

Differentiating Instruction Through Open Tasks

Basil Conway IV, PhD
Jacksonville State University

Socrative

- Go to www.socrative.com
- Login to the class named “statistics”
- Complete the one survey question by picking the “best” definition given of differentiated instruction. Pick only one.

Where I was...

- <https://www.edutopia.org/stw-differentiated-instruction-learning-styles-video>
- 1-3 minutes
- So I decided to differentiate, but not through multiple tasks, assessments, etc.

What is differentiated instruction?

- Differentiated instruction is an approach to teaching and learning for students with different abilities in the same classroom. The theory behind differentiated instruction is that teachers should vary and adapt their approaches to fit the vast diversity of students in the classroom. (Tomlinson, 1995, 1999a; Hall, 2002 as cited by Promising Practice Briefs).

What's not differentiated instruction?

- http://www.ascd.org/ASCD/pdf/siteASCD/publications/Differentiation_Is-IsNot_infographic.pdf

Open Tasks

- I have found open tasks as a means to differentiate learning in my classroom.

Discuss in your groups or with a shoulder partner.

- What are open tasks?
- What are open goals?

Closed Tasks

- Closed implies there is only one acceptable pathway, response, approach, or line of reasoning. Open refers to the existence of more than one (preferable many more than one) possible pathways, responses, approaches, or lines of reasoning.

Open Tasks

- If we want students to make connections, generalize, and justify, we need to give them problems sophisticated enough to require this sort of higher-order mathematical activity.
- To support students in engaging in knowledge building, mathematical tasks should be challenging enough to elicit **multiple solutions, possibilities for generalizations, and a need for justifications**. The majority of tasks should not be narrow exercises in which students repetitively practice a skill.
- Students will engage more when tasks involve more cognitive effort.

Closed Task

- $\frac{1}{2} + \frac{3}{8} =$
- Round the following to the tenths place: 5.7347
- The difference between 1 and 6 is
- The perimeter of the following rectangle is...

Open Task

- What pairs of fractions can be added to get $\frac{7}{8}$? How many can you find?
- A number has been rounded off to 5.7. What might the number be?
- What pairs of integers/real numbers can be differenced to be -5?
- How many rectangles can you construct with a perimeter of...

Suggestions for Opening Tasks

- Observing and measuring real world phenomena
- Work backwards
 - Identify a mathematical topic or concept.
 - Think of a closed question and write down the answer.
 - Make up a new question that includes (or addresses) the answer.
- Reduce problem constraints from textbooks
- Ensure targets can be achieved with varying techniques
 - Where does the mathematics connect in other domains?
 - What different ways can the mathematics be represented?
 - How do different modalities such as verbal, physical, analytical, numerical, and graphical provide access to the problem?

Opening Session

- Write four different word problems in which you must use $26/4$ to solve the problem, but the answer is 6, 6.5, 7, and 2.
- How did Dr. Dixon make this problem?

How do we assess problems with multiple answers or multiple solution pathways?

- Be careful with so much openness that we miss mathematical targets. (Open Goals)
- Be careful with so much openness that we cannot provide useful feedback.
- Focus on assessing mathematical reasoning and communication of ideas rather than the solution.
- I believe the underlying question here is, “What are your goals for mathematics?”
 - Students find value or importance in what we assess in our classroom.

How do open tasks provide a means for differentiation and learning?

- The 5 practices for Orchestrating Productive Mathematical Discussions (Stein & Smith, 2011)
 - Anticipate
 - Monitor
 - Select
 - Sequence
 - Connect
- Eliminate funneling questions and use focusing questions (Herbel-Eisenmann & Breyfogle, 2000)
- Did you notice these and her focus of conversation in Dr. Dixon's presentation.

Proper Planning

- For those children who are unable to start working (enabling prompts).
 - How will you provide access for students who are struggling without reducing the cognitive difficulty of the task?
- For those children who finish quickly (extending prompts).
 - How will you enrich a task to highlight or connect other mathematics that may not be a direct target?

Questions