ADVANCING FORMATIVE ASSESSMENT

IN EVERY CLASSROOM

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Formative Assessment

Formative assessment is an **active and intentional learning process** that partners the **teacher and the students** to **continuously and systematically gather evidence of learning** with the express goal of improving student achievement.

Moss & Brookhart, 2009, p. 6

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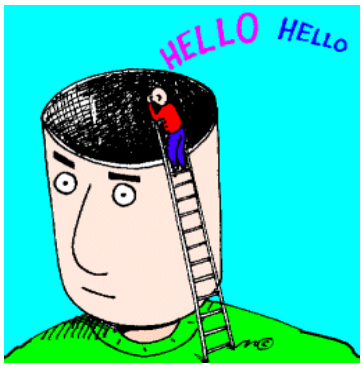

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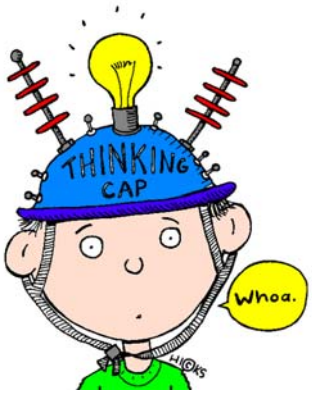

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Formative Assessment

Sadler's paradigm

- Appraise work against criteria
- Decide where improvement is needed
- Take action to improve

Sometimes written

- Where am I going?
- How close am I now?
- What do I need to do to improve?

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Teachers who are

Expert in Formative Assessment	Not expert in Formative Assessment
• Collect evidence of student thinking (quality of thinking) • Interpret student responses in terms of what students were thinking • Consider what feedback or immediate next step in instruction will address the specific needs	• Collect evidence of student performance (quantity of thinking) • Evaluate the correctness of responses • Re-teach topics based on percent correct

[Minstrell, Anderson, & Li (2009); Hattie (2009); Hattie & Timperley (2007); Kroog, Ruiz-Primo, & Sands (2014)]

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Six Strategies

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Focus Activity – With a Partner

Name one of the six formative assessment strategies that you have tried.

Describe either (a) how that assessment strategy affected your further instruction or (b) a question you had about further instruction after using the strategy.

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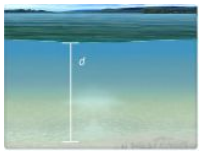
If formative assessment strategies don't inform further instruction (and students' further work), the issue is usually one of depth.



Surface application of strategies (e.g. using exit tickets) without deep mindset change has been called the "letter" but not the "spirit" of FA (Marshall & Drummond, 2006).

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Research Support

Increased achievement and increase in student self-assessment capabilities result when students understand the criteria for good work.

- Primary projects (Higgins, Harris & Kuehn, 1994)
- Elementary and middle school writing (Andrade, Du, & Wang, 2008; Andrade, Du, & Mycek, 2010; Coe et al., 2011)
- Middle school mathematics (Ross, Hoagaboam-Gray, & Rolheiser, 2002)
- Middle school special education (Lee & Lee, 2009)
- Secondary school social studies (Panadero, Tapia, & Huertas, 2012; Ross & Starling, 2008)

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Learning Target Theory of Action

The most effective teaching and the most meaningful student learning happen when teachers design the right learning target for today's lesson and use it along with their students to aim for and assess understanding (Moss & Brookhart, 2012, p. 2)

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Learning Target?

View the video

- Shows the first few minutes of an 8th grade mathematics lesson
- Whole lesson lasted 50 minutes
- This was the first in a series of 12 lessons on exponents.

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Compare IO and LT

- **Standard** - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. (CCSS Mathematics Standard 8.EE.1)
- **Instructional Objective** – TSWBAT solve problems using the rules for multiplying exponents.
- **Learning Target** - I can show why you add exponents to simplify expressions like $2^2 \times 2^3 = 2^5$.

