



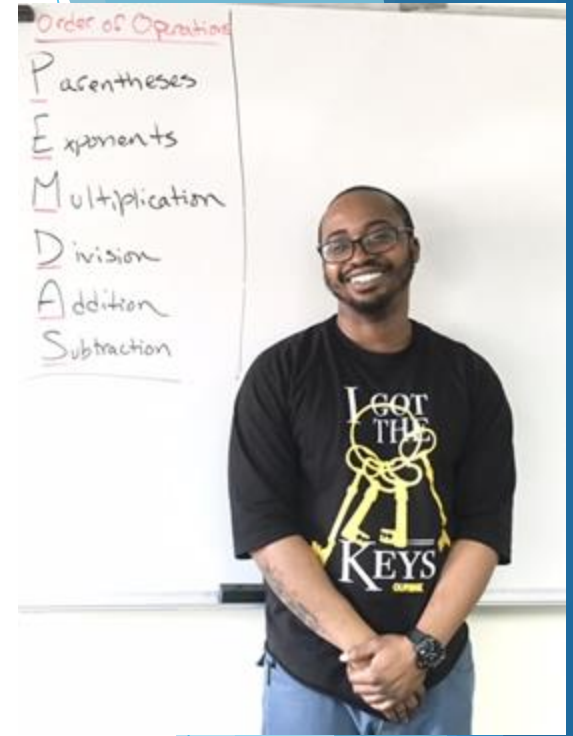
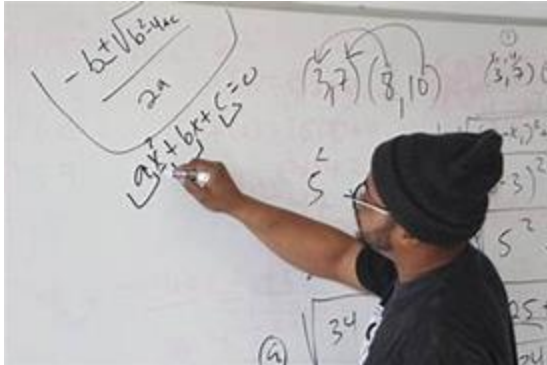
Bridging the Gap: Innovative Strategies for Adult Math Literacy

Empowering Educators to Transform the ABE Math Classroom

Manny Knaggs

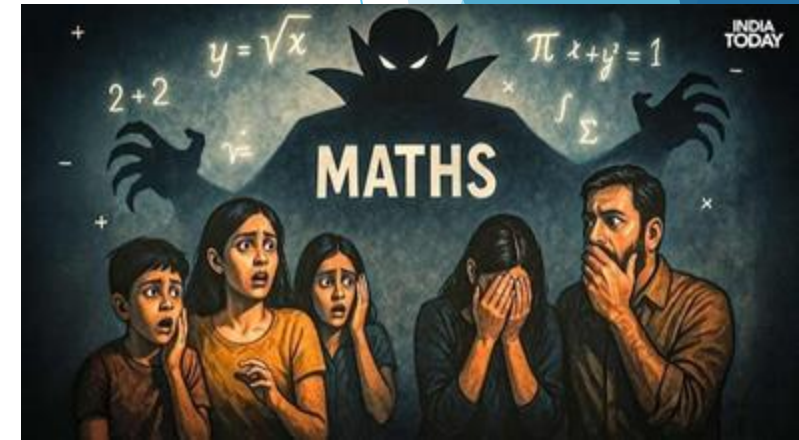
Welcome & Introductions

- ▶ Who is Manny Knaggs?
- ▶ The goal of today : Moving from “doing math” to “understanding math.”



The Current Landscape of Adult Math Literacy

- ▶ The shift in ABE: Why traditional methods aren't enough.
- ▶ Math literacy as a tool for social and economic empowerment.
- ▶ The "Math-Positive" Environment: Shifting student (and teacher!) mindsets.



"Math is not about numbers, equations, or algorithms: it is about understanding." — William Paul Thurston.

Learning Objectives

By the end of this session, you will be able to:

- Identify and mitigate math anxiety in adult learners.
- Facilitate active learning strategies (Number Talks & Inquiry).
- Differentiate instruction for diverse skill levels.
- Contextualize math for real-world life applications.
- Redesign traditional lessons into active learning experiences.

Strategy 1: Number Talks



Definition: Short, daily routines where students mentally solve problems and discuss their reasoning.

Why it works:

- Builds number sense.
- Values the *process* over the *answer*.
- Reveals student misconceptions in real-time.

Activity: Let's try one! Solve 18 times 5 mentally.
How did you do it?

