they can do better, and concrete examples of what doing better means in practice.* Since that article was published, we have planned and implemented a program in which a group of teachers has been supported in developing innovative practices in their classrooms, drawing on the ideas in the article. Whilst this has amply confirmed the original proposals, it has also added a wealth of new findings which are both practical and authentic. Thus, we are now confident that we can set out sound advice for the improvement of classroom assessment.

In the sections that follow, we first describe this work, and the evidence that it did raise standards. We then set out the main findings, starting with those relevant to classroom work, and then discuss the more fundamental issues involved. A final section sets out recommendations for taking these ideas forward in schools.

The journey: learning with teachers

The KMOFAP project

To carry out the exploratory work that was called for, we needed to collaborate with a group of teachers willing to take on the risks and extra work involved, and to secure support from their schools and their LEAs. The funding for the project was provided through the generosity of the Nuffield Foundation. We were fortunate to find, in the Medway and Oxfordshire LEAs, advisory staff who understood the issues and who were willing to work with us. Each authority selected three secondary schools, spanning a range of catchment backgrounds; they included one boys' and one girls' school, the other four being mixed. Each school selected two science and two mathematics teachers. We discussed the plans with the head of each school, and then called the first meeting of the 24 teachers – so in January 1999 the King's-Medway-Oxfordshire Formative Assessment Project (KMOFAP) was born.

The ways in which the partners involved worked together will be written up elsewhere. For the present purpose, it is the outcomes that are important. The findings presented here are based on the observations of classrooms by the King's team, records of meetings of the whole group, interviews with and writing by the teachers, and a few discussions with student groups. Whilst we worked initially in science and mathematics, the work has been extended more recently to involve teachers of English in the same schools.

Spreading the word

Throughout the development of the project, members of the King's team have responded to numerous invitations to talk to other groups of teachers and advisers; over three years they have made over 100 such contributions. These have ranged across all subjects, and across both primary and secondary phases. In addition, there has been sustained work with some primary schools. All of this makes us confident that our general findings will be of value to all, although some important details may vary between different age groups and different subjects. A USA version of *Inside the*

Black Box has been published (Black *&* Wiliam 1998b) and a group at Stanford University obtained funding from their National Science Foundation to set up a similar development project, in collaboration with King's, in Californian schools. We acknowledge that extension of our work has been made possible by this funding.

The learning gains

From our review of the international research literature, we were convinced that enhanced formative assessment would produce gains in student achievement, even when measured in such narrow terms as national curriculum tests and examinations. At the outset we were clear that it was important to have some indication of the kinds of gains that could be achieved in real classrooms, and over an extended period of time. Since each teacher in the project was free to decide the class with which they would work on these ideas, we discussed what data were available within the school, and set up a 'mini-experiment' for each teacher.

Each decided what was to be the 'output' measure for their class. For year 11 classes this was generally the GCSE grades achieved, and for year 9 classes it was generally the score or level achieved in the national curriculum tests. For other classes, a variety of measures were used, including end-of-module-test scores and scores on the school's end-of-year examinations.

For each project class, the teacher identified a control class. In some cases this was a parallel class taught by the same teacher in previous years (and in one case in the same year). In other cases, we used a parallel class taught by a different teacher and, failing that, a nonparallel class taught by the same or a different teacher. Where the project and the control classes were not strictly parallel, we controlled for possible differences in ability by the use of 'input' measures, such as scores on the NFER's Cognitive Abilities Test, or school test scores from the previous year.

This meant that the size of the improvement was measured differently for each teacher. For example, a year 11 project class might outperform the control class by half a GCSE grade, but another teacher's year 8 project class might outscore its control class by 7% on an end-of-year exam. To enable us to aggregate the results across the teachers, we adopted a common 'measuring stick' called the standardized effect size. This was calculated by taking the difference between the scores of the experimental and control groups, and then dividing this by the standard deviation, which is a measure of the spread in the scores of the groups.

For the 19 teachers for whom we had reliable data, the average effect size was around 0.3. This is equivalent to just under half a level at key stage 2, just over half a level at key stage 3, and just over half a grade at GCSE. Such improvements, produced across a school, would raise a school in the lower quartile of the national performance tables to well above average. It is clear, therefore, that, far from having to choose between teaching well and getting good national curriculum test and examination results, teachers can actually improve their students' results by working with the ideas we present here.

