Administrative Response to Program Review
Math
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On April 24, 2009, the Math SAC presented their Program Review findings to an audience of PCC administrators and others with an interest in the discipline. We found the written report and presentation to be informative and thought provoking, and are appreciative of the engagement of this SAC in both the process and reflective intent of program review. We appreciate Steve Simond's leadership in the Math SAC's 2009 Program Review

This response consists of three sections: areas for which we particularly wish to commend the SAC, areas for further consideration and finally, our response and comments to your recommendations and/or requests.

Of Note

The PCC Math Program serves students well, and embodies an approach of continuous improvement and looking for ways to further serve students. In particular, retention practices of the Math SAC are very solid, and undoubtedly result in increased student success. Here is a list of some (but certainly not all) of SAC work which we find notable:

- Your approach of using SAC days (over the last two years) and creating sub group focus areas led to a wide involvement of faculty.
- Your organization of the Program Review (PR) around the key areas of Student Success, Distance Learning and Technology is an effective strategy in focusing attention on key areas of relevance to the Math discipline.
- The PR written report was professional and well-developed, including both data and thoughtful discussion.
- The PR addressed program and course level outcomes, and included an examination of the JBAC outcomes adopted by the Math SAC.
- Your attention to the importance of accurate assessment and placement of students, and your associated strategies to achieve such accuracy.
- The "Are You Prepared" pamphlet.
- Promoting and advancing consistent standards for courses across sections and instructors.
- Considering the model of "Course Leaders" (and we encourage you to further explore and implement this strategy.)
- The coordination and implementation of a dual credit model to allow more HS students to earn college credit

- Some innovative projects: the pilot project to increase success in Math 20 (Level Teaching Teams).
- Outreach: ORMATYC, State FDC's, PSU, Mathfest, Service Learning, etc
- Commitment to common textbooks and "holding the line" on student textbook expenses.
- Two-thirds of Math Faculty providing office hours and student assistance in the Learning Centers
- Significant commitment to ensuring DL access to Math courses of high quality while ensuring that student success is not compromised.
- Responsiveness of Math departments to surges in enrollment occurring in parallel with the economic downturn.

For Further Consideration, and Some Questions

Your program review has prompted a number of thoughts and questions on our part.

The retention practices outlined are very solid, and likely to result in increased student success. Could the Math faculty lead or facilitate a TLC series for PT faculty to discuss these approaches? We are quite impressed by your Math 20 initiative, and encourage you to think about presenting at the TLC's or the Student Success conference. There is also a wide and diverse use of technology in the Math curriculum and approaches to teaching. Please consider developing a Math technology workshop or series for PT faculty.

Course outcomes: over time, we encourage you to take outcomes to the next level, and to go further with "describing evidence that students are meeting core outcomes." This would include giving examples of assessments, and how those assessments will ultimately inform changes in your methods of teaching.

PCC is increasingly called upon to provide access for students in our more remote areas such as Newberg and Columbia County. We think you may have some good ideas for using technology or modified instruction for expansion of Math offerings to outlying areas. If there is interest, the DOI's at Rock Creek and Sylvania would be interested in hearing ideas on this topic.

The data provided by in the Program Review was quite interesting, and has led us to think about additional data analysis. For example, we would like to hear from the Math SAC how the 4 to 5 hour shift impacted student retention and success, including a review of the data. You noted your interest in student persistence and success data in F2F and DL courses, and we encourage you to work with Institutional Research to get more data in that area. In addition to looking at in-course data, please continue to explore success/persistence over time. How long does it take to move through Math sequences for the succeeders/non succeeders? This might be a good time to gather data comparing the relative success rates in

MTH 60-65 vs. MTH 61-62-63, along with determining if there is a difference in success rates in MTH 95 following either earlier sequence. The same might be done for MTH 95 vs. MTH 91-92, including how students do in MTH 105 or 111 after either earlier sequence.

We commend the Math SAC for consideration of alternative models for moving students through Math sequences, and we strongly encourage and support you in more of that work. In addition to working towards accurate placement (which agreed is one element of a success strategy) please also consider alternative models for delivery with a goal of accelerating movement through the developmental sequence.

