OMEC Meeting Feb. 28, 2009 George Fox University, Tigard

Attending: Paul Hibbard, Kathy Hall, Nicole Rigelman, Linda Samek, Laura Lethe, Phyllis Leonard, Klay Kruczek, Marla Baber, Lynn Bonser, Bob Turner, Ann McMahon

Bob Turner's discussion: (Oregon University System)

Bob has come to the OMEC meeting to ask higher education folks to review the final draft of ODE's new high school Math Standards. Working with college students, he represents the Oregon University System's Chancellor office. He would like us to evaluate each standard as a necessary part of the high school math graduation requirement. These standards need not be detailed, but must convey the big ideas of high school mathematics. They need to be cognizant of the NAEP framework. They need to be a smooth continuation of the K-8 Math Content Standards. What would higher ed teachers expect students to know when they get to college and enter their coursework? Where might students need some remediation before moving on?

"This is what we really need students to be able to do."

The xpectations need to be clear. Perhaps we need professional development for middle and high school teachers. Perhaps we need to look at how we are assessing the 5-8 standards. Bob has a 50 question survey. He will show us the problems if we tell him the math standard it relates to.

He attended a meeting in Seattle at which a Texas person from their university math department said that they distributed their placement exams to the K-12 folks. What do we think of this idea as a way of indicating what students have to be able to do in their university coursework? Please contact:

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1. Timeline
2. Algebra 1 Standard
3. Modify the floor?
   a. some OUS feedback
   b. Joint Boards K-12 State, OUS

Right now Algebra 1 is the floor for HS graduates. Should the floor be modified? We are saying that every single graduate should have Algebra 1 and above. If we say that applied mathematics is the floor for grades 5-8, then Algebra teachers need to understand the standards that come before their classes.

Paul Hibbard's report

Big picture: timeline for HS Standards is **March 31st** for a Final Draft ready for State Board meeting in the middle of April. They have had only five meetings.
You have to begin with the K-3 Standards because these cannot be repeated. It is a vertical progression, not a spiral situation. He believes the new K-8 standards are more rigorous and there aren't as many of them.
Question: has there been any kind of PR about this? How do we help the broader community understand that this is going on?
Paul: It is state law.
OMEC response:
We need to help parents understand that this is higher-level and deeper mathematics in K-8 than previously. Parents are pressuring their schools to push children into Algebra.
Missing links: fractions, percents, and proportional reasoning.

Process Standards as folded into the Content Standards

If you are going to accelerate students, you have to have a plan as to how they will learn the 6,7,8th grade content with understanding as they will not have the opportunity in Algebra 1, Geometry, etc.
2002 Standards: can't just throw these out and not consider them
NAEP examination: they rank us and we cannot ignore their report, so we should pay attention to what is tested and teach as appropriate
K-8 standards: we cannot repeat them
Anxiety centers around the fact that the test is at grade 10. Many people feel it should be at grade 11. This possibility is under serious discussion.
Three primary HS strands: Algebra, Geometry and Measurement, Statistics & Probability
Because of the OAR (law), we have to write standards of Algebra 1 and above.
Essential Skills are just the process standards. They should be linked with the High School standards. These should not be separate documents! It needs to be all together in one piece of paper. In fact, they need to stay at *the beginning* of this document.
Question: Would it benefit users of this document to have footnotes. Some of these content standards are not as evident as to where the connection is to the process standards. Problem Solving, Reasoning, etc. belong in all the standards. We don't just stop doing math on Friday and address the process standards. e.g. H.A. 1.5 Factor simple quadratic expressions can also be taught using Reasoning.
NCTM HS Standards
Are developing a companion document as to how to do this, therefore, they will not be released until September of 2009 (not April).
There may be some verbiage from the ODE problem solving scoring guide that would help in creating the final draft of the HS standards.
The assessment office did a cognitive demand analysis of this and felt satisfied.