The findings: how change can happen

Questioning

Many teachers do not plan and conduct classroom dialogue in ways that might help students to learn. Research has shown that many leave less than one second after asking a question before, if no answer is forthcoming, asking another question, or answering their own question (Rowe, 1974). A consequence of such short 'wait time' is that the only questions that 'work' are those that can be answered quickly without thought, i.e. questions that call for memorized facts. In consequence, the dialogue is at a superficial level. As one teacher put it:

I'd become dissatisfied with the closed Q & A style that my unthinking teaching had fallen into, and I would frequently be lazy in my acceptance of right answers and sometimes even tacit complicity with a class to make sure none of us had to work too hard…They and I knew that if the Q & A wasn't going smoothly, I'd change the question, answer it myself or only seek answers from the 'brighter students'. There must have been times (still are?) where an outside observer would see my lessons as a small discussion group surrounded by many sleepy onlookers.

James, Two Bishops School

The key to changing such a situation is to allow longer wait time. Many teachers find it hard to do this – they have to break their established habits and, as they change, the expectations of their students are challenged:

Increasing waiting time after asking questions proved difficult to start with – due to my habitual desire to 'add' something almost immediately after asking the original question. The pause after asking the question was sometimes 'painful'. It felt unnatural to have such a seemingly 'dead' period, but I persevered. Given more thinking time students seemed to realize that a more thoughtful answer was required. Now, after many months of changing my style of questioning I have noticed that most students will give an answer and an explanation (where necessary) without additional prompting.

Derek, Century Island School

One teacher summarized the overall effects of her efforts to improve the use of question and answer dialogue in the classroom as follows:

<u>Questioning</u>

• My whole teaching style has become more interactive. Instead of showing how to find solutions, a question is asked and students given time to explore answers together. My year 8 target class is now well-used to this way of working. I find myself using this method more and more with other groups.

<u>No hands</u>

• Unless specifically asked, students know not to put their hands up if they know the answer to a question. All students are expected to be able to answer at any time, even if it is an 'I don't know'.

<u>Supportive climate</u>

• Students are comfortable with giving a wrong answer. They know that these can be as useful as correct ones. They are happy for other students to help explore their wrong answers further.

Nancy, Riverside School

Increasing the wait time can lead to more students being involved in question and answer discussions, and to an increase in the length of their replies. One particular way to increase participation is to ask students to brainstorm ideas, perhaps in pairs, for two to three minutes prior to the teacher asking for contributions. Overall, a consequence of such changes has been that teachers learnt more about the preknowledge of their students, and about any gaps and misconceptions in that knowledge, so that their next moves could address the learners' real needs.

To exploit such changes it is necessary to move away from the routine of limited factual questions and to refocus attention on the quality and the different functions of classroom questions. An example is the use of a 'big question': an open question, or a problem-solving task, which can set the scene for a lesson by evoking a broad-ranging discussion, or by prompting small group discussions, so involving many students. However, if this is to be productive, both the responses that the task might evoke and the ways of following up these responses have to be anticipated. Collaboration between teachers to exchange ideas and experiences about questions is very valuable. The questions themselves then become a more significant part of teaching, with attention focused on how they can be used to explore and then develop students' learning.

I chose a year 8 middle band group and really started to think about the type of questions I was asking – were they just instant one-word answers, what were they testing – knowledge or understanding, was I giving the class enough time to answer the question, was I quickly accepting the correct answer, was I asking the girl to explain her answer, how was I dealing with the wrong answer? When I really stopped to think, I realized that I could make a very large difference to the girls' learning by using all their answers to govern the pace and content of the lesson.

Gwen, Waterford School

Effective questioning is also an important aspect of the impromptu interventions that teachers make once the students are engaged in an activity. These often include simple questions such as 'Why do you think that?' or 'How might you express that?', or – in the 'devil's advocate' style – 'You could argue that…'. This type of questioning can become part of the interactive dynamic of the classroom and can provide an invaluable opportunity to extend students' thinking through immediate feedback on their work.

Overall, the main suggestions for action that have emerged from the teachers' experience are:

• More effort has to be spent in framing questions that are worth asking, i.e. questions which explore issues that are critical to the development of students' understanding.

• Wait time has to be increased to several seconds in order to give students time to think and everyone should be expected to have an answer and to contribute to the discussion. Then all answers, right or wrong, can be used to develop understanding. The aim is thoughtful improvement rather than getting it right first time.

• Follow-up activities have to be rich, in that they provide opportunities to ensure that meaningful interventions that extend the students' understanding can take place.

Put simply, the only point of asking questions is to raise issues about which the teacher needs information or about which the students need to think. Where such changes have been made, experience has shown that students become more active as participants, and come to realize that learning may depend less on their capacity to spot the right answer and more on their readiness to

express and discuss their own understanding. The teachers also shift in their role, from presenters of content to leaders of an exploration and development of ideas in which all students are involved.

Feedback through grading

It is the nature, rather than the amount, that is critical when giving students feedback on both oral and written work. Research experiments have established that, whilst students' learning can be advanced by feedback through comments, the giving of grades has a negative effect in that students ignore comments when grades are also given (Butler, 1988). These results often surprise teachers, but those who have abandoned the giving of grades find that their experience confirms the findings: students do engage more productively in improving their work.

