Admissions Workflow System

The new workflow system was used successfully to handle the application review process for the Colby Class of 2018. Between April 2013 and January 2014, the processes by which applications are downloaded from the Common Application system and the full range of supporting documents are compiled and reviewed for early decision and regular decision were mapped and coded into the Perceptive Content (previously known as ImageNow). A significant complication in our effort to implement this system was a major restructuring at The Common Application, through which all students apply for admission to Colby. The revised data structures had to be remapped to the system we were implementing and there was delay in getting information about this structure from The Common Application. At the same time, the software vendor was having to migrate all other current customers to the new data structure. Overall, the software vendor provided reasonable support and the admissions staff readily adapted their pattern of applicant review to the new system.

As with previous large projects undertaken by existing staff, this one took a large amount of time from the Director of Administrative ITS, Cathy Langlais, and some members of her staff, resulting in non-essential projects from other administrative departments being deferred.

Overall, the project was delayed only slightly by The Common Application challenges, was under budget, and had all the desired functionality. It was declared a success by the Admissions leadership and staff. Some needed adjustments of the system were identified in its first year of use and are in the process of being implemented in preparation for review of applications to the Colby Class of 2019 about to begin.

Network Electronics Upgrades

Replacement of older network switches supporting the wired network in the academic and administrative buildings is being completed. Although some redeployment of equipment to the residence hall wired network has taken place as planned, the low level of use of wired network ports in residence halls is leading us to consider alternatives that will be more flexible, energy efficient and easier to manage. Over the next few months, ITS will be developing a new multi-year plan for network upgrades throughout campus.

Central Server Upgrades and Datacenter Network Switches

A great deal of effort has been put into improving the reliability of the campus datacenters, located in Miller and Lovejoy. Our virtual machine server environment is designed to be reliable, with network resources that, in theory, should be able to recognize and reroute communications around a failed network segment. In practice, we were finding that occasional network anomalies were causing the network switches to be essentially locked up trying to self-heal communications paths. The major impact was in disruption between the virtual machines and their storage arrays, requiring restarting of the environment and resulting in unacceptably long service outages. To protect the virtual machines and their storage from this situation, we installed a set of new, high performance network switches specifically designed for virtual machine environments. Over the coming months we will be implementing a plan to either reconfigure the primary datacenter switches (completing a plan to implement what is called Multi-Chassis Trunking in place of the Spanning Tree system now in use) or replace them.

We are also continuing to seek a storage solution for personal and departmental shares on the file server. This is storage space that can be accessed from personal computers on the network. The challenge is that the storage must be compatible with both Macintosh (Linux) and Windows computers, but the file systems that control permissions for access to those files and directories are quite different. We are still evaluating some alternatives that minimize the necessary compromises in functionality.

IP Address Management

This project has provided essential improvement at the core of our network operations: the assignment and use of Internet Protocol (IP) addresses. We implemented the InfoBlox suite of IP address management tools initially to replace our open source DHCP and DNS systems. DHCP assigns an IP address to every device that connects to the network and DNS allows us to connect to servers by name rather than by
IP address. This system was installed in July with great success and has demonstrated enhanced reliability. We are now preparing to use this system to alter the availability of IP addresses across campus, especially in support of the wireless network. With a campus population moving about campus with a variety of devices accessing the wireless network, and the legacy IP address structure that provides only 255 addresses for assignment to devices in a particular area, depletion of the pool can easily result in new devices unable to receive an address assignment. By using the InfoBlox IP address management tools, we will increase available pools by joining blocks of addresses. The ultimate solution will be in the next generation IP address system (IPv6) and our tools are compatible with it, but it will likely be years before we are able to migrate fully to that IP address structure.

Classroom Technology Upgrades and Hockey Rink Sound System Upgrade

The ubiquitous classroom technology installed in about 130 teaching spaces on campus requires regular refresh cycles to bring them up to the evolving standards on campus. This year was no exception and the major work was in Diamond where the classrooms and seminar rooms had significant upgrades, such as HD projectors and control systems. The control systems in two auditoriums, Arey 5 and Keyes 105, had major upgrades. The sound system at the hockey rink experienced several component failures in recent years and was replaced with modern amplifier and speaker system.

