

On October 7 Parents for Quality Math Education (PQME) posed the following question to all six candidates running for the State College Area School District School Board:

“Parents for Quality Math Education (PQME) is a group of parents and citizens in the District who are concerned about the direction of the SCASD math curriculum, especially for grades K-8. Considering the low PSSA math scores in our district for 2009, our group would like to hear your position on this important issue. Do you support the School Board's decision last June to adopt the 2nd edition of *Investigations* throughout the District as the core elementary math curriculum with a supplementary “Action Plan”? Or would you prefer that the District begin an open, inclusive process to select a new math curriculum? Or do you hold a position different from these?”

The following responses were received by October 19.

Penni Fishbaine

The State College school students' PSSA math rankings in the state have decreased significantly for 3rd, 5th, and 8th grade since the district started using *Investigations* as the main math curriculum. Given this empirical data and the fact that over 700 citizens in the district signed a petition requesting the discontinuation of *Investigations*, I would support the search for a comprehensive, cohesive, and more consistent (than we currently are using) core math curriculum for the district.

When over 700 people sign a petition against a particular program, common sense tells me something is wrong. The district has held multiple Parents' Nights to explain the conceptual math curriculum, and still there is opposition to *Investigations* as a core curriculum. It is more than a communications problem at this point.

On the district website under the *History of Program/Research* for *Investigations* (<http://www.scasd.org/249737814134550/blank/browse.asp?a=383&BMDRN=2000&BCOB=0&c=65203>) the answer to question one is:

In 2002, Sue Younkin (Elem. Math Coordinator) and Cam Bausch (Assistant Superintendent) led the district's adoption committee, which consisted of teacher representatives from each school. The goal was to find a consistent approach to teaching mathematics across the district that best met the Pennsylvania State Testing Standards that were being developed and implemented.

One of the reasons for originally adopting *Investigations* as our core math program was to provide consistency in the math programs throughout the district. Since *Investigations II* is a full school-year program with daily lessons and teachers are to incorporate traditional math supplements, I believe we are once again going to have consistency issues. Individual teachers will need to select which *Investigations II* lessons or portions (and how much of it) to teach along with the supplements for traditional math. There is only so much time in math class so it no longer serves the purpose of ensuring consistency across classrooms.

Students learn in different ways, and different approaches work for different students. Teachers are our professionals. In order to have consistency throughout the district and our students learning with proven methods, the teachers need to have access to multiple resources, but also have one comprehensive and cohesive math program that is strong in traditional math and incorporates conceptual learning ideas.

Following is the answer to question 2 (same link as above), *if we didn't have problems, why are we doing this? Where is the evidence that it is working?*

Our former approach did not adequately prepare students for the kinds of thinking and breadth of content that is expected on the PSSAs today. While our PSSA scores have maintained with our current curriculum, we are not confident that would have been the case with our former approach.

Obviously, the *Non-parametric trend analysis of SCASD PSSA performance* from the district proves that the Investigations curriculum has not allowed our students to keep up with other students in the state. There is a significant decrease in our math rankings relative to other Pennsylvania students since we started using *Investigations*. It may be advantageous for a certain group of students, but that does not negate the success we have had in the past with Traditional math.

As transparency and open communications are a significant part of my platform for office, I believe all important decisions should be decided based on empirical data and input from the administration, teachers, parents, and the community. Therefore, we should have an inclusive process to select a new math curriculum. We are all in this together, to provide the best education and to encourage student success.

David K. Hutchinson

My thinking has not changed a great deal since last spring, but here are a couple of points I think are worth making.

First, it is important to understand that there is no such thing as a perfect curriculum. It takes time for teachers to learn how to adapt it to meet the needs of individual students. While there may be other good math programs out there, changing the entire curriculum is the surest way to impede the academic progress of our students.

The latest edition of *Investigations* Math specifically addresses the aspects of the program that needed to be strengthened. One area that has been improved through the efforts of our teachers has been the issue of parents struggling to help their children with homework. One bonus is that the parents who have availed themselves of these opportunities have discovered that they can learn a new way to learn math.

Unfortunately, there are many people of my generation who think that the only correct

way to learn math is to memorize the algorithms. But when you understand the concepts behind the rules, it is not only easier, it is considerably more fun. By the way, Math is **supposed** to be fun. The fact that generations of Americans consider Math to be tedious or boring is tragic and a terrible waste of human potential.