There is now available a good deal of best practices research about examples such as Math Jam, or contextualized Math, and it would be very good to find ways to adapt and test some of those models here at PCC. Intensity can also mean greater immersion, or higher "dosage," as in several new "Math intensives" developed by the Teaching and Learning Center at Pasadena City College (PCC). These include a two-week, no-credit, basic skills Math boot camp, called "Math Jam," for first-time students; XL, an intensive summer learning community focused on prealgebra; and an NSF-supported "MathPath" of two Math courses in the same semester that makes it possible for students starting in developmental Mathematics to pursue Math-based majors. Each of these intensive immersion experiences has proved powerful in raising student retention and success. In the summer Math Jam, for instance, 91 percent of the students were retained, 89 percent qualified for a selective fall program called Lifelines, and 56 percent significantly improved their scores when the placement test was re-administered at the end of the experience.[1]

The rest of this report provides comments and responses to the 25 recommendations included in the Math SAC's Program Review. To simplify reading and understanding, the SAC's heading areas and recommendations are reproduced in full here, along with each administrative response.

Responses to Math SAC Recommendations

Placement and Advising

1. **• Recommendation**
    a. The administrators of the COMPASS test need to emphasize the importance of the test and they should strongly suggest that the student prepare adequately before taking the test; this is also true of advisors when they direct a student to take the test. We understand that it may decrease the efficiency of the enrollment process if a

[1] Pasadena City College, SPECC Report, 2006, p. 5

student has to return to take the test on another day, but more accurate placement should be a priority.

b. *Rationale* In the absence of a valid transcript, students registering at PCC are required to take the COMPASS test. Students unprepared to take a Mathematics placement test may not perform optimally.

Response: We agree and will pass this recommendation to the Deans of Student Development who support the Testing Centers. We will also suggest a review of the wording at http://www.pcc.edu/resources/testing/, to assess whether a greater emphasis on the importance of the test could be provided via the web interface where many students first learn of the placement testing process.

2. **• Recommendation**
   a. We would like all students who request placement overrides for Mathematics courses to be directed to the department chairs of the Mathematics departments or to the instructors of the specific sections into which the students wish to enroll.
   b. *Rationale* We occasionally have students misplaced due to advisors overriding COMPASS placement test scores. Students are also sometimes misplaced by advisors when overrides are given based upon transcripts from other colleges.

Response: We agree and again, will pass this with this recommendation to Deans of Student Development who supervise the advisory process. With this practice in place, it is important that the Math SAC and department chairs take into consideration and provide options for those times, e.g., summer, when chairs may be away for a while.

3. **• Recommendation**
   a. We recommend that an orientation to 'Studying at college,' which gives details on such things as note-taking, paying attention, homework, and study skills, be part of the general orientation process.

   b. *Rationale* We have found that many students are unsuccessful because they are unaware of the basic routines necessary to find success at the college level.

Response: Such courses are available (but not required) and are already recommended to students, by counselors, academic advisors, and via the web. PCC offers one, two or three credit Study Skills classes: CG 111A , 111B, or 111C. Additionally, there are many study skill workshops offered at the college and can be found in the PCC Calendar of Events in MyPCC.

4. **• Recommendation**
   a. We recommend that students in the 'High School Completion

Program' not be steered into a course more than one course below that indicated via traditional placement tools.

b. *Rationale* We have an increasing number of students in the 'High school Completion Program'. Some of these students have been advised to take classes lower than the ones indicated by their COMPASS test scores or their prior course histories. Although we understand that steering a younger student into a lower level class is done to help younger students transition to the college environment, we recommend that these students take a class no more than one level below the class into which they were placed via traditional placement tools.

Response: This recommendation merits further discussion. We encourage the Math SAC to meet with High School Completion staff to further investigate and discuss best practices.

