Science and Math Liaisons Meeting

Nov. 6, 2015

Meeting Notes

Present: Steven Bogaerts, Bridget Gourley, Pam Propsom, Jackie Roberts, Henning Schneider, Fred Soster, Brian Wright

Pam shared a couple of updates. IUSE grant was submitted. Jackie, Bill Tobin and Pam attended an assessment workshop at Wabash, and the participants and scholars there were impressed by how much our group has accomplished already with regard to student scientific literacy assessment.

Data. We’ve got a lot of data from the ACS (Attitudes and Conceptions in Science) and TOSLS (Test of Scientific Literacy Skills); we need to decide how to analyze and use it. Ideas for analysis for ACS:

 --Separate sophomore students who declare their majors this spring into Science/Math majors and non-majors, and see if their ACS scores from Fall 2014 differ.

 --Divide by lab vs. non-lab courses

 --Q vs. non-Q courses

 --Majors vs. non-majors vs. hybrid (serving both majors and nonmajors) courses

 --By department

 --Grouping FYS together

 Ideas for analysis of TOSLS:

 --Analysis for SM majors vs. non-majors showed that our SM majors did significantly better than non-majors on items 2, 5, 8, 15, and 26, but they did significantly worse on 1, 3, 9, 16; everything else was non-significant. Interesting that in some cases they did significantly worse on one item and better on another item when the items were actually on the same subscale/skill. Might be worthwhile to discuss as a division why we think our students did well on some items and poorly on others, implications for our curricula and how we teach our courses. Some of the items might not be as relevant to math and computer science, so we might want to re-analyze with them taken out.

 --Analyze by department. For example, Economics majors might do particularly well on stat items.

 --Analyze by division.

 --At some point, by course (e.g., Bio majors who did or didn’t take Biostat)

 --Could track students by ACT math and science scores.

 --Brainstorm ideas about other kinds of data or questions we might want to have.

 --Not really that we want the SM majors to do better than non-majors on the TOSLS, but we want all of our students to do well.

 --What would be our “cut-off” for doing well? One suggestion would be to look at our students with highest GPA and maybe look at their score, and use that as a goal. Could look at the Gormally et al. paper and see what the “good” score was for high-achieving Bio course.

 --Isolate by courses that might have alternative formats or instructional styles, to see if students who had courses with more “interactive” approaches do better.

 --This is probably more baseline data and it might be more informative to use this over time to see what happens if we transform courses or what happens in certain groups of courses.

 --Do we have total scores on the TOSLS? Factor out incoming ACT science and math scores? Correlate TOSLS score with DePauw GPA and DePauw major GPA.

Pam will contact Gormally to see if she knows of others using the TOSLS, what they consider a “good” score, how are other institutions making changes based on this?

Do certain departments value some of these TOSLS skills more than others, especially in the 100-level courses?

HHMI grant. Preproposal is due Dec. 1. The call has shifted to how institutions address the issues of non-traditional or under-represented students (e.g., first-generation, minority, community college), but not by trying to “fix” the students with “one-and-done” programs (research or summer bridge programs that are expensive and not sustainable), but instead by making long-term institutional change. If invited to submit, final proposal would be due next October. Are there data we should be gathering or questions we should be asking to prepare for this? We already have some data indicating that our SM majors do not match the general DePauw university population in terms of diversity. We do have some data on students’ stated area of interest upon entering the university; are we losing students who had expressed an interest in science and math? Are they being drawn to other majors or pushed away from science and math? Of first-generation students who come to DePauw, are they as successful in science and math as other students? Accepted students who are interested in science and math but didn’t come here; do we know why? The HHMI call is not just for science majors, but they want more scientifically literate graduates, which matches our interest in general education.

Brown Bag. Change from Nov. 11 to Nov. 20, 11:30 a.m.

Divisional meeting on Dec. 2. We’ll have some data from the analyses you all have suggested.

Other topics for discussion? In December we will vote on new language for current graduation requirements. If we’re already “tweaking” language, do we have suggestions for this in science and math? Think about the third goal we might want to add to science and math: quantitative literacy or numeracy that might be addressed more in math and computer science.