Using Formative Assessment for Student Learning

Richmond NCTM Regional
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Goal for the Day

- Probe your thinking about assessment and differentiation
- Have you consider new ideas based on research
- And engage in professional conversations with colleagues
Goal for the Day

- Explore a variety of assessment strategies
- Discuss how to use this evidence to inform teaching
- Reflect upon ways to allow for high quality formative assessment to occur
Form a circle with the people at your table. If you know everyone at your table, please change places with someone from another table for this activity.
## What is Formative Assessment?

<table>
<thead>
<tr>
<th>Definition:</th>
<th>Key Characteristics:</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Examples:</th>
<th>Non-examples:</th>
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There is only one 21st century skill

The one really competitive skill is the skill of being able to learn. It is the skill of being able not to give the right answer to questions about what you were taught in school, but to make the right response to situations that are outside the scope of what you were taught in school. (Papert, 1998)
## High Effect Strategies: What Works Best?

<table>
<thead>
<tr>
<th>Effect Level</th>
<th>ES Range</th>
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<tbody>
<tr>
<td>Very High</td>
<td>0.67 – 1.44</td>
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<tr>
<td>Moderate to High</td>
<td>0.43 – 0.54</td>
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<tr>
<td>Low Effects</td>
<td>0.17 – 0.29</td>
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<tr>
<td>Low to Negative</td>
<td>0.12 – 0.13</td>
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</tbody>
</table>
Strategies to consider

- Learning styles
- Team teaching
- Retention in a grade
- Class size
- Effective feedback
- Homework
- High expectations of students
- Student-centered learning
- Good questioning
- Teacher subject knowledge
- Vocabulary instruction
- Ability grouping
- Metacognitive strategies
# High Effect Strategies: What Works Best?

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<thead>
<tr>
<th>Very High Effects: 0.67 – 1.44 ES</th>
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<tbody>
<tr>
<td>- High expectations of students 1.44</td>
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<tr>
<td>- Effective feedback 0.75</td>
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<tr>
<td>- Metacognitive strategies 0.69</td>
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<tr>
<td>- Vocabulary instruction 0.67</td>
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</tbody>
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<tr>
<th>Moderate to High Effects: 0.43 – 0.54 ES</th>
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<tr>
<td>- Student centered teaching 0.54</td>
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<tr>
<td>- Good questioning strategies 0.48</td>
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<tr>
<th>Low Effects: 0.17 – 0.29 ES</th>
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<tbody>
<tr>
<td>- Homework 0.29</td>
</tr>
<tr>
<td>- Class size 0.21</td>
</tr>
<tr>
<td>- Team teaching 0.19</td>
</tr>
<tr>
<td>- Learning styles 0.17</td>
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</tbody>
</table>

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<thead>
<tr>
<th>Low to Negative Effects: 0.12-0.13 ES</th>
</tr>
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<tbody>
<tr>
<td>- Ability grouping 0.12</td>
</tr>
<tr>
<td>- Teacher subject knowledge 0.09</td>
</tr>
<tr>
<td>- Retention -0.13</td>
</tr>
</tbody>
</table>
Using the Walls

The benefits:
- Ability to see student’s work and assess
- It is harder for students to opt out
- Creates movement; add energy
- Encourages students to take risks as it is non-permanent

Challenges:
- Not enough board space
- One person does the work
What is Formative Assessment

- For today we are going to look at assessment as the gathering of data about a student’s learning.
- Assessments become formative “when the evidence is actually used to adapt the teaching to meet student needs”. (Black and Wiliam, 1998)
What is Your Assessment Strategy?

- Why do you assess students?
- When do you assess students?
- How do you assess students?
- What do we do with the data?
Formative Assessment is . . . .

“An assessment functions formatively to the extent that evidence about student achievement elicited by the assessment is interpreted and used to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions that would have been taken in the absence of that evidence.” (Wiliam, 2009)

TEACHING is a contingent activity
The Five Key Strategies of Formative Assessment:

- Clarifying, sharing, and understanding learning intentions and criteria for success
- Engineering effective classroom discussions, activities and learning tasks that elicit evidence of learning
- Providing feedback that moves learning forward
- Activating learners as instructional resources for one another
- Activating learners as the owners of their own learning

(Wiliam, 2009)
Clarifying, sharing and understanding learning intentions
Students learn best when they understand what they are learning and the criteria for success.