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Example

View the video

- Shows a middle lesson on a 5th grade unit about close reading of informational text

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Compare IO and LT

- **Standard** - Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. (CCSS Reading Informational Text Standard 5.2)
- **Instructional Objective** – TSWBAT identify main idea in grade-level informational text.
- **Learning Target** - I can get the gist and determine the main idea in a newspaper article about Seneca people.

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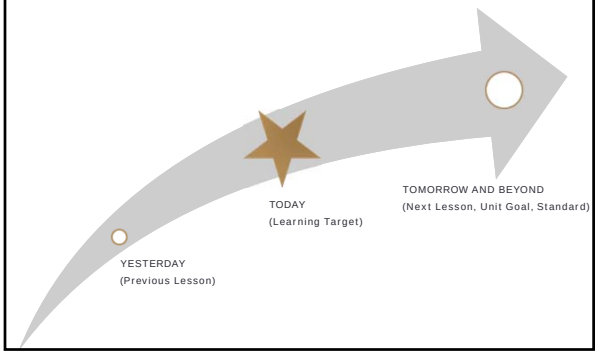
Potential Learning Trajectory (Why "daily" targets in every class?)



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Distinguish between

- What students DO during a lesson

- What students LEARN from a lesson

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Critique These Learning Targets

Use the 5 characteristics as criteria:

A LEARNING TARGET

1. Describes what students will learn in today's lesson
2. In language students can understand
3. From the point of view of a student who is learning it for the first time
4. Connected to a performance of understanding
5. Provides students things to look for to assess their understanding as they are learning and working

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1. I can complete a sequence chart for the story we read.
2. I can explain how Colonial discontent with government reached the stage of full-scale revolution.
3. I can develop a formula for the sum of the interior angles of any convex polygon.

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What about inquiry learning?

- Example from (intended) exponents lesson:
  - I can discover a formula for multiplying exponents.
- Example from a science lab:
  - I can explain how water gets from soil to the leaves of a plant.
- In general, inquiry learning is usually question-driven. Use the question to formulate the learning target.

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A strong performance of understanding makes the learning target visible and translates it into action for the students.

It **shows**, **develops**, and **gives evidence** of essential knowledge and skills.

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Counterexample

I can identify character attributes from reading a piece of text.

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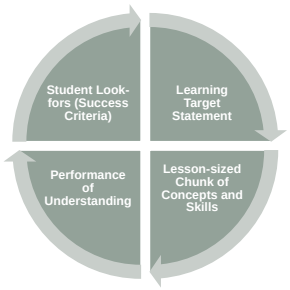
Success Criteria Complete the Learning Target



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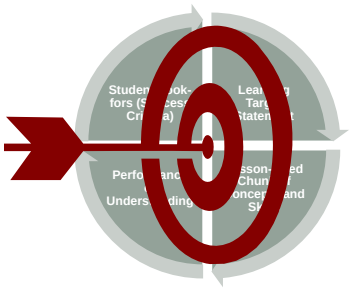
The Whole Thing is the Learning Target



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How does a Learning Target "Live" in a Lesson?

- Share the target verbally
- Students put the learning target into their own words or explain it to a friend
- Students use an organizing visual—a picture, chart, video, smart board image, or handout that unpacks an important concept
- Students and teacher refer to the learning target throughout the lesson in ways that help the students self-assess
- Students analyze and discuss examples of strong and weak work
- Students discuss the connection of today's lesson to what they learned previously and where they are headed in this lesson group

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Example

- **LTS** Today we are learning that an effective paragraph has an opening, uses transition words that build from one part of the paragraph to the other, and leads to the end (conclusion).
- **POU** Students will compare two paragraphs, one with open/transitions/close and one without. How are they different? Which is better and why?
- **L-Fs** Can I locate the transition words? Can I explain whether they were used appropriately? Can I identify the opening and closing and explain whether each is effective or not?

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Practice – Which is which?