Many teachers will be concerned about the effect of returning students' work with comments but no grades. There may be conflicts with school policy:

My marking has developed from comments with targets and grades, which is the school policy, to comments and targets only. Students do work on targets and corrections more productively if no grades are given. Clare [King's researcher] observed on several occasions how little time students spend reading my comments if there were grades given as well. My routine is now, in my target class, to: i) not give grades only comments, ii) give comments that highlight what has been done well and what needs further work, iii) give the minimum follow-up work expected to be completed next time I mark the books.

Nancy, Riverside School

Initial fears about how students might react turned out to be unjustified, and neither parents nor OFSTED inspectors have reacted adversely. Indeed, the provision of comments to students helps parents to focus on the learning issues rather than on trying to interpret a score or grade. We now believe that the effort that many teachers devote to grading homework may be misdirected. A numerical grade does not tell students how to improve their work, so an opportunity to enhance their learning has been lost. A policy of improving their comments requires more work initially, as teachers have to attend to the quality of the comments that they write on students' work. Collaboration between teachers to share examples of effective comments can be very helpful, and experience will lead to more efficient fluency. There is, however, more involved because comments only become useful feedback if students use them to guide further work, so new procedures are needed:

After the first INSET I was keen to try out a different way of marking books to give students a more constructive feedback. I was keen to try and have a more easy method of monitoring students' response to my comments without having to trawl through their books each time to find out if they'd addressed my comments. I implemented a comment sheet at the back of my year 8 class's books. It is A4 in size and the lefthand side is for my comments and the right-hand side is for the students to demonstrate by a reference to the page in their books where I can find the evidence to say whether they have done the work…The comments have become more meaningful as the time has gone on and the books still only take me one hour to mark.

Sian, Cornbury Estate School

We have met a variety of ways of accommodating the new emphasis on comments. Some teachers cease to assign scores or grades at all, some enter scores in record books but do not write them in the students' books, whilst others give scores or grades only after a student has responded to their comments. Some teachers spend more time on certain pieces of work to ensure that they give good feedback and, to make time for this, either do not mark some pieces, or mark only a third of their students' books each week, or involve the students in checking straightforward tasks.

A particularly valuable method is to devote some lesson time to rewriting selected pieces of work, so that emphasis can be put on feedback for improvement within a supportive environment. This can change students' expectations about the purposes of classwork and homework.

As they tried to create useful comments, many of the teachers realized that they needed to reassess the work that they had asked students to undertake. They found that some tasks were useful in revealing students' understandings and misunderstandings, but that others focused mainly on conveying information. So some activities were eliminated, others modified, and new and better tasks actively sought.

Overall, the main ideas for improvement can be summarized as follows:

• Written tasks, alongside oral questioning, should encourage students to develop and show understanding of the key features of what they have learnt.

• Comments should identify what has been done well and what still needs improvement, and should give guidance on how to make that improvement.

• Opportunities for students to follow up comments should be planned as part of the overall learning process.

The central point here is that, to be effective, feedback should cause thinking to take place. Implementation of such reforms can change the attitudes of both teachers and students to written work: the assessment of students' work will be seen less as a competitive and summative judgement and more as a distinctive step in the process of learning.

Peer-assessment and self-assessment

Students can only achieve a learning goal if they understand that goal and can assess what they need to do to reach it. So self-assessment is essential to learning (Sadler, 1989). Many who have tried to develop self-assessment skills have found that the first and most difficult task is to get students to think of their work in terms of a set of goals. Insofar as they do, so they begin to develop an overview of that work so that it becomes possible for them to manage and control it for themselves: in other words, they are developing the capacity to work at a meta-cognitive level.

In practice, peer-assessment turns out to be an important complement to self-assessment. Peer-assessment is uniquely valuable because students may accept, from one another, criticisms of their work, which they would not take seriously if made by their teacher. Peer work is also valuable because the interchange will be in a language that students themselves would naturally use, and because students learn by taking the roles of teachers and examiners of others (Sadler, 1998):

As well as assessing and marking (through discussion and clear guidance) their own work they also assess and mark the work of others. This they do in a very mature and sensible way and this has proved to be a very worthwhile experiment. The students know that homework will be checked by themselves or another girl in the class at the start of the next lesson. This has lead to a well-established routine and only on extremely rare occasions have students failed to complete the work

set. They take pride in clear and well-presented work that one of their peers may be asked to mark. Any disagreement about the answer is thoroughly and openly discussed until agreement is reached.

