

Academic Audit of the Mathematics Program at Pellissippi State Community College, Knoxville, Tennessee conducted on March 24, 2015.

On March 24, 2015, the Academic Audit Team conducted its on-site audit of the Pellissippi State Community College (PSCC) Mathematics Department. Because of recent comprehensive reviews of the Transitional Studies Program and the Teacher Education Program this review was limited to the College-Level Mathematics Program. The Academic Audit Team was led by David Stanislawski, Department Head for Physical Sciences at Chattanooga State Community College. He was assisted by Mary Martin, Professor of Mathematics at Middle Tennessee State University and David Bowlby, Assistant Professor of History at Motlow State Community College.

Prior to the on-site visit, the Academic Audit Team reviewed the Academic Audit Self-Study prepared by Nancy Pevey, the Dean of Mathematics, along with various members of the Mathematics Department. Although this was their first academic audit they prepared a thorough comprehensive review of the program involving both full-time and adjunct faculty members in the process. They are to be commended for the effort put into preparing the self-study.

Introduction

The audit team met first with the Dean and several faculty members. While we understand the need for faculty to cover their courses and timing may have not been the best, it would have been helpful if more faculty had been present to present their perspectives and provide input to the audit team. This is especially true of continuing full-time faculty who play an on-going role in course and program development, departmental operation and institutional memory.

Discussion revolved around various initiatives including co-requisite remediation and their trial program last fall. While their trial was successful in improving success there are a lot of unknowns in rolling this out to a larger audience.

The audit team also met with a group of students, a group of part-time faculty and a group of stakeholders, heads of other departments that depend on having their students well prepared in mathematics. The students and part-time faculty were appreciative of the time and effort the full-time faculty gave to them and were complimentary of the department.

Overall Performance

In terms of program performance the members of the Academic Audit Team believe that the College-Level Mathematics program at PSCC has met all the objectives reviewed by the team. Both the faculty and administrators at PSCC were well prepared for the

audit visit. The administrators and faculty members were frank and detailed in their responses. The students clearly valued the efforts of their faculty.

Focus Area 1: Learning Objectives

The faculty regularly conduct a thorough study of the learning objectives, always considering the needs of their students and the transfer institution, which is most often the University of Tennessee at Knoxville (UTK). The faculty consider the Tennessee Board of Regents (TBR) guidelines as well as Southern Association of Colleges and Schools (SACS) guidelines. The course offerings are consistent with the selection of courses offered by many community colleges. Of exceptionally high quality is the department's maintenance of a central repository for course materials. This allows all instructors to share data and yet individually edit their own version. Several courses contain common exams, containing questions associated with specific learning outcomes. These outcomes are discussed during faculty curriculum meetings. Maintaining an archive of documents would be an added feature that would allow changes to be tracked more easily.

The faculty is also considering collaborating with departments external to mathematics and conducting an expanded assessment. The department might consider going even further afield to examine their courses. While it is important to consider the most significant institutional links (internal and external), it is also important to view the status of the relevant courses and benchmarks with a more national perspective and with companies and other institutions of higher education. This would add a wider perspective to their plans for strengthening learning objectives.

The faculty have established a method of collecting information, analyzing it, and reviewing results for additional improvement. Additionally, the Self-Study and the faculty discussions show that the course documents are prepared with the appropriate benchmarks and with the goal of meeting the needs of their various constituencies.

Focus Area 2: Curriculum and Co-curriculum

The faculty have a clear design for curricula and for the requisite courses appropriate to the long-term goals of the students. The department has adjusted ACT prerequisite scores and added courses to help students more readily achieve their goals. The shifting of developmental studies from being housed in the Mathematics Department to being housed in a separate department, imposed from outside, has caused difficulties to the department and they appear to have graciously adjusted back and forth as has been demanded of them. The faculty has largely been required to respond to demands for change rather than to establish a journey toward long-term improvement. The department would benefit if these changing winds would calm down and they could deal with a more stable environment. Their course content and sequencing seems to be in line with traditional trends. The department keeps external constituencies in mind when

reviewing their course content. They require appropriate co-curricular material (such as publisher resources, D2L, and calculators). The options for peer tutoring seem to have benefited the students. Finally, a closer monitoring of syllabi is planned for up-dating the syllabi. This plan should be very helpful to the faculty.

