

## **Testing One, Two, Three!**

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### **Background of the College**

Hampden-Sydney College is a four-year traditional liberal arts college for men located on a 660-acre campus in rural southside Virginia. Founded in 1775, Hampden-Sydney 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.

Enrollment is approximately 1100 students. Hampden-Sydney men are traditional aged and reside on the campus. The student/faculty ratio is 10:1, with a large percentage of the approximate 110 members of the faculty electing to live on campus.

### **Introduction to Project**

Faculty at Hampden-Sydney College are heavily involved in the governance and operation of the College. In May 2004, in response to an earlier vote to make computer literacy a goal of the College, the faculty voted to initiate a requirement that students be tested for computer literacy. After much debate, the faculty elected not to make the test a condition of graduation but rather that testing be done to determine whether our students showed improvement in their computer literacy skills as a result of their time at the College.

The faculty resolution for computer testing was flexible in that it did not require that all students be tested. However, it did specifically name Microsoft Word, Excel, and PowerPoint as the three software packages that the faculty felt all students should have a working knowledge.

### **Initial Assessment Proposal**

The Associate Dean of the Faculty, a psychologist, was given the task of developing the research design for the assessment. He proposed a combination of a cross-sectional and longitudinal study. The cross-sectional measurement would come from testing freshmen and seniors in the same year. A longitudinal measure would come in the fourth year when the seniors taking the test would be the same students who had also taken it as freshmen. In the first three years, we would be able to compare freshmen with seniors but in the fourth year, senior scores could be compared with their freshmen scores.

Scoring of the assessment would be used to determine growth of computer skills. A defining score for judgment of an acceptable level of growth would not be implemented in the initial stage of the assessment. After four years of study, when the first freshmen class would be tested as seniors, then we would begin to have data that would allow us to define, for Hampden-Sydney, a

measurable goal. The first three years of the assessment was designed to collect data to define current skill levels.

The participant sample for the assessment would include sixty freshmen and eighty seniors. Freshmen selection would be by advising group with an attempt made to obtain a representative sample of students. For example, an advising group of honors students would be included as well as an advising group identified as at-risk. The senior sample would be randomly selected from all seniors. Freshmen would be tested early in their first semester and seniors would be tested in their final semester sometime prior to spring break.

Incentives for students to participate and do their best on the test would be put in place. Freshmen advisors would “require” their advisees to participate as part of advising activities, and seniors would be offered cash -- \$10. In addition, for each class, a \$100 gift certificate from the College Bookstore would be awarded in a drawing made up of those who achieved the top 25% of scores.

### **Assessment Selection**

The faculty vote to initiate the computer literacy testing took place at the final faculty meeting for the academic year. As part of passing the assessment requirement, faculty voted for testing to begin in the fall 2004 semester. Because of this tight deadline, it was obvious that there was no time to develop our own testing measure. A commercial product was the obvious solution.

The Thomson Course Technology Skills Assessment Manager 2003 (SAM 2003) was selected because of its software coverage and its flexibility. It fully covered the three software products we wanted to assess -- Word, Excel, and PowerPoint. SAM 2003 also provided a variety of question formats for test creation. It offered true/false questions, multiple-choice questions, skills based scenarios, and the ability to create custom questions.

### **Development of Assessment**

For the creation of the assessment, an ad hoc (Computer Assessment Project or “CAP”) committee of faculty, administrators, and administrative and academic computing technicians was created. Faculty represented the hard and soft sciences, the humanities, and economics – the heaviest users of the three software packages to be assessed. The committee met during the summer of 2004 to select the specific questions to make up the exam.

Initially the CAP committee members met to explore the options available to them in the SAM 2003 product. They quickly agreed that the use of the skills based scenarios offered the kind of assessment that they were after. The skills based scenarios would require students to manipulate the actual software being tested instead of answering true/false or multiple choice questions about it and time was too short to create custom questions.

The committee held several brainstorming sessions to develop a list of skills which it felt all students should be able to accomplish. As the same test would be given to freshmen as well as seniors, the test needed to include some scenarios at a higher level of difficulty in order to measure growth in skills development. Therefore, each item on the skills list was ranked by the committee to be basic, intermediate, or advanced.



PowerPoint	Basic	Create intro slide Design template Using different views Adding/deleting slides Create text slide Choose and change slide layout
	Intermediate	Manipulate text outline Create chart/graph Slide transitions
	Advanced	Insert hyperlink Animation and timing Save as web/HTML

### Year One Testing

Prior to deploying the assessment to the freshmen class, the committee felt that a pilot test should be run with a small, selected group of students. Committee members recommended several upper-class students and seven of them were asked to take the exam. Each student was given \$5.00 for providing this assistance. This student group encountered only a few minor glitches that were easily fixed before deploying to the freshmen class.

Although the original plan was to test freshmen early in the semester, it was mid-October before the exam was ready. To take the test, students would first need the SAM software on their computer. We decided to use Blackboard to deliver the software to them. Students selected to take the exam were enrolled in a Blackboard course where they could get the software and the SAM login URL. Once a student downloaded the software, he could easily login into SAM and take the exam at his convenience within the two-week window that had been set for the exam.