5. • **Recommendation**
   a. We strongly recommend that there be a continual dialogue between the Math SAC and the Deans of Instruction about the placement test used for Mathematics at the college and that improvements to the manner in which the placement test is used continue to be implemented. We also recommend that the Deans of Instruction be open to the possibility of finding a placement tool that results in more accurate placements than we are experiencing with the use of the COMPASS test.
   b. *Rationale* The Math SAC COMPASS test committee (chaired by Sylvania instructor Will Freeman) has worked with the Deans of Instruction in evaluating and improving the effectiveness of the COMPASS test. This committee has worked to adjust the exam to place our students more appropriately. One of the improvements made to date has been to increase the number of exam questions students are asked before they are placed, to help eliminate premature placement due to an inadequate variety of questions. Even so, there is strong anecdotal evidence that misplacements via testing have been higher since the college adopted the COMPASS test than they were when the college used the ASSET test.

Response: We are open to a discussion of more appropriate and commonly used placement tools. Anything we can do to help Math placement to be more accurate would be helpful to students. A related matter is to encourage faculty to establish and adhere to uniform course standards so that students are successful as they move from one course to another, not just at their placement point of entry. We know this is already happening to some extent, and we appreciate that the SAC notes in this PR that you are increasing focus on course standards.

6. **• Recommendation**
    a. We recommend that the SAC continue to update and promote the use of the "*Are You Prepared*" pamphlets and the 'placement advisory tool' among all faculty and advising staff.
    b. *Rationale* In conjunction with the COMPASS test, the placement advisory tool developed by Dr. Chris Hughes and the "*Are You Prepared*" pamphlets can assist students in making choices that lead them to the classes most appropriate for their success at PCC.

Response: Agreed, we consider the *"Are You Prepared"* and the placement advisory tool to be quite useful supplements to the placement test. We encourage the SAC to continue with updates, and outreach and promotion of the tools.

Recommendations Related to Student Retention and Success

7. **• Recommendation**
    a. First and foremost the Math SAC endorses increasing the full-time/part-time faculty ratio.
    b. *Rationale* Among many benefits, an increased full-time/part-time ratio would improve content consistency, staff stability, and continuity of faculty involvement at each campus. All of this would ultimately increase both retention rates and success rates in the courses offered by the Mathematics Program.

Response: We recognize a long-standing commitment to hire seven MATH instructors as a result of moving many courses from four- to five-hour per week formats earlier in this decade. Two of those have been hired (at CA and SE). To that end, four MATH instructor positions are on the current three biennia academic plan maintained by the DOI's and three of those were slated as part of the new Initiative process of the current biennium, but funding was not available. We are continuing our efforts to find ways to fund additional full-time faculty

8. **• Recommendation**
    a. Responsibility for MATH 15 and MATH 20 should be transferred from the DE SAC to the Math SAC.
    b. *Rationale* Responsibility for Mathematics courses numbered below MATH 15 was recently transferred from the DE SAC to the ABE/GED SAC. The only remaining courses under the purview of the DE SAC are MATH 15 and MATH 20. On all campuses but Sylvania, MATH 20 is scheduled by the Mathematics departments. Only on Sylvania Campus are MATH 15 and MATH 20 scheduled by the DE department. While it is true that faculty from the DE department teach the majority of

sections of MATH 15 and MATH 20 offered on the Sylvania Campus, nearly all sections of the courses offered on other campuses are taught by faculty in the Mathematics departments. Additionally, the four full-time Mathematics instructors in the Sylvania DE department are members of the Math SAC (as well as the DE SAC). The duel assignment of Mathematics courses presents a barrier to the creation of continuity between MATH 20 and MATH 60. Since all full-time instructors of the courses are members of the Math SAC, there is no compelling reason to maintain this barrier and responsibility for MATH 15 and MATH 20 should be transferred to the Math SAC.

Response: While we believe there may be some merit to this suggestion, we cannot respond to this recommendation without involving the DE SAC in the discussion. The DOI's are open to such a discussion.

9. • Recommendation

a. All faculty members should be encouraged to communicate with their students outside of regularly scheduled class-time. This communication could take place during office hours and/or via MyPCC, instructional websites, Course Progress Notification (CPN), phone, or email.

b. *Rationale* Easy to access resources can help a student when he or she is studying for a class or has questions about class protocol or scheduling issues. Also, a personal communication from an instructor can help a student to feel connected to a class; a student who feels personally connected to a class is less likely to withdraw from that class.