The faculty should continue to review the impact of technology on student learning and should compare their curricula to best practices. Given the size of the faculty in mathematics and the demographics (full-time to adjunct ratio), the department needs to be sure that communication is adequately maintained between the people designing the course, teaching the course, and analyzing the course. While the full-time faculty should assume the preponderance of this work; if an appropriate communication structure is not included, then opportunities can be missed.

Focus Area 3: Teaching and Learning Processes

The entire Mathematics Department strives to provide students the resources and support needed to succeed in each of its classes. The department makes use of proven best practices to provide excellence in instruction. The primary goal of its Quality Enhancement Plan (QEP), for example, is to improve critical thinking and oral communication through active learning strategies and the department has implemented instructional methods to realize this goal. After implementation, these methods are evaluated by students to provide timely, valuable feedback to instructors. As a result of these efforts, more instructors are employing diverse methods to actively engage students in their classes. Examples of these active learning strategies include hands-on activities, group discussions, flipped or partially flipped classrooms, small group problem-solving work, and group projects. The department has been ranked very high on student engagement by the Community College Survey of Student Engagement (CSSEE) as a result of these strategies. It is readily apparent that faculty routinely engages in reflective teaching by consistently reevaluating the effectiveness of their teaching methods and adjusting them as necessary to enhance the quality of instruction. The level of collaboration between all instructors within the department, both full-time and adjunct, is exemplary. The department has demonstrated both intradepartmental and interdepartmental collaboration that other departments and institutions would do well to emulate.

Professional development opportunities for both full-time and adjunct instructors in the department have been plentiful and of high quality. Instructors have participated in webinars, workshops, and in-service opportunities to receive special instruction in best practices in teaching and learning and the use of technology. There are also special in-service opportunities provided specifically for adjunct instructors. Frequent workshops show faculty how to make optimum use of Desire to Learn (D2L), the Tennessee Board of Regents online course management system. Faculty members are encouraged to take advantage of professional development opportunities by attending as well as presenting at various conferences. The entire department benefits from these conferences both because individual members have enhanced their knowledge of best

practices by attending them and because the members who attended the conferences share what they have learned when they return from these conferences, either through an email to all department members or at the monthly department meetings. Faculty members also indicated that they consult the current research and professional literature for knowledge of best practices in teaching and learning.

Job shadowing is employed to help any instructor teaching a class for the first time. This provides them with information about the course and demonstrates one method of effectively presenting the material. Shadowing and discussions between the instructors not only enhances the quality of instruction but also builds valuable relationships between faculty members. The annual faculty evaluation provides useful feedback on the accomplishment of goals and helpful suggestions for further improvement in instruction. The mentoring of adjunct faculty members by an experienced full time faculty member and in-service opportunities for adjunct instructors provides valuable resources to these indispensable members of the team.

Focus Area 4: Student Learning Assessment

The Mathematics Department specifically links course learning objectives in each syllabus to each of the six criteria as stated by the TBR General Education Outcomes. Competency is measured by inclusion of several specific identifiable questions that are linked to each of the objectives. Competency is achieved through the employment of best practices in teaching and learning. As noted above, instructors use a variety of proven teaching methods to develop competency. By carefully linking objectives, teaching methods, and assessment, the department provides a good model of curriculum mapping and alignment. In addition, the department is to be commended for the breadth and depth of the learning support opportunities available to aid students in mastering the material.

Mentoring of new faculty members by experienced full-time faculty plays an important role in the development of successful assessment methods. The New Faculty Academy provided during the first year of a new faculty member's tenure-track employment and a pre-service retreat also are beneficial in sharing best practices and acclimating new faculty to the department and campus community.

The use of standardized departmental final exams allows the department and individual instructors to assess student learning outcomes and make appropriate adjustments to teaching and assessment strategies using exam results. The examination of end-of-course grade distributions and withdrawal rates allow faculty committees to determine the best ways to make improvements.