Klay is okay with a simple standard, as long as there is a range in H.A.1 and H.A.2. Pau feels that H.A.2 has good examples of both low and high level thinking. Paul wonders about "functions." e.g. H.A.2.5 and 2.6 He wonders if this is too much. Discussion followed. Paul wants a good understanding of independent and dependent variables.
H.A. 3 We have to have standards for all students, not just for Algebra students. It's giving you the function to evaluate on a lower level. On a higher level it's asking about the interdependence of x and y. It allows for the understanding that not all things are lines. The quadratics and exponential functions are also important.
Question: Will there be connections written at the HS level as they were at the K-8 level? Paul agrees, but he has to prioritize at this time.

Feedback from OMEC on Draft 5
p. 7 Interpret a solution (add: **in the context of the problem**):
Is the first bullet necessary? analyze a solution
p. 9 H.A.1.5 need different verbs here that involve deeper thinking
We can't continue to send messages to say that no changes are needed.
We need to show that there is a range of thinking in this document so that sense making and reasoning cause deeper thinking.
H.A.2.4
H.A.3 You have one linear function and a distinct separate linear function. We don't want teachers to only find linear models to share. What about step functions and *other non-linear functions*? (add this) It belongs here. e.g like a car trip where you slow down and speed up
H.A.3.4 "Represent and compare quadratic equations and other non-linear functions."
OMEC is concerned about teachers who say: "If it's not in the standards, we don't need to know it."
Add headings on page 11. Core Geometry Standards
Phyllis wonders if we can say for a second time: add H.A.1.6 H.A.2.9, etc. "All of these content standards are influenced by or subject to the process standards above." She will send Paul a draft of this. She's concerned that if the Stats teacher only prints off his/her page, they will not get the understanding about how to teach their concepts.

Advanced Standards (Color Coded Pages)
Do Not interchange the High School Standards with these other documents. (Discrete Math, Advanced Algebra, Calculus).
He was told these had too much detail, so he spent this last week editing these. These Advanced Standards are not course specific.
It was challenging to organize this is a logical manner and have them be all encompassing. He looked at Achieve, the College Board and the State Standards. It's

supposed to include everything in mathematics after the pink document. It's not written in a way to be assessed by the state as they will not be tested by the state, rather by local assessments.
He needs help from the University level with some higher-level math thinking. It's too much for the Math Content Panel in two days. What are the gaps, the missing content. (demonstrate, determine, evaluate)
These can be used to help demonstrate proficiency.
Example: If it's not in the pink document (Algebra), then it should flow into the gold Advanced Algebra document.
OMEC feedback:
statistics: Is this focused on what is the AP Statistics test? Calculus, Physics For calculus, if you have things that are on the Calculus draft that aren't on here, please let Paul know. This Calculus documents allows the teacher to give students a basic understanding of Calculus. The issue is that when they get to college they will get the depth of understanding.
Statistics – there may be a gap between the HS standards and the blue page. Statistics pink document. example: H.P.S.2.3 People need to have a feel for more randomness. If someone makes a claim from the data summary, is it reasonably representative of the group you want to answer questions for? You should be able to look at this graphically and see the bias. Kathy Hall will send Paul some information on this.
There is the mathematics of statistics. But there is also the essential skill for all that inferential teaching. This is missing! Paul said they had this and it was taken out! Kathy Hall will work on this as well. Tweak H.PS.1.4
Klay wants him to limit the definition of a derivative.
Paul says that Discrete Mathematics cannot overlap with the AP Algebra. e.g. H.A.1. (Relations & Functions) and DM8 (Matrices)
So what is meant by Discrete Mathematics? This green sheet is more like a college course that is a "catch-all" for other topics. Klay says that DM 6, 8 and 11 are not Discrete.
If I'm a high school teacher and I have been teaching for 25 years and pick up only the Advanced Standards packets, there is nothing there to indicate that I need to change anything I have been doing.
Concern: the intent was to go deeper and they don't necessarily represent the big ideas.
NCTM's Curriculum Focal Points: Their goal was to focus the bigger and cohesive mathematical ideas that you can organize curriculum around.
This document is like a menu of standards you can teach from and you can choose which of these you want to focus on and teach deeply. Perhaps we need a similar statement at the top of each of these in paragraph form that gives a description of how these should be taught. We can try to form a paragraph that explains the philosophy and that people

