



Clovis
Community
College

Technology Plan

2020-2023

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Introduction

Clovis Community College (CCC) strives to maintain a high level of commitment to provide support of technology needs across instructional, administrative, and student services areas.

The purpose of this Technology Plan is to establish technology guidelines that will help direct Clovis Community College as we prepare for the future. This plan contains visions and recommendations for technological enrichment within Clovis Community College that will occur over the next three years.

This plan examines the current status of technology at Clovis Community College, focusing on three major elements that are crucial for the success of any technology master plan: organization, processes, and technology. It contains administrative procedural recommendations that should be implemented and supported as CCC intends to continue to maintain the high standard of education it currently provides.

After completion of the [Educational Master Plan](#) (Fall 2016), [Strategic Plan](#) (Spring 2017), and [Governance Handbook](#) (Spring 2020), the Technology Committee updated the CCC Technology Plan. The plan was presented to College Council and was shared with various governance groups for comment prior to final review by College Council (Fall 2020).

Support of College Mission and Vision

The mission of Clovis Community College is *Creating Opportunities – One Student at a Time*:

- We honor diversity and serve all students of the community.
- We promote opportunities for success and wellness through full access to programs and services, and we provide comprehensive student support to achieve equity.
- We foster critical, creative, and engaged thinking through education based on integrity, generosity, and accountability.
- We support student success along pathways to certificates, degrees, and transfer programs, preparing students for thriving futures.
- We build community partnerships to enhance student learning and success, thereby advancing economic vitality in the community.
- We engage in reflective research and innovation focused on learning and student outcomes.

VISION STATEMENT

Clovis Community College is the college of choice for academic excellence, innovation, and student achievement.

Alignment with District Tech Plan

The technology plans for each college within the district are formulated to fit within the goals of the campus strategic and/or educational plans using the District Strategic Plan 2017-2020 as a foundation. As a result, all campus and District office plans are all inter-related, with some initiatives being campus based, while other activities are inter-connected with District and/or other campus plans. The campus technology teams work in collaboration with the district to ensure that the implementation, review, training, and security of technology resources and related technology initiatives are managed at both the college and district level.

The Director of College Technology Services is a standing member on the Districtwide Technology Advisory Committee and can represent this committee to the districtwide committee when needed such as providing input on scheduling of downtime for technology applications and services to minimize the impact to instruction.

Education Master Plan Alignment: Innovation

Our college prides itself on being in the vanguard of innovation. We are committed to the highest levels of rigor and inspiration, and so we explore innovative practices that will provide the best opportunities for our students.

Following are the overarching goals of the 2017-2027 Educational Master Plan, which encompass six major areas:

- ACCESS: Expand opportunities and remove access barriers
- TEACHING & LEARNING: Promote excellence and opportunities
- SUPPORTING STUDENT SUCCESS: Provide comprehensive services while promoting equity
- COMMUNITY & PARTNERSHIPS: Strengthen and develop external relationships
- RESOURCES AND FACILITIES: Expand and enhance the capacity of the college
- INSTITUTIONAL EFFECTIVENESS: Strive for excellence in planning, governance, and communication

