



Math Solutions®

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HOW TO DIFFERENTIATE MATHEMATICS INSTRUCTION, K-5

**JAYNE BAMFORD LYNCH
NEW ORLEANS 2014**

THE JOURNEY.....

- What does it mean to differentiate instruction for all learners?
- Why is it important?
- How will we measure the success of it?

About the Authors



Linda Dacey, a professor of mathematics and education at Lesley University in Cambridge, Massachusetts, began her career as an

elementary school teacher. She is the coauthor of many materials for teaching math and differentiating instruction, including *Growing Mathematical Ideas in Kindergarten* and *Show and Tell: Representing and Communicating Mathematical Ideas in K-2 Classrooms*, both published by Math Solutions.



Jayne Bamford Lynch is a District Math Instructional Coach in Cambridge, Massachusetts, where she spends most of her days in elementary and

middle school classrooms supporting coaches, teachers, and students. She presents workshops for teachers, administrators, and parents on a multitude of topics related to math education. She is also a National Faculty member of the School of Education at Lesley University.



Rebeka Eston Salemi is a kindergarten teacher at Lincoln School in Lincoln, Massachusetts, and is a coauthor of *Growing Mathematical Ideas in Kindergarten*

and *Show and Tell: Representing and Communicating Mathematical Ideas in K-2 Classrooms*, both published by Math Solutions. She participates and consults in the development of reform-based math curriculum and assessments, striving to meet the needs of all students.

Common Core

- **“all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-school lives. The Standards should be read as allowing for the widest possible range of students to participate fully from the outset, along with appropriate accommodations to ensure maximum participation of students with special education needs.”**

©2012 Common Core State Standards Initiative:

Core plus more, plus more



Theory into ACTION!

In your classroom, is every student, every day, given the opportunity to engage in a rigorous mathematical task that is “just right” for them?

Discussion

- What are the challenges for teachers as they are learning to differentiate within a mathematics lesson to meet the needs of all students?
- What are the challenges for people supporting teachers as they learn to differentiate within a mathematics lesson to meet the needs of all students?



How to Motivate Change

In order for change to happen 2 conditions must be present:

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In order to change to conditions must be present:

1. Person needs to believe that change has to happen.
2. Person needs to believe that he or she is capable of performing the change.

Tori Corpas- Kindergarten

- Ms. Corpas teaches Junior Kindergarten and Kindergarten at the Martin Luther King Jr. School in Cambridge, MA. She has taught for seven years and loves using creative methods to teach math such as having her students act out math problems with puppets or incorporating movement/dance into her lessons. Ms. Corpas also credits using the practice of having her students repeat their peers' solutions to math problems during math discussions for helping her students develop a deeper understanding of mathematical ideas.



Ms Corpas' kindergarten class

Dr. Martin Luther King Jr. School, Cambridge MA

- There are 20 students in Ms. Corpas' s grade class, 8 boys and 12 girls.
- 21 percent Caucasian
- 45 percent African American
- 17 percent Asian
- 13 percent Hispanic,
- 4 percent Multi-Race, Non-Hispanic
- Fifty-six percent of the students qualify for free or reduced lunch.
- Thirty-eight percent of the students do not have English as their first language.

MATHS

Appetizer



Tracing
Shapes



Main Course (Required)



Scoop and
Count



Roll a Sum



Dessert



Geoblocks



Counting
Blocks



Pattern
Block



Math
Books



Questions to consider

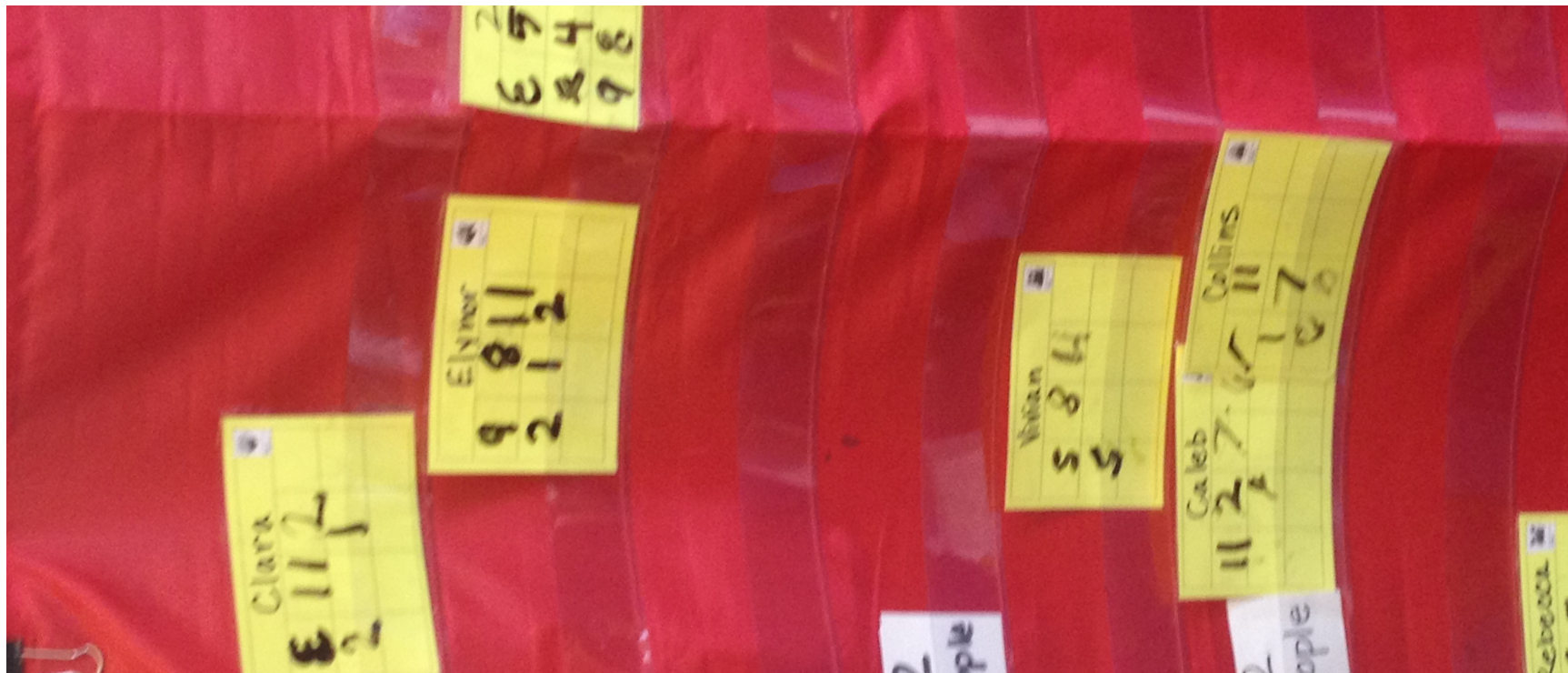
- What is the teacher's role when the students are engaged in making choices within a math menu?
- What is the role of the students?
- How can you use the idea of choice to meet the needs of your students and close the achievement gap that may exist in your classroom?

