

Notes from Math Discipline Workgroup Meeting #2 September 27, 2007

Present at the meeting:

DHE Staff:

Heather Fabian
Hillary Fuhrman

Chad Hampton
Paul Wagner

Participants:

Phyllis Anthony
Donna Bailey
Cindy Bryant
Kenny Bullington
Yungchen Cheng*
Tabatha Crites
Callie Daniels
Craig Dierking
Mary Fine
Lynda Fish
Pam Gordy
Briehan Grant
Leon Hall
Matt Harris
Jennifer Hegeman
Jayna Hively

Kerry Johnson
Mary Ellen Kirgan
Wanda Long
Cheryl Malm
Beverly Meyers
Dorina Mitrea
Mary Monachella
Tracey Mulholland
Dennis Nickelson
Jane Roads
Linda Schott
Chip Sharp
Mary Shepherd*
Bernadette Turner
Debbie Vaughan
Debbie Ziegler

*Discipline Workgroup Liaisons/Steering Committee Representatives

Observers:

Sandy Haskins

Welcome and Background Information

The meeting was called to order at 11:05 AM by Hillary Fuhrman. She welcomed those present, thanked them for their participation and introduced Missouri Department of Higher Education (MDHE) Deputy Commissioner Paul Wagner.

Deputy Commissioner Wagner thanked everyone for making the effort to be present at this meeting. He stressed the importance of aligning curriculum and reminded those present that one of the principle concerns was reducing the 35% remediation rate.

Ms. Fuhrman introduced MDHE staff present (Heather Fabian and Chad Hampton). She introduced the Mathematics Discipline Workgroup Liaisons and Steering Committee

members, Dr. Yungchen Cheng and Dr. Mary Shepherd, and invited the rest of the participants to introduce themselves to the group.

After the introductions were complete, a brief overview was given of the drivers behind this curriculum alignment work. The primary driver mentioned was Senate Bill 389 (SB 389). This important piece of legislation states that:

The coordinating board shall establish guidelines to promote and facilitate the transfer of students between institutions of higher education within the state and shall ensure that as of the 2008-2009 academic year, in order to receive increases in state appropriations, all approved public two- and four-year public institutions shall work with the commissioner of higher education to establish agreed-upon competencies for all entry-level collegiate courses in English, mathematics, foreign language, sciences, and social sciences associated with an institution's general education core and that the coordinating board shall establish policies and procedures to ensure such courses are accepted in transfer among public institutions and treated as equivalent to similar courses at the receiving institutions. The department of elementary and secondary education shall align such competencies with the assessments found in section 160.518, RSMo, and successor assessments;

The MDHE had rigorously discussed the implementation of this language internally and with legal counsel and these meetings were the result of this discussion. In order to continue to receive funding, public institutions were required to participate to a “reasonable degree.”

The Department of Elementary and Secondary Education, the Math, Engineering, Technology, and Science (METS) coalition, the Counsel on Transfer and Articulation (COTA), and the P-20 Council were all committed to helping smooth the traditional pathways from high school into post-secondary education. DESE has been on board with this curriculum alignment initiative since its inception and is committed to complying with any recommendations that come forth. At their recent Joint Board of Education meeting, significant concern was raised about the high remediation rate. As a result, DESE is moving from grade-level expectations to course-level expectations (CLEs). While their timeline for this does not parallel the timeline for curriculum alignment, they are committed to retro-fitting these exams. The initial end-of-course exams will be used in the 2008-2009 academic year.

The next topic discussed was “Entry vs. Exit Competencies.” Ms. Fuhrman went through the definitions put forth on the handout *Information on Curriculum Alignment*. “Entry level competencies refer to defining the knowledge and skills necessary for students to begin gaining access to collegiate-level work.” These cover a broad range of competencies that any entering freshman should be proficient in. “Exit-level competencies” are more course-specific. They “refer to defining the knowledge and skills that a student is expected to have gained as a result of successfully completing an entry-level general education course at the postsecondary level”.

Participants were reminded that the primary goal of this work was to set up a threshold point so that students wishing to pursue post-secondary education would be able to reasonably assume that they will not need remediation if they have reached this threshold of skills and competencies. The hope is that such a threshold would increase the overall rates of participation and success in Missouri's postsecondary institutions, in part by reducing the high rates of remediation. Ms. Fuhrman noted that this threshold was separate from the admissions standards of any institution.

In order to facilitate the work of the various discipline workgroups, a Steering Committee (CAS) was developed. This committee is composed of representatives from each of the seven discipline workgroups, secondary participants, and postsecondary administrators, including Drs. Cheng and Shepherd. The CAS has been "charged with coordinating the work of discipline workgroups and communicating with constituents. Ms. Fuhrman referred the group to the handout *Steering Committee Steering Charge*.

At the September 13 meeting of the CAS, a timeline was developed in accordance with the mandates set forth by SB 389. In order to make adequate progress, the CAS members decided that the Discipline Workgroups needed to narrow their focus. Thirty-three courses had originally been decided on as "entry-level" the discipline workgroups at their initial meetings. It was decided that this was not a realistic goal for the time that was allowed. The CAS recommended that the process of aligning curricula be restricted (at first) to those courses that were the first in a hierarchy of courses or were taken by a majority of entering freshmen. The rest of the courses could be worked on at a later date.

According to SB 389, the alignment of curricula for entry-level courses needed to be completed in time for the 2008-2009 school year. In order for this to happen, the CAS came up with a timeline mandating that the final drafts of the competencies be complete by April 15, 2008. This will enable the Commissioner and the Coordinating Board of Higher Education to review and make necessary changes in time for the 2008-2009 deadline.

