

A Textbook Case in Textbook Adoption

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It was a textbook case on how to adopt substandard math textbooks. On June 15, 2005, the Washington, DC School Board voted to adopt Everyday Mathematics (EM) for elementary schools and Connected Math Program (CMP) for middle schools. The action was a photocopy of actions taken by other school boards across the country—adoptions that have been occurring on a disturbingly regular basis for the past decade and a half.

What the DCPS Board did and said on June 15 was so similar to what other school boards have done, one would think that they all operate from the same scripts:

A script on how to adopt math textbooks that require extensive teacher training and whose success is most likely attributable to the flurry of tutoring, enrollments in learning centers, or supplemental materials teachers must use if their students are to learn any math that will be of use.

A script on how to disparage testimony from mathematicians and knowledgeable parents, and give credibility only to their own witnesses.

A script on how to have an independent consultant summarize the results of the recommendations for textbook evaluations made by a committee hand picked by the school board.

Like any sleight of hand, once you know the tricks, these techniques are not subtle. Unfortunately, many people fall prey to the illusions used to convey objectivity and professionalism in the same way Las Vegas audiences believe David Copperfield can make an automobile onstage disappear.

As a public service, therefore, I have described the various tactics the DCPS school board used at last year's hearing. Do not make the mistake of thinking that these tactics are under the strict ownership and control of the DCPS school board. In fact, they have been used successfully by many school boards for many years. And if history is any witness, they will continue to be used for many more.

Some background on the “math wars”

To put the hearing and tactics in context, one has to first understand what the “math wars” are. Simply stated, the term refers to the controversy over math education in general, and state math standards and math textbooks in particular.

The DCPS School Board’s hearing focused on whether or not to adopt a series of math textbooks for K-12. Among them were the two math programs, EM and CMP. These programs are two of thirteen programs funded by the Education and Human Resources Division of the National Science Foundation (NSF) and based on standards developed by the National Council of Teachers of Mathematics (NCTM). Though the NCTM is a private organization, it exerts enormous influence over the math standards and texts used by most states and districts in the United States—standards and texts that, in the view of parents, mathematicians, and various teachers (many of whom keep their views to themselves for fear of damage to their careers) are inferior and one of the root causes for the steady decline of math skills and knowledge in the U.S. over the past decade and a half.

The NCTM’s standards reflect the education school mode of thought that learning to think critically is more important than the learning of “mere” facts. The knowledge base of the world is changing so fast, the theory goes, that learning how to learn is ultimately more important than learning facts. That critical thinking cannot occur without something to think critically about—namely facts—is of little concern to ed school gurus. And given the importance of critical thinking over facts, learning becomes a laissez faire type of thing in which information is presented in a never-ending spiral fashion in which topics are revisited and reviewed in the belief that “if they don’t learn it now, they’ll learn it later”.

These theories have informed many NCTM-influenced state standards and math texts. Case in point is EM which relies on a “spiral” approach and often results in students not remembering how to do it when they do return—and if they do remember it, it’s now being taught in a different way. It also tends to stay away from repetitive practice (called “drill and kill” by the reformers) and presents inefficient and confusing algorithms in lieu of standard ones for addition, subtraction, multiplication and division.

CMP for middle school also has significant problems. But because the DCPS hearing centered on EM, this article will focus only on that program.

Tactic 1: State that the traditional approach hasn’t worked

Step one in any school board hearing for textbook adoption is to make the case that the traditional approach hasn’t worked, and that anyone advocating for such an approach opposes progress and innovation. Dr. Hilda Ortiz, Chief Academic Officer of the DCPS school board, did just that in her opening statement: “The debate is traditional versus nontraditional,” she said as if that was all one needed to know about the math wars. “If you look at the history of traditional versus

nontraditional, the traditionalists are the folks that want things to stay the same way. But when you think about our success as a nation in mathematics, I'm not really sure that we have been so successful. If you remember your own experiences when you were in school, much of the knowledge that we obtain mathematically doesn't always stay with us, and that is a concern.”

Dr. Ortiz did not define what she means by “traditional” but seemed instead to rely on a generally assumed—and false—dichotomy in which “traditional” means drill, practice, rote memorization and little else, and math problems are given in isolation and not related to “real world” problems, while non-traditional provides more conceptual learning.

This is an inaccurate simplification. In fact, mathematicians and others advocate for learning based on mastery of continually repeated formal elements of math so that they become automatic. Such facts and procedures can then be used without having to think about the rules governing their use. This frees up working memory, allowing students to solve different types of problems using these facts and procedures, and to engage the highly sought-after “critical thinking” and “higher order thinking” skills.