Response: We certainly agree, and commend the Math SAC for promoting this culture of student engagement. An additional method of engaging with students is for faculty to spend time in the Learning Centers providing tutoring. We know many Math faculty do so, and we wish to also formally acknowledge and encourage that manner of contributing to student success.

10. • Recommendation

a. Instructors should be encouraged to initiate student/teacher conferences, especially with students who are identified as having significant difficulty early in a course.

b. *Rationale* A student who feels his or her instructor recognizes them as an individual is more likely to feel connected to a class. Also, a student struggling early in the term may need personal encouragement to use the resources available to help him or her succeed. Also, a student who is struggling early in the term may in fact be misplaced; if the misplacement is identified early enough in the term then the student may be able to transfer to a more appropriate course during that same

term.

Response: Again, we certainly agree. Some Math faculty do this already, and we encourage the effort to make this approach part of the "Math SAC culture."

11. • Recommendation

a. The Math SAC should continue the strong faculty support of the Learning Centers and continue to lobby for generous institutional funding of the Learning Centers.

b. *Rationale* The Learning Centers provide an invaluable service to the students enrolled in Mathematics courses and the demand for these services is very high. Because we serve students whose personal schedules vary around the clock, the Learning Centers need to be open as many hours as possible to accommodate the wide range of times that students schedule for their study of Mathematics.

Response: We agree, and to some extent, this is already occurring. Through support from the DOI's, Math videos are now available for all students via 'YouTube', which was done in response to the Math SAC's request to make these more available. Also, CA has expanded greatly its Math tutoring in general and is moving Into year two of a MATH 20 Initiative to bring all Math 20 instructors and tutors together to Increase the success in this course.

12. • Recommendation

a. Group study, both inside and outside the classroom, should continue to be encouraged by all instructors in the Mathematics Program.

b. *Rationale* The research is clear that participation in group activities increases a student's connection to a class, exposes a student to a variety of perspectives they might not otherwise encounter, and gives a student the chance to talk through, and thus refine, his or her own thought process.

Response: We agree!

13. • Recommendation

a. A discussion of best practices to optimize student retention in Mathematics courses should take place in at least one Math SAC meeting per year

b. *Rationale* The first necessary element for student success in a course is completion of the course. Having the topic of student retention discussed at least once a year will help remind instructors to consider student retention when they design a course and while they are teaching that course.

Response: We agree!

14. • Recommendation

a. We recommend continued institutional support for student lab assistants in Math 251.

b. Rationale The use of lab assistants in Math 251 has been an important component in the success of the course.

Response: We concur with continuing current levels of support, as long as funding remains available.

15. • Recommendation

a. The Math SAC recommends that department chairs on each campus take a leading role in the following with regard to Math 105:
   i. Information should be emailed to all Math111B/C instructors during registration and at the beginning of the term encouraging them to remind students of the availability, purpose, and nature of Math 105.
   ii. Similar information should be sent to all Math 95 instructors at the end of each term
   iii. Informational flyers should be prepared and posted promoting Math 105 to our students.
   iv. Advisors on each campus should be contacted and informed to ensure that eligible students are properly advised before they take there first 100 level Mathematics course.

b. Rationale The reintroduction of Math 105 in Fall 2008 resulted in very low enrollment. We believe that the low enrollment was caused by lack of clarity about the intended audience for the course as well as uncertainties about the transferability of the course.

Response: We concur that enhanced communication and outreach about the intent of Math 105 should result in enhanced enrollments. As further out-reach, representatives from the Math SAC can meet with campus advisors or attend a quarterly meeting of all advisors district-wide. The suggestion of Math 105 should be consistent with and appropriate to the students' goals, which students should discuss with an academic advisor.