- Students complete a problem set and explain their work. Then they compare their answers with a partner.
- Did I move the addition/subtraction first? Did I move the multiplication/division next? Did I move the number with the variable? Did I put my solution back into the original equation to check it?
- I can solve a two-step equation (e.g., $2x + 3 = 7$) using inverse operations.

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Practice – Which is which?

- I can watch what a character says, looks like, and feels in the beginning & end of a story to see if the character changed.
- Are the character traits I identify the important ones for the story? Can I tell when a character began to change? Can I explain why the event helped the character to change? Does the explanation make sense?
- Use a graphic organizer to identify character traits at the beginning & end of the story.

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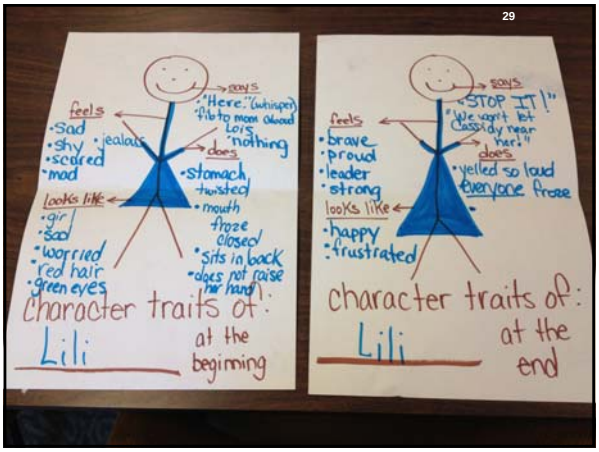

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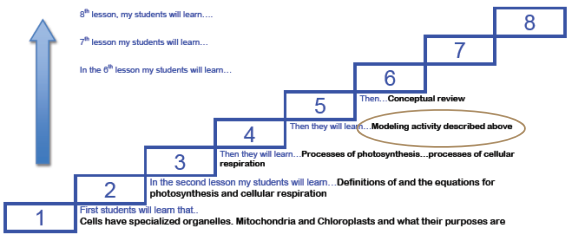
Example



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Example

Today we are learning that

- "What goes in, must come out" (Atoms that are reactant molecules in a chemical reaction must also be present in the product molecules of that reaction)
- "What comes out of one, goes into the other!" (The products of photosynthesis are needed as reactants in cellular respiration and the products of cellular respiration are needed as reactants for photosynthesis)

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Which of these is the performance of understanding?

1. Review purposes of photosynthesis and cellular respiration (on board).
2. Review chemical equations for each.
3. Carry out a modeling activity where students build molecular models for the reactants for each equation and demonstrate how they become the products. The activity has stages with checks at the end of each one.
4. At the end of the activity, students answer written questions.

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Success Criteria

- Students "look-fors"
- Sharable in several ways
  - I can statements
  - Rubrics
  - Checklists
  - Guiding questions
  - By analyzing exemplars

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Success Criteria

View the video

- Shows a 2nd grade teacher setting up students for success in a lesson about using powerful words in writing.
- What do you notice about this teacher's use of success criteria?

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Success Criteria Should Help Students Interpret Their Learning

Example

- LT -- I can do word problems requiring 2-digit addition.
- Look-fors:
  - I can say WHAT I did and WHY I did it.
  - I can explain each step of my work, in order.
  - I use math vocabulary words and strategy names.
  - I use clear language that others can understand.

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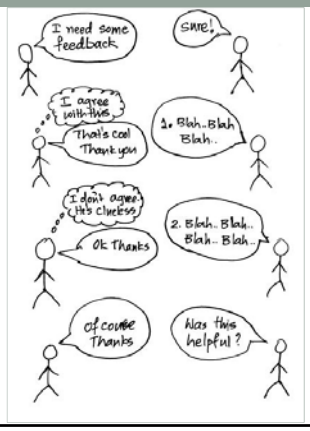

What kind of feedback do you prefer to receive?