Alice, Waterford School

The last sentence of this quotation brings out an important point – when students do not understand an explanation, they are likely to interrupt a fellow student when they would not interrupt a teacher. In addition to this advantage, peer assessment is also valuable in placing the work in the hands of the students. The teacher can be free to observe and reflect on what is happening and to frame helpful interventions:

We regularly do peer marking – I find this very helpful indeed. A lot of misconceptions come to the fore and we then discuss these as we are going over the homework. I then go over the peer marking and talk to students individually as I go round the room.

Rose, Brownfields School

However, self-assessment will only happen if teachers help students, particularly the low-achievers, to develop the skill. This takes time and practice:

The kids are not skilled in what I am trying to get them to do. I think the process is more effective long term. If you invest time in it, it will pay off big dividends, this process of getting the students to be more independent in the way that they learn and taking the responsibility themselves.

Tom, Riverside School

One simple and effective idea is for students to use 'traffic light' icons, labelling their work green, amber or red according to whether they think they have good, partial or little understanding. These labels serve as a simple means of communication of students' self-assessments. Students may then be asked to justify their judgements in a peer group, so linking peer- and self-assessment. This linkage can help in the development of the skills and the detachment needed for effective self-assessment.

Another approach is to ask students first to 'traffic-light' a piece of work, and then to indicate by hands-up whether they put green, amber or red; the teacher can then pair up the greens and ambers to deal with problems between them, whilst the red students can be helped as a group to deal with their deeper problems. For such peer-group work to succeed, many students will need guidance about how to behave in groups, e.g. in listening to one another and taking turns.

In some subjects, making students familiar with grade or level descriptions is also very helpful. Students can be given simplified versions of examination board criteria, or encouraged to rewrite them or to create their own. Again peer- and self-assessment are intimately linked. Observations made in several English classrooms saw children engaged in peer assessment apply lessons learned during this activity to their own work. A frequently heard comment was 'I didn't do that either' or 'I need to do that too'.

Students' reflection about their understanding can also be used to inform future teaching – their feedback can indicate where more time needs to be spent on some topics and where it can be saved on others. A useful guide is to ask students to 'traffic-light' an end-of-topic test in the first lesson on the topic: the amber and red items can be used to readjust priorities within the teaching

plan. Our experience of work on this theme leads to the following recommendations for improving classroom practice:

• The criteria for evaluating any learning achievements must be made transparent to students to enable them to have a clear overview both of the aims of their work and of what it means to complete it successfully. Such criteria may well be abstract – concrete examples should be used in modeling exercises to develop understanding.

• Students should be taught the habits and skills of collaboration in peer assessment, both because these are of intrinsic value and because peer assessment can help develop the objectivity required for effective self-assessment.

• Students should be encouraged to keep in mind the aims of their work and to assess their own progress to meet these aims as they proceed. They will then be able to guide their own work, and so become independent learners.

The main point here is that peer- and self-assessment make unique contributions to the development of students' learning – they secure aims that cannot be achieved in any other way.

The formative use of summative tests

The practices of self- and peer assessment can be applied to help students prepare for examinations, for example in tackling the following problem:

They did not mention any of the reviewing strategies we had discussed in class. When questioned more closely it was clear that many spent their time using very passive revision techniques. They would read over their work doing very little in the way of active revision or reviewing of their work. They were not transferring the active learning strategies we were using in class to work they did at home.

Tom, Riverside School

To change this situation, students can be asked to 'traffic-light' a list of key words or topics on which the test will be set. The point of this is to stimulate the students to reflect on where they feel their learning is secure, which they mark in green, and where they need to concentrate their efforts, in amber and red. These traffic lights then form the basis of a revision plan. Students can be asked to identify questions on past examination papers that test their red areas and then work with books and in peer groups to ensure that they can successfully answer those questions.

The aftermath of tests can also be an occasion for formative work. Peer marking of test papers can be helpful, as with normal written work, and is particularly useful if students are required first to formulate a scoring rubric, an exercise which focuses attention on criteria of quality relevant to their productions. After peer marking, teachers can reserve their time for discussion of the questions that give particular difficulty; peer tutoring can tackle those problems encountered by only a minority.

A further idea has been introduced by research studies (Foos et al., 1994; King, 1992) which have shown that students trained to prepare for examinations by generating and then answering their own questions out-performed comparable groups who prepared in conventional ways. Preparation of test questions calls for, and so develops, an overview of the topic:

Students have had to think about what makes a good question for a test and in doing so need to have a clear understanding of the subject material. As a development of this, the best questions have been used for class tests. In this way the students can see that their work is valued and I can make an assessment of the progress made in these areas. When going over the test good use can be made of group work and discussions between students concentrating on specific areas of concern.