Corpas Video

View video:

<http://mathsolutions.wistia.com/medias/w7wsbsbiux>





- Let's meet some more teachers.....

Summer Thompson- Grade 3

Mrs. Thompson has taught second grade and is currently teaching third grade at the Martin Luther King, Jr. School in Cambridge, MA. She has been teaching for six years. She believes every student should have a voice and be able to explain their strategies they use to solve math problems to others. She employs many ‘math talk’ moves including the turn and talk method and students repeating what other students have said. Mrs. Thompson believes that these teaching moves help ALL of her students including those with special needs and English language learners.



Thomson' s 3rd Grade Class

Dr. Martin Luther King Jr. School, Cambridge, MA

- There are 17 students in Mrs. Thompson' s third grade class, 5 boys and 12 girls.
- 21 percent Caucasian
- 45 percent African American
- 17 percent Asian,
- 13 percent Hispanic
- 4 percent Multi-Race, Non-Hispanic
- Fifty-six percent of the students qualify for free or reduced lunch.
- Thirty-eight percent of the students do not have English as their first language.

Mystery Puzzles

Launch Problem

$$\Phi + \Phi + \Phi + \Delta = 324$$

$$\Phi - \Delta = 76$$

$$\Phi = \underline{\hspace{2cm}}$$

$$\Delta = \underline{\hspace{2cm}}$$

RED

$$\diamond + 30 = 35$$

$$\nabla = \underline{\hspace{4cm}}$$

^

BLUE

[illegible]

$$\diamond - \nabla = 88$$

 = _____

GREEN

$$\textcircled{\times} + \Lambda = 261$$

$$\textcircled{\times} = \underline{\hspace{10em}}$$

▲

Questions to consider....

- As a teacher, what do you do when you have students working on different problems?
- How do you structure the lesson so that all students can participate in the summary?
- As a coach, how do you support teachers creating tiered lessons and what are the challenges?

Debriefing a tiered task

View video:

<http://mathsolutions.wistia.com/medias/scn6vxinw2>

Meaghan Miller- grade 4

Meaghan Miller is a teacher at the Maria L. Baldwin School in Cambridge, Ma. She has been a teacher for 6 years and feels that providing structured choice in her classroom has finally given her the time to engage in meaningful differentiation. With her students more invested in the work, she is able to meet all students' needs in a more thoughtful and deliberate manner.



Miller' s 4th grade class

Maria L. Baldwin School, Cambridge, MA

- There are 16 students in Mrs. Miller' s fourth grade class, 8 boys and 8 girls.
- 50 percent Caucasian
- 25 percent African American
- 10 percent Asian
- 8 percent Hispanic
- 7 percent Multi-Race, Non-Hispanic
- Thirty-six percent of the students qualify for free or reduced lunch.
- Nineteen percent of the students do not have English as their first language.

Miller's Video

Manage the Classroom

8.2 A Math Clinic

- What is the role of the teacher?
- What is the role of the students?
- In your own classroom, what content would be best taught in a clinic format?

Miller Video

View video:

<http://mathsolutions.wistia.com/medias/ekxnupj642>

Ben Geiger- Instructional Coach

Mr. Geiger serves as the math coach for the Baldwin School in Cambridge MA. He has been teaching elementary school for 20 years. He sees a real opportunity to motivate both reluctant and enthusiastic math students when they are given a chance to choose "Just right" problems and activities. Mr. Geiger enjoys seeing children experience that "aha" moment when there is a perfect intersection between the challenge of the task at hand and the student's level of mathematical experience.



Geiger' s video

Scaffold Learning

6.4 Using Word Banks

- What strategies is Mr Geiger using to foster communication?
- Do you agree that supporting students with vocabulary development will support them in expressing their understandings of mathematics? Why?
- How does this work support the Mathematical Practice of attending to precision?

Geiger Video

View video:

<http://mathsolutions.wistia.com/medias/umjvdvglpd>

Keep the Vision

“ Remember that differentiated instruction is a quest, a journey that never ends.....**It takes courage and passion to sustain your efforts towards the goal of differentiated instruction,** and the vision of all of your students becoming successful learners of mathematics.”



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