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Feedback that Feeds Forward

Describe the work's strengths and make one suggestion for a next step.

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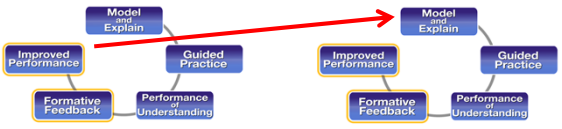
Feedback Feeds Forward

- Where am I going? (learning target)
- How am I doing? (descriptive feedback)
- How can I close the gap? (suggestion for next steps)



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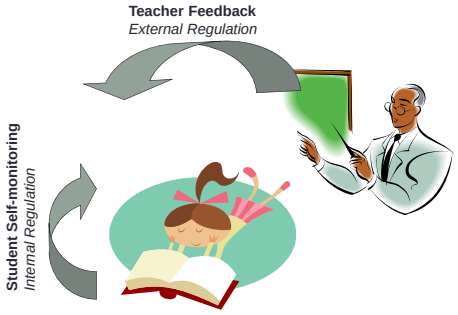

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Feedback that Feeds Forward

- Describes the work's strengths first.
- Makes at least one suggestion for a next step.
- Uses different amounts of scaffolding for different students' needs
  - **Remind** students of the learning target
  - Ask detailed, focused questions/suggestions (**scaffold**)
  - Provide **examples** of how to do it

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Three views of feedback

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Characteristics of Effective Feedback

- Is it descriptive?
- Is it timely?
- Does it contain the right amount of information?
- Does it compare the work to criteria?
- Does it focus on the work?
- Does it focus on the process?
- Is it positive?
- Is it clear?
- Is it specific (but not too specific)?
- Does its tone imply the student is an active learner?

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What is "descriptive"?

- Good job!
- That's a great answer.
- You really get this, don't you?

- You have a lot of details about Washington's military career. Can you write a little more about his political career?
- Find a missing comma in this line.
- What happens to the water after it reaches the pond?

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What is "descriptive"?

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- Find a missing comma in this line.
- What happens to the water after it reaches the pond?

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What is “timely”?

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How much is the “right amount” of information?

- At least one strength and one suggestion for improvement
- More, depending on the content, the student’s needs, and the particular next step

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What does it mean to focus

- On the work?
- On the process?

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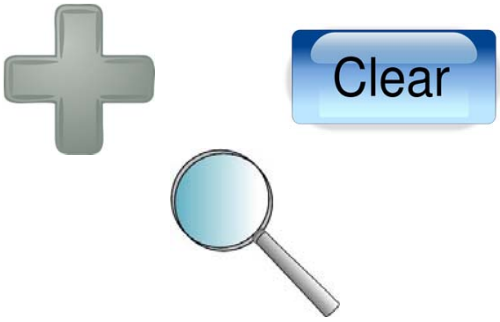
Positive, clear, and specific



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Maintain a learning tone

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Maintain a learning tone

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Dear Librarian, what book?
I want you to by this book again because it is a very funny book and it has mystereys in it, That's why I want you to buy it. Add more.
Sincerely,

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I want you to by this book again because it is a very funny book and it has mystereys in it, That's why I want you to buy it.

These are two good reasons. Can you add the name of the book and explain why these reasons are important? For example, "I feel ____ when I read funny stories" or "Mysteries are great because ____."

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Characteristics of Effective Feedback

- What did the student learn from the feedback?
- What did the teacher learn from the feedback?