I am a product of the traditional method which Dr. Ortiz contends doesn't “stay with us”. I know many others, including mathematicians, for whom this method worked just fine. It works extremely fine in programs like Saxon math, bitterly criticized as “drill and kill” and overly prescriptive by the “innovators” of education. It also works well in countries such as Singapore and Japan, scoring at the top in international math tests such as those in the Third International Mathematics and Science Study (TIMSS).

These countries use texts that are structured in the traditional methods Dr. Ortiz seems to believe have failed. The nation of Singapore, which has come in No. 1 in math on these exams in 1995, 1999, and 2003, uses a text and curriculum that requires students to learn a particular concept/skill to mastery before moving on.

The spiraling that occurs in Singapore's program, rather than reviewing previously presented material (but not necessarily learned), builds upon previously mastered material. It also presents students problems (“real world” or otherwise) for which they can apply previously presented—and mastered—material.

In addition to its spiral approach, EM often presents problems for which students have not been given adequate preparation to solve. The premise is that students will then work in small groups, facilitated by the teacher, to discuss “approaches” to the problem, and thereby “discover” what they haven't been taught. The theory is that what students themselves have discovered will stay with them, and not be forgotten as Dr. Ortiz and others allege happens with the traditional approach.

Tactic 2: Disparage testimony from those against the adoption as ideological and politically-motivated arguments

School boards confronted with concerns from individuals who gained support from Internet-based networks and university experts generally will employ the following tactic:

Begin with claims that the individuals are associated with politically-motivated groups

Avoid the substance of the concerns

State that these individuals do not represent the community; and

Assert their campaign is ideologically driven and that the school board's is the only view to be trusted.

Over the years, internet-based organizations have been formed (most of them started by angry and concerned parents) to provide information to parents, teachers, school boards and others on math education issues. One of the first such groups was formed in California and is called Mathematically Correct; another, is NYC HOLD (New York City Honest Open Logical Decisions on Mathematics Education Reform) to which I belong. Upon learning only a day before the hearing that DCPS was planning to adopt the texts, several of us in NYC HOLD and Mathematically Correct prepared testimony against the adoption of EM and CMP, and e-mailed the testimony to the school board members.

Dr. Ortiz, in fact, took note of the e-mails and pointed out the existence of "national groups of a variety of advocates, teachers, parents, some professors who really are very zealous in their political causes, and which are based on ideologies." She explained how she figured out that all these e-mails from "outside of D.C., from different parts of the country" were from people associated with NYC HOLD and Mathematically Correct. That established, she made sure everyone knew the rules which are "to always start with good data and not raise ideologies, or any assumptions." Dr. Clifford Janey, Superintendent of the DC Public Schools then followed up with his summation of the e-mailed testimony, declaring "I think they're short on research and long on opinion."

And just what did these idealogues say in their e-mails? Bastian Braams, visiting professor of physics at Emory University provided links to analyses he has written of EM which provide very careful, reasoned arguments (with many detailed examples) on why the spiral process and other aspects of the program it employs are ineffective. Ralph Raimi, emeritus professor of mathematics from the University of Rochester stated quite simply "In my experience with districts afflicted with these programs, affluent parents have sent their children to private schools or hired tutors, while the less privileged, even if they 'succeeded' in these programs, were forever cut off from any further progress in mathematics or scientific professional education."

Karen Budd, a parent in Fairfax County, Virginia, presented data showing how school test scores in math in the 14 poorest schools of Anne Arundel County, Maryland rose dramatically after one year, using the Saxon Math program. She also presented the test scores in math for the Project Excel Schools in Fairfax County, Virginia—schools which used a similar pedagogy in math as Everyday Math. These schools received an additional \$60 million in their budget for 5 years to implement new programs, procedures, and lengthen the day so that students could receive extra instruction in math and reading. Even with the considerable additional funds, longer days and focused attention, there was little to no increase the first three years and an overall decline the last year.

And Adele Hlasnik, a parent in Pittsburgh, Pennsylvania stated that after 10 years of Everyday Math in their schools test scores based on the Pennsylvania System of State Assessments (PSSA) show “that the curricula are failing the most vulnerable students, those from low-income, minority households. In the 2003-2004 testing year, over 70 percent of African American fifth- and eighth-grade students failed to demonstrate proficiency on the PSSA with some 50 percent measuring ‘Below Basic’ in each grade.”

