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DIFFERENTIATED INSTRUCTION: IT'S NOT A RADICAL EXPECTATION… IT'S THE REAL DEAL!

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National Council of Teachers
of Mathematics Conference
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Outcomes

During our time together today, our goals are to:

- define differentiation;
- explore how to utilize differentiated instruction to meet the needs diverse learners; and
- consider how differentiated instruction is the real deal.

What is differentiated instruction?

What is differentiated instruction?

Differentiated Instruction-

Instruction designed to meet differing learners' needs.

How To Differentiate Your Math Instruction: Lessons, Ideas, and Videos with Common Core Support, Grades K-5; A Multimedia Professional Learning Resource by Linda Dacey, Jayne Bamford Lynch, and Rebeka Eston Salemi. © 2013 by Scholastic Inc.

Considerations for Meeting Student Needs

- Digital age changing the way we think and teach
- Diversity in classroom composition
- National agenda- all students must meet standards

Do I have to differentiate in Math?

YES!

Important reasons to differentiate in Math:

- Higher demand for mathematical skills
- Gap in achievement
- Math phobia
- Focused and coherent curriculum
- Increased student expectations

What does differentiation look like?

View video clip here:
http://mathsolutions.wistia.com/projects/ba57hfixlq

- How is differentiated instruction a part of these classrooms?
- What surprises you? What is familiar to you?

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Know Your Standards

- How do the concepts and skills I am teaching develop across grade levels?
- Am I using language that might cause misunderstandings later?
- Am I oversimplifying mathematical ideas?

Know Your Students

- Questionnaires
- Interviews
- Anecdotal Records
- Quick Assessments
- Open ended problems

Questionnaires

Who are you as a learner?

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Interviews

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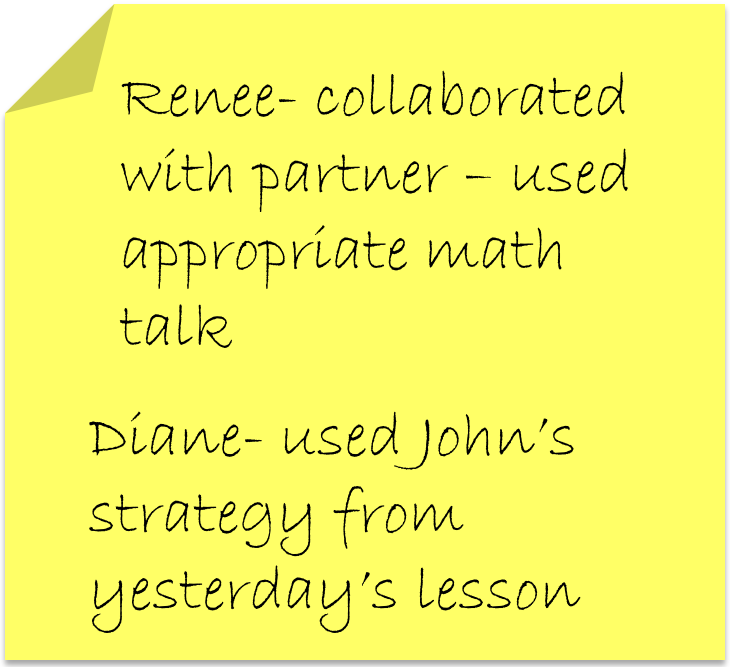
Anecdotal Records



Quick Assessments

Range Question

What are some fractions greater than ½ and less than ¾?

Exit Slip

3

2

1

Correct the Error

34 -17=23

Open ended problems

What do you know about 100?

Open-ended tasks provide teachers a way to assess *accuracy, flexibility,* and *engagement* in order to differentiate future tasks based on:

- **Content**—the material being presented;
- **Process**—the tasks students engage in and the strategies students use in order to make sense of or practice mathematics; and
- **Product**—the work completed by the student.

"We believe that getting to know each student is at the heart of differentiation."

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"Choosing mathematical tasks is one of the most important decisions that teachers can make. Although it is difficult for one task to be appropriate for all leaners, most tasks can be transformed to be more inclusive, to allow a greater number of students access, and to provide additional students with possibilities for more expansive thinking."

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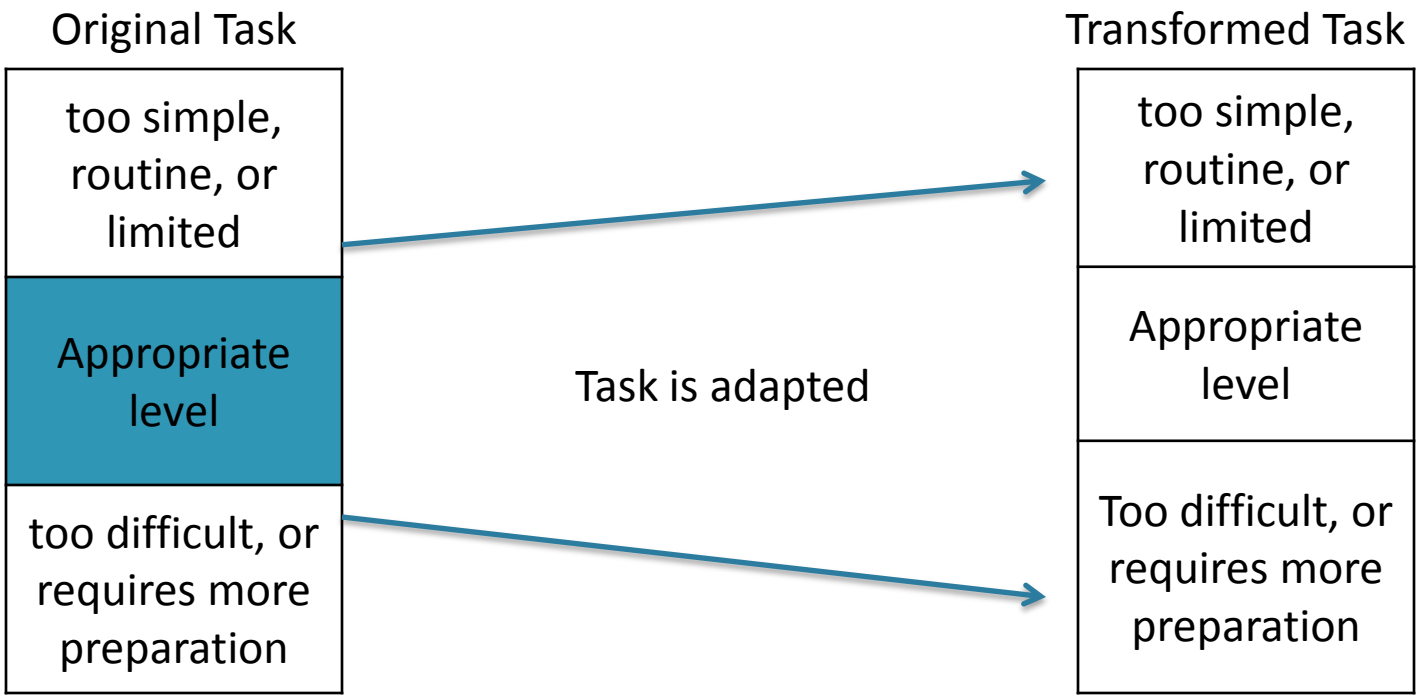
Zone of Proximal Development