According to a recent study at Vanderbilt University “teaching children the basic concept behind math problems was more useful than teaching children a procedure for solving the problems—these children gave better explanations and learned more.” And, “this adds to a growing body of research illustrating the importance of teaching children concepts as well as having them practice solving problems.”

Just this week, the nation’s largest group of math teachers urged a new approach to *high school* instruction, one that aims to build students’ ability to choose and apply the most effective problem-solving techniques.

Our teachers are beyond enthusiastic about the improvements they’ve seen in our students. On what basis do we dismiss their insight? University Education professors—who understand the importance of different learning styles—have been very supportive of the current approach, particularly in light of the adjustments that have been made this year.

Finally, I’m concerned about what I view as a misuse of statistical data in order to find justification for one’s point of view. It shouldn’t be necessary to point out that one data point does not a trend make. Correlation does not imply causality. And basing one’s entire argument on the results of one high-stakes test is indefensible—unless we believe that the PSSA measures every important component of our students’ mathematical skills and knowledge.

This change in math instruction was long overdue. Forty years ago, it may have been ok that 20% of our students were “good at math.” This is no longer acceptable. As school board members, we have a responsibility to give every student the opportunity to succeed. In the 21st century, it is important that **all** our students to be able to **think** mathematically—not just the select few who have traditionally done well in math.

Brian Kaleita

I do not support the Board's decision last June to continue with the *Investigations* math curriculum. Had I been on the Board at that time I would have voted against that decision. PSSA results indicate to me that the use of *Investigations* as the core math curriculum is a mistake. Other school districts in Pennsylvania are achieving better results with other math programs. I also believe in involving parents to a greater extent in the decision making process when it comes to the selection of teaching materials for their children. SCASD education bureaucrats must become more willing to listen to the legitimate concerns of parents who, after all, remain the primary educators of their children. If I am elected to the School Board I will work to eliminate *Investigations* as

the core math curriculum. I favor establishing a joint parent-staff effort to find a replacement program.

Thank you for the opportunity to present my views on this issue.

Jim Leous

Like many of you, I have experienced the frustration of helping my children with math. Currently I have two children in the *Investigations* program. I was trained as a physicist and yet I sometimes have to do my homework before I can help them with theirs. My son's math experience last year at the third grade level was a good one, but I know in part that it was due to an excellent, experienced teacher. Last year he was adding fractions with unequal denominators (something which my brother can't do today) and working with some 3-d geometric shapes.

In my field, Information Technology, innovation is often the result of finding another way to do something. That search begins with the realization that things aren't always done the same way. I think it's important for our students to acquire this skill, and conceptual math is certainly a start.

With that said, the question remains as to whether the *Investigations 2* curriculum supplemented with U.S. algorithms and more traditional approaches to math is the best way to accomplish this. From what I've observed with regard to the *Investigations 2* fourth grade material, it appears that the publisher has found a better balance between concepts and algorithms. The SCASD Elementary Math handbook is another step in the right direction. I have used it at least once already for help with the fourth grade homework. In addition to the *Investigations* work sheets, I have already seen more traditional math homework this year.

I attended the Elementary Math Night last Thursday. Between the weather and the Phillies, attendance was low. I hope the district holds another because I found it worthwhile. It is clear that there is a much better effort to communicate with the parents. I thought the examples of developing Algebra skills through the grades were pretty good. During the question and answer session, Dr. Barb Schaefer asked a question about algorithms that I think deserves a more detailed answer. I suggest that one of the improvements in the feedback resulting from the Action Plan is a time line showing which algorithm was taught and the approximate time in the curriculum for it to be taught. As I said previously, if the homework is representative, our students are being taught the more traditional math, at least for my data points.

Based on the early measures of the Action Plan, I would like for us to see it through the year to determine if our overall elementary math proficiency improves. I believe we need to continue to refine the Action Plan and suggest the following improvements:

1. Identify those sections of the PSSA tests where our students are testing poorly and

determine if that is a deficiency of the curriculum or the way the students are being assessed.

2. Develop a more clear time line for the introduction of algorithms into the curriculum with indications as to which algorithm is taught at which time.
3. Develop or identify some YouTube (or similar on-line video) segments which explain the U.S. Algorithms and make them available on the SCASD Website.
4. Develop or identify some YouTube (or similar on-line video) segments which explain some of the Investigations homework problems and make them available on the SCASD Website.

Long term, we should conduct a periodic evaluation of the curriculum (not just math) under the direction of the curriculum coordinators. I hope that the math evaluation committee would include some of our local community experts in addition to parents of elementary school children.

