2020-21 Information Technology Services Overview

The information technology needs of the Colby community increased dramatically during the pandemic. As remote and hybrid work became the norm, technology became more crucial than ever to conducting the business of the College. The Office of Information Technology Services (ITS) worked with the Provost's Office to develop plans and new services for faculty teaching remotely and students learning from quarantine locations while still emphasizing community and engagement. ITS rapidly increased its capacity to produce and support high value virtual events for an environment where audience sizes were limited and campus visitors were not permitted. The College's extensive COVID-19 testing program was fundamental to the in-person 2020-21 academic year and ITS developed a number of tools to support the test program. This past year especially, Colby benefited greatly from a long and consistent investment in its IT infrastructure.

Colby Workday Project

The College went live with Workday for human resources, financial management and payroll functions on July 1, 2020. This was the culmination of over two years of planning, design, and implementation efforts.

The Colby Workday project team transitioned to governance mode in the form of the Colby Workday Governance Group. This group prioritizes ongoing Workday work and continues to build out and refine Colby business processes in Workday.

We continue to work with our implementation partner, Accenture, as we progress through milestones—such as fiscal year-end close—and continued configuration and business process alignment.

Workday Planning (previously called Adaptive), a budgeting and forecasting tool, went live in early 2021. Workday Learning, a training management module, went live in September.

Modernizing Administrative Systems

Efforts continued to replace homegrown and locally hosted legacy applications with modern cloud-hosted alternatives. Several new administrative systems were implemented during the summer of 2021 including an accessibility management system for the Office for Student Access and Disability Services, a comprehensive Athletics Department recruiting and management platform, a recreation program management platform, a student success platform for the Office of Campus Life designed to bridge the gap between acceptance and arrival for students, a student support platform to facilitate connections for first-year students, a mailroom management software replacing a homegrown system, and a new platform to provide a modern web presence for the Colby Bookstore.

COVID-19 Testing Management

The ITS Consulting & Solutions team collaborated with others at Colby to manage data and applications related to testing, test results management, and student onboarding during the pandemic. Examples include:

- A student onboarding portal which incorporates student data and testing data into a centralized tool for student arrival and testing compliance management.
- An employee testing management portal to track testing compliance for faculty and staff.
- Integration of data from Colby sources to and from internal and external systems such as CoVerified and CareEvolve.

Supporting Hybrid Teaching and Learning

Beginning with the spring 2020 semester and continuing throughout the spring of 2021, the members of the Academic ITS team deployed several new technologies to address the persistent challenges of remote and hybrid learning: building community in the remote/hybrid classroom and keeping students engaged with their courses.

During the emergency remote teaching period in the spring of 2020, all faculty, staff, and students were remote to Mayflower Hill. While the situation was unwelcome, the circumstances for all members of the community were at least consistent from a technology support perspective. The 2020-21 return to an on-campus experience for the majority of faculty and students introduced inconsistent circumstances that were more challenging to address. About 25 percent of classes were taught remotely. Further, some international students were unable to travel to the United States for various reasons. Of those international students unable to return, many were in China where that country's "Great Firewall" complicated access to services and resources and challenged ITS staff and faculty to find creative solutions on the fly.

Faculty members utilized new academic technologies paired with new pedagogical practices out of necessity during the pandemic and many of those are now certainly here to stay.

Building Community in Remote and Hybrid Classrooms

For community building, Academic ITS staff and members of the Center for Teaching and Learning recommended to faculty that they provide a home base for all of their courses online. Moodle, Colby's learning management system (LMS) was the recommended choice, and a suite of add-on integrations were selected and implemented to improve the cohesiveness of the remote and hybrid learning experience. Following is a sampling of the integrations that were added:

- Zoom, to allow faculty to manage all of their meetings and recordings for each course.
- Perusall, which facilitates students' ability to collectively annotate and discuss readings online.
- Google Assignments, for managing paperless writing assignments.
- Kaltura provided faculty with a means to manage their videos for each course with Colby's new video content management system, including assignments that permit students to submit audio and video and in-video quizzing.