are not supposed to teach ALL of this. In Advanced Algebra, these are the bigger ideas that should be taught. Here are a lot of competencies that should be taught…
H.A.1.1 "building upon what they know about…" (Nicole will email)
This is a Christmas list and Paul is asking the OMEC Board to email him with their changes. It has not been looked at or refined yet, but he still needs to give this to the State Board by March 31st. College Algebra should be a subset of this Advanced Algebr document. Can he pull out College Algebra from this document? "The following standards represent College Algebra…" There is no universal, statewide source for curriculum at the Community College level at this point. This may be the goal. They have been working on common expected outcomes.
What falls under the first all-encompassing statement (H.A.1) and what about the families of functions that follow it? He needs college help on this document.
What about technology? If the State says "with technology" then they automatically mandate that you must use technology to solve this. It's a local decision as to where technology comes into the picture.
Nicole says that a number of these documents appear to be out of the table of contents o textbooks. We are losing sight of the bigger aspects of mathematical thinking. Matrices are a simply a tool used to teach certain concepts. You are not going to teach a course o matrices.
Paul sees the Advanced Standards as having a different purpose than the HS Standards. The Advanced Standards are written for courses that teachers in post-secondary institutions can write their course to. They are written to have a sequential flow from the HS Standards. They are written not with an assessment purpose, but to be able to create a course. If teachers use the whole document, they will teach a mile wide. Nicole feels the document should not look the same as the pink document, if the purposes are different. These are titles, they are not higher cognitive demand. It is not a checklist.
Paul NEEDS HIGHER ED help before the Math Content Panel meets on March 9 and 10.

Letter from OMEC to State Board

OMEC understands the need to have a draft that is ready to go, but we need some flexibility here to be able to change this document, once adopted. Suggestion to the Stat Board: It would be wise to at least look at the information that comes from the Joint Boards and carefully consider the recommendations of the Joint Boards report prior to the final adoption. This is high stakes.
Would it be valuable if there were a Math Ed lens looking at these standards because of the professional development that will be needed once these standards are adopted?
Paul does not believe the deadline of March 31st will change.
Concern from state: curriculum adoption is coming up.

Essential Skills Discussion led by Linda and Kathy

They have been trying hard to help ODE understand that applying mathematics cannot be properly assessed by the OAKS test. Currently they want to us these measures to demonstrate proficiency:

10^{th} grade OAKS
SAT and ACT
AP and IB courses
Option: State Scoring Guide and Work Samples

Never mind that these options don't assess the same content areas.

Some panel members want to use these measures to determine if students are meeting the Essential Skills. Question: don't you even want to know if the SAT test is addressing the same topics that students need to know. "We have to have a few things that we can take back to the Board by Friday." This is where people are coming from.

Raising the quality of the graduates is not one of the goals of this panel.

How can we demonstrate that students have the minimum score NOW?

Talked about English Language Learners. According to the criteria, this brilliant student will not graduate from high school. How do we accommodate Hispanic students who do not move to the US until they are 16?

One of the arguments against moving the OAKS test to grade 11: However, they can begin taking it at any time, so this is not a legitimate argument!

Students wouldn't have as many chances to pass the test.

What happened to the purpose? : to have better-prepared high school students. But this is such a political issue: the percent that can pass the assessment and get out of high school. Everything focuses on the bottom score.

What we are doing right now is obviously not producing more well-prepared students. So why are we continuing to do the same thing?

Suggestion from TOSA group:

What if Work Samples are accepted in place of the OAKS test?

They felt that two work samples wouldn't be enough to demonstrate their content knowledge. Content is assessed on OAKS. This is supposed to be about application.

Students will have to take 3 years of math anyway now in HS.

If they still don't pass, what about a 4^{th} year of math that is all about Applied Mathematics? (one semester)

Our next meeting will be in May.