Agreement with the choices of CMP and EM is typically described as "objective" or "balanced," whereas disagreement is "ideological." In fact, the opposite is true. The criticisms stated by the testimonies were based on objective mathematical shortcomings. On the other hand, it's the arguments promoting them that are consistently ideological. And of course, in the end, according to school board tactics, the texts don't matter at all. The teachers do, which brings us to the next tactic.

Tactic 3: State that the success of any program depends on the teacher

Disparaging the testimony as ideological argument is only one step in the process. The next very important step is downplaying the importance of a text. There is more to this tactic than meets the eye. The first part of this tactic is that when parents or mathematicians criticize defective textbooks, the response is that textbooks don't matter; teachers do.

Let's see how this works. Dr. Janey made the following statement at the beginning of the meeting after acknowledging the e-mailed testimony that criticized the textbooks: “I don't believe it would be fair to make a causal relationship between any textbook series and mathematics,” he said. “Other variables are much more important than just a particular set of materials.” This It's-the-teacher-not-the-textbook argument sets up a barrier against criticism of any program. If a school does poorly on standardized tests, the teachers are held accountable, not any textbook that the school board had a hand in adopting.

The second part of the tactic covers the situation of someone asking “why change the books if they don't matter”? The answer to be given is “of course they matter.” And sure enough, later in the meeting, the question did indeed get asked, by board member Victor Reinoso: “If it

doesn't matter what textbooks we use to drive student achievement, then why are we changing textbooks?"

Dr. Janey responded: "I didn't say textbooks don't matter. I said be cautious about making a causal relationship between the use of any print material and student achievement." That established, he then put on the finishing touch. "I was suggesting that we should not put too much emphasis on any type of material because in the real research, it's teachers that matter most," he said, thus having it both ways. Which is good because in the case of EM, there is no textbook—only a set of workbooks with problems that students work in every day, a Student's Reference Manual which students can read at their leisure to look up terms and concepts, and a teacher's manual. But that aside, Dr. Janey's answer was so skillful that Victor Reinoso thanked him for the clarification, and then asked what type of teacher training is going to take place, given that it's the teachers that matter.

As it turns out, the cost of the textbooks includes teacher training and professional development, words that always sound good but which raise questions about what this training is all about. If it's the teachers that matter, training should be rather critical. But since EM is one of several programs intended as a shortcut to higher-order thinking skills, it isn't likely that training will consist of helping teachers to structure new information and of helping students to relate it to what they already know. Nor is it likely to be about instruction from the teacher nor about mastery of basic facts and skills. More likely it will be about how to facilitate classes to work in small groups (the mainstay of education school theory: students teach other students better than teachers can), to not answer questions, or to direct information.

With teachers—and teacher training—being more important in the end than textless math curricula, what could then be better at a school board hearing than testimony from teachers themselves?

Tactic 4: Bring in teachers from affluent school districts as witnesses

After acknowledging, and disparaging, criticism of the textbooks to be adopted, and after maintaining that the textbook is not as important as the teachers, what makes more sense than hearing from the teachers themselves? This is precisely what happened. EM has been piloted in six schools in the District: John Eaton, Horace Mann, Murch, Bunker Hill, Janney, and Hearst. With the exception of Bunker Hill, which is in Ward 5, all of these schools are in Ward 3. The percent of students receiving free or reduced price lunches in the schools in Ward 3 range from 4 to 15 percent. This metric is considered an indicator of socio-economic status of the school. Generally, at lower percentages, the more affluent the population, higher school test scores tend to correlate well with affluence. The level for Bunker Hill was 48 percent.

Math test scores for the schools in Ward 3 tended to be high—more than 80 percent of the students received passing scores on the SAT-9 tests for math. The Janney School has piloted EM for 8 years, but the other schools have not used it as long. All math scores for schools in

Ward 3 were in the same general range. For Bunker Hill in Ward 5, however, the scores were lower, ranging from 65 to 80 percent over a five year period.

Why this is important is that schools with a more affluent population will tend to do well for any number of reasons, including students receiving tutoring, enrolling in learning centers (e.g., Sylvan, Huntington, Kumon), obtaining help from parents, or having more experienced teachers who supplement the material.