16. • Recommendation

a. The Math SAC should determine if sufficient demand for precalculus and calculus review courses exist for reactivation of Math 116 and/or Math 259.

b. Rationale There has always been the need for a precalculus review

course and we used to offer MATH 116 to meet this need. Early this decade Cascade Mathematics instructor Ann Sitomer identified a similar need for a review course covering the first three terms of calculus and she designed and offered a course to fulfill that need (Math 259). Although there is sufficient demand district-wide to offer these courses on a regular basis, in the past enrollment was low because only a small percentage of the students who desired the course were able to take the class at the time and place it was being offered. Eventually each of the courses was inactivated. There is anecdotal evidence that the need for the courses has increased to the point that the courses should be reactivated. Trial sections of the courses could then be offered to determine if sufficient enrollment can be maintained to justify the offering of the courses.

Response: We are in support of a limited trial of re-introducing these courses with coordinated scheduling across the district to maximize student access and potential enrollments. If enough students register, we can run the courses (or cancel if it turns out the demand is not sufficient).

Recommendations Related to Distance Learning

17. • Recommendation

a. The Math SAC would like students to be required to complete an orientation before being allowed to register for DL courses. While there is currently an orientation available for DL courses, there is no requirement that students complete the orientation and there is no information in the orientation to help students understand the particular challenges of studying Mathematics via the DL deliver methods. One proposal is to have an online orientation linked from the registration tool in MyPCC and require that students complete this orientation before registering for a DL class. Another proposal is to insert a "pop-up window" that is activated when a student tries to register for a DL class and include in this window important information about the course and the delivery method.

b. *Rationale* The withdrawal rate is significantly higher for DL Mathematics classes than for on-campus Mathematics classes. We believe that this is evidence that many students in DL Mathematics classes realize prior to the end of the course that the DL delivery methods do not adequately support their learning styles. We believe it is important for the college to work to lower the withdrawal rate since there are many adverse consequences when students withdraw from classes. For example, a student who withdraws from a class is likely to

get behind in his or her academic plan since he or she will probably have to retake the class. Also, a student who withdraws after the refund-deadline will lose money and/or face the risk of putting their financial aid in jeopardy. Unprepared students registering for DL classes impact other students as well. For example, a student who both needs and is prepared to take a DL Mathematics class is sometimes unable to register due to full enrollment in the class. This is especially frustrating because inevitably some of the students who are registered for the class will end up withdrawing because they weren't prepared to take a DL class in the first place. The Math SAC feels that the current system does not provide students with enough information regarding what will be expected of them in a DL Mathematics course. Instead, we would like to provide students with more information and better advising before they register for DL Mathematics classes.

Response: The matter of how best to ensure the success of the DL student continues to be discussed in a number of PCC venues, including the DL Advisory board, and the recently formed EAC Task Force on Distance Learning. We will forward to these groups the recommendation of the Math SAC for mandatory DL orientations, with a particular emphasis on the challenges of learning Math via DL.

18. • Recommendation

a. The Testing Centers on the PCC campuses need to provide more support for DL students and instructors. The college should provide funding and staffing so that the Testing Centers on each campus can maintain hours of operation that meet the needs of students who do not have the flexibility in their personal schedules required by make-up testing being available on a severely limited basis. Make-up testing should be available during daytime hours and evening hours throughout the week. Some opportunities for make-up testing on Saturdays should be provided as well.

b. *Rationale* The Math SAC requires proctored exams for all courses, but it is very challenging for instructors to arrange for all of their DL students to take proctored exams since the students do not have the same schedules and do not all live near the same campuses. Students and instructors frequently need to work with PCC's Testing Centers to arrange for make-up exams, but most of the PCC Testing Centers offer minimal make-up testing hours. For example, the Sylvania, Cascade, and Rock Creek Testing Centers only offer make-up testing three days a week and then for only four hours on each of those days. The Southeast Center is the only campus that offers ample make-up testing, with the Testing Center available for make-up testing five days each week for an average of seven hours each day; we would like to see the other PCC campuses adopting similar make-up testing schedules. Mathematics Web-based course enrollment increased

about 144% between 2003-2004 and 2007-2008, and with so many more of our students taking DL courses, the college needs to support our Testing Centers and increase the make-up testing hours. Please note that instructors of on-campus classes also use the Testing Centers for make-up testing, so increasing the make-up testing options will benefit on-campus as well as DL students.