That area that provides challenge, without going beyond the student's comfort zone or edges, that is, without being too easy or too hard.



Transform Your Tasks

- Give students control over the difficulty level
- Open up problems
- Vary the challenge

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Students Provide the Numbers in the Problem

Nora had ____ stickers in her sticker book. There were ____ stickers on each page. Then, Nora's uncle came to visit and gave her enough stickers to fill ___ pages in her book and add ___ stickers to the next page. Now, Nora has ____ stickers.

Students Choose Exercises to Complete

- Pick 5 examples that have a product that is less than 50 and tell how you know that will be so.
- Pick 1 example and find the product. Next create 4 different multiplication examples that will have the same product.

Transform Your Tasks

- Give students control over the difficulty level
- Open up problems
- Vary the challenge

What's the Question?

Here are the answers: 42, 2, 294, 3 ½

Number Story:

Sabina and Mike ran each day this week. Each day Sabina ran 3 miles in 30 minutes. Mike ran 6 miles in 72 minutes every day.

What could be the questions?

Student Responses

42:

How many more minutes did Mike run than Sabina each day?

How many fewer minutes did Sabina run that Mike each day?

How many miles did Mike run this week?

At this rate, how many miles would Sabina run in two weeks?

Student Responses

2:

On average, how many more minutes does it take Mike to run a mile than Sabina?

On average, how many fewer minutes does it take Sabina to run a mile than Mike?

Student Responses

294:

How many more minutes did Mike run than Sabina this week?

How many fewer minutes did Sabina run than Mike this week?

Student Responses

3 ½:

How many hours did Sabina run this week?

Transform Your Tasks

- Give students control over the difficulty level
- Open up problems
- Vary the challenge

Tiered Tasks

Mystery Puzzles

Tiered Task

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Processing

- What stays the same between the tiers?
- What changes between the tiers?
- How do the tiers support the accessibility for different students?
- How do the tiers challenge students?

As we choose among **modifications** we must remember that **all students deserve challenging thought–provoking problems and tasks.** Too often, in the spirit of "helping" some students are provided with simplistic tasks or rules to follow that are not connected to conceptual understanding.

Math For All: Differentiating Instruction by Linda Dacey and Jayne Bamford Lynch. © 2007 by Math Solutions Publications

Differentiated Instruction- What should I keep in mind?

10. Identify where you already provide differentiation
9. Recognize where you are along the journey
8. Start small
7. Anticipate student support
6. Expect surprises

Differentiated Instruction- What should I keep in mind?

5. Let students help
4. Work with parents
3. Find sources of professional learning
2. Reflect on your journey
1. Keep the vision

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Who Are You as a Learner? Questionnaire

Distribute to students early during the school year. For younger children, ask the parent or guardian to complete this questionnaire at home, with the adult reading and recording the information given by the child.

Student name: _____

Who Are You as a Learner?

1. If you could learn about anything at school, what would you choose?

2. What do you know a lot about?

3. How do you work best in school (check all that describe you)?

   ____ alone ____ partner ____ small group ____ large group

4. Where do you like to work at school (check all that describe you)?

   ____ desk ____ table ____ hallway ____ floor ____ library area ____ other

5. You learn best when your classroom is (check all that describe you)

   ____ quiet ____ somewhat quiet ____ somewhat noisy ____ noisy

6. Do you like schoolwork to be (check all that describe you)

   ____ easy ____ somewhat easy ____ somewhat hard ____ hard

7. What else helps you to learn?

8. What makes it hard for you to learn?

Mystery Puzzles

RED

$$\nabla + \Diamond + \Diamond = 110$$

$$\Diamond + 30 = 35$$

∇ = _____

$\Diamond$ = _____

Explain how you solved this problem.

BLUE

$$\Diamond + \Diamond + \nabla + \nabla + \nabla = 236$$

$$\Diamond - \nabla = 88$$

$\Diamond$ = _____

∇ = _____

Explain how you solved this problem.

GREEN

$$\otimes + \otimes + \Lambda + \Lambda = 522$$

$$\otimes + \Lambda = 261$$

$\otimes$ = _____

Λ = _____

Explain how you solved this problem. Can you find more than two solutions? Prove it!