The freshman testing was doomed to failure for a series of reasons. By waiting to the middle of the semester to deploy the exam, advisors had lost the power of “requiring” advisees and a drawing for two \$50 gift certificates for the College Bookstore was not enough of an incentive to take the exam. The few students who attempted to take the exam grew impatient with the slowness of downloading SAM’s large software files. In addition, we did not know that SAM only works with Internet Explorer and that the College’s Computing Center had that fall decided to switch from Internet Explorer to Mozilla Firefox as the default browser on new computers purchased through them. Therefore, with approximately 98% of freshmen purchasing new computers through the College, freshmen only had access to Mozilla Firefox and not Internet Explorer. When the testing period was over, only five freshmen had taken the exam with only two completing it.

Senior testing in the spring saw a complete change in the deployment of the exam. Instead of delivering the test via Blackboard, we elected to schedule time in the computer lab where students could take the test at regularly scheduled times over a period of two weeks. The software was preloaded on the computers so that students had only to take the test. All seniors were invited to take the exam and seventy-one of them took us up on our offer to pay them \$15 to do so.

Also, as we had offered the freshmen, there was a drawing for two \$50 gift certificates for the College Bookstore.

### **Year Two Testing**

The resulting attendance of the senior class in the first year left us feeling some success in the project after our initial failure with the freshmen. We moved into the second year of testing assuming that we had finally worked through any problems with the testing process. We were not completely correct.

Again for freshmen, advising groups were identified and invited to participate in the testing. Realizing that we needed an incentive for freshmen to come, we offered \$5.00 gift certificates to the Starbucks coffee shop that had recently opened on campus as well as a drawing for two \$50.00 gift certificates for the College Bookstore. The test was again deployed in the computer lab at regularly scheduled times over a two-week period. Initial student attendance was very hopeful with honor student advising groups showing high levels of attendance. However, after the first week of testing, the numbers began to dwindle down to one or two students at each session. We extended the period of testing another two weeks and asked several faculty of all freshmen courses to bring their students for the test during class time. With this effort, we were able to achieve a reasonable sample of approximately sixty freshmen to take the exam.

For senior testing we repeated the process used in the first year and expected similar results. Seniors were offered \$15.00 for taking the exam as well as the drawing for two \$50.00 gift certificates for the College Bookstore. Attendance for the first two sessions was at full capacity. However, the following sessions brought almost similar results as the freshmen – three to five students per session. Additional sessions were added; we bombarded seniors with email inviting them to come. After sufficient begging and coercing to improve attendance, we finished the testing with approximately sixty seniors taking the SAM test.

### **Results**

Data from the second year of testing has not yet been fully analyzed. However, the trend shows that results between the freshmen and the seniors are similar in their performance on PowerPoint, which is predominately high, while Word and Excel results varied depending on the skill level of the task. Seniors outscored freshmen in Word, Excel, and PowerPoint with Excel showing the biggest difference. Also, thus far, little relationship has been shown between a student's major and his overall performance or his performance on a particular software application. Nor has there been any correlation seen between grade point average and SAM scores.

We are continuing to extrapolate the second year data and make comparisons with the first year data.

### **Future Plans**

Testing as it is now done will continue on freshmen and seniors in the coming years. When we reach the fourth (and probably more importantly the fifth) year of testing, we will specifically invite seniors who took the exam in their freshman year. At that point, we can begin the longitudinal part of the study by comparing freshman and senior results from the same individual. How

long the testing will continue into the longitudinal study has yet to be determined. In addition, how we apply the knowledge gained through the test results has yet to be determined.

### **Problems and Issues**

Our first most obvious problem is finding an incentive for students to participate in the assessment. We found that “requiring” freshmen did not work. Paying seniors on the surface appears to work but we discovered that the financial office was requiring the students to complete so much paperwork before receiving their \$15.00 that many of them never collected it. As seniors tell underclassmen about this paperwork “glitch,” we anticipate that we will no longer be able to attract seniors with the promise of money. We are exploring the idea of offering gift certificates for Dominos, local restaurants, the College Bookstore, or Wal-Mart. Gift certificates would not require students to fill in any paperwork.

The timing of the exam is also a major issue. We still aim to have the freshmen testing as early as possible but so much is scheduled for freshmen at the beginning of their first semester that we are having difficulty finding room for the exam. For seniors we want to wait as late as we can in their final semester but run into the problem that if we do the testing after spring break the seniors are either too busy with major projects and paper deadlines to participate or they have come down with senioritis by then and are no longer interested in participating.

### **Conclusion**

The development and creation of the assessment using the SAM 2003 product was easy and with few technical concerns. We are very pleased with the scenario based questioning offered by SAM 2003. However, it is the software-generated reports that make it an ideal product for our project. The reports permit us to see not only overall test scores for the exam but also each key-stroke taken by each student in his attempt to complete each task required in the scenario. Therefore, we can collect data that includes not just correct and incorrect responses but near completions and reasonable errors. The resulting data can then be accumulated and formulated into a method for assisting students in their growth in computer literacy. Thus far, we have used this information to develop web-based tutorials to address common errors that we have identified from the SAM reports. We hope to see such more use of this data as we continue in the project.