ENHANCING ADULT LITERACY

Teacher to Teacher

039-0300-0048

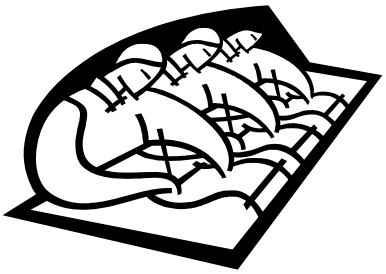
Is Contextual Math the Answer? What is the Question?

Nancy Markus

There are many challenges in adult education including what we teach to our students and how we teach them. Do we teach to the GED test? Do we use a standard GED text? Do we insist on mastery of facts before problem solving? Do we have a hierarchy of skills we feel are important? Is it really important what we teach and how we teach it?

When most of us learned math in school, there was very little connection between "math class" and "real-life." Most adult educators realize that this "disconnect" is a problem in their classrooms, resulting in even more math anxiety and decreasing number sense.

In Ohio, we have been involved in several initiatives that promote contextual math, that is, math in real-life situations. During the 2005-2006 school year Ohio was a part of the TIAN project (Teachers Investigating Adult Numeracy). This project involved 20 teachers who explored the math concepts of Data and Algebra using the contextual program called EMPower Math. (Extending Mathematical Power).



Teachers are encouraged to use contextual math materials in order to help their students succeed. However, with any one approach there are always concerns and problems.

Charlie Brover is a Staff Developer in an Adult Basic Educational program for recipients of public assistance in New York City. He is a member of the New York City Math Exchange Group (MEG), a voluntary teacher collaborative dedicated to improving math instruction and learning in Adult Basic Education. He recently wrote the following thoughts that I want to share with Ohio teachers.

Notes on a Balancing Act: Math Context and Structure

"Nancy: I don't really know what kind of math you are "promoting" in Ohio or what you should call it, but I have some thoughts (more than you probably want or need) about context in math education.

Like literacy education, math education at all levels including ABE, is fundamentally about making meaning (constructing meaning socially in my view). So we certainly should provide engaging contexts that connect math to students' life experiences and goals. But more than merely an uncritical "real-world" context, math education should aim to deepen students' critical understanding of the social purposes of mathematics, rejecting the myth of math neutrality and the motivation of national economic competitiveness to justify math education. Here I tend to agree with William Tate regarding the failures of math education to engage African American students particularly, and with the general perspective of the ethnomathematics folks who explain that all mathematics is socially and culturally situated. In MEG's practice, for instance, we have recently tried to engage teachers and students in a lesson set focused on "math for a post-Katrina world."

But the problem is that math education can become too context-laden. Particularly for socially marginalized ABE students, an over-emphasis on context at the expense of mathematical structure and concepts can reflect a teaching culture of low expectations and limited opportunity to learn. In the name of "contextualized learning," too many ABE curricula seem bound by a kind of low-grade consumer arithmetic. Lynn Arthur Steen considers the pedagogical tension between mathematical structure and meaning in *Why Numbers Count:* "Even though mathematics embedded in context often loses the very characteristics of abstraction and deduction that make it useful, when taught without relevant context it is all but unintelligible to most students" (xxiii). This tension between mathematical structure and "real world" context was recently explored by linguist/educator Frank Smith in an effort to discover why so many students have difficulty with math (*The Glass Wall*, 2002). Smith draws a bright line between what he calls natural language and mathematical language,

Ohio Literacy Resource Center
Enhancing Adult Literacy

Teacher to Teacher is a publication of the Ohio Literacy Resource Center
Research 1—1100 Summit St., Kent State University
PO Box 5190, Kent, OH 44242-0001
Phone: (800) 765-2897 or (330) 672-2007
FAX: (330) 672-4841 Email address: olrc@literacy.kent.edu
Web site: http://literacy.kent.edu

7/07

and he argues that many teachers fail to help students pass through the “glass wall” to the “world of mathematics”—the system of pattern and relationship independent of referent to anything but the structure of mathematics itself. He says that students get into trouble, for instance, when they try to make “real world” sense of the idea of division of fractions. ½ of a candy bar divided by ½ equals a whole candy bar (??). Signed numbers and fractional numbers provide other examples.

MEG has been wrestling with this tension for some time. We have coalesced pretty firmly around a perspective of teaching through problem solving and the mathematical discourse thus generated as the best and most effective way to balance context and mathematical structure. Challenging, rich, non-routine problems can provide context as they embed mathematical structure. Some problems we use are “artificial,” and others nearly context-free (what some educators call “naked”). We are interested in the problems themselves, and so, we find, are our students. Like Polya and Dewey we resist the idea of one kind of mathematics education for a minority elite and another math education for a presumed essentially non-mathematical mass. So we self-consciously use the word mathematics to describe what we teach, and we like to “label” our approach as problem solving. Good luck with your project. Charlie (7/ 6/ 06)

There are no easy answers when it comes to our ABE students. Fortunately, we, as teachers, do not have rigid curriculums or textbooks that encumber the K-12 system. However, this presents us with the challenge of what is best for each of our students, with their varied goals and needs. It forces us to think about what we are doing each day and each year.

I challenge all of you to think about *what* you have decided to teach your students and *why* you made that choice. *Reflect* on what you are doing. This critical thinking can only enhance our programs.