

Notes from Mathematics Faculty Exchange - November 13, 2008

1. High Schools are required to provide Academic Intervention Services (AIS) for students who fail or are at risk of failing the Mathematics Regents. Who are these students? What are the issues in teaching these students? What can AIS and the students who “take AIS” in high school tell us about students who are assigned developmental mathematics courses as they enter college?

Who are these students? In many districts, they are often high school (HS) students who haven't had a 4th year of math. College faculty will know that if high school students took math A and B then they did take a 4th year of math for most districts. However, the Guidance Department representative from Middletown noted saying that all their seniors must take a 4th year of Math & Science, even though that exceeds graduation requirements for NY State.

Maturity issues were discussed...many teachers maintain that some students are ready or not. “Developmental readiness” is an issue in mathematics. Unfortunately, many students receive the message they can't do higher level math, but they really can, they are just not ready

Some teachers see two groups of students: one group who works hard and one group who is not motivated, no desire to do the work

When thinking about the data for students who currently are unable to place in college-level mathematics at SUNY Orange, only 28% of those who are taking non-credit bearing (“remedial”) developmental courses are taking a developmental math course (the majority are taking a developmental reading or writing course). However, it is important to note that the course at SUNY Orange called College Algebra is not considered developmental by SUNY Orange, but is considered developmental at Mount Saint Mary College (MSMC). The faculty present agreed that it is really high school math level.

HS math are hopeful that a recent revision of the Mathematics Learning Standards will result in more student success because some duplication has been reduced in the K-8 continuum. With the prior standards, too much repetition of the same concepts in grade after grade resulted in the students dismissing the importance of math or gave up because it was the same thing again and again.

MSMC starts with a functions course, it's pre-Algebra and includes graphing calculator...some students have to do remedial math before they get to this first course. The noncredit courses are taught by another department at MSMC. At SUNY Orange, the math faculty all teach the developmental courses as well. They prefer to do it that way.

MSMC competency exam: 45 minutes for 15-20 questions. Based upon their academic major (goals), they are placed in a certain level. If they need calculus they do one thing, if not, they do another path. Where they go in math depends upon where they are going, it might be functions and then statistics track rather than a calculus or pre-calculus track. All students must be past the developmental level and if non-math major then they take a non-algebra course that is more problem solving than math. Around 44% of entering students are placed in developmental courses at MSMC.

Electronic calculators are allowed on the MSMC entrance exam, but only a TI 84 but not TI 90 (because it factors an equation) and a scientific calculator pops up on the screen.

Placement based on taking Advanced Placement (AP) courses is the same with SUNY Orange and MSMC: Students need a four or five in AP and if it's a college-level course then 99% of the time it's accepted if students earn a C or better in the course. In these cases, students don't take the placement test. However, they do take the placement if students come in with a three on an AP exam.

Use of Calculator on placement exams – Reportedly, Westchester Community College doesn't allow calculators, but some other schools do, such as MSMC. Since the State Education Department requires that schools provide graphing calculators, students can be receiving a mixed message. At the least, some are surprised and disadvantaged when they learn that they cannot use calculators on the placement exam. This is a point of major discussion between high school and college faculty.

Real world application of formulas - why shouldn't the list be allowed if it's available in the real world? Students need to know the basics...does using the calculator mean they know the long division? Why do they need to know what's behind the calculations if they are not going to use it?

Can there be a blend – a bridge? It should depend upon what you are looking for: Is it a process or is it the knowledge of long division? Why not the calculator?

On Accuplacer (placement exam used by SUNY Orange and many others) there is a popup calculator for some questions. HS faculty would need to know what is specifically expected and then they can prep the students better.

An action research study was proposed: look at the results of Accuplacer with students comparing their scores with and without calculators to see if there really is a difference. It was also suggested that the students retake the placement exam on the first day of developmental arithmetic. SUNY Orange faculty noted that if the students can make a strong case that they are inappropriately placed in developmental math, then they do change their placement. More often than not, the students are accurately placed and sometimes those who are moved out unfortunately fail the college-level course.

Discussion of requirements for math credit and algebra....

Issues for learners today.... Issues of families today.....

Issue of State Education Department (SED) in New York State: math specialists are in the department and their work identified as helping roll out the three new Regents exams in mathematics (Integrated Algebra, Integrated Geometry and Integrated Trig), but none have a math degree. It is also a challenge that SED has two distinct divisions that relate to mathematics, curriculum and assessment. Yet, these two areas are separate and only answer questions in their own areas of expertise, e.g., if it's about the standards, it's one office but if it's about the Regents exam, it's another office.

Does HS faculty like the new algebra assessment? Yes, but remember that it's allowable not to have algebraic solutions. Any proof will be acceptable if it's geometric or not. Dynamic software and Geometry Sketchpad must be used for teaching these concepts and there's some confusion whether it will be allowed or not on the Regents.

2. Possible solutions that might increase the likelihood of success for students moving from high school to college in mathematics.

Share the name of the courses of HS to know what the courses are...every school is different in how they call certain courses...when they pull a transcript then SUNY Orange might know about their placement.