Identify Clear Learning targets

- What do we expect students to learn?
- How are they going to learn it?
- How will we know they have learned it?
- How will they know they have learned it?
- How will we respond when they don’t?
- How will we respond when they do?

(NCSM Jump Start Formative Assessment)
The class was looking at the number of raisins in little boxes of cereal. Here are the numbers the students found:

15, 13, 19, 14, 15, 15, 22, 16, 14, 18

The teacher asked them to predict how many raisins will be in the next open box? Explain how you would make a good prediction.
Engineering effective discussions, activities and classroom tasks that elicit evidence of learning
Eliciting evidence of Learning

- Good Questioning strategies
- No hands up except to ask a question
  - Popsicle sticks
  - No one opts out

Listen to interpret rather than evaluate
Four Types of Questions

- 1. Gathering Information
- 2. Probing Thinking
- 3. Making the Math Visible
- 4. Encouraging Reflection and Justification
Funneling vs Focusing Questions

- Funneling pattern of questioning involves using a set of questions to lead students to a desired procedure or conclusion.
- Focusing pattern of questioning involves the teacher attending to what the students are thinking pressing them to communicate their thoughts clearly and expecting them to reflect on their thoughts and those of their classmates.
Asking Good Questions

- Why do you think that?
- How did you know to try that strategy?
- Will this work with every number? In every similar situation?
- When will this strategy not work?
- Who has a different strategy?
- How is your answer alike, different from another student’s?
- Can you explain your classmates strategy in your own words?
The children in the Polya family are 3, 8, 9, 10, and 15 years old. What is their average age?

There are five children in the Polya family of different ages. Their average age is 9. How old might the children be?
Eliciting evidence of Learning

- Round the following to the nearest whole number:
  - 17.6
  - 210.33
  - 5.489

- My coach said I ran my race in about 12 seconds. What might my actual time be? Explain
Eliciting evidence of Learning

- In a survey of 1,200 people $\frac{3}{4}$ are Baltimore Ravens fans. How many people are Baltimore Ravens fans?

- Making a skinny question fat.
All Student Response Systems

Get a response from every student in real time
Collect information from every student at the same time
Make it difficult for students to opt out

- ABCD Cards
- Response Boards
- Exit Slips

What do we do with the information we gather?
Now what?
ABCD cards: Formative assessment is best described as

A. An assignment or activity that informs teachers and/or students what needs to be learned next

B. An assessment that is given marks by the teacher, but will not be counted in the final grade

C. Questions that provide a window into students’ thinking

D. Both A & C
A significant factor in formative assessment is feedback. The feedback \textbf{most likely} to improve student learning is feedback that

A. Is provided by other students
B. Is provided by the teacher
C. Provokes thinking
D. Both A & C above
The primary consumer of assessment feedback should be the:

A. Teacher
B. Student
C. Parents
D. District personnel
Which angle is closest to 110 degrees?

A

B

C

D
Which expression best represents the pattern 3, 7, 11, 15, 19 ...?

A. n + 4  
B. 3 + n  
C. 4n − 1  
D. 4n + 3
When you multiply two numbers together, the product is always larger than either of the two factors? True or False?
I drew a hexagon on my paper. Draw what my shape might look like.
Using Response Cards

Find the perimeter of this figure:

6

4
Using Response Cards

Use A for true and B for false

When you multiply two numbers the result is a larger number.
Exit Slips

☐ What is one idea that is still unclear to you from today’s lesson?

Write “The Muddiest Point” on your exit slip and hand it in at the front.
Exit Slips

- Give students one question to answer and use answers to group students for next day and to help you decide: go on; go back?
- Have students create a question based on the lesson.
Exit Slips: Feedback

Which is the “squarest”?