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Feedback Example

View the video

Compare & contrast the two examples

What the teacher learned	What the student learned
High school	example
Elementary	example

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One other aspect of feedback is **critical**

Let's discover it with a content-free demo…

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Applause Rubric

	A	B	C	D/F
Volume	So loud I can't hear myself think	Loud enough that I can't hear myself speak	Loud-ish in some parts of the room but quiet in others	So quiet I can hear the toilet flush in the ladies room
Tempo	Rapid: Hands are hurriedly smacked together	Fast: Hands are quickly brought together	Leisurely: Hands are hit together at an unhurried pace	Slow: Fingers are slowly tapped together
Dynamics	Erupts suddenly, builds to a deafening crescendo that is sustained for a second or more, then fades slowly and reluctantly. May involve cheering, etc.	Builds up for a second, peaks, then fades	No change in dynamics: Half-hearted throughout	Begins with a silent pause, pitter-pats for a second, then fizzles

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Characteristics of Effective Feedback

- What next step(s) should the teacher and student take to use this feedback for learning?

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5th Grade Oral Feedback Example Work on One Assignment

View the video

Analyze the feedback

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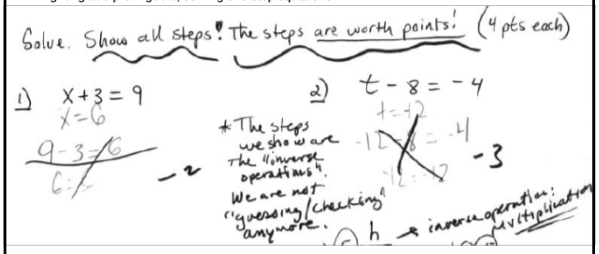
Written Feedback Example

Eighth grade pre-Algebra, solving one-step equations.



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Therefore…

For feedback to ***feed forward***

- Students AND teachers need to use assessment information
- The information should be about UNDERSTANDING more than correctness
- Plan further instruction that gives students an opportunity to use the feedback RIGHT AWAY

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How do goals help you in your own life?

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Student Goal-Setting

A goal is something specific that the student is trying to learn.

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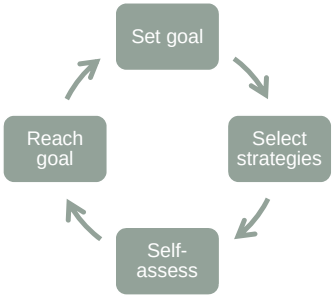
Goal-setting is a cognitive process that is part of student self-regulation



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Setting a Goal "Just Right"

TOO HARD OR TOO EASY

Students give up or do not try. They use inappropriate levels of effort

TOO VAGUE

Students lose their focus and expend their energy in less productive directions.

SETTING A GOAL

JUST RIGHT DIFFICULTY

Increased Effort and Persistence. *Students work harder and stay engaged.*

JUST RIGHT SPECIFICITY

Increased Intention and Attention. *Students work smarter and with greater focus.*

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Student Goal-Setting

Common misconceptions

- A "goal" is a general personal wish *("When I grow up I'll be a professional baseball player.")*
- "Goal-setting" is an occasional event. ("*I will work harder during the next nine-weeks*.")
- Goal-setting is a "study skill" and is not part of teaching content.

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Student Goal-Setting

Specific strategies

- Give effective feedback (which helps students judge their current level of performance)
- Model goal-setting, using goal-directed language
- Provide goal-setting guides

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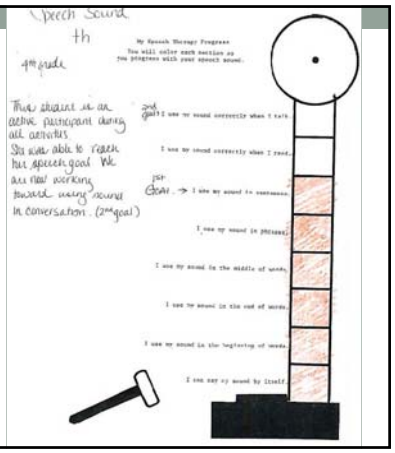
Goal-directed Language

- "What are you trying to learn?" *not* "What are you doing?"
- "What resources do you need to work toward your goal?" *not* "What did you find in the library?"
- "What were you thinking as a writer when you described the noise?" *not* "Why did you write that?"