Increased and Lasting Reliance on the LMS

When remote teaching began in the spring of 2020, the number of pageviews served by the LMS effectively doubled and that trend generally continued throughout the 2020-21 academic year.
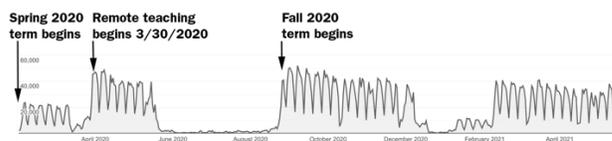
The Moodle LMS had a long history and wide adoption at the College prior to the pandemic but the spring 2020 remote teaching experience and then the 2020-21 academic year drove even wider adoption and far more sophisticated uses, many of which were facilitated by the growing number of integrations with other tools and services.

During academic year 2020-21, the LMS served 6.4 million pageviews. During the most recent past fully in-person year, 2019-20, Moodle served 3.9 million pageviews—a nearly a 40 percent increase in views. Now that faculty and student expectations have been reset around what role the LMS may play in the academic program, it seems likely that the increased use and reliance on it will continue even as the academic program transitions back to a fully residential experience.

Zoom Emerges as a Standard Communication Tool

Countless media articles have documented the inexorable rise of Zoom as the videoconferencing platform of choice during the pandemic and that was certainly the experience at Colby. For synchronous remote and hybrid class meetings, Zoom permitted faculty to see and hear students, assign them to breakout rooms for small group discussion, poll them for feedback on course progression, and use text chat channels to supplement verbal discussion. The class meetings were often recorded for reference in the future and those recordings provided machine generated transcripts that could be searched by text query to locate when a particular topic was reviewed during the recorded discussion. Faculty members also made considerable use of Zoom to hold virtual office hours to offer students opportunities for one-on-one attention. Administrative functions also moved to remote meetings, for both internal and external communications (admissions, advancement, alumni engagement, parent programs).

During the 2020-21 academic year, members of the Colby community hosted almost 86,000 Zoom meetings involving about 2,300 active users (effectively everyone in the community) with considerable participation from community members outside the United States.
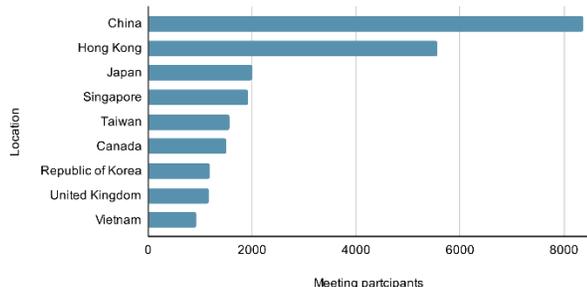
Zoom represents the current state of the long evolution of videoconferencing technology and has lowered the bar sufficiently to be nearly effortless to organize, join, and participate in virtual meetings. Now that the community has considerable experience with the tool, it is likely that it will remain part of the repertoire of many. Faculty members may choose to make greater use of guest speakers, inviting them into class meetings virtually, and providing students with richer opportunities for engagement.

Video Enhances In-Person Instruction

Implementing Kaltura, an enterprise video management platform, allowed Colby faculty and students to manage all of their videos using a single application. Not only did it provide new opportunities, such as LMS integration, but it also provided more
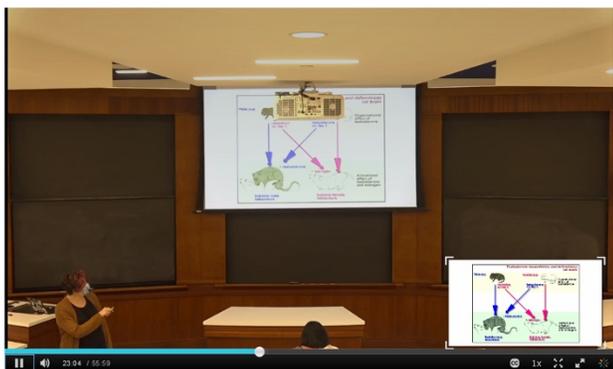
Frame from Kaltura recording in Olin 001

refined classroom lecture capture options and generated transcripts to improve accessibility.

Many faculty members used desktop Kaltura production tools to produce videos covering course material for students to watch before a virtual or in-person class meeting so that they could maximize the time students had for live discussion.

During the 2020-21 academic year, faculty and students produced nearly 4,000 videos, those videos were played almost 80,000 times by 1,700 unique viewers for a total of about 23,000 hours viewed. About 90 percent of all views were through the Moodle LMS.

Video recording class meetings or disseminating course material by video to supplement class discussions will certainly continue. Faculty members have demonstrated strong ongoing interest in the myriad ways that video may be used in instruction.

