

What Happens When Math and Rhetoric Combine with Technology

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Abstract

What do Math 100 and Rhetoric 100 have in common? Each requires students to have specific computer and information literacy skills. This presentation will examine a pilot program started in the fall of 2007 at Hampden-Sydney College, funded through a VFIC-Verizon grant, which added a lab course for those enrolled simultaneously in Math 100 and Rhetoric 100. A collaborative effort, the lab faculty included Math and Rhetoric professors, the Public Services Librarian, the Instructional Technologist, and a group of student tutor / mentors. The content of the lab addressed not only computer and information skills necessary for both Math and Rhetoric but included some basic computing skills needed by all students at Hampden-Sydney College. Assessment measures, lab content, outcomes, lessons learned, and future plans will all be discussed during the presentation

Introduction

Hampden-Sydney College is a four-year traditional liberal arts college for men located on a 660-acre campus in rural southern Virginia. Founded in 1775, H-SC is the tenth oldest college in the country. The mission of the College is “to form good men and good citizens in an atmosphere of sound learning.”

Hampden-Sydney men are traditional aged and reside on the campus. Enrollment is approximately 1100 students. The College has no computer requirement for students; however, for the past several years 99% of freshmen arrive on campus with a computer (laptops out numbering desktops).

In this digital age, when communication is electronic, becoming an educated, responsible member of society also requires developing strong skills in information and computer technology. We expect that graduates should be able to access available information, judge its accuracy, understand the fundamentals of computers and information systems, manage the information acquired, and create spreadsheets and other documents that use that information to accomplish a specific purpose.

In an effort to meet this ever-increasing need for information and computer literacy, in the fall of 2006 we applied for and received grant funds from the Verizon Foundation and the Virginia Foundation of Independent Colleges to develop a computing lab class for incoming Hampden-Sydney College freshmen from challenged backgrounds – lower income, racial minority, and first-generation college students (a population criteria of the grant).

Over the past two and a half years, the College has been conducting an assessment study to determine the computer skills levels of incoming freshmen and graduating seniors. Through detailed analysis of individual student results, we identified skills for which some incoming freshmen need assistance as they begin their academic careers. These skills include basic spreadsheet creation, manipulation, and calculation, advanced word processing, and use of commenting, tracking changes, and other editing features. As the spreadsheet skills are required in Math 100 and the word-processing skills are required in Rhetoric 100, adding a lab experience to address both assists students in developing basic computer competency skills, as well as facilitating better performance throughout the curriculum.

The idea of such a computer lab is not a new one at Hampden-Sydney. Several years ago, we conducted a pilot project to add a lab experience to the upper-level Rhetoric classes (101 and 102). Two sections for two semesters each were taught. Because of technical problems encountered during the trial, however, it was decided not to add the lab permanently to either rhetoric class. Further, the College was in transition from a Macintosh to a PC environment at that time: files written on one platform could not be accessed by the other. The challenge this presented to the students and the faculty overshadowed any benefit that teaching computer and information literacy skills may have offered. With the adoption of a single platform (Windows for PC) for the College and a single, supported software package (Microsoft Office), these technical difficulties are no longer a concern. The addition of the Blackboard course management system also eliminated the file management issues we experienced earlier.

An earlier grant from the Verizon Foundation and the Virginia Foundation of Independent Colleges funded an initial technology-equipped classroom for the Rhetoric department and led to the addition of similar classrooms across the College. The new library, offering technology-equipped classrooms and wireless access throughout, expands and enhances our commitment to technology, while encouraging the co-integration of old technology (the book) with new technology (the Internet). Over the past ten years, the Instructional Technologist has conducted scores of instructional sessions for faculty and students on both the technical and the practical uses of technology; for four years, the Public Services Librarian has worked exclusively with students on the development and integration of information literacy skills. Faculty members have responded to these advances by enhancing their teaching with technology, to the extent that students expect and demand the integration of technology in the classrooms.

All of these factors make this the right time to add a lab experience to the basic Math and rhetoric classes, to assist students in acquiring and developing computer literacy. With a continued emphasis on technology-enhanced learning and the proliferation of technology in their everyday lives it makes it vital that students not only become proficient in their computer skills but use them without effort.

