Science and Math Brown Bag

Meeting notes

9/23/15

Present: Tim Cope, Bridget Gourley, Matt Hertenstein, Mary Kertzman, Alex Komives, Jim Mills, Selma Poturovic, Pam Propsom, Jackie Roberts, Naima Shifa, Zhixin Wu

The topic for this meeting was whether we need a more robust science and math general education requirement, and if so, how do we work with the faculty at large and the Curriculum Committee to make it happen. Jackie and Pam shared some data relevant to the issue.

Learning goals. Our tentative shared learning goals for the SM curricular area:

I. Understand methods of inquiry that lead to scientific knowledge.

II. Organize, analyze, and interpret quantitative data and scientific information.

Discussions have indicated that we might need to add at third goal relating to computing and numeracy (perhaps overlapping with Q).

NSSE data. National Survey of Student Engagement data from 2012. DePauw first-year students and seniors report on their college experiences. Results from a number of questions suggest that DePauw students report lots of experience with writing, speaking, critical thinking, but rather low percentages report significant experiences with science and math skills (e.g., “reached conclusions based on your own analysis of numerical information,” and “completing an experiment or project using scientific methods”).

TOSLS. Test of Scientific Literacy skills has been administered here to two incoming classes of students and one year of graduating seniors. Analyses show that science and math majors score better than non-science and math majors, but they also show that overall there is not much difference between incoming students’ and graduating seniors’ scores. Future analyses will entail removing science and math majors to see if non-majors show differences between first-year and graduation, and eventually we will be able to follow a single class from entry to graduation to look at individual change. A question for us to consider is what is our goal; what TOSLS score would we see as indicating “success?”

Number of courses taken in different curricular areas. These were the same data presented during the Faculty Institute, indicating overall that students don’t seem to be exploring much and are taking few courses outside their major curricular area.

“Four Pillars” model. Fred Soster and Scott Wilkerson proposed a revised general education model last year and we’re asking departments to discuss it. Naima Shifa indicated that the Math Department talked about it and agreed that in the future they could offer more sections of Math 141 (Stats for Professionals), which might be a better general education math course than Calculus. We also discussed the possibility of a University 102 course to supplement University 101 (Intro to Quantitative Reasoning). Could we use Winter Term to have students meet some requirements?

Lab requirement. Before we decide if we need a science and math laboratory requirement, we need to define what we mean by a “lab.” Is it just to experience science in a “hands-on” way? To follow set instructions in a lab manual? To pose hypotheses and be inquiry-based? To collect new data on a genuine scientific problem? Tim Cope suggested that it be “experiential,” meaning to see science as a process and not a collection of facts. Others discussed testing hypotheses, seeing that science is messy. Alex Komives suggested that he also likes labs so that students can *see* what they’re reading and learning about.

Building support. How do we build support with colleagues outside the science and math area for any new general education proposal? One suggestion was to survey colleagues in the other curricular areas, asking what they think their majors need to have in terms of science and math general education. Someone asked how the open meeting for the other curricular areas went. There were about 30 faculty members in attendance. Bridget attended and reported that there was some enthusiastic discussion, more so in the Humanities than in the Arts or Social Sciences. There seems to be an interest in collaboration between curricular areas, maybe team-teaching or at least less “silo-ed” teaching.

Mary Kertzman asked where we are in terms of the “Big Picture.” We were kind of forced into a discussion about new general education requirements last year because of the Power/Privilege/Diversity (PPD) requirement and at that time we asked to remove the CAPP’s proposal for a new science and math requirement, with the understanding that we would come back soon with our own proposal. Jackie indicated that we have momentum and we would like to build on that; we can’t wait for the other curricular areas and we should continue to move forward with any ideas we have in the SM division for a new requirement. The Curriculum Committee has stated that it will pursue revised wording of the graduation requirements so that they are more cohesive when the new PPD requirement is added. We may have the opportunity to comment on new language for science and math, and we should be prepared to help frame this. But we also want to make sure that our focus is not exclusively on graduation requirements; our original motive was to revise our courses and make any necessary improvements to our teaching so that students get the strongest science and math general education possible.