Angela, Cornbury Estate School

These developments challenge common expectations. Some have argued that formative and summative assessments are so different in their purpose that they have to be kept apart, and such arguments are strengthened by experience of the harmful influence that narrow 'high-stakes' summative tests can have on teaching. However, it is unrealistic to expect teachers and students to practice such separation, so the challenge is to achieve a more positive relationship between the two. This section has set out ways in which this can be done: they can all be used for tests where teachers have control over the setting and the marking, but their application may be more limited for tests where the teacher has little or no control.

Overall, the main possibilities for improving classroom practice are as follows:

• Students should be engaged in a reflective review of the work they have done to enable them to plan their revision effectively.

• Students should be encouraged to set questions and mark answers to help them, both to understand the assessment process and to focus further efforts for improvement.

• Students should be encouraged through peer- and self-assessment to apply criteria to help them understand how their work might be improved.

The main overall message is that summative tests should be, and should be seen to be, a positive part of the learning process. By active involvement in the test process, students can see that they can be beneficiaries, rather than victims, of testing because tests can help them improve their learning.

Reflections: some underlying issues

Learning theory

One of the most surprising things that happened during the early inset sessions was that the participating teachers asked us to run a session on the psychology of learning. In retrospect, perhaps, we should not have been so surprised. We had, after all, stressed that feedback functioned formatively only if the information fed back to the learner was used by the learner in improving performance. But whilst one can work out after the event whether or not any feedback has had the desired effect, what the teachers needed was to be able to give their students feedback that they knew in advance was going to be useful. To do that they needed to build up models of how students learn.

So the teachers came to take greater care in selecting tasks, questions and other prompts to ensure that the responses made by students actually helped the teaching process. Such responses can 'put on the table' the ideas that students bring to a learning task. The key to effective learning is to then find ways to help students restructure their knowledge to build in new and more powerful ideas.

In the KMOFAP classrooms, as the teachers came to listen more attentively to the students' responses, they began to appreciate more fully that learning was not a process of passive reception of knowledge, but one in which the learners were active in creating their own understandings. Put simply, it became clear that, no matter what the pressure to achieve good test and examination scores, learning cannot be done for the student; it has to be done by the student.

Students came to understand what counted as good work through exemplification. Sometimes this was done through focused whole-class discussion around a particular example; at others it was achieved through students using criteria to assess the work of their peers.

Engaging in peer- and self-assessment is much more than just checking for errors or weaknesses. It involves making explicit what is normally implicit, and thus requires the students to be active in their learning. As one student wrote:

After a student marking my investigation, I can now acknowledge my mistakes easier. I hope that it is not just me who learnt from the investigation but the student who marked it did also. Next time I will have to make my explanations clearer, as they said 'It is hard to understand' … I will now explain my equation again so it is clear.

The students also became much more aware of when they were learning, and when they were not. One class, which was subsequently taught by a teacher not emphasising assessment for learning, surprised that teacher by complaining: 'Look, we've told you we don't understand this. Why are you going on to the next topic?' While students in tune with their learning can create difficulties for teachers, we believe that these are problems we should want to have.

Subject differences

From hearing about research, and from discussing ideas with other colleagues, the teachers built up a repertoire of generic skills. They planned their questions, allowed appropriate wait time, and gave feedback that was designed to cause thinking. They ensured that students were given time in lessons to evaluate their own work, and that of others.

However, after a while it became clear that these generic strategies could go only so far. Choosing a good question requires a detailed knowledge of the subject, but this is not the knowledge that is gained from advanced study in a subject. A high level of subject qualification is less important than a thorough understanding of the fundamental principles of the subject, an understanding of the kinds of difficulties that students might have, and the creativity to think up questions that can stimulate productive thinking. Furthermore, such pedagogical content knowledge is essential in interpreting responses – what students say will contain clues to aspects of their thinking that may require attention, but picking up on these clues requires a thorough knowledge of common difficulties in learning the subject. Thus, although the general principles of formative assessment apply across all subjects, the ways in which they manifest themselves in different subjects may differ. We have encountered such differences in making comparisons between teachers of mathematics, science and English.

In mathematics, students have to learn to use valid procedures and to understand the concepts that underpin these. Difficulties can arise when they learn strategies that only apply in limited contexts but do not realize that these are inadequate elsewhere. Questioning must then be designed to bring out these strategies for discussion and to explore problems in the understanding

of the concepts so that the need to change can be grasped. In such learning, there is usually a well-defined correct outcome. In more open exercises, as in investigations of the application of mathematical thinking to everyday problems, there may be a variety of good solutions; then an understanding of the criteria of quality is harder to achieve and may require an iteration in discussion between examples and the abstract criteria which they exemplify.