Project Description

As a two year pilot project each fall semester for 2007 and 2008, a maximum of 14 students who meet the population criteria and whose scores on existing College placement examinations indicate their need for Rhetoric 100 and Math 100 preparatory classes are enrolled in a weekly two-and-a-half-hour lab designed to develop the computer and information skills required not only for Rhetoric 100 and Math 100 but for future use throughout their college experience. (If there are not enough students meeting the population criteria then any student enrolled in both Rheto-

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ric 100 and Math 100 is selected to participate.) The lab is held in a technologically equipped classroom in the College's new library, which opened in August 2007. Each lab class incorporates practice sets and assignments, mixing elements from Math, Rhetoric, information literacy, and computer / internet skills. In order to accomplish this blended instructional atmosphere the teaching of the lab is a team effort which draws faculty and support staff from various areas of the college. The Rhetoric and Math classroom faculty act as consultants and offer instruction when needed to supplement the lab and provide cohesion with the traditional classroom instruction; the Public Services Librarian works with the students on skills in information literacy (the ability to locate, synthesize, and use information effectively); and the Instructional Technologist, who is the academic coordinator for the program, instruct the students in basic spreadsheet creation, manipulation, and calculation, and advanced word processing and editing; the Associate in Instructional Technology and Media assists the Instructional Technologist and works with the students on presentation software and imbedding media in spreadsheets, presentations, and text documents. Student mentors (one for each two students), upperclassmen trained in computer and information technology as well as mathematical and rhetorical procedures, assist the students with lab assignments, offer an upperclassman's perspective on topics, encourage those who struggle to learn new skills, and generally serve as a big brother.

Preparing the Lab

The instruction team for the lab as mentioned above includes the Rhetoric and Math professors to assure that the lab coordinates with classroom instruction, the library's Public Services Librarian to facilitate the information literacy component of the lab, the Assistant in Instructional Technology and Media to assist with teaching computer skills, the Instructional Technologist to teach computer skills and coordinate the overall administration of the lab. The Director of Academic Success participates by assigning herself as the freshman advisor for this selected group of students. Her assistance is extremely beneficial in straightening out student schedules and encouraging the students to continue to participate in the weekly lab.

To prepare for each fall semester's lab, the team meets weekly in the preceding spring semester to lay out a planned syllabus for merging the Math, Rhetoric, and computer and information literacy skills to be addressed in the coming semester. Throughout the fall semester, the team continues to meet weekly to discuss the status of the lab, changes in the syllabus, student progress, and any other issues which arise. The student mentors meet with the team during break periods of the lab and are included in all email conversation between team members.

The Fall 2007 Lab

Each lab met on Wednesday afternoon from 1:30-4:00. The instruction team members all attended each session if possible. Originally the instruction was to be a blend of each subject area using computer and technology skills to accomplish the assigned task. However, shortly after the start of the semester the instruction became broken into two or three definable sections. There would usually be a Math lesson which utilized computer or information skills (spreadsheets, graphs, research on mathematicians) and a Rhetoric lesson which used computers to conduct research or practice grammar skills. If a third lesson was included it was either an information literacy session (using online databases or library collections) or a specific computer skill based lesson (language use in email vs. text messaging, student online footprint, finding, using

and citing images). Plans for the fall 2008 lab include returning to the original idea of a more blended instruction.

Challenges

Initially planning was to enroll the students into sections of Rhetoric 100 and Math 100 which included no other students. However, due to staffing difficulties and past trends, the Math Department only offers one section of Math 100 each fall semester. Therefore, students are in one section of Rhetoric 100 by themselves but are part of a larger group in their Math 100 course. Because of this, the lab is officially tied to the Rhetoric course. Grades for work done during the lab are recorded for inclusion in the Rhetoric or Math class depending upon the assignment. At this time, students are not given academic credit for participation in the lab.

What the Grant Money Provides

The grant funds the student mentors as well as providing stipends for the Rhetoric and Math classroom faculty. It also covers the weekly snacks for the students as well as an end of the semester celebration. Each student who participates in the lab receives a 2G USB flash drive which he is required to bring to his Rhetoric and Math classes as well as to the lab. They are also given lifetime access to the Cengage Learning (formerly Thomson Course Technology) Skills Assessment Manager training module which is a tutorial and resource guide for basic computer skills and includes the entire Microsoft Office suite; the College's approved software for word processing, spreadsheets, and presentations.

Assessment

The College currently uses the Skills Assessment Manager (SAM), published by Cengage Learning (formerly Thomson Course Technology), to assess random groups of freshmen and seniors. We use the same assessment with lab class, as pre- and post testing, to assess changes in skill levels. We also plan to follow the progress of the lab students as they work through their Rhetoric 101 and 102 sequences, as well as their future Math courses. Retention rates for these groups will be compared with those of other current students also taking Math 100 and Rhetoric 100 in their first semester. A retrospective analysis of retention rates of past students who would have met the project profile will also be conducted and compared with the pilot group students.