Computational Chemistry Blade Server System

The intense computational resources required by Prof. Nicholas Boekelheide are best provided by a system of server blades mounted in a rack that integrates easily energy efficient power management, disk storage, and network connections. This project has provided a blade enclosure to host Prof. Boekelheide’s initial set of six blades with expansion capability for his and other applications in the natural sciences to a maximum of 16 blades. The current array of servers will undergo final configuration for his research program over the coming months, with additional blades expected to be added in the future using his faculty startup funds and as part of planning for the Natural Sciences Computing Cluster used by several departments.

Academic Quad Media Infrastructure

This project has provided the necessary infrastructure to better support media intensive events on the academic quadrangle below Miller Library. Its first use occurred with great success during the Presidential Inauguration, with live video-audio streaming on the web of the installation ceremony. This facility greatly simplifies set up for events and reliability of the data connections.

Davis Science Center – Classroom and Wireless Technology Prototype Deployment

The Davis Science Center is providing an opportunity to work with next generation technology, especially interactive whiteboards in classrooms and labs and the latest wireless technology. The Eno boards provide an additional system for faculty to manage information in the classroom. Although abundantly equipped with conventional whiteboards, the Eno boards are integrated with a projector and computer; enabling the instructor to interact with the display in a variety of modes, make annotations, and record it all in a file that can be made available to students. The Eno board was piloted last year and generated enough interest among the faculty in the departments occupying the Davis building that they wanted this expanded to a new classroom prototype in Davis. As faculty gain experience with this system and express interest in its wider deployment, we will develop plans for installation in classrooms elsewhere on campus in future classroom technology projects.

The wireless network in Davis uses the latest 802.11ac protocol that offers greatly enhanced bandwidth to suitably equipped mobile devices. It also provides better performance for an older protocol, 802.11n, found on many relatively new devices.

Wireless Network Upgrade Planning

Besides the prototype in Davis, we are about to do a full building evaluation of Aruba wireless hardware in Lovejoy. We are not entirely satisfied by the Meru wireless system we have deployed throughout campus and in the Davis prototype. The Aruba evaluation will allow us to compare this alternative in a production environment to determine first hand its advantages and limitations. We will be communicating the details of this evaluation with the Colby community, especially to solicit feedback on their experiences. We currently expect to propose a major two phase upgrade of the wireless network, first in the residence halls summer 2015 and then in the academic and administrative buildings summer 2016.
Planning Initiatives Now Underway in ITS

We have three significant planning efforts under way in ITS.

• That ITS is understaffed is well established by comparison with our peers. Two positions are being added immediately in the most critical areas: (1) In response to the major challenges in the datacenter and network operations area, one FTE has been added; Dan Siff has accepted the position as Director of Systems and Network Operations, and we are recruiting a new Director of Information Security to replace him there. (2) The other FTE is designated for an additional information systems analyst position in Administrative ITS to help carry out the current and anticipated projects supported by that group.

There are other areas that have been recognized by many members of the community as needing increased staffing and an internal review in ITS has developed a long list of potential positions to better meet the needs of the Colby community. ITS has begun a staffing assessment to better identify and prioritize the areas where staff coverage falls short of that required to meet essential current needs and set the stage for strategic resource planning. This effort will involve opportunities for input from the community and, especially, the College’s IT Committee.

As major College-wide strategic initiatives are identified, it will be essential to align the priorities and staff of ITS, augmenting resources where essential.

• At the same time that staffing assessment is taking place, ITS is examining space options for current and new staff to enable suitable interaction among the staff, with the facilities they manage and with the members of the community they support.

• IT Strategic Planning will be undergoing a major overhaul to parallel the College’s new vision, new strategic planning, and to assist with the assessment of resource requirements to achieve success in College initiatives.

• An initiative by the Provost’s office last year brought four faculty members together with Academic ITS staff to explore options to “flip classrooms” or otherwise use information technology in ways that improve student engagement and learning outcomes in particular courses. Jason Parkhill, Director of Academic ITS, has written a summary of these projects and some of what has been learned about the processes involved.