Virtual Computing Obviates Place Constraints

During quarantine or isolation situations, many students needed to access software that is licensed for use only on College-owned systems in classrooms and labs. A virtual desktop computer service, Apporto, was implemented to provide continued access to specialized software required for coursework via only a web browser from any location with a reliable internet connection.

Colby students have indicated significant interest in the flexibility that mobile computing provides, opting to run software on their own devices when possible. With high rates of laptop and smartphone ownership, students expect to be able to access education resources anywhere. A robust virtual computing service can provide that flexibility and the demand for it seems likely to persist going forward.

ITS Support Services

In the leadup to the 2020-21 academic year, the types of requests submitted to the ITS Support Center focused on faculty and student needs as they related to hybrid teaching and learning.

There was a significant increase in requests for mobile hardware and communications hardware (webcams, microphones, tablet input devices). In some cases, cellular hotspots and laptops were configured and deployed for students who found themselves restricted to locations with limited connectivity so they could continue their coursework. Similarly, there was an increase in requests for access and support for services integral to hybrid teaching and learning including Zoom software and the campus VPN service.

Many new and existing processes were developed, implemented, and refined to support the technology needs of hybrid teaching and learning. ITS computer deployment staff expanded their use of shippers like

UPS and FedEx to facilitate hardware deployment, upgrades, and repair for faculty who were not on campus. The ITS Event Support team developed new systems and processes to standardize and support Zoom webinars as part of the co- and extracurricular events.

The Support Center and Hybrid Teaching

The efforts of the ITS Support Center team contributed to the success of the hybrid teaching and learning experience.

- Support Center staff provided training to faculty in a way they had not previously, educating them on new technology in learning spaces and/or their offices to facilitate hybrid teaching.
- Support Center staff provided just-in-time support for tools like Kaltura and Zoom which were integral to the success of the hybrid learning experience.
- The Event Support team added a significantly higher level of production value to the hybrid/remote events they supported, including but not limited to camera and lighting set up and live production control via Open Broadcaster Software.

Network and Systems Infrastructure

Colby's continued investment in its network and systems infrastructure allowed ITS systems and network administrators to deploy significant upgrades in 2020-21, including:

- Expansion of the VPN service to increase capacity from 100 to 500 concurrent connections to support remote and hybrid teaching and learning.
- A campus-wide upgrade of all wireless network access points, providing support for Wi-Fi 6 and continued expansion of coverage in outdoor areas.
- Upgrades of network switches in academic and administrative buildings as part of the second year of a three-year refresh plan. Improvements include power to every port (PoE) and increased access to 10 Gbps connections to the academic research computing environment and 'low friction' network deployed in 2019-20 as part of a NSF cyberinfrastructure grant.
- Upgrade of the network switches serving the on-campus data center including both the academic and administrative computing environments to 100 Gbps speeds.

- Continued investment in high-performance and research computing infrastructure capability and capacity, including new blade server enclosures.
- The campus telephone system upgrade was completed in 2020, including a change of external services from analog to digital and the initial deployments of new voice-over-IP telephones to campus buildings.

Additional improvements to Colby's disaster recovery and continuity of critical systems capability included the installation of a generator to the primary data center in Miller Library, which will maintain central network and systems operation in the event of a power outage, and the move of off-campus backup infrastructure from a leased facility in Brunswick, Maine to the University of Maine's primary data center in Orono. This move increased capacity for backups and the speed of the connection to campus while reducing operating costs.

Information Security

Information security continues to be an important and expanding area of information technology. While the College itself did not directly experience a significant incident in 2020, two data breaches occurred during this period that impacted Colby. Front Rush, an athletic recruiting platform, experienced a breach in late 2019 that came to light in early 2020. Blackbaud, the company that maintains The Raiser's Edge platform used by College Advancement, was breached in 2020. The ITS Office of Information Security continues to work closely with the Office of Risk Management and many other College offices to ensure that new services and data integrations are carefully managed to minimize risk to Colby data.

There were several key initiatives and areas of focus carried out in 2020 that served to improve Colby's information security posture and reduce risk:

- The 2019 transition to Okta, a cloud-hosted identity and access management platform, created a pathway for increased security and manageability of authentication to online services. More than 60 authenticated services were added to the Okta platform in 2020, bringing the current total to 99.