Thanks for giving me the opportunity to respond to this. If anyone would like further clarification or to discuss anything related to the School Board campaign, please e-mail me at "jim dot leous at gmail dot com".

James Pawelczyk

The SCASD challenges students to become mathematically *fluent*; comfortable with the language of mathematics and able to employ it as a tool. Among the many professionals, parents, and citizens with whom I've spoken, there is consistent agreement that facts, concepts, and procedures are all essential elements of the district's math curriculum. The question that remains is, "are students learning math the best way for State College?" Assessment is one essential means to help answer this question.

Absent another instrument, the Pennsylvania System of School Assessment (PSSA) is the standard for the district to evaluate math proficiency and growth. As your question implies, relative to the rest of the state, SCASD performance on the math component of the PSSA has been declining. The following observations are relevant:

- Over time, the rank of the SCASD among the state's 500 school districts is declining at grades 3, 5 and 8. In 2009 alone, the district's ranks on the math PSSAs reached historic lows in 5 of the 7 grade levels where the tests are administered.
- During the past 5 years, 18/32 math ranks were 100 or greater (i.e., below the top quintile statewide). In the same time period, only 2/32 reading ranks were 100 or greater.

- The Pennsylvania Value Added Assessment System (PVAAS) indicates that for the past three years, 5th graders in most SCASD elementary schools fail to make an expected year's growth in their math learning.
- Whereas the percentage of 11th grade students in the state achieving proficient or advanced ratings in math changed little from 2008 to 2009 (55.9% vs. 55.6%, respectively), the percentage 11th grade students in the SCASD achieving proficient or advanced ratings declined from 78.3% in 2008 to 69.5% in 2009. For the first time in a decade, SCASD 11th graders did not score in the top 5% statewide.

Although students' accomplishments remain commendable, I believe the overall performance and trend in mathematics is no longer consistent with the expectation of high achievement traditionally held by members of the SCASD community.

The SCASD recognizes these developments and is responding. Over the past year, the curriculum and instructional staff have demonstrated extraordinary diligence and effort in communicating the math curriculum to the public. They have made tremendous strides by helping parents, students and the rest of our community appreciate the importance of conceptual understanding, particularly in elementary math education.

While I applaud the district's efforts to improve student learning and parent engagement with the *Investigations* curriculum, it is a matter of public record that I did not vote in favor of adopting the *Investigations 2* curriculum. The steps outlined in the district's "Action Plan" appear logical and appropriate, particularly with regard to standards alignment, fact fluency and practice. Methods to assess and individualize learning are developing steadily and are just now being implemented. However, the Action Plan falls short in one key respect: it presumes that *Investigations* is the best curriculum choice for the SCASD. Accepting *Investigations 2* for granted denies the district opportunities to analyze other curricula to determine if potentially better solutions exist.

There are many reasons to be proud of public education in the SCASD, but the slow progress, and in some instances, reversal of math achievement, should be a call to improve. I voted against adopting *Investigations 2* in order to provide the district sufficient time and opportunity to evaluate and pilot both alternative curricula and the Action Plan.

Nowhere in the job description of a school board director are the words, "curriculum expert." School boards invest their effort and your taxpayer dollars to ensure that professional educators have the right resources to help students learn; to make certain that education is contemporary, appropriate and affordable; and to analyze performance with validated assessment tools. If it can be established using complementary means of assessment that high levels of math achievement and growth can occur with the current curriculum and Action Plan, then why should its continuation be disputed? But if these expectations are not met, as I believe is now the case, then a curriculum change should be considered, perhaps by a coalition of education professionals and discipline experts. Neither teachers nor students deserve anything less.

Thank you for the opportunity to respond.

J. Gowen Roper

The role of the board is to set policy, to establish clear goals for the district, to provide the administration with the resources to achieve these goals and then to assess progress towards these goals on a regular basis to insure accountability. As elected representatives the Board also needs to listen to and be open and responsive to the concerns of all the members of the community. I believe that the board, the administration, teachers and parents all have the same goal: to have a rigorous, comprehensive math curriculum that insures that every child has the math and problem solving skills that they need to succeed in their future. We will always need to improve our curriculum and how we deliver it. We know that we need to improve the fact fluency and conceptual understanding of all our children. I believe the Administration's Math Action Plan recognizes the need for continuous improvement and represents a step in the right direction. We need to continue to assess progress towards this goal using a number of different achievement indices, not simply the PSSAs, and to use this data to direct further change. I trust that our teachers and administration will continue to bring us towards our common goal.