Thus far, the SAM scores for the fall 2007 lab students show that upon completion of the lab course their scores rose to a level comparable with the scores of the freshmen random sample group from the beginning of the semester.

What We Learned

Having completed one of the proposed two pilot semesters, there are several insights which we have gleaned from the experience not the least of which was that it was essential that we provide snacks at each session. The more snacks the greater the participation. An infusion of sugar in the middle of the lab worked wonders on the students, the tutors and the instruction team.

We also learned that we needed to increase our planning team. Including the Director of Academic Success and the tutors in the early planning stages and throughout the semester would

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help with the flow of the course and increase communication among all interested parties. This would also have helped in maintaining a consistency of method across the entire instruction team. As with most things there is more than one way to accomplish a task. Each one may assume that their method is the only way. In team teaching, we needed to all agree on using the same procedures even if it was just how to open a file or perform copy and paste. Our consistency would have saved confusion for the students.

“Go with the flow” is a good motto in this type of experiment. There were lessons we had spent great amounts of time to prepare that did not spark the students’ interest and times when an off-hand comment generated meaningful and insightful dialogue. We learned as the semester progressed to not tie ourselves to what had sounded good in planning and to give ourselves up to those teaching gems that seem come from nowhere.

As in all things technological, plan for failure. The new library contained all brand new equipment and software. This was the first trial for the use of everything. Most equipment performed as expected but there were the odd glitches with laptops failing to connect to the wireless network or over sensitive building fire alarms which needed to be adjusted. The team did well to punt through any difficulties and used the technology problems as learning examples for the students.

Because the instructional team had invested so much time in planning for the lab, we had a desire to know that we were making a difference in our students’ academic lives. We wanted them to regale us with stories of how they were using the knowledge gained in our lab in other courses. They did not gush forth with such stories although one would occasionally make a reference to using an online database that had been discussed in lab for a paper in another class. Not until later in the spring semester 2008 did we start to hear more stories of how glad they were to have participated in the lab. Now students from the first lab are asking how they can help with the second lab class. We had to be satisfied with delayed gratification for our efforts.

We did, however, see a few immediate benefits to participation in the lab. It had been our hope that by having such a large and diverse team working with the students that they would make more use of the support staff and student tutors than traditional freshman. This did happen almost immediately. Students in the lab began to set up their own study groups and would meet in the library regularly. They were not shy about seeking out the Public Services Librarian for any library assistance they needed nor to visit the Instructional Technology Office for advice on personal computers or projects for which they needed help.

Finally, we came to realize that we needed the lab lessons to be more interactive. What the team thought of as solid interactive lessons was not viewed as such by the students or the tutors. We are aiming for a higher degree of interactivity in the coming fall 2008 lab.

Plans for Fall 2008

The instruction team is working on more thematic, interconnected, interactive lessons for the second offering of the lab. The plans are to have the students out of their seats physically retrieving material from the library, working in groups on differing tasks at stations setup in and out of the lab classroom, participating in game like internet and library hunts, and collecting data from their peers. An example of a lab which is planned has the students polling their peers about

the coming presidential election. In the lab they will analyze the data with a spreadsheet, create charts and graph, write a report on the data using word processing, include their charts and graphs into their text and format the entire report so that it is presentation quality. Another project has them being assigned a great mathematician to research using the internet and library print and non-print resources. They will generate a report on the mathematician, and then turn the report into a presentation using presentation software. After practicing their presentations in the library's public speaking center, they will give their presentation to the rest of the class.

For the fall 2008 semester, we have a clearer vision of how to blend the lessons so that the students are thinking with the technology and not about it. The lessons will focus the Math or Rhetoric skills while making use computer or library resources and separating these tools away from the subject instruction.

Future Possibilities

It is possible that after the two year pilot study the College may decide to make the lab a permanent part of the curriculum. It will depend upon the results of the assessment measures outlined previously. There is definite interest among the faculty and the administration to consider the possibility of have a permanent lab for Rhetoric 100 and Math 100 students.

Conclusion

When the idea of linking Math and Rhetoric together was first suggested, there were those who wondered at how two subjects so opposite could ever unite in a lab environment. However, the vision behind the project was that Math and Rhetoric are just two different ways of expressing thought and ideas – one numerical, one written.

With this in mind, the success of the first pilot experience has encouraged the instruction team and the College to look with anticipation toward the second pilot in the fall 2008 semester.

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