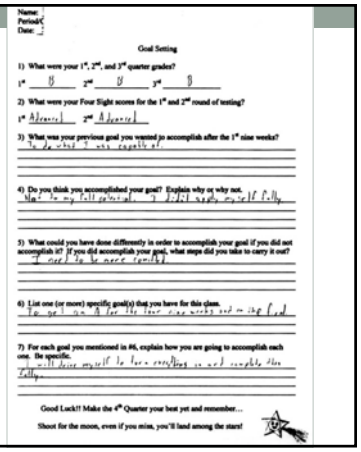
Example

Grade 4 Speech Therapy



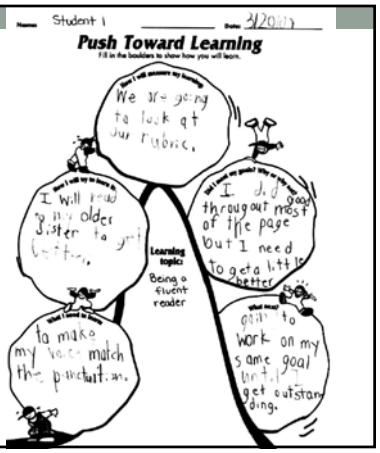
Counter-Example

High School Mathematics



Example

Grade 2 Reading – used with Oral Reading Rubric (next slide)



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Name: Student 1 Date: 3/25/09

Oral Reading Rubric

	Outstanding	Satisfactory	Needs Improvement
Expression	Very expressive throughout the entire selection	Expression throughout most of the selection	Very little to no expression when reading
Phrasing	Meaningful phrasing throughout the selection	Some phrasing; pays attention to punctuation	Mostly a word-by-word reader
Pace (Speed)	Reads at a steady, smooth pace	Pace is slightly fast or slow	Pauses frequently to sound out individual words
Clarity	Loud, clear voice that is easily understood throughout the entire selection	Most words in the selection are clear and can be understood	Reads with a low tone or mumbled voice that is hard to understand
Accuracy	Missed 0-2 words	Missed 3-6 words	Missed 7 or more words

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Student Self-Assessment

Students review their own work in light of criteria and decide on a next step.

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Student Self-Assessment

Specific strategies

- Use self-assessment for learning goals students already know something about
- Teach self-assessment skills
- Rubrics and highlighters
- Indicator systems
- Before and after tests
- Self-assessment of effort

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Student Self-Assessment

- Use self-assessment for learning goals students already know something about

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Student Self-Assessment

- Teach self-assessment skills
  - Students develop their own criteria or rubrics or are given criteria or rubrics by the teacher.
  - Students use criteria or rubrics to assess their own work.
  - Teachers give students feedback on the quality of their self-assessments.
  - Teachers give students opportunities to practice self-assessment regularly.

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Student Self-Assessment

How is the teacher coaching the student on how to self-assess as they talk?

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Student Self-Assessment

- Rubrics and highlighters
  - Students highlight portions of rubrics that they think apply to their work.
  - Teachers can also highlight portions of rubrics that apply to students' work.
- Checklists

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Student Self-Assessment

- Indicator systems
  - Happy/sad faces or traffic lights
  - Letter cards for multiple choice questions
  - True/false or yes/no questions with movement
  - Whiteboards
  - "Most and least clear" cards

