

## THE NCTM VISION OF “*MATH FOR ALL*”: A VISION or AN ILLUSION?\*

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Johnny, a 4th grader who can't sit still. His attention span is short. He is not motivated to learn. He disrupts classes. Johnny's teacher teaches math because *she has to*. The truth is that she doesn't like math, because she "*never got it*" when she was in school. Johnny's mother, a high school drop out on Public Aid, had Johnny when she was 16 years old. She hates math. She rarely communicates with Johnny's teacher or picks up his report card. Johnny spends most of his time watching television or playing outside.

Does Johnny sounds familiar? How many “Johnny” are out there does anyone know? Now, according to the current Nation's K-12 Math Curriculum Reform *crusaded* by National Council of Teachers of Mathematics (NCTM) and *endorsed* by the U.S. Department of Education, *Johnny should be learning* the following **13 standards** according to **the NCTM Standards for K-4** (5 to 9 years old) [I, p. 15]:

1. Mathematics as Problem Solving
2. Mathematics as Communication
3. Mathematics as Reasoning
4. Mathematical Connections
5. Estimation
6. Number Sense and Numeration
7. Concepts of Whole Number Operations
8. Whole Number Computation
9. Geometry and Spatial Sense
10. Measurement
11. Statistics and Probability
12. Fractions and Decimals
13. Patterns and Relationships

And the NCTM Standards *prescribes not only WHAT* “Johnny” is to learn *but also HOW he is to learn*. “Johnny” is expected to work in groups with his peers to discuss, to discover, to construct or to create math knowledge for themselves through "hands-on" manipulative activities and "calculator." [1, pp.15-19]. *Johnny's teacher is not supposed to teach or to impart knowledge. Her role is to guide and to facilitate.* [See also the questions for teacher to ask in "*Dialogue*" on page 3 below.] And the 4th-grade-*Johnny* is expected to achieve the following **five overall goals** in his math adventure [1, p. 5-6]:\*

- \* to **VALUE** mathematics
- \* to **BECOME CONFIDENT** of his mathematical abilities
- \* to **BECOME** a mathematical problem solver
- \* to **COMMUNICATE** mathematically
- \* to **REASON** mathematically

What do you think? Will our “Johnny” be able to discover for himself the abstract mathematics concepts, skills and their relationships through peer group discussions and through empirical experiences? And, *what is the probability for “Johnny” to master the thirteen standards and achieve the five goals as prescribed in the NCTM Vision of “**Mathematics for ALL**”?*

For many years, I used the very *"Interactive Group method"* advocated by the NCTM reformers to *train* the lay Christian group leaders and I know *the strength and the weakness* of the method. And I also have a *firsthand knowledge* of the gravity of math education problem of the bottom 20% of students for I have worked as a volunteer Christian worker in a low-income community having "math club" for 4th to 8th graders for many years. *I do not hesitate to make a categorical statement that "Mathematics for ALL" as envisioned in the NCTM Standards is an ILLUSION!* How could the reformers come up with such grand "VISION" and failed to see "the REALLITY"?

For generations, we have ignored the academic problems of the bottom 20% of the student population (students like "Johnny") [2, Vol. I, pp.13] [3, p.8]. We lost them in math "desert" until they developed "math phobia". We let their education problems got compounded, deeply entrenched and became social problems. Then, a new economic reality made the NCTM reformers realize that for the good of the national economy this population should become mathematically literate [1, p.4]. I couldn't agree more to the idea of serving ALL students, which we ought to have done instead of disfranchising them for so long [4]. Now, to overcome this *almost insurmountable* problem, one would have considered a *direct instructional approach* to get them out of the math "desert." Instead, the "reformers" now insist on taking them through the "wasteland" of NCTM math reform and letting them "wander" through *self-directed group learning!* And the advocates of the NCTM Vision call it *"mathematics for ALL students!"*?

Working with the students who at the bottom of academic ladder given me the opportunity to *carefully diagnosis* their educational problems. It is so obvious what they need is plain "Tylenol" --*a direct approach because the shortest distance between two points is a straight line*; and yet the current math education reformers, *who probably have never done any case study of this group*, insist on treating them ("ALL" students) with a "New Untested Super Antibiotic" called "the NCTM Standards" --*"Mathematics for ALL"* [5] Again, *history is repeating itself. We still appear to be, as we have been in the past, a nation willing to sacrifice her children on the "altar" of this theory or that theory!*

**The Secretary Riley** needs to be reminded of what the National Science Board Commission said regarding new curricula/programs:

*"The new programs developed should be tested extensively in a variety of settings to insure that they work with real students and schools before extensive implementation is attempted."*  
[2, Vol.2, p.13]

[1] Curriculum & Evaluation Standards for School Mathematics, National Council of Teachers of Mathematics, National Council of Teachers of Mathematics, Inc., Reston, V A. 1989.

[2] Educating Americans For The 21st Century, National Science Board Commission on Precollege Education in Mathematics, Science and Technology, 1983, Vol. 1 & 2.

[3] A Nation At Risk, National Commission on Excellence in Education 1983.

[4] Interview with Gail Burrill, Notices of American Mathematics Society, January 1998.

[5] Readers are encouraged to read "What About The Top 20%?", H. Wu, 1995. The paper is available on request at: [wu@math.berkeley.edu](mailto:wu@math.berkeley.edu). University of California, Berkeley, CA.

\* "The NCTM Standards: A World Class Math Education?" "The NCTM Vision of 'Math For ALL': A Vision Or An Illusion?" and "The NCTM Integrated Approach & Pedagogy: Logical Or IL-Logical?" (to be released soon) are three parts of one paper. Ruth C. Sun, 1998