

Moving Students Forward: Formative Assessment in K-2



Suzanne Belahmira, M.Ed

Sara Delano Moore, PhD



**NATIONAL COUNCIL OF
TEACHERS OF MATHEMATICS**

- We know it is more informative to observe a student during a mathematical activity than it is to grade his papers.

» Freudenthal, 1973



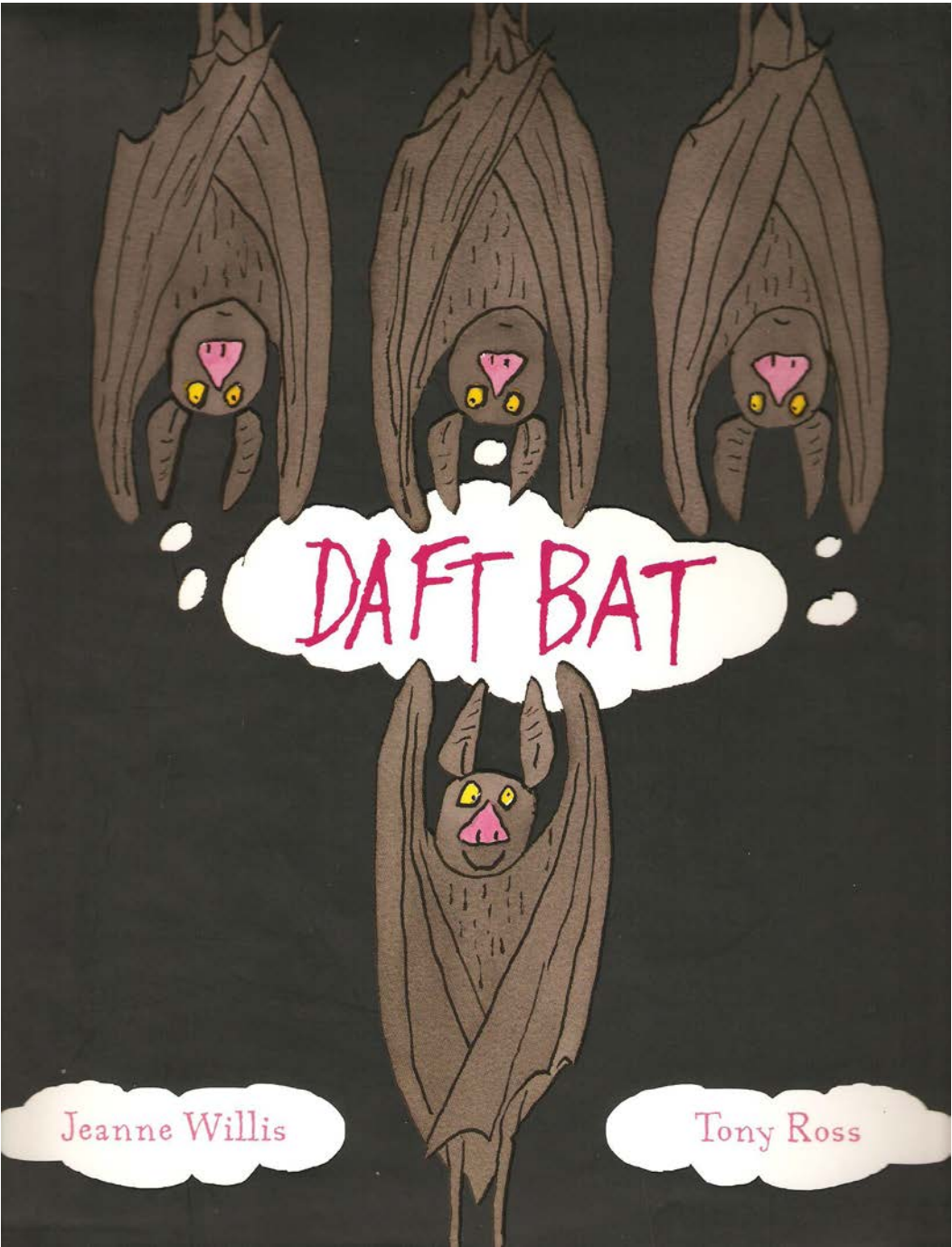
Agenda

- Why **formative** assessment?
- Different types at different times
- Let's try it!
- Sharing
- Questions



And Owl said, "Question Number Three! Have you ever tried looking at things from *Bat's* point of view?"

Daft Bat by Jeanne Willis & Tony Ross
Sterling Publishing, 2008



DAFT BAT

Jeanne Willis

Tony Ross

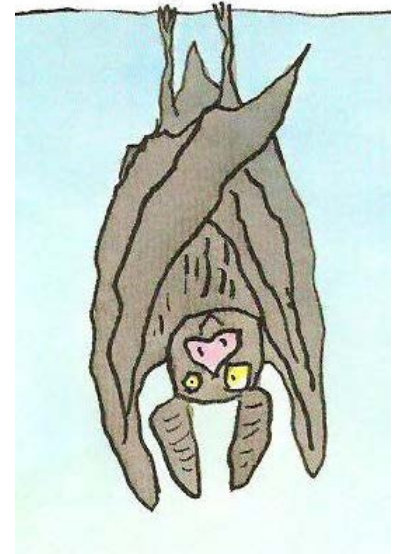
DAFT BAT



Teachers need to know...

... how students see the world.

- What does she know?
- What does he understand?
- Where are her errors?
- What are his misconceptions?
- What turns her off?