• Assessment of how well we are meeting the needs of the Colby community is always on our minds in ITS but difficult to measure in substantive ways. To obtain some meaningful data comparing the perceptions of Colby’s faculty, staff, and students over time and to those at our peer institutions, ITS and the Library participated in the MISO (Measuring information Service Outcomes) Survey in spring 2013 and received the results late last fall. A small part of the results of that survey is in the following two pages. The survey contained a series of questions about the frequency of use, importance and satisfaction with a series of resources, as well as some other questions about the staff and familiarity with technology. The results show Colby’s mean as Group A compared to a peer group. The peer group for faculty and students differ, because not all schools surveyed both faculty and students. Where Group A is shown as higher, Colby has a statistically significant higher mean score for use, importance or satisfaction, for example. The difference shows statistical standard deviation, indicating how much higher (or lower) is Colby’s mean. There are no real surprises to us in these results. Although interesting to compare with our peers, we will be most interested in the comparison between our 2013 results and the next survey, which we may do in spring 2015.

Ray Phillips
Director of Information Technology Services

Supplementary Items

What follows are two items associated with ITS activities this past year and these are found in the following pages.
Active Learning with Technology (ALT) Projects
– Jason Parkhill, Director of Academic ITS

Ankeney Weltz
Ankeney has been using exhibitions, both physical and virtual, as a way to provide an engaged hands-on learning experience for most of her teaching career. She was interested in web-based exhibitions as they could offer the advantage of collaborative, object-based learning with the possibility of an expanded audience.

Ankeney had designed a few online exhibitions using WordPress, but the WP themes available were more of a hindrance than an asset to the curatorial process she wanted to create for her students. Her goal was to design a WordPress template (or “theme”) in which students could easily build an exhibition without extensive WP or webpage design experience.

Ankeney met with ACITS staff to share her vision and provide some examples of the visual and textual design of the curatorial theme. A theme was designed based primarily on an example from the Museum of Modern Art. This theme would allow students to add media in the form of images as well as layers of critical metadata to describe the individual works of art and collections they created.

It was important to Ankeney that the Colby Museum of Art staff had the opportunity to provide feedback on the template with the hope that virtual exhibitions made by students could be linked to the homepage of the Museum. Academic ITS and Ankeney met with Museum staff and demonstrated the WordPress theme. It was an entirely positive meeting and the Museum staff members were pleased at the opportunity for future collaboration facilitated by a standard visual expectation that would guide student work.

Ankeney will be teaching a course in Jan Plan that utilizes this curatorial theme and she has shared the template with colleagues in the Art Department.

David Freidenreich
David began his project by identifying a concern that too much class time was spent on content delivery. He sensed that the textbook he uses might be the weakest link in the instructional experience. In addition, David uses many primary sources that require students to comprehend complex material. David felt forced to lecture to explain the texts and concepts. Moving these lectures outside of class time was the work David envisioned. He wanted “flip” class time to be used for analysis and secondary sources that build upon an understanding of the primary. Further, he wanted to foster more discussion during class time.

David arranged for two Colby students who had taken his course to work as research assistants on this project during the summer (2014). Sarah Jeanne Shimer and Anna Spencer collaborated with David to edit written versions of his lectures, videotaped David delivering the lectures and then created Prezi presentations to accompany them.

The lessons are broken down into 8-10 minute segments. The lessons and presentations were combined using video editing software and then uploaded to Youtube. Using a plugin for WordPress called Learn Dash, David and his team created a course website where the videos could be accessed and short quizzes to check for understanding could be administered. The course, RE181: Conceptions of Jews and Judaism was offered this fall (2014).

David feels his redesigned course has enabled him to go beyond content to explore the importance of developing reading as a critical academic skill. In addition, David realized new connections to his scholarship in the course curriculum and has made critical additions to enrich the experience for his students. Finally, even though David acknowledged the significant commitment of time this process took, he is already making plans to flip another course.