But the school board presented this as evidence of the effectiveness of EM. Sue White, director of mathematics for DC Public Schools stated as a witness that: “We have, in the District, six schools who are presently using EM and have topped out on mathematics scores.” They also topped out on reading scores, which wasn’t mentioned. Also not mentioned was the fact that Bunker Hill did not top out on math scores. Ms. White read a statement from a teacher at the Hearst School, praising the program but also stating “Our school’s population is 82 percent out of boundary with the majority coming from Wards 7 and 8.” This statement supposedly gives evidence that high test scores occurred even with a diverse population. But again, the percent of students receiving free or reduced lunches is quite low—5 percent. So the students coming over from Wards 7 and 8 do not appear to be poor.

With high test scores as the setting (except for the anomalous scores from Bunker Hill, which weren’t mentioned), various teachers raved and told stories about the wonders of EM as Betsy Kelly, a teacher, did in her concluding statement: “So if a student is not getting something the first time, they will come around and they’ll get it again. So in 4th grade, when they’re introduced to long division, which is a very abstract, very hard concept for kids in 4th grade, they will get it again in 5th grade, they’ll get it again in 6th grade, and they will master it. Believe me, they will master it. But they get another chance at it.”

Ms. Kelly left out many details. I am familiar with Everyday Math and how long division is taught since EM is used in Fairfax County, Virginia where I live. The traditional long division algorithm is not taught in 4th grade; a rather cumbersome and inefficient method is used instead. In one class I know the teacher forbid use of the long division algorithm among students who happened to learn it. In 5th and 6th grades, the traditional method is introduced but they do not work with it enough to gain proficiency in long division.

For those who are curious, this is what EM has to say about long division from the Teacher’s Reference Manual: “The authors of Everyday Math do not believe it is worth the time and effort to develop highly efficient paper-and-pencil algorithms for all possible whole number, fractions and decimal division problems....It is simply counterproductive to invest hours of precious class time on such algorithms. The math payoff is not worth the cost, particularly because quotients can be found quickly and accurately with a calculator.”

Tactic 5: Bring in a witness from a university

At various times in the hearing, there was mention of a witness who would be talking. Sue White, the DC Public Schools mathematics director referred to “Tom Bullock, an esteemed mathematics professor from Georgetown” who would be talking later. There were other references to Bullock as a professor from Georgetown. In fact, Mr. Bullock is not with the mathematics department of Georgetown, nor is he a professor. He has a masters degree in mathematics and is Assistant to the President for District of Columbia Education Initiatives. He directs the education outreach initiatives of the university and as part of that works with K-12 schools within the District of Columbia. It is hard to say whether referring to him as a professor was intentional, but I could not find evidence of any correction of that in the transcript of the hearing.

What Mr. Bullock had to say referred to research from a Department of Education report on the Third International Math and Science Study (TIMSS). The report examined countries outperforming U.S. students in math and identified what they were doing to achieve such success. “The one approach is that they favor a spiral approach to teaching mathematics” he said.

While not precisely correct, it is not exactly wrong either. In short, a perfect statement which can be read into any way one wants. There is spiral teaching as it is done in Singapore, and there is the spiral method as done by EM. The two are very different. Singapore revisits older material that has been mastered and builds upon it. EM’s “learn it later” spiraling is not used in the highest performing nations. Also, not addressed in his statement is the fact that if EM omits valuable material, no amount of spiraling will bring it in.

Tactic 6: Assemble your own expert panel and have an independent consultant summarize the results

The DCPS Board recently adopted mathematics standards that were modeled on those used in Massachusetts. These standards are among the best in the country. It was therefore a surprise to learn that DCPS was recommending the adoption of EM and Connected Math Program, given such strict and demanding standards.

The DCPS put together a panel of teachers and personnel to evaluate the textbooks for adoption (not just math, but literature, science and social studies). I obtained a list of the names of the people on this panel from the DCPS through a Freedom of Information Act (FOIA) request. I also requested the Curriculum Vitae of these people, but was told they would have to go through everyone’s to determine what needed to be “redacted” (struck out) for confidentiality reasons. I have never received any information on the personnel.

DCPS hired a firm called StandardsWork, a consulting firm in Washington DC that among other things helps school districts evaluate textbook decisions with respect to standards. I obtained a copy of their report through a FOIA request as well. At first reading I thought the report was StandardsWork’s recommendation on what math texts should be adopted. But it is not. It is a summary of the recommendation that the School Board’s hand-picked panel made. I

contacted someone at StandardsWork, who confirmed that this was indeed the case. The person then intimated that had they made the recommendation, it would not have been EM and CMP.