Response: PCC is experiencing three "pressure points" associated with Testing Centers: growth (particularly in DL), staffing and space. We will address space as part of our bond work. CA and RC are both considering reworking of testing spaces, and a district wide committee bond committee will focus on enhanced and more uniform approaches to Testing Centers. The second challenge is funding for staffing to expand current hours of operation and to support enhanced Testing Centers, which may result from bond work. Developing Testing Centers of sufficient scope and capacity to meet student needs is an important instructional priority that we agree must be addressed. We encourage Math faculty to participate in campus and district Bond committees that will provide input about Testing Centers.

19. • Recommendation

a. The College should recognize the extraordinary increase in workload that occurs when major changes are made in the support technology for DL courses. The college needs to make sure that adequate notice is given to the instructors of these courses and the college needs to adequately compensate instructors for the increased workload caused by these transitions. Additionally, in recognition of the fact that Mathematics courses have word processing and testing issues not encountered in other disciplines, significant opportunities for evaluation and comment should be provided to Math faculty ***before*** a decision is made by the college about the software to be purchased for use in Web-based courses.

b. *Rationale* Recently there was a major change in the delivery-platform for Web-based courses (the college transitioned from WebCT to Blackboard). The Math SAC understands that difficult changes like this are occasionally unavoidable, but we feel that the college needs to recognize how challenging and time-consuming such changes are for the faculty.

i. More support should be given to instructors who are required to adapt their DL courses to new delivery platforms. At a minimum, adequate prep-time needs to be provided for course revision.

ii. Ideally, release-time should be provided so that instructors can not only modify the course to the new delivery platform but they also have adequate time to learn the subtleties of the new

product so that they will be prepared to best serve their students.

iii. On another note, several instructors of DL classes in the Math SAC have found that Blackboard presents challenges for effective delivery of online Mathematics courses (e.g., the equation editor is slow, unreliable, and not available in all of the Blackboard tools). We believe that greater attention needs be taken when evaluating a new delivery-platform to make sure it will meet the needs of Mathematics faculty and students alike.

Response: We agree that faculty impact and adequate time to respond is a very important component in the planning and budging for future migration. Per Kendra Cawley, District Division Dean of Instructional Support, there is a plan in place to have faculty help evaluate options but also do pilots to help identify workload requirements. John Sneed (of Distance Learning) is organizing the migration plan with the help of a Steering Committee that includes Math faculty. Math faculty will certainly be invited to participate in the "field trials" of the options. The intent is to have a longer period of time over which to convert the courses. The DL department and Steering Committee are also exploring ways to implement the migration without completely halting new development.

Recommendations Related to Technology

20.• Recommendation

a. We would like to get better support with our computer network.

b. *Rationale* Recently, the Mathematics faculty at Sylvania had to contend with an internet connection that was so slow that attempts to upload files onto SPOT, our academic server, would time out and fail. Similar delays were experienced when staff tried to send emails from the Mathematics office on the Sylvania campus. This slow connection, apparently due to obsolete switches, was eventually corrected when department computers were re-routed through a new subnet. Unfortunately, this issue took nearly six months and several contentious discussions with TSS before it was resolved. During the six months it took to resolve this problem, instructors' ability to engage with students was hindered.

21.• Recommendation

a. The Mathematics Program has been informed by TSS that it does not intend to continue maintaining Monark, the program's secure server.

We would like the college to maintain support for this server.

b. *Rationale* Monark has been very helpful in the dissemination and archiving of information regarding SAC matters. The server is also very useful for the sharing of instructional material.

Response: We agree that changes in technology can have significant impacts on the teaching environment. We also understand that in a district the size of PCC, some level of technological standardization (and fiscal constraints) means that individual areas sometimes must give up specialized technology solutions that have been effective for them. In this case, the DOI's must defer to the expertise of our TSS department, but we will certainly advocate that replacement systems must provide a level of service that meets (and hopefully exceeds) the current system. We will share your and our concerns with TSS leadership.