Addressing the "Elephant in the Room": Math Anxiety

Common Barriers: Past trauma, "I'm not a math person" mindset, cultural myths.

Strategies for Educators:

- Normalize mistakes as learning opportunities.
- Use "Parallel Tasks" to reduce frustration.
- Focus on "Growth Mindset" language.



Differentiation in the ABE Classroom

The Challenge: Teaching a room where one student is at a 3rd-grade level and another is at a 9th-grade level.

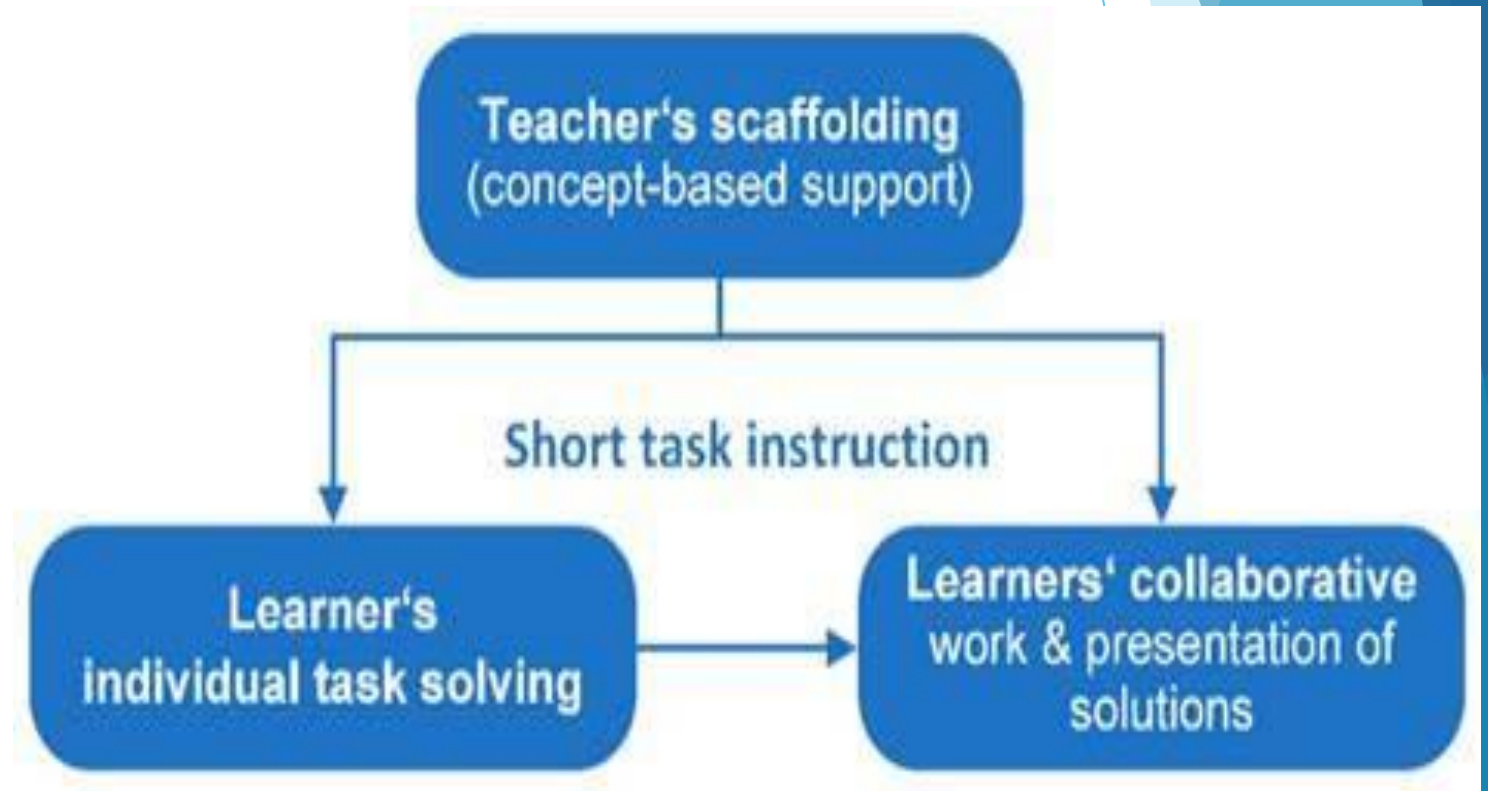
The Solution:

- **Scaffolding:** Temporary support to bridge gaps.
- **Parallel Tasks:** Same big idea, different complexity levels.
- **Choice Boards:** Allowing students to choose how they demonstrate mastery.



