Calculus by 3rd Grade

A bad experience in algebra sets students for failure as they progress through the math curriculum in high school or college.

While Calculus by 3rd Grade is an exaggeration, essentially that is the direction “reformers” seem to have takes as a way to increase the academic standards and increase rigor.

A few years back, there was a big push to have all students take algebra by 8th grade. The argument made by these ‘reformers” was they would rather have students take and fail algebra, being exposed to higher level math, then taking down a watered down math class. They argued that, in the long run, these students would benefit by taking algebra, even if they were not prepared. We know see, they were wrong.

Math teachers argued that first year algebra is the foundation that the rest of math is built, that students would not benefit from the class if they were incorrectly placed; prepared students would suffer having to endure distractions from kids that either did not want to be in the class or who were either unable or unwilling to do the work.

Well, now that we are a few years down the road, what have we found out? The math teachers were correct. As juniors and seniors, we find students who were enrolled in 8th grade algebra who did not have the prerequisite knowledge and skills are performing below students who did not have to take algebra in 8th grade. While that might surprise some, it certainly was not a surprise to math teachers.

The only thing that was accomplished is we made thousands of students miserable throughout their math career, they did not receive the foundational skills to become successful in math, and they are now being outperformed by students who did not have to face that misery, and we placed their graduation in jeopardy.

To address the failure of this initiative, schools and districts sought additional funding from the taxpayers to purchase remedial programs, tutoring, and after contract. It would have been just a lot better and a lot less expensive to have placed students correctly in the first place so they could succeed.

The only thing that was really accomplished with this initiative, a number of the reformers, the superintendents, made a name for themselves by increasing their profile, telling their respective communities they wanted higher standards, that all kids can learn, then they moved on to higher paying jobs, leaving the devastation that these kids had to endure, teachers frustrations behind, and the taxpayers with the bill.

You’d think these people would learn. Now there is a big push for all students to be enrolled in Advanced Placement AP Classes or Pre AP in middle school. Maybe we are not smart enough to see the parallel between that algebra initiative and the new AP initiative. Yes, those initiatives sound great in the evening soundbite, but the simple fact is, if the kids are not ready, because of maturity, lack of skills or capacity, we are not serving the students very well.

Should we push for higher standards? The answer is absolutely yes. But the standards should be reasonable, attainable and reaching those should also be retainable.

Just as we teach basic math facts, we should expect students to retain that knowledge over time. That ability to retain information over time occurs through understanding, usage and practice. We all know memory decreases over time, so revisiting information is also paramount to student success.

As we expect kids to learn and remember their basic arithmetic facts, there is also an expectation that students learn and remember basic facts in an algebra or geometry class. This is also a function of time. Teachers need the time to more fully and appropriately develop concepts that lead to rules, formulas and procedures, students need time to practice so they gain procedural fluency.

Making students learn concepts and skills at earlier grade levels isn’t really increasing the rigor of the academic standards if the students are not academically mature enough to understand the material. If the curriculum doesn’t allow enough time for mastery (practice), then we are pretty much spitting in the wind and will need to more money to fix a problem we created.