In science, the situation is very similar. There are many features of the natural world for which science provides a 'correct' model or explanation. However, outside school, many students acquire different ideas. Examples are the belief that, whilst animals are living, trees and flowers are not because they don't move, or the belief that astronauts seem almost weightless on the moon because there is no air there. Many of these 'alternative conceptions' can be anticipated for they have been well documented. What has also been documented is that mere presentation of the 'correct' view has been shown to be ineffective. The task in such cases is to open up discussion of such ideas, and then provide feedback that challenges them by introducing new pieces of evidence and argument that support the scientific model.

There are other aspects for which an acceptable outcome is less well-defined. As in mathematics, open-ended investigations call for different approaches to formative assessment. Even more open are issues about social or ethical implications of scientific achievements, for there is no 'answer', and so the work has to be 'open' in a more fundamental way. Then the priority in giving feedback is to challenge students to tease out their assumptions and to help them to be critical about the quality of any arguments.

In English, peer- and self- assessment have a long history. It follows from the nature of the subject and the open outcome of many of the tasks characteristically set, that they are central to one of its overall aims – which is to enhance the critical judgement of the students.

A second important function of peer and self-assessment was brought out by Sadler (1989), who argued that criteria alone are unhelpful in judging the quality of a piece of work or in guiding progression because there will always be too many variables. The key lies in knowing how to interpret the criteria in any particular case – which involves 'guild knowledge'. Teachers acquire this through assessing students' work and it is this process that allows them to differentiate between grades and gain a sense of how progression is achieved. Peer- and self-assessment provide similar opportunities for students to be apprenticed into the guild, provided the criteria of quality are clearly understood.

In English, as with science and mathematics, attention needs to be given to the central activities. Those that are the most successful are those rich tasks that provide students with an opportunity either to extend their understanding of a concept within the text or to 'scaffold' their ideas before writing. Characteristically, these include small group and pair work, the reflections often being fed back into a whole class discussion. Again, this type of work is not uncommon in English, the skill being to make the task sufficiently structured to scaffold learning but not so tightly defined as to limit thinking. Such activities not only provide students with a chance to develop their understanding through talk, they also provide the teacher with the opportunity to give feedback during the course of a lesson through further questioning and guidance. The better the quality of the task, the better the quality of the interventions.

Differences between learning tasks can be understood in terms of a spectrum. At one end are 'closed' tasks with a single well-defined outcome, at the other are 'open' tasks with a wide range of acceptable outcomes. Tasks in English are mainly at the open end, e.g. the writing of a poem, but there are closed components, e.g., for grammatical or genre conventions. Tasks in (say)

mathematics are more often closed, but applications of mathematics to everyday problems can require open-ended evaluations. Thus, in varying measure, the guidance needed for these two types of learning work will be needed in all subjects.

Despite these differences, experience has shown that the generic skills that have been developed do apply across subjects. One of the project's science teachers gave a talk to the whole staff about his experiences, and subsequently found that other teachers:

. . .do more of it than us as part of their normal teaching. Art and drama teachers do it all the time, so do technology teachers (something to do with open-ended activities, long project times, and perhaps a less cramped curriculum?). But an English teacher came up to me today and said: 'Yesterday afternoon was fantastic. I tried it today with my year 8s, and it works. No hands up, and giving them time to think. I had fantastic responses from kids who have barely spoken in class all year. They all wanted to say something and the quality of answers was brilliant. This is the first time for ages that I've learnt something new that's going to make a real difference to my teaching'.

James, Two Bishops School

Motivation and self-esteem

Learning is not just a cognitive exercise: it involves the whole person. The need to motivate students is evident, but it is often assumed that this is best done by offering such extrinsic rewards as merits, grades, gold stars and prizes. There is ample evidence that challenges this assumption.

Students will only invest effort in a task if they believe that they can achieve something. If a learning exercise is seen as a competition, then everyone is aware that there will be losers as well as winners: those who have a track record as losers will see little point in trying. Thus, the problem is to motivate everyone, even though some are bound to achieve less than others. In tackling this problem, the type of feedback given is very important. Many research studies support this assertion. Examples are:

• Students told that feedback '…will help you to learn' learn more than those told that 'how you do tells us how smart you are and what grades you'll get'; the difference is greatest for low achievers (Newman *&* Schwager, 1995).

• Those given feedback as marks are likely to see it as a way of comparing themselves with others (egoinvolvement), those given only comments see it as helping them to improve (task-involvement): the latter group out-performs the former (Butler,1987).

• In a competitive system, low achievers attribute their performance to lack of 'ability', high achievers to their effort; in a task-oriented system, all attribute to effort, and learning is improved, particularly amongst low achievers (Craven et al. 1991).

• A comprehensive review of research studies of feedback showed that feedback improved performance in 60% of them. In the cases where it was not helpful, the feedback turned out to be merely a judgement or grading with no indication of how to improve (Kluger *&* DeNisi, 1996).