Scaffolding Examples

- ▶ Visual Aids
- ▶ Chunking Information
- ▶ Modeling
- ▶ Guided Practice
- ▶ Peer Collaboration
- ▶ Use of Technology
- ▶ Fading Support



Parallel Tasking Examples Part 1

Example 1: Fractions

- **Task A (Basic):** Simplify the fractions $\frac{4}{8}$ and $\frac{6}{9}$.
- **Task B (Intermediate):** Compare the fractions $\frac{4}{8}$ and $\frac{3}{5}$ using a number line.
- **Task C (Advanced):** Add the fractions $\frac{2}{3} + \frac{1}{4}$ and explain the steps taken.

Example 2: Solving Equations

- **Task A (Basic):** Solve the equation $x + 3 = 7$.
- **Task B (Intermediate):** Solve the equation $2x - 5 = 9$ and check your solution.
- **Task C (Advanced):** Solve the equation $3(x - 2) = 12 + x$ and show all steps.

Parallel Tasking Examples Part 2

Example 3: Measurement

- **Task A (Basic):** Measure the length of a pencil in centimeters.
- **Task B (Intermediate):** Convert the length of a pencil measured in centimeters to millimeters.
- **Task C (Advanced):** Calculate the perimeter of a rectangle with length 5 cm and width 3 cm and explain how you arrived at your answer.

Example 4: Data Interpretation

- **Task A (Basic):** Read a simple bar graph and answer the question: "How many apples are there?"
- **Task B (Intermediate):** Analyze a pie chart and determine what percentage of the total is represented by oranges.
- **Task C (Advanced):** Given a data set, create a line graph and interpret trends over time.

Parallel Tasking Examples Part 3

Example 5: Word Problems

- **Task A (Basic):** If there are 3 apples and you buy 2 more, how many apples do you have now?
- **Task B (Intermediate):** A car travels 60 miles in 1 hour; how far will it travel in 2.5 hours?
- **Task C (Advanced):** A train leaves a station at 3 PM traveling at 45 miles per hour. At what time will it reach a city 135 miles away?

Example 6: Geometry

- **Task A (Basic):** Identify shapes (circle, square, triangle) from a set of images.
- **Task B (Intermediate):** Calculate the area of a rectangle with length 4 cm and width 6 cm.
- **Task C (Advanced):** Determine the volume of a cylinder with a radius of 3 cm and a height of 10 cm, showing your calculations.

Choice Boards Examples

Example 1: Fractions Choice Board

- **Create a Visual:** Draw a pizza divided into different fractions and label each part.
- **Write a Story:** Compose a short story that includes at least three fractions and explain their context.
- **Solve Problems:** Complete a worksheet with a variety of fraction problems (addition, subtraction, simplification).
- **Online Game:** Play an online fraction game and summarize what you learned.

Example 2: Word Problems Choice Board

- **Create Your Own:** Write three original word problems that involve addition, subtraction, or multiplication.
- **Solve and Explain:** Choose three word problems from a worksheet, solve them, and explain your reasoning in writing.

Example 3: Algebra Choice Board

- **Solve Equations:** Solve a set of linear equations and create a poster displaying the steps taken.
- **Real-Life Application:** Write a paragraph explaining how algebra is used in a career of your choice.

Choice Boards Examples

Math Choice Board

Develop your own 10 question math assessment with answer key. 	Create a word problem using addition and subtraction. Then, solve the problem and explain your answer.	Roll a pair of dice 6 times. Add up all 6 numbers that you roll. What is the sum? 
Write 5 ways to use addition in the real world and 5 ways to use subtraction. 	Design a poster explaining how addition and subtraction are related. 	Use the following words to write a creative story: add, subtract, sum, difference, equal, problem.
Write a song explaining how to add and subtract. 	Make a video explaining how to add any two numbers. Then explain how to use subtraction to check your math.	Make your own addition and subtraction flashcards. 

M. Nelson

Math Choice Board

Make a video explaining how to make change if you bought something for \$3.65 and you gave the cashier \$5.00.	Brainstorm 10 real world scenarios where you would count money and make change. 	Roll a die. How much would you have if you have that many quarters, dimes, nickels and pennies?
Scott has 6 quarters, 2 dimes, 5 nickels and 2 pennies. How much more does he need to buy a toy for \$3.00?	Design a poster showing and explaining how much each coin is worth. (quarter, dime, nickel, penny) 	Use the following words to write a creative story: dollar, change, coin, quarter, dime, money.
List 10 ways that you can make change for \$1.00. 	Create three word problems using money. Then, solve each problem and explain your answers.	Develop your own 10 question math assessment with answer key. 