22.• Recommendation

a. The college should provide funding to the DL department so that adequate staffing can be maintained in support of instructors using their video production facilities. Members of the Math SAC would also like to be included when decisions are being made about the software to be used for the production of on-line video materials.

b. *Rationale* On-line videos can be of tremendous value in all of our courses and especially in our Web-based courses. The DL department should be commended for taking the lead in providing resources and support for the production of on-line instructional videos. However, the software chosen for these projects, Mediasite, has a video capture rate so slow that it is very difficult to maintain proper timing between the instructor's verbal and visual presentations. Furthermore, with multiple users in the facility and lack of adequate technical support, instructors who attempt to use the facility frequently spend more time troubleshooting than they spend actually recording content.

Response: The funding of the DL department is outside of the DOI's area of influence, but we do agree that we need to provide staffing to support agreed upon and promoted video production efforts. We also agree that members of the Math SAC should be included in the consideration and assessment of technology used to support the on-line presentation of materials. We suggest that members of the Math SAC volunteer to the appropriate persons that provide leadership for the various technology areas (such as John Sneed and Sue Quast)

23. **Recommendation**

a. The college needs to be prepared to address issues related to Mathematics images before activating software purchased for use throughout the college. These issues should also be given serious consideration when software is being evaluated for purchase.

b. *Rationale* When the CCOG Management Tool was implemented, we found that it did not support Mathematical symbols. Since most of our CCOG's contain Mathematical symbols, several of the MATH CCOG's posted for public viewing are unreadable and reflect badly upon PCC in general and the Mathematics Program specifically. It was late Fall 2008 (two years later) before a procedure was clearly identified that allowed for the posting of the images. The procedure works at least through the preview stage; to date, no CCOG's have been publically posted that contain Mathematical images. The procedure is very time consuming and a great deal of attention must be paid to ensure that each image is properly located within the document. With over 40 CCOG's under his purview, The Math SAC chair in 2008 (Steve Simonds) suddenly found that his workload had increased dramatically. Because the steps necessary to implement image placement into CCOG's are non-trivial, training is probably going to be required every fall when our annually elected SAC chair assumes his or her new role. Had the college purchased a software package that allowed for direct upload of either an html document or a pdf file, none of this work nor any training would be required for the upload of Mathematical symbols.

Response: We agree that the college needs to consider the specialized image needs of disciplines such as Math and Science when evaluating and choosing software. Involving discipline faculty early in the process could avoid the unfortunate outcome which you describe in your rationale. We (the DOI's) will continue to advocate for your involvement, but suggest the best and most direct resolution is for the SAC to identify specific individuals that would like to volunteer for that service, and to regularly communicate that information to leadership in the areas making the purchases (DL, TSS, etc.)

Additionally, we believe we are all in agreement that struggling with software is a poor use of faculty time. It seems that other resources might be brought to bear, perhaps IAA's could do a portion of CCOG input, perhaps there are areas where Div Deans could run interference. Is there is interest either within the Math SAC or at a particular campus to convene a small workgroup to look for process improvements in the posting of CCOG's?

24. • Recommendation

a. The college should provide more classroom Starboards on all campuses.

b. *Rationale* Students have been very enthusiastic about instructor use of Starboards for classroom presentations. Among many benefits, notes written during class on a Starboard can be converted to pdf files

which are subsequently posted to instructional websites.

Response: If the Math SAC would like to develop a priority list of rooms by campus for
Starboards installation, the DOI's commit to the consideration and funding of Starboards (or similar technology if that becomes available) over the next few years. For new rooms with new podiums, Starboards could be part of the basic package.

25. Recommendation

a. Periodic upkeep of podium software is obviously essential and the TSS department does a good job of scheduling this maintenance. However, while performing upgrades it is vital that the technicians properly test all instructional software on the machine.

b. *Rationale* On more than one occasion StarBoard software upgrades have been installed in classroom podium computers without proper functional tests. Instructors have designed course presentations around this valuable technology, and it is quite disruptive when they go to class and find that the software has not been properly installed or configured.

Response: We agree, and will refer your concern to TSS.