A. 18 units by 20 units
B. 9 units by 8 units
C. 5 units by 6 units
D. 100 units by 91 units
The Benefits

- Reduce the amount of time spent marking
- Allows teacher to make instructional adjustments in a timely manner which is more effective.
- Once the teacher has information about a student’s learning, appropriate support can occur.
Providing Feedback That Moves Learning Forward
Hitting the Mark
Butler study:
- 132 low and high ability grade 7 pupils in 12 classes in 4 schools
- Same teaching, same aims, same teachers, same classwork
- Three kinds of feedback: grades, grades+comments, comments only
### Research Feedback We Can’t Ignore

<table>
<thead>
<tr>
<th>Type of Feedback</th>
<th>Gains in Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades only</td>
<td>Almost 0%</td>
</tr>
<tr>
<td>Grades and Comments</td>
<td>Almost 0%</td>
</tr>
<tr>
<td>Comments Only</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>Significant improvement at all levels</td>
</tr>
<tr>
<td>Type of Feedback</td>
<td>Attitude changes</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Grades only</td>
<td>Top - positive</td>
</tr>
<tr>
<td></td>
<td>Bottom - negative</td>
</tr>
<tr>
<td>Grades and Comments</td>
<td>Top – positive</td>
</tr>
<tr>
<td></td>
<td>Bottom - no change</td>
</tr>
<tr>
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</tr>
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“Giving scores alongside of comments completely washed out the beneficial effects of the comments...”

And yet this is the most prevalent kind of feedback currently being given

“This study (and others like it...) shows that if teachers are providing careful diagnostic comments and then putting a score or grade on the work, they are wasting their time.”
What does Dylan Wiliam say?
Providing Feedback

Be specific!

☐ What are you looking for? Don’t try to provide feedback on everything.

☐ What did they do well?
☐ What do they need to work on?
☐ What are next steps?

Have you provided time for next steps?
Providing Feedback

- There has to be some kind of follow-up where students are expected to act upon the feedback. What kind of follow-up do you expect of your students?

- We need to structure our classrooms to allow students time to read and respond to feedback and then apply their learning to a new project/assignment.
Providing Feedback

- Feedback should inform students about where they are in the process of moving from not knowing to being proficient with content.
  - Grades are one form of feedback
  - Written comments on students work are another
  - Conversations with individual students is feedback

Feedback is most helpful when it is actionable – suggesting possible actions for moving forward.
Is the Feedback Helpful, Actionable?

- In table groups, sort the feedback cards into categories
- Use sticky notes to label the categories
- Talk at your table:
  - How did you sort the cards?
  - Which feedback is likely to be most helpful to students?

If you want to know which feedback is most helpful – ask the students.
If you have to give marks . . .

- Put the number correct at the top of the page but do not identify which questions are correct.
- Students have to work with other students to determine which answers are correct.
- Students correct the ones that are incorrect.
Teachers places a numbered circle 1, 2 or 3 beside something that requires improvement or comment.

Underneath the student’s work the teacher writes a question pertaining to the first numbered circle. Leaves a number of lines for the student’s response, and then...

Writes a question for the second and then the third.
“No matter how good or bad everyone has the same amount of work”

- Time is provided in class for the students to respond to the questions. The feedback is actually read and next steps identified.
- Wiliam also states that "the first fundamental principle of effective classroom feedback is that feedback should be more work for the recipient than the donor."
- Second feedback must be focused.
- Third feedback must relate to the learning goals shared with the student.
Peer Assessment

- “Teaching students to help one another in assessing their growth toward key content goals is beneficial on several levels”  (Tomlinson, Moon, 2013)

- Two Stars and a Wish
Peer & Self Assessment Videos

- Austin's butterfly
The Orange Problem
A grocer was asked how many oranges he had sold that day. He replied, “my first customer said, I'll buy half your oranges and half an orange more. My second and third customers said the same thing. When I had filled all three orders I was sold out and I did not have to cut a single orange all day.” How many oranges had he sold in all?

What if there were four customers? Five customers? Ten customers? n customers?
If students graduate from school still dependent on others to tell them their work is adequate then we failed them as a school system.
Activating Students as Owners of Their Own Learning

Self Assessment:
- Homework Board
- Colored Cups or Colored Triads
- C3B4Me
- Row Game
- Four corners: What’s Your Total?
- Self reflection – 3 circle exit slips

Remember: the teacher is not the only source of information in the room.
Peer & Self Assessment Videos

- www.teachingchannel.org/videos/daily-lesson-assessment
What is Formative Assessment

- Return to your Frayer Model. Make any changes you would like to make.
Keep the Learning Going

- What is one thing you will try in your class next week?
- What is one thing you will share with a colleague that you learned about in today’s session?
Contact Us

- Please feel free to contact us with questions or to share your stories.

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- robertberry@virginia.edu