Michael Donihue & Whitney King
Michael and Whitney are interested in developing a model that would enable lab and field work to develop students’ technical skills. The objective would be to give students hands-on opportunities to experience energy systems differently. They
observed that their students have interest in the ideas but not necessarily the technical skills to engage in the work itself.

They plan to create a shared experience where students are doing something very different once a week. These “Flipped Fridays” would involve peer-to-peer work in and outside of class. In preparation for this course, Michael has developed a paperless system for sharing class materials and providing feedback on student work using cloud-based technology. This has allowed him to gain back class time for instruction and given students anytime/any place access to the material.

Meanwhile Whitney has developed a process to encourage and support students in the creation of an Excel based tool kit. Students manage their tool kit and add whatever they create (e.g., t-tests, explanations of formulas). This has enabled Whitney to develop more complex and precise assessments for students to demonstrate learning.

Lessons learned:

- Substantial faculty time and supporting resources are required to significantly rethink and revamp how classes are taught. It may likely involve a multi-year process of refinement.

- Using digital tools to reconsider how and when course content is delivered permits faculty members to rethink how in-class time may be used in more engaging and productive ways.

- Moving content previously delivered in class to other media delivered before a class meeting dramatically improved class participation during face-to-face meeting times.

- The reproducibility and modularity of digital tools encourages greater collaboration among faculty and, potentially, disciplines.

- Participation in this working group created an opportunity for faculty members from disparate departments to share their instructional experiences and set the stage for further collaboration.

- Including students in the production of the digital curriculum elements had many benefits. First, students who had previously participated in the course were able to contribute their insight in terms complexity of content and support for multiple modes of learning. Second, the students gained new digital skills including screen capture, video-editing, and presentation development. Additionally, students had the opportunity to work closely with a faculty member around content and instruction in a collaborative environment.

- Plans for capturing the experiences of students participating in the use of digital instruction should be mapped out in tandem with the curriculum development process. The question, “How do we know if this change enhanced or improved learning?” should be posed throughout the process. This would allow a more granular focus on what the goals of the adaptations are and whether or not they are achieved.
### MISO Survey Results

#### Measuring Information Service Outcomes
Higher mean values are considered better than lower values. Statistical comparisons are between Colby and peer group.

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<th>Difference b/t Groups</th>
<th>Statistical difference test</th>
<th>Over the course of a semester, how important are these services to you?</th>
<th>Difference b/t Groups</th>
<th>Statistical difference test</th>
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**Group A** = Colby 2013 (N=149)