The report cautions that EM and CMP require intensive professional development programs for teachers and principals. It also recommends that the sequence of EM and CMP would require supplementation with specific “skill and drill work” and “added emphasis on procedural proficiency is essential”. Most interesting, however, was the statement of caution about the “math wars” and that “if DCPS selects the non-traditional texts [i.e., EM and CMP] for use district-wide, it must be prepared to withstand the ‘heat’, as it is likely to find itself in the position of having to spend political capital, energy, and time, defending the choice.”

Apparently, the District was prepared for the resistance, but I can’t really say they have spent an immense amount of energy and time “defending the choice”. The vote to adopt was passed at the hearing on June 15, 2005 with no further discussion of the issue.

A never-ending story

I happened to talk to several parents who had kids in the Janney School; this was one of the schools at which EM had been piloted. None of the parents had good things to say about the program. The school has held parent meetings to help parents learn the math so they can help their kids. For one parent, this didn’t work, because she couldn’t catch on. Neither could her daughter who she said is two years behind her peers and finally was given an Individual Education Program (IEP).

Another parent said she became suspicious when her son was in first grade. “There seemed to be altogether too much emphasis on estimating and my son would ask to use a calculator at home. Now that my son is finishing second grade, I have no doubt that the program is awful,” she said. She has hired a tutor for the summer and may use the tutor into the school year. She has instructed the tutor to teach her son standard algorithms.

In terms of teachers, I was only able to talk with a few. Many are afraid to come out with anything negative about the school district. I found that experienced teachers did not take to the program, and supplemented it with texts they had used in the past which they knew to work. In general, I find this true all over; superlative teachers do more than supplement the material—they supplant it. But such teachers have been around a while and do not fear for their jobs as newer teachers do. One teacher told me that in some schools, teachers simply won’t use it. Principals didn’t have enough control to stop it in those schools. “It reminds me of an arranged marriage,” this teacher said. “Many teachers don’t like it.”

Since EM emphasizes group work, teachers have had to facilitate small groups in their classes. One first grade teacher said this hasn’t worked well because at that age some children lack socialization skills and can’t sit next to each other without grabbing others’ belongings. Not to worry, though; the school is now going to teach socialization skills next year

Newer teachers thought that the program had merit, probably because it matched the theories they had been hearing about in ed school, which promote things like child-centered curriculum, discovery learning, working in groups, and spiral process. Some of the newer teachers confessed at being confused over how to teach the various algorithms for multiplication, addition and subtraction. One can only imagine how their students felt.

I have seen the effects of the “spiral” in my own experience with EM tutoring several sixth grade students whose school used the program. I needed to get them up to speed on fractions in order to keep these kids ahead of what I saw as an oncoming train wreck with upcoming worksheets on multiplication and division of fractions in their EM workbooks. I used the Singapore Math texts which present distinct information in a logical sequence. I thought that I would be able to zoom through the beginning exercises which I took from the Singapore 4th grade text and quickly get up to multiplication and division. I was totally surprised, however, when I saw that they reacted to the basic concepts such as equivalent fractions and addition and subtraction of fractions as if it they had been seeing these things for the first time.

I was therefore curious to know teachers’ views about the aspect of EM in which students are given a problem for which there has been no prior explanation or similar problems. For example, in a set of exercises involving division by whole numbers, there may be one problem asking students to solve 20 divided by 0.5. I asked one teacher how he handles that.

He defended the practice, stating “In real life the application of math does not occur in a box. This is one of those examples in which the child is sent into disequilibrium as Piaget might say.” After he got the ed school jargon out of the way, he admitted that in problems like that, “some students get it, others don’t.” He said sometimes it could be resolved in group work, where one student “already knew it from home and shared it with the other student.

Finally I asked him what he tells a student who says “I don’t understand the problem 20 divided by 0.5.” He explained that if you want the child to explore the answer you may ask the child to think about money as a way to explain the problem but then pointed out that students who don’t understand place value clearly misinterpret 0.5 and 0.05. I would agree with that; particularly if the only prior work in decimals came some time last year on the “spiral”, and there has been no discussion of decimal division.

The teacher’s bottom line was “If you have been teaching for a while you probably have the lines down.” In other words, in an echo of the “It’s the teacher not the text” motif, he didn’t feel he had enough teaching experience to know. I find it sad that he *would* have “the lines down” if he were using traditional texts like Saxon, Singapore, or others.

The teachers clearly bear an unfair burden in all this. So do the students who don’t have access to tutors or learning centers or parents who can teach them what they’re not being taught. In the meantime, the school boards go on with their business, buying into the next educational fad

that comes along, ignoring parents and expert opinions, and adopting programs that are short on content, and long on deception.

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