Adapted from Hattie (2009)
Visible Learning

What is formative assessment?

- Table Talk
 - What are your experiences with formative assessment?
 - What has worked well?
 - What are your challenges?

Key Elements

- Clear learning goals and criteria for success
- Classroom engagements that elicit evidence of learning
- Feedback that moves learners forward
- Student ownership of learning
- Students as instructional resources for peers

» Wiliam, 2007

Clear Learning Goals

- Understand the meaning of the equal sign, and determine if equations involving addition & subtraction are true or false.

» Grade One Standard

- Is this a clear learning target?

Classroom-Based Formative Assessments

- Observations
- “Show me”
- Interviews
- Hinge Questions
- Exit Tasks

» Fennell, Kobett, Wray in APME 2015

Where's your evidence?

- What sources of information do you have to know where students are along this pathway?
- How do young learners communicate their mathematical knowledge?

Mathematical Representations

Concrete

Verbal

Visual

Contextual

Symbolic

Observations

- What would you expect to see from a student who has mastered this standard?
 - Understand the meaning of the equal sign, and determine if equations involving addition & subtraction are true or false.
- What are some key milestones along the way?
- What errors might inform your thinking?
- How do you document what you're observing?

“Show Me”

- When might you want to elaborate on an observation?
- How do you plan your questions?

$$4 + 5 = 9 - 3 = 6$$

- How do you document what you're learning about this student?

Student Interviews

- When is a deeper dive appropriate?
- Which students should you interview?
- Where do you find time for interviews?
- How do you document what you learn?

Try an interview task

Add & Subtract: Algebra

Word Problems: Totals to 10

Card
14_a

Common Core Standard

K.OA.A.2 Solve addition ... word problems, and add ... within 10, e.g., by using objects or drawings to represent the problem.

Materials

- Two-Color Counters
- Paper and pencil
- Recording rubric



About the Tasks

- The problems are given in increasing difficulty.

Assessment Coach

- If children only built a model, ask them to draw a picture. If they only drew a picture, ask them to build a model.

TASK A

■ **Say:** Use counters to model and solve the problem. **Austin had 3 toy cars. He got 2 more for his birthday. How many cars does Austin have now?**

■ **Say:** What's the solution to this problem? Now draw a picture to show me how you know.

TASK B

■ **Say:** Use counters or draw a picture to model how to solve the problem. **Sally has 4 markers. Claire gave her 3 more markers. How many markers does Sally have now?**

■ **Say:** What's the solution to this problem? Show me how you know.

GO ON →

Number & Operations

What did you learn?

What support do you need?

An interview task Grade 1

Add & Subtract: Algebra

Joining and Separating

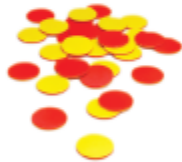
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Common Core Standard

1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, ... with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Materials

- Two-Color Counters
- Paper and pencil
- Recording rubric



About the Tasks

- Allow ample space or use a workmat to define each work area.

Assessment Coach

- If children choose to use models, have children also draw a picture.

TASK A

■ **Say:** *I am going to read you a problem. Show me with Two- Color Counters how you might solve the problem.*
There are 8 children in the pool. 4 more jump in. Now how many children are in the pool?

■ **Say:** *What is the solution to this problem? Tell me how the counters helped you find the solution.*

TASK B

■ **Say:** *I am going to read you a problem. Show me with Two- Color Counters how you might solve the problem.*
There are 16 children in the pool. 7 children climb out. How many children are in the pool now?

■ **Say:** *How do you know that your solution is correct?*

GO ON →

Number & Operations

Sample Rubric

Add & Subtract:
Algebra

Name _____ Date _____

Card
7

Joining and Separating

CCSS

1.OA.A Represent and solve situations involving addition and subtraction.

1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, ... with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

X	Student is unable to initiate the task.
-	Student attempts the task, but is unsuccessful.
✓	Student completes the task successfully.
+	Student work on the task exceeds requirements.

	Mathematical Content	Mathematical Practice 4
	Find an accurate solution	Model with mathematics
	X - ✓ +	X - ✓ +
Task A create a model to solve an add-to situation; explain the solution		

An interview task Grade 2

Place Value

Place Value: 3-Digit Numbers

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Common Core Standard

2.NBT.A.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones.

Materials

- Base Ten Blocks
- Paper and pencil
- Place-Value Chart (print at hand2mind.com/hos-assessments)
- Recording rubric



About the Tasks

- Place manipulatives within easy reach of children.

Assessment Coach

- Encourage children to explain their solutions using the manipulatives.

TASK A

■ **Say:** *I'm going to read a number for you to show with Base Ten Blocks on your chart: 235.*

■ **Say:** *Tell me about the blocks you used. Show how you know that they model 235.*

TASK B

■ **Say:** *I'm going to write a number for you to show with Base Ten Blocks on your chart.*

Write the number 350 for children to model.

■ **Say:** *Tell me how you are sure that you built 350. Describe the blocks you show by using their place value names: hundreds, tens, and ones. Why did you not use any ones?*

GO ON →

Number & Operations

Exit Question

Here, There, and Everywhere card

Use this picture to tell me a word problem and solve for:

$$7 + ? = 9$$

THANK YOU

Suzanne Belahmira, M.Ed.
Independent Consultant, Mathematics

suzanne@northshorepublishing.org

Sara Delano Moore, Ph.D.
Director of Math & Science

smoore@hand2mind.com



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