In January, DESE decided to begin moving to replace their assessment standards used for standardized testing, or Grade Level Expectations with Course Level Expectations. Steering Committee members Drs. Cheng and Shepherd have both been actively involved with these standards revisions throughout the spring. These exams are scheduled to begin in the 2008-2009 school year. In order to be more in sync with DESE, the CAS has decided that aligning curricula for entry-level courses should be a priority. The timeline developed by the CAS reflects this.

Participants were reminded of the extreme importance of math to the economic prosperity of Missouri. The METS coalition, the P-20 Council, and several initiatives by Governor Matt Blunt reflect this. These constituencies are all very supportive of the work being done to align curriculum across the state. Everyone is in agreement that the standards set forth by the Discipline Workgroups need to be sufficiently high so that Missouri remains academically (and thus economically) competitive regionally, nationally, and globally.

The group discussed and decided that all decisions would be made by consensus among the group whenever possible. Votes will be taken only if necessary.

In order to assist discussions in the future, a quick tour of the SharePoint site was performed by Ms. Furman to benefit those new to the group. The SharePoint access is given to all workgroup members to facilitate discussion and help move work forward more efficiently. The participants agreed that meeting in person was a valuable use of time. It was decided that in-person meetings would be used to create drafts. The SharePoint site was to be used as a secondary means of providing feedback and comment.

Content Discussion

At this point, Dr. Cheng took over the facilitation of the meeting. He and Dr. Shepherd presented themselves as conduits of information for the workgroup. The urgency of the work that needed to be accomplished was reiterated and those present were asked to consider how best to accomplish it.

The participants were given two documents: “Entry Level Skills for College Preparedness in College Algebra” (MoDEC) and “Mathematics: Knowledge and Skills Foundations” (*Standards of Success*) as a good starting point for discussion for the work that needed to be accomplished.

The participants were asked to comment on two issues:

- 1) How to involve those not present at this meeting
- 2) How to have a draft completed by the October 31, 2007 due date.

Dr. Shepherd recommended that a very rough draft of entry-level competencies for college mathematics be completed by the end of the day, and those present agreed that this could be accomplished.

Since college algebra was taken by more freshmen than other courses, and that the workgroup is instructed to provide the exit-level competencies for only one college mathematics course by early January 2008, there was a general sense that college algebra will be an acceptable first course for this purpose.

The participants agreed that any list of competencies would need to include both skills and mathematical “maturity” (conceptual learning) levels. It was also recognized that any competencies would need to lend themselves to some sort of assessment. While the DHE has no plans at this time to create assessments based on these competencies, participants felt that there eventually needs to be a way to ensure that students were being taught in accordance with the newly aligned curricula. It was pointed out that different forms of assessment may need to be considered because of the dual-credit math courses. Several participants thought that the alignment of math curricula would make the MAP tests more “meaningful.” In relation to this, participants discussed the functionality of

testing students during their sophomore year in high school so that teachers would have two years to prepare them more adequately for post-secondary education.

The participants discussed whether skills or conceptualization were more important to the success of students entering into post-secondary education and which should be taught prior to the other. It was generally agreed that both are needed to be taken into consideration, since the development of concepts (mathematical reasoning) and the ability to perform specific mathematical skills went hand in hand in actual practice. However, the more mathematical reasoning student have mastered, the better they are able to retain (or refresh quickly) the ability to perform various skills. It is often this mastery that determines whether or not a student will be able to avoid remediation in college.

The meeting broke for a working lunch. The participants were asked to think about the topics they wanted to address while they ate.

After lunch, the group discussions resumed. Observer Sandy Haskins remarked how pleased she was that this work was going on. As a director of K-12 curriculum, she felt that the curriculum alignment mandates that this group would produce would give those in K-12 more power to deal with parents who wanted them to lower standards. She appreciated that this work would allow her and her colleagues to demonstrate more clearly to parents what was necessary in order for their children to succeed.

Dr. Cheng asked the participants what subjects in which they wanted to begin aligning the curricula. He reminded them that time was very short and asked that everyone focus on the very basic criteria for entering freshmen. The sole purpose of this session was to focus on entry-level competencies.

The group decided to use the *Standards of Success* handout as the starting point. After further discussion, it was agreed that the entry-level competencies will focus on computation, algebra, and geometry, with an understanding that mathematics reasoning will be blended into all three topics, basic trigonometry will be blended into geometry, and basic statistics will be blended into algebra. It was furthered agreed that competencies for more advanced courses may be included but designated with asterisks. Specific examples for the listed competencies may be included in an appendix.

The participants then broke into three groups and began working on their draft competencies for computation, algebra, and geometry. Drs. Cheng and Shepherd rotated through the groups to note progress, answer questions, and participate in the discussions.

At 2:30 PM, the participants gathered together to hear a summary report from each group and ask quick questions. All agreed that each subgroup will continue to work together by e-mail and turn in their drafts by Friday, October 5. Dr. Shepherd would then post them for general comment on SharePoint. It was decided that the introduction to these statements would be written after these drafts were complete. Dr. Shepherd agreed to prepare a rough draft and get feedback from Dr. Cheng before posting it for group

comment. Ms. Fuhrman agreed to contact Dr. David Conley (author of *Standards of Success*) and get permission to reference his work.

A poll was taken and it was decided that the next meeting would be Saturday, October 27 at 11:00 AM at MDHE in Jefferson City. The purpose of this meeting will be to put together a final version of the draft statements with an introduction. This draft will be made public as of November 1, 2007. All felt that it was important to meet in person to do so.

The meeting adjourned at 3:00 PM.