M. Nelson

Math for Life: Real-World Contexts

Making it Concrete:

- **Financial Literacy:** Interest rates, budgeting, and paycheck deductions.
- **Workplace Readiness:** Measurements, ratios in recipes/mixing, data interpretation.
- **Health Literacy:** Medication dosages, reading charts/graphs.

Prompt: How can we make "fractions" relevant to a student's daily life today?

Hands-On: Lesson Plan Modification

The Challenge: Take a standard "rote" lesson (e.g., Calculating Percentages).

Your Task:

- Add a real-world application.
- Add an inquiry-based question.
- Plan a differentiation strategy.

Breakout Sessions

A. Addressing Math Anxiety

- Discuss strategies to identify and mitigate math anxiety in adult learners.

A. Active Learning Strategies

- Explore the concept of Number Talks and engage in hands-on activities.

A. Differentiation in Instruction

- Workshop on creating parallel tasks to cater to diverse skill levels.

The Empowerment Mindset

Summary:

- Math literacy is a gatekeeper; your instruction is the key.
- Focus on the *thinking*, not just the *answer*.
- Small shifts in teaching lead to big shifts in learner confidence.

Resources & Next Steps

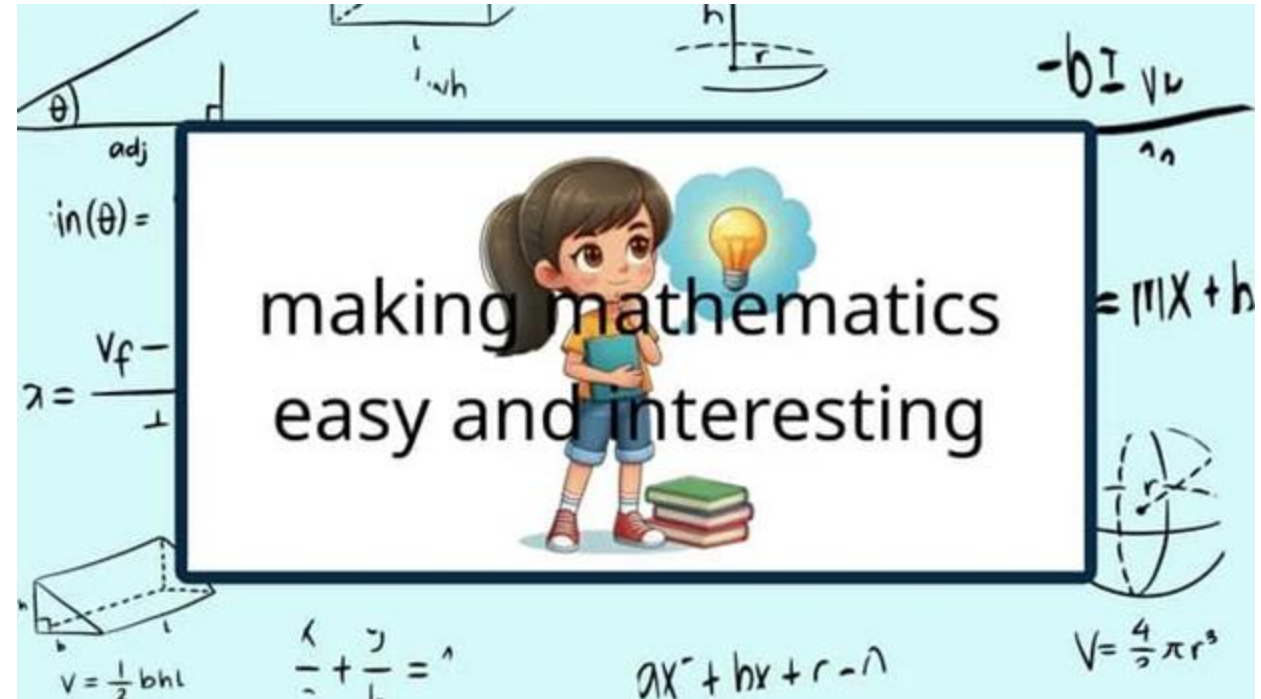
Toolkit Highlights:

- Websites for math help.
- ABE-specific curriculum.

Q&A and Final Thoughts

- ▶ Questions?
- ▶ Manny Knaggs | eknaggs@x-celeducation.org
- ▶ Youtube | [@emmanuelknaggs1451](https://www.youtube.com/@emmanuelknaggs1451)
- ▶ Thank you for your commitment to adult learners!

Math Can Be FUN If We Keep It SIMPLE





Thank you!

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