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<th>Statistical difference test</th>
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</thead>
<tbody>
<tr>
<td>Departmental Printers</td>
<td>-0.07</td>
<td>No difference</td>
<td>-0.15</td>
<td>Group A Lower</td>
</tr>
<tr>
<td>Computer Replacement</td>
<td>0.30</td>
<td>Group A Higher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support: Data Backup</td>
<td>0.13</td>
<td>Group A Higher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campus Computing Labs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Computers in the Library</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Departmental/Specialized Computing Labs</td>
<td>0.01</td>
<td>No difference</td>
<td>0.09</td>
<td>Group A Higher</td>
</tr>
<tr>
<td>Wireless Availability</td>
<td>0.11</td>
<td>Group A Higher</td>
<td>-0.09</td>
<td>Group A Lower</td>
</tr>
<tr>
<td>Wireless Performance</td>
<td>0.05</td>
<td>No difference</td>
<td>-0.21</td>
<td>Group A Lower</td>
</tr>
<tr>
<td>Wired Network</td>
<td>0.02</td>
<td>No difference</td>
<td>-0.13</td>
<td>Group A Lower</td>
</tr>
<tr>
<td>E-mail Services</td>
<td>0.05</td>
<td>Group A Higher</td>
<td>0.13</td>
<td>Group A Higher</td>
</tr>
<tr>
<td>E-mail SPAM Filtering</td>
<td>0.12</td>
<td>Group A Higher</td>
<td>0.16</td>
<td>Group A Higher</td>
</tr>
<tr>
<td>Virus Protection</td>
<td>0.04</td>
<td>Group A Higher</td>
<td>-0.01</td>
<td>No difference</td>
</tr>
<tr>
<td>Off-Campus Access</td>
<td>0.06</td>
<td>Group A Higher</td>
<td>-0.08</td>
<td>No difference</td>
</tr>
<tr>
<td>Campus Telephone Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support: Campus Phones</td>
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<td></td>
</tr>
<tr>
<td>ERP Self Service</td>
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<td>No difference</td>
<td>0.08</td>
<td>Group A Higher</td>
</tr>
<tr>
<td>Computing Web Site</td>
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<tr>
<td>Web Portal</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Input into Computing Decisions</td>
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<td>0.02</td>
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</tr>
<tr>
<td>Overall Computing Service</td>
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<td>Group A Higher</td>
<td>0.02</td>
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<tr>
<td>How satisfied are you with the following resources and services? (cont.)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Departmental Printers</td>
<td>-0.07</td>
<td>No difference</td>
<td>-0.15</td>
<td>Group A Lower</td>
</tr>
<tr>
<td>Computer Replacement</td>
<td>0.30</td>
<td>Group A Higher</td>
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<td>Support: Data Backup</td>
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<tr>
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<tr>
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<td></td>
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</tr>
<tr>
<td>Departmental/Specialized Computing Labs</td>
<td>0.01</td>
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<td>0.09</td>
<td>Group A Higher</td>
</tr>
<tr>
<td>Wireless Availability</td>
<td>0.11</td>
<td>Group A Higher</td>
<td>-0.09</td>
<td>Group A Lower</td>
</tr>
<tr>
<td>Wireless Performance</td>
<td>0.05</td>
<td>No difference</td>
<td>-0.21</td>
<td>Group A Lower</td>
</tr>
<tr>
<td>Wired Network</td>
<td>0.02</td>
<td>No difference</td>
<td>-0.13</td>
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<tr>
<td>E-mail Services</td>
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<td>Group A Higher</td>
</tr>
<tr>
<td>Virus Protection</td>
<td>0.04</td>
<td>Group A Higher</td>
<td>-0.01</td>
<td>No difference</td>
</tr>
<tr>
<td>Off-Campus Access</td>
<td>0.06</td>
<td>Group A Higher</td>
<td>-0.08</td>
<td>No difference</td>
</tr>
</tbody>
</table>

How informed do you feel you are about the following?  
- Available Tech Services: -0.10 (Group A Lower)  
- Tech Privacy Issues: -0.06 (No difference)  
- Virus/Spyware Issues: -0.17 (Group A Lower)  
- Information Security Issues: -0.13 (Group A Lower)  
- Who to Contact: Instructional Tech Needs: -0.09 (Group A Lower)  
- Data Backup Solutions: -0.11 (Group A Lower)  
- Who to Contact: Computing Needs: -0.16 (Group A Lower)

How strongly do you agree with the statements with regard to the staff providing this service?  
- Help Desk - Friendly: 0.24 (Group A Higher)  
- Help Desk - Knowledgeable: 0.14 (Group A Higher)  
- Help Desk - Reliable: 0.15 (Group A Higher)  
- Help Desk - responsive: 0.11 (Group A Higher)  
- Instructional Technology Services - Friendly: 0.08 (Group A Higher)  
- Instructional Technology Services - Knowledgeable: -0.06 (No difference)  
- Instructional Technology Services - Reliable: 0.02 (No difference)  
- Instructional Technology Services - Responsive: 0.00 (No difference)

Do you personally own the following devices?  
- Smart Phones: 7.2% (Group A Higher)  
- E-Book Readers: 6.1% (Group A Higher)  
- Tablets: 19.5% (Group A Higher)  
- Off-Campus Internet Access: -0.24 (Group A Lower)

How would you describe your skill level with the following?  
- Course Management System: 0.09 (No difference)  
- Tech in Meeting Spaces / Classrooms: 0.09 (No difference)  
- Search Engines: 0.01 (No difference)  
- Word Processing Software: 0.14 (No difference)  
- Spreadsheet Software: 0.14 (No difference)  
- Presentation Software: 0.20 (Group A Higher)  
- Graphics Software: 0.25 (Group A Higher)  
- Audio/Video Editing Software: 0.25 (Group A Higher)

Higher mean values are considered better than lower values. Statistical comparisons are between Colby and peer group.
## MISO Survey Results

### Measuring Information Service Outcomes

Higher mean values are considered better than lower values. Statistical comparisons are between Colby and peer group.