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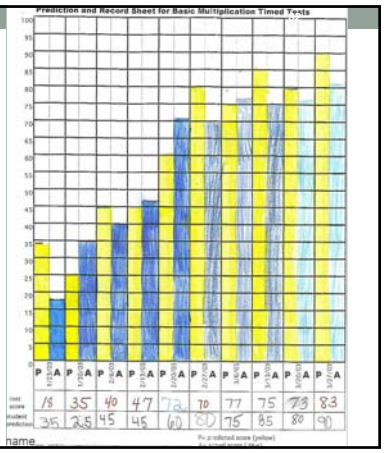
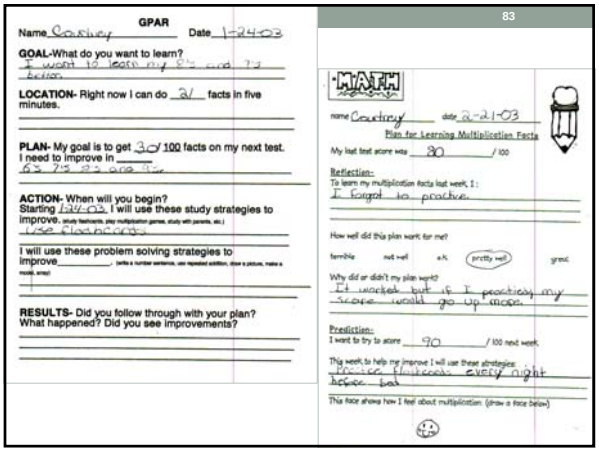
Student Self-Assessment

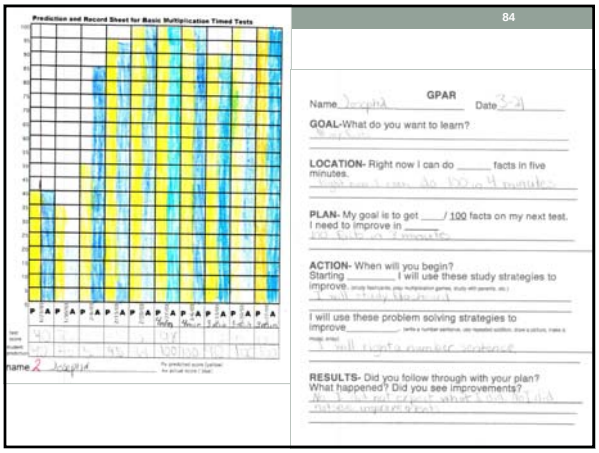
- Before and after tests
  - Students generate practice test questions and use them for studying.
  - Students plan study for a test by evaluating what they understand and what they don't.
  - Students assess their test results, looking for patterns in performance.
  - Students graph progress on repeated tests and reflect.

Example

Grade 3
Mathematics

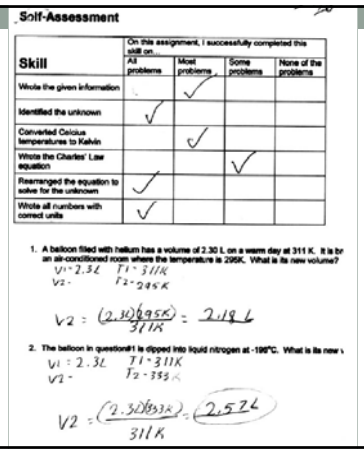






Example

High School Chemistry



Self-Assessment

On this assignment, I successfully completed this skill on...

Skill	All problems	Most problems	Some problems	None of the problems
Wrote the given information		✓		
Identified the unknown	✓			
Converted Celcius temperatures to Kelvin		✓		
Wrote the Charles' Law equation			✓	
Rearranged the equation to solve for the unknown	✓			
Wrote all numbers with correct units	✓			

1. A balloon filled with helium has a volume of 2.30 L on a warm day at 311 K. It is br... an air-conditioned room where the temperature is 295K. What is its new volume?
V1 = 2.3L T1 = 311K
V2 = T2 = 295K
$V2 = \frac{(2.30)(295K)}{311K} = 2.18\ L$

2. The balloon in question#1 is dipped into liquid nitrogen at -196°C. What is its new ...
V1 = 2.3L T1 = 311K
V2 = T2 = 77K
$V2 = \frac{(2.30)(77K)}{311K} = 0.574\ L$

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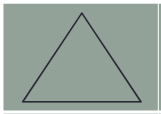
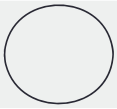


What's at the top of your mind?

What squares with your thinking?



What's going around in your head?

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