In general, feedback given as rewards or grades enhances ego — rather than task — involvement. It can focus students' attention on their 'ability' rather than on the importance of effort, damaging the self-esteem of low achievers and leading to problems of 'learned helplessness' (Dweck 1986). Feedback that focuses on what needs to be done can encourage all to believe that they can improve. Such feedback can enhance learning, both directly through the effort that can ensue, and indirectly by supporting the motivation to invest such effort.

The big idea: focus on learning

Our experiences in the project all point to the need to rethink a teacher's core aim – enhancing students' learning. To achieve this calls for a willingness to rethink the planning of lessons, together with a readiness to change the parts both teacher and students play in supporting the learning process.

A learning environment: principles and plans

Improvement in classroom learning requires careful forethought:

Actually thinking about teaching has meant that I have been able to come up with ideas and strategies to cope with whatever has arisen, and has contributed greatly to my professional development. I now think more about the content of the lesson. The influence has shifted from 'What am I going to teach and what are the students going to do?' towards 'How am I going to teach this and what are the students going to learn?'

Susan, Waterford School

One purpose of a teacher's forethought is to plan to improve teaching actions. So, for example, the planning of questions and activities has to be in terms of their learning function:

I certainly did not spend sufficient time developing questions prior to commencing my formative training...Not until you analyze your own questioning do you realize how poor it can be. I found myself using questions to fill time and asking questions which required little thought from the students. When talking to students, particularly those who are experiencing difficulties, it is important to ask questions which get them thinking about the topic and will allow them to make the next step in the learning process.

Derek, Century Island

Of equal importance is care for the quality of the responses that teachers make, whether in dialogue or in feedback on written assignments. Effective feedback should make more explicit to students what is involved in a high-quality piece of work and what steps they need to take to improve. At the same time it can enhance students' skills and strategies for effective learning.

There is also a deeper issue here. A learning environment has to be 'engineered' to involve students more actively in the tasks. The emphasis has to be on the students doing the thinking and making that thinking public. As one teacher said:

There was a definite transition at some point, from focusing on what I was putting into the process, to what the students were contributing. It became obvious that one way to make a significant sustainable change was to get the students doing more of the thinking. I then began to search for ways to make the learning process more transparent to the students. Indeed, I now spend my time looking for ways to get students to take responsibility for their learning and at the same time making the learning more collaborative.

Tom, Riverside School

Collaboration between teachers and students and between students themselves can produce a supportive environment in which students can explore their ideas, hear alternative ideas in the language of their peers, and evaluate them:

One technique has been to put the students into small groups and give each student a small part of the unit to explain to their colleagues. They are given a few minutes' preparation time, a few hints, and use of their exercise books. Then each student explains their chosen subject to the rest of their group. Students are quick to point out such things as, 'I thought that the examples you chose were very good as they were not ones in our books. I don't think I would have thought of those.' Or, 'I expected you to mention particles more when you were explaining the difference between liquids and gases.' These sessions have proven invaluable, not only to me, in being able to discover the level of understanding of some students, but to the students too.

Philip, Century Island

An additional advantage of such an environment is that a teacher can work intensively with one group, challenging their ideas and assumptions, knowing that the rest of the class are working hard.

So the main actions to be taken to engineer an effective learning environment are:

• Plan classroom activities to give students the opportunity to express their thinking so that feedback can help develop it.
• Formulate feedback so that it guides improvement in learning.
• Use activities that demand collaboration so that everyone is included and challenged, and train students to listen to and respect one another's ideas.
• Be sure that students are active participants in the lessons. Emphasize that learning may depend less on their capacity to spot the right answer and more on their readiness to express and discuss their own understanding.

A learning environment: roles and expectations

It is one thing to plan new types of classroom activity; quite another to put them into practice in ways that are faithful to the aims that they were developed to serve. Here there are no recipes for all to follow in a uniform way. *Inside the Black Box* was clear in stating that the effective development of formative assessment would 'only come about if each teacher finds his or her own ways of incorporating the lessons and ideas that are set out above into her or his own patterns of classroom work'.

A second principle is that the learning environment envisaged requires a classroom culture that may well be unfamiliar and disconcerting for both teachers and students. The effect of the innovations implemented by our teachers was to change the 'classroom contract' between the teacher and the student – the rules, usually implicit, that govern the behaviors that are expected and seen as legitimate by teachers and students.

For the students, they have to change from behaving as passive recipients of the knowledge offered by the teacher to becoming active learners who could take responsibility for, and manage, their own learning.

