

“Baa, Baa, Black Sheep”: A Delightful Memory

Werner Liedtke

Unpredictable, predictable and pleasant incidents are part of any classroom. When incidents are unpredictably pleasant, they become memorable (perhaps even more so with advanced age and more time for reflection).

A course dealing with diagnosis and intervention in elementary mathematics included three mature students. These women sat together at the back of the classroom, and the occasional whisper among them during a lecture was not disruptive. However, it was somewhat unusual that they always remained seated after the class had concluded. Their responses to my queries indicated that they did not have any questions or concerns about the course, and my worries were put to rest when they assured me that they were not involved in some sort of protest or secret plot.

At the beginning of the final class, one of the women requested that 15 minutes be set aside for a presentation. The request was granted. When the time arrived, lyric sheets were distributed to the other students, a ukulele appeared, and one of the women assumed the role of choir director.

On the lyric sheets, 10 verses and a refrain were written out in calligraphy. The class was led through a song to the familiar tune of “Baa, Baa, Black Sheep.” Each verse referred to one or more key ideas of the course. These ideas were what the women had been discussing at the end of each class.

The lyrics are presented below, along with my comments.

How are they different?
How are they the same?
What do you think of when you see this?
Can you give it a new name?

The refrain captures the key ideas of the course. If we don't know how students think, effective intervention cannot take place. Sorting is a key strategy for many aspects of learning about mathematics, and the ability to think flexibly is an important goal of intervention.

Which is more and which is less?
And what do you do with zero?
If you can make up your own rule,
The prof will think you're a hero.

This hints at the confusion that can exist with regard to the role of zero, as well as the challenge to create settings where students can generate their own rules for generalizations about calculating answers for equations that include a zero.

You must get them to manipulate.
You must get them to simulate.
You must teach them to estimate.
Before you can remediate.

During diagnosis (as well as intervention), questions should be asked that engage the brain while objects are manipulated or while actions related to operations are simulated. It is very likely that in an intervention setting, estimation strategies will need to be taught or retaught.

Relate to experience.
Construct and record.
Rename and regroup.
You're colour-bound? Good Lord!

Being able to connect, to illustrate one's thinking and to think flexibly about numbers are important aspects of sense-making and conceptual understanding. Since students who experience difficulties may be easily distracted by the colour of objects, key manipulative materials used during diagnosis and intervention should be colourless or all of the same colour.

You don't understand place value?
We will help you, honey.
We'll relate to your experience,
And do it all with money.

In an intervention setting, money can play a role that goes beyond the ability to make connections. Key components of developing number sense (including visualizing numbers, thinking flexibly about numbers and relating numbers) can be accommodated.

“My students can’t sketch or diagram,”
We hear the math tutor groan.
“So how can I get her to transfer
From the known to the unknown?”

Students who understand what they have learned are able to illustrate their thinking with manipulative material or diagrams. They can talk about the ideas and procedures they have learned in their own words. This understanding, as well as transfer to previous and ongoing learning, is a goal of intervention.

Working with subtraction
May cause you joy or sorrow.
Regroup, rename or trade
But never, never borrow!

How did the term *borrow* find its way into the mathematics classroom? The terminology used during intervention should foster visualization. It should also be consistent with the terminology that was used when numbers and numerals were examined.

Partitive or “quotative”?
Which method do you choose?
Division is so difficult.
No wonder we turn to booze!

Data collected over the years show that most requests for intervention are concerned with either basic multiplication facts or the division algorithm. Understanding the latter requires that students know about the two types of division—partition and measurement. At one time the term *quotitive* was used to describe measurement division. During a session on division, it was pointed out that this term does not help in any way with visualization, and it is also often misspelled (as indicated in the verse).

Always use the very best aids,
If you really don’t want to fluff it.
Forget the abacus and number line.
Take the pocket chart and stuff it!

The ability to visualize numbers is a key indicator of the presence of number sense—the foundation of numeracy. Fostering the ability to visualize requires the use of a manipulative aid that clearly illustrates the properties of our numeration system. The aids mentioned in the verse lack this property.

When you are in an LA setting,
The conceptual domain be not forgetting.
There is one thing before we go.
Memorize this—“How do you know?”

This verse identifies the question that gives the greatest insight into what and how a student is thinking. Without an answer to this question, thorough diagnosis and effective intervention are impossible.

Understanding and basic facts,
As well as algorithm.
With the prof’s notes under your arm,
Go forth and remediate with ’em!

It has been stated more than once that it is possible to “teach” anyone to repeat something. The challenge is to foster understanding—conceptual understanding. There are some who say that *remediation* has a negative connotation, and I am certain that if these ladies were to write the last line now it would read:

Go forth and plan your intervention with ’em!

A few ideas from the course that did not make it into the song were incorporated into the rectangular border of the lyric sheet. When students requiring diagnosis and intervention were discussed during the early sessions of the course, boys were most often identified (for example, by referring to *Johnny* or *he*). On more than one occasion, it was pointed out that this was unfair; thus, the reference to *honey* and *her* in the fourth and fifth verses. This reversal also became evident in two statements included in the border (with underlining for emphasis):

Yes, but how are her visualization skills?
Does she have a good memory bank?

Throughout the course, terminology was identified that does not foster students’ ability to visualize, including the word *times* (the phrase *groups of* was recommended instead). The frame included the following statements:

Never say “times.”

On Sunday morning we read the *Victoria Groups of Colonist*, or *The New York Groups Of*.

Two statements in the border referred to strategies employed during diagnosis and intervention:

Can you see an error pattern here?
And if that does not work, try something different.

The late-afternoon class must have made these ladies think about refreshments. One statement points out the advantage of living in a big country:

Somewhere in Canada it’s cocktail hour right now.

The students who have these women as teachers will be very lucky, indeed. To Dale, Jennifer, Beth and the choir—a hearty thank you for the memorable moments.

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