<table>
<thead>
<tr>
<th>How would you describe your skill level with the following? (cont.)</th>
<th>Difference b/t Groups</th>
<th>Statistical test</th>
<th>How interested are you in learning more about the following?</th>
<th>Difference b/t Groups</th>
<th>Statistical test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math/Statistics Software</td>
<td>0.23</td>
<td>Group A Higher</td>
<td>E-mail</td>
<td>-0.40</td>
<td>Group A Lower</td>
</tr>
<tr>
<td>Spatial Analysis/GIS Software</td>
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<td>ERP Self Service</td>
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<td>Primary Operating System</td>
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<td>Course Management System</td>
<td>0.08</td>
<td>No difference</td>
</tr>
<tr>
<td>Backing Up Data</td>
<td></td>
<td></td>
<td>Tech in Meeting Spaces / Classrooms</td>
<td>-0.02</td>
<td>No difference</td>
</tr>
<tr>
<td>Avoiding Computer Problems</td>
<td></td>
<td></td>
<td>Search Engines</td>
<td>-0.09</td>
<td>No difference</td>
</tr>
<tr>
<td>Solving Computer Problems</td>
<td></td>
<td></td>
<td>Word Processing Software</td>
<td>-0.06</td>
<td>No difference</td>
</tr>
<tr>
<td>Finding &amp; Evaluating Information</td>
<td></td>
<td></td>
<td>Spreadsheet Software</td>
<td>-0.08</td>
<td>No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Presentation Software</td>
<td>-0.14</td>
<td>Group A Lower</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Graphics Software</td>
<td>-0.22</td>
<td>Group A Lower</td>
</tr>
<tr>
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<td></td>
<td>Audio/Video Editing Software</td>
<td>-0.16</td>
<td>Group A Lower</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Math/Statistics Software</td>
<td>-0.10</td>
<td>Group A Lower</td>
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<tr>
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<td>Spatial Analysis/GIS Software</td>
<td>-0.13</td>
<td>Group A Lower</td>
</tr>
<tr>
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<td></td>
<td>Primary Operating System</td>
<td>-0.06</td>
<td>Group A Lower</td>
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<tr>
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<td>Backing Up Data</td>
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<td></td>
<td>Avoiding Computer Problems</td>
<td>-0.19</td>
<td>Group A Lower</td>
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<tr>
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<td></td>
<td></td>
<td>Solving Computer Problems</td>
<td>-0.19</td>
<td>Group A Lower</td>
</tr>
<tr>
<td>How interested are you in learning new technical or research skills by the following methods?</td>
<td></td>
<td></td>
<td>Learning Method: One-on-One</td>
<td>0.01</td>
<td>No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Learning Method: Workshop/Training Session</td>
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<td>Group A Lower</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Learning Method: Documentation</td>
<td>-0.15</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Learning Method: Online Tutorial</td>
<td>-0.05</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Learning Method: Trial &amp; Error</td>
<td>-0.05</td>
<td>No difference</td>
</tr>
</tbody>
</table>

How interested are you in learning new technical or research skills by the following methods?

- **Learning Method: One-on-One**
  - Group A: 0.01
  - Statistical test: No difference
- **Learning Method: Workshop/Training Session**
  - Group A: -0.21
  - Statistical test: Group A Lower
- **Learning Method: Documentation**
  - Group A: -0.15
  - Statistical test: Group A Lower
- **Learning Method: Online Tutorial**
  - Group A: -0.05
  - Statistical test: No difference
- **Learning Method: Trial & Error**
  - Group A: -0.05
  - Statistical test: No difference

**Group A = Colby 2013 (N=149)**


**Group A = Colby 2013 (N=416)**