For the teachers, courage is necessary. One of the striking features of the project was the way in which, in the early stages, many spoke about the new approach as 'scary', because they felt that they were going to lose control of their classes. Towards the end of the project, they described this same process not as a loss of control, but one of sharing responsibility for the class's learning with the class – exactly the same process, but viewed from two very different perspectives. In one perspective, the teachers and students are in a delivery-recipient relationship, in the other they are partners in pursuit of a shared goal:

What formative assessment has done for me is made me focus less on myself but more on the children. I have had the confidence to empower the students to take it forward.

Robert, Two Bishops School

What has been happening here is that everybody's expectations, i.e. what teachers and students think that being a teacher or being a student requires you to do, have been altered. Whilst it can seem daunting to undertake such changes, they do not have to happen suddenly. Changes with the KMOFAP teachers came slowly and steadily, as experience developed and confidence grew in the use of the various strategies for enriching feedback and interaction. For example, many started by using questions to encourage thinking, then improved their oral and written feedback so that it took thinking forward, and went on to develop peer- and self-assessment.

To summarize, expectations and classroom culture can be changed by:

• Changing the 'classroom contract' so that all expect that teacher and students work together for the same end, the improvement of everyone's learning.
• Empowering students to become active learners, taking responsibility for their own learning.
• Incorporating the changes in the teacher's role one step at a time, as they seem appropriate.
• Sustained attention to, and reflection on, assessment for learning issues.

What next – what you can do

As an individual teacher

To incorporate some of the ideas about formative assessment into your practice, the first step is to reflect on what you do at the moment. Discussion with colleagues, and observation of each other's lessons, can help such reflection.

A next step must be to try out changes. Wholesale change can be too risky and demanding – so in any case it is best to think of one thing you feel confident to try, be it traffic lights, peer-assessment, improved questioning, whatever, and try it, at secondary with just one group, at primary with just one curriculum area. We found that, as teachers explored the power of allowing students, in just one area or group, to tell them what they know and what they need to know, and as they gained confidence in doing this, they decided that they must extend assessment for learning to the whole of their teaching.

Progress can then be made by taking on further strategies. Where several colleagues are collaborating, they can each start with different strategies, and then share findings. This should lead to explicit formulation of an 'action plan'. A plan would comprise a set of strategies to be used, in combination, preferably starting with a class at the beginning of the school year so that there can be time to accustom both teacher and students to a new way of working. The experience of a

year's sustained work, with only a few classes, preferably alongside similar innovations by colleagues, can provide a firm basis for subsequent adoption of new practices on a wider scale.

Working with colleagues

Collaboration with a group that is trying out similar innovations is almost essential. Mutual observation and the sharing of ideas and experiences about the progress of action plans can give help and support both with the specific techniques and at a strategic level. Support for colleagues is particularly important in overcoming those initial uncertainties when engaging in the risky business of changing the culture and expectations in the classroom.

Across the whole school

For any innovations, support from school management is essential. One way to support is to help teacher peer-groups find time to meet on a regular basis so that they can work together effectively. Opportunities should also be found for them to report to faculty and staff meetings.

The work of any group experimenting with innovations is an investment for the whole school, so that support should not be treated as indulgence for idiosyncratic practices. Indeed, such work should be integrated into a school improvement plan, so that evaluation of findings, and dissemination of fruitful practices, should be anticipated as a future development that should follow, and be based on, evaluation of a group's experiences.

At the same time, there may be a need to review current school policies. Policies can actually, or by interpretation, constrain use of formative assessment. A notable example would be a policy that, by demanding that a mark or grade be given on every piece of homework, prevents the serious use of comments. Five of the schools in the KMOFAP project have, following the experience of their science and mathematics teachers, modified their policies to allow comment-only marking; for two of these the modification was that no marks or grades be given on homework throughout the school. Another example would be that a target-setting system that requires very frequent review will inhibit any change in learning methods, which might slow down immediate 'progress' in order to produce medium to long-term gains in learning skills. Those engaged in innovations may need formal exemption from such policies.

It follows that support, evaluation and subsequent dissemination of innovation in assessment for learning will only be planned in a coherent way if responsibility for strategic oversight of the development is assigned to a member of the school leadership team. Our experience supports the view that to realize the promise of formative assessment by leaving a few keen individuals to get on with it would be unfair to them, whilst to do it by a policy requiring all staff immediately to change their personal roles and styles in their classrooms would be absurd.

What is needed is a plan, extending over at least three years, in which a few small groups are supported for a two-year exploration, and they then form a basis of experience and expertise for disseminating within the school and supporting their colleagues in making similar explorations for themselves.

Further resources

Only a few references to the literature are given here. Further information about publications and other resources can be obtained on the King's College London website in the research pages of the King's Department of Education & Professional Studies. Some of the publications can be downloaded from this site. The address is: http://www.kcl.ac.uk/depsta/education These pages include references to other useful websites.

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CURRICULUM TOPIC STUDY SOURCE MATERIALS

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