Besides the final exam, the department uses a variety of student assessment methods such as homework, quizzes, chapter tests, portfolios, projects, QEP activities, and capstone projects. Such a variety of methods has the benefits of helping students

master the material, provide an ongoing assessment of student learning, and enhancing and maintaining student interest and engagement with the material. Faculty members in the department are able to share their methods of assessment (and their teaching methods) with one another. This helps each of them assess which practices are most effective and make adjustments accordingly.

Measures for achieving student success include student access to Supplemental Instruction and peer tutoring. The Student Success Coordinator reaches out to struggling students and connects them with math learning resources. When combined with available co-curriculum student support opportunities, such as those made available on Desire to Learn and other support systems, it is clear that the department provides an impressive variety of approaches to ensure student success.

The department tracks the success of students from entry-level (often prerequisite) courses through their terminal courses to determine whether students are receiving adequate preparation. Based upon an analysis of student success in subsequent mathematics courses, instructors can make necessary changes in curriculum, textbook, and teaching methods. This sort of reflective teaching is highly commendable as it is likely to result in better teaching and learning and higher rates of student success.

Focus Area 5: Quality Assurance

As mentioned previously one way of assuring continued high quality instruction is to provide professional development opportunities. PSCC offers many in-house opportunities to its full-time faculty as well as adjunct faculty members, including a Saturday In-Service Day. Records show that all full-time and adjunct faculty avail themselves of these opportunities. Additionally faculty are provided the opportunity to attend and present at regional and national conferences.

The department sets annual goals which allows faculty members to attach individual goals to achieve the overarching aims of the department. Faculty are reviewed annually and even adjunct faculty are also offered the opportunity to prepare a portfolio. Those that do so can gain additional compensation.

The department continually collects data to assure that the students within courses are meeting the learning objectives. Select courses have pre-test/post-test questions which allows the department to gauge how well the students have achieved the learning objectives. We would recommend that the department develop a plan for introducing this approach into all of their courses.

Conclusions

The audit team is confident that the faculty and staff in the College-Level Mathematics program at PSCC are dedicated to their students and their profession. The faculty and

staff were prepared for the team's visit and they readily answered the questions of audit team members.

The audit team offers its Commendations, Affirmations and Recommendations below.

A. Commendations

- We commend the department for the thoroughness and collaboration they have exhibited in preparing the academic audit report.
- We commend the department for pursuing best practices in teaching and learning and providing continued and appropriate professional development activities in this area for both full-time and part-time faculty. We are extremely pleased with the overwhelming response of the faculty to participating in these activities.
- We commend the department for setting departmental goals annually which helps provide guidance to faculty in pursuing individual goals.
- We commend the department for aggressively addressing the task of developing co-requisite remediation courses. We recognize the challenges that this will present in terms of providing adequate staffing and resources to the project, coordinating co-requisite materials with the college level course, and meeting A-100 guidelines. We admire the focus on student success shown by the faculty and administration and anticipate a positive outcome.
- We commend the department for the high level of success they have in both their online and on ground courses. The success rates they exhibit, especially for on-line courses, are well above the national averages in mathematics.

B. Affirmations

- The department has done an excellent job of aligning objectives and course assessments across multiple campuses and courses. We encourage the faculty to continue to promote student success in achieving these objectives by sharing their resources, teaching practices, and classroom activities.
- The systematic record keeping, maintained on the departmental server, is exemplary and above and beyond efforts exhibited by many departments and institutions. We encourage the department to continue to collect data, keep records, and disseminate them to all appropriate faculty and staff.

- We affirm the use of technology including mobile technology and encourage the administration to provide additional resources allowing faculty to expand their use of these technologies.

C. Recommendations

- Several faculty members have identified the need to reassess the prerequisites associated with various mathematics courses. We recommend that the department review course prerequisites and make decisions in a manner that continues to support student success.
- The department has developed an effective, systematic approach to providing common exams and embedded questions in core-courses and utilizing the data appropriately. We recommend a studied and planned process of introducing this approach into other college level courses.
- We concur with the department's decision to institute a broader analysis of the effectiveness of college-level mathematics courses, additionally, we recommend that the department include research of national and peer performance in various on-line and on ground courses in order to inform their decisions on where to invest their efforts most effectively.