- Multi-factor authentication, which requires a unique one-time code in addition to an account password, is now required when accessing services which contain sensitive or private data, including Workday, the Google Workspace suite (including Email, Calendar, and Drive) and the Colby VPN.
- The Office of Information Security met with individuals and stakeholders from over 20 different College offices to review information security policy, practices and technology in order to raise awareness about data security.
- While phishing awareness exercises were paused due to the pandemic, the addition of Google's enterprise licensing for Colby's Workspace increased the ability to respond to and remove fraudulent email and phishing attacks from inboxes. Additionally, changes to the College's online directory made it more difficult to obtain email addresses and resulted in a decrease in the number and extent of such attacks.

Goals for 2021-22

Student Information System (SIS) Planning
- ITS continues to participate with the SIS project steering group to develop plans for migration to a new SIS platform.
- Work to migrate custom services built on top of the current Jenzabar CX ERP over the past three decades is underway and will continue during 2021-22 to help pave the way for the move to a new SIS.

Workday Optimization
- The Workday project team continues to optimize business processes to better align with Colby practices. These optimizations include targeted improvements like more seamless onboarding for faculty hires, development of an end-to-end process for student employment, and reduced manual data entry through integrations.
- Work to improve access to data is underway, with refined role. A re-envisioning of the Workday Governance Group is planned to more effectively serve the College's needs in finance, human resources, and payroll.

Infrastructure Upgrades
- The virtual machine infrastructure in the campus datacenter is in the process of being migrated to a new solution from Nutanix.

- The core network switch is at the end of its service life and ITS will be upgrading it and adding capacity over the next year to a configuration sized to serve the College for the next several years.

Information Security
- ITS is currently upgrading our endpoint security system to a more comprehensive solution from CrowdStrike. The new solution especially aims to guard against ransomware attacks.
- ITS is engaging an external partner to review our posture against the NIST 800-171 security framework. This review will build on a similar one conducted in 2018 and is intended to be the first in what will become an annual assessment involving an external party to assist us in advancing and testing our information security policies and practices.

Return to On-Site Work/Hybrid Environment
- About 75 percent of the ITS organization has transitioned back to on-site work full time. The remaining 25 percent currently have hybrid work schedules where they are on campus a certain number of days per week while working remotely for the others.
- ITS leadership is working closely with the Office of Human Resources on the shifting preferences of technology professionals around hybrid work arrangements and how to ensure Colby can recruit and retain the highly qualified talent needed to support students, faculty, and staff.

Voice Over IP (VoIP)
- ITS has completed a multi-year upgrade of the network infrastructure to support VoIP.
- Work continues to stage cutovers to the VoIP system on a building-by-building basis. This work includes final network configuration and new handset distribution.

Colby Card Operations and Modernization
- ITS took over the technology aspects of Colby Card operations following the retirement of a long-time card manager in the Financial Services Office.
- Following an evaluation of card and card reader technology, ITS has made several recommendations to modernize card infrastructure and is beginning work on various projects.

Website Content Delivery Network (CDN)

- ITS and the Office of Communications partnered to configure the Colby website to use the Cloudflare CDN so that site content is now cached and served from a network of geographically distributed servers to improve site speed and reliability.
- ITS is continuing to refine use of the Cloudflare CDN and add it to other web services as appropriate.

ITS Leadership Transition

- Cindy Mitchell retired as Chief Information Officer, effective April 1, 2021. During her nearly five years at Colby, she led efforts to modernize the College's administrative information systems, increase support for faculty teaching and research, and develop staff at the management and individual contributor levels. She also played a critical role in coordinating the move to remote teaching, learning, and work in the spring of 2020 and the technology infrastructure implemented to support Colby health screening and testing programs in the fall.
- Jason Parkhill has been appointed Interim Chief Information Officer. Jason has been at Colby for 14 years serving as the Director of Academic Information Technology Services. Jason has led and/or been involved in a broad range of institutional initiatives, including leading the creation of Mule Works Innovation Lab, planning for the Davis Artificial Intelligence Institute, as well as numerous construction or renovation projects (e.g., Alfond Commons, Harold Alfond Athletic and Recreation Center, Arts Collaborative, and Gordon Center for the Creative and Performing Arts). Jason also led the Academic ITS team's roll-out of the technology and pedagogical support required by the move to remote instruction in March of 2020 and hybrid instruction during 2020-21.