Do students know what their last math class was? Do they know their Regents exam and exam score? If they don't know these answers, HS faculty note that these students are likely to be our "stretch students" who have taken more than a year to complete their Integrated Algebra or Math A course.

Placement data shows that the average age of students of SUNY Orange is decreasing and now 54% are full time...these trends will increase due to the economic issues.

For many, SUNY Orange is a second chance and they deserve that. Yet, it's sad to see Elementary Algebra being taken two and three times by students.

Would like to see a better job of assessment...if it's really only about the calculator then we don't want people to be in a course unnecessarily. SUNY Orange is considering letting someone take the assessment and then, if they want to take 15 hours in the lab and take it again instead of the remedial class, they may allow that for some students.

The Mount has a similar arrangement through a special program. Students have gone into a remediation program and at least 90% were successful.

Maybe we could do a Summer Institute ... sign up for the class and complete any developmental course over the summer. There were a lot of returning students but more of them are recent high school students.

A good thing is for students to know that registration during spring is important since classes are gone by the summer...placement test over the summer can be a surprise...math is usually at the end...three hours of testing...take it seriously.

Summer Institute at SUNY Orange is \$40 for the math plus the cost of the book (basic arithmetic, developmental algebra) through continuing education...at the end of the six week course (2 hours 5 minutes, M-R). It's for students who place into developmental arithmetic. If they also place into developmental reading, then they have a full day where they do reading. They really can master both contents. The last couple years, these courses have not been full.

It was suggested that discussions take place with Guidance Departments. One of their representatives at this meeting offered to share this information at a regional meeting with other guidance counselors. It was suggested that SUNY Orange put together a packet of information on how to be successful for the placement exam.

Accuplacer has a specific program for high school students and provides sample testing and preparation... Check out www.accuplacer.com

Maybe a grant writer could get funding for this kind of sharing and prep of students.

What are high school students doing in math for 4th year...Washingtonville has Functions of Mathematics that is a course to help prepare for college level work.

These courses should be a combination of both calculator use AND conceptual understanding for all students. "I factored a quadratic so what does it have to do with this parabola?" Need to help students not be so dependent on the calculator since there are all kinds of colleges who don't allow the calculator. We have to raise the bar and demand math and science for the 4th year. It would make a tremendous difference in what is seen in SUNY Orange.

"Every student should have at least one college-level course before they graduate."
Others said "why should they all have a college course?"

BUT a 4th year is not the answer for everyone because it depends upon the students, depends upon the math. Discussion of the project-based STEM class by VC...must have algebra regents but only two credits of algebra...the 3rd math has to have indicators beyond algebra so this is a project-based course. The kind of math they are doing is exceeding all expectations for math. This is a different population even including that it's not cool to be smart!

Gender issue that boys in particular are not going for honors, exceeding expectations.

We rarely have anyone who says they can't do English, but it's acceptable (no one brags they can't do math).

One faculty member is passionate about the need for parents who must be able to factor! (or do fractions!) That alone motivates all the work in making sure students have basic math skills and understandings.

3. Feedback from high school and college mathematics faculty for New York SED when opportunities arise:

(Comments and opinions included these items, but consensus was not reached. This has not been shared officially with SED.)

Get rid of one-size-fits all Regents exam. Hire math specialists for SED. Not every student is destined to achieve at the same level.

With requirements to teach statistics, truth tables, logic, HS faculty are unable to teach in any depth.

Too much being taught in that algebra class...can't go in depth on any one topic.

Placement tests should look at whether students can calculate or not...the GED exam does some with calculation and some without...The placement test should assess if students know if they know the process not the calculations. If students get within a grade range then if they do with a calculator maybe you can get an idea of whether they got the process or just the calculation.

On the scoring of the Regents exam, there is a way of knowing whether or not calculation got in the way or process was in the way.

Reportedly, Accuplacer takes computation errors into account...if it's an error in just calculation then the next couple questions assess that.

MSMC reports that the problem is students placing too high rather than too low...SUNY Orange sees the same thing. If you have a student who scores low and is misplaced, the department chair will let them move in the first week. The majority is that they are moving down. Some want something easier (or without homework) but that's only some of them. There is flexibility and they do look at results. Developmental courses are taught by the math department at SUNY Orange – they do their own remediation because they believe it is the way to maximize the success of students.

HS faculty would like to know specifically, by school districts, what are the numbers of students who are in developmental and how do they do? Banner is a new data system at SUNY Orange and should provide a lot more information. SUNY Orange is also looking to track Community College in the High School (CCHS) program students as well. With the data, it would be helpful to see the background of those students who are successful in developmental. For example, a lot of students in developmental algebra have not taken math B.

Concerns about the amount of curriculum materials in Algebra II and Trig...way too much in that course...have been told there won't be a review until 2011...will force a stretch course for more and more students.

Community colleges give every student an opportunity at a second chance, regardless of their high school background. However, the most successful students in secondary are likely to be successful students in post-secondary.

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