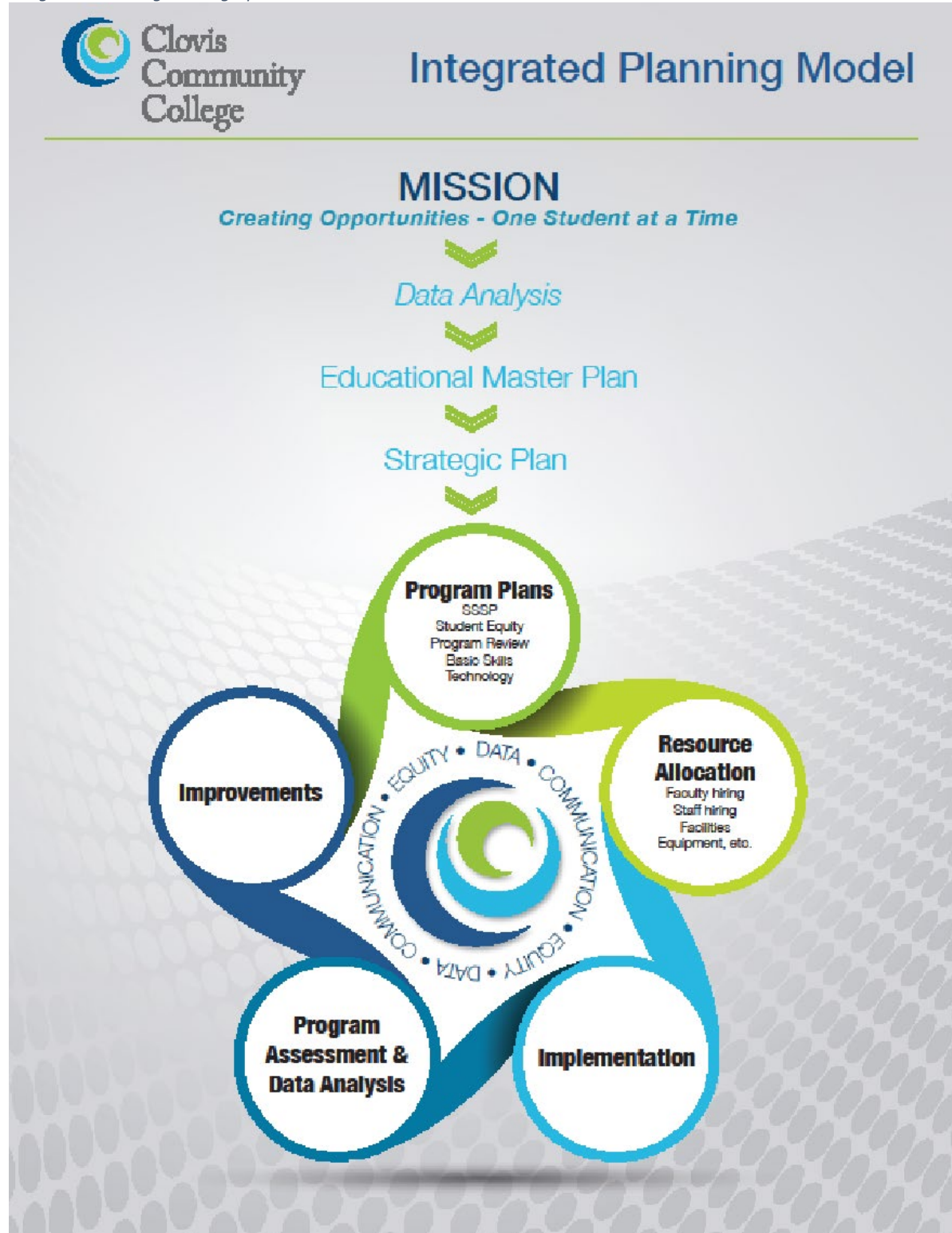
Technology Goals

In support of the college's mission, Education Master Plan and Strategic Plan, the Technology Plan has the following four goals:

- All staff computers will meet the requirements for mid or high-level computers.
- All campus technology resources available to students will meet the minimum hardware requirements and software resources will be kept up to date.
- All current technology resources will be assessed for compliance with accessibility.
- All action plans will be reviewed to ensure that all new technology purchases meet recommended standards and accessibility requirements.

Integrated Planning Model

Integrated Planning Model graphic 1



Current Status of Technology

Staff

The Clovis Community College Technology Services Department is under the direction of the Director of Technology Services. The Director reports to the Clovis Community College president for technology related planning and implementation. Clovis Community College has one Network Administrator, two Sr. IT Customer Support Technicians, one full-time IT Customer Support Assistants, and two permanent part-time IT Customer Support Assistants.

Budget and Funding

The Technology Services Department is primarily funded out of the college's budget based on the annual budgeting process. Where it is advantageous to consolidate hardware and software license and maintenance purchases across the district, the purchase will be made from the District level budget with input from the different campuses to leverage cost savings.

Facilities

Clovis Community College has approximately 780 computers available to students, staff and faculty. There are 10 student computer labs with 468 (329 desktops, 139 laptops) computers for student use. The Open Computer Lab at Clovis Community College has 108 computers available for use throughout the week. The other five labs support programs, including Business, Computer Science, Math, English, Art, Engineering, Geographical Information Systems (GIS), Mechatronics, Student Services and IT. The Herndon campus houses an additional open lab for student use and a separate lab for faculty. Software available in the labs are standardized on Microsoft Office 2016/2019 along with specialized programs to support specific disciplines (e.g. Adobe Creative Cloud and AutoCAD). Regular classrooms are technology enabled with a computer, projector, sound and VCR/DVD's permanently installed. The administrators, staff, and full-time faculty are assigned a laptop or desktop computer for their use with access to multiple printers and other resources. Virtual Desktop Infrastructure (VDI) is implemented in two of the instructional computer labs, the Open Computer Lab, and the library lab. At the Herndon campus, it is implemented in two instructional computer labs and the open computer lab.

The core networking and datacenter server farm at Clovis Community College is housed in the main cross connect (MDF) in Academic Center 1 (AC1). In each building and on each floor, there are multiple telecom rooms (IDF) that house the distribution networking equipment with redundant fiber optic connections back to the core. The telecom rooms also contain the patch panels where the wired Ethernet cabling terminate to the wall plates at the stations. The server farm utilizes Dell equipment running a hypervisor that supports purpose specific virtual servers which provides services such as authentication, network operation, Internet browsing, file storage, printing, licensing, software applications, and more for both instructional and administrative uses.

Clovis Community College has two classrooms that are equipped with video conferencing equipment. These classrooms support distance learning classes, where an instructor at one site can send their live feed to students at remote room location. There are also four conference rooms equipped with video conferencing equipment that allows administrators, staff, and faculty to meet with employees at the other campuses and sites without having to physically leave the campus.

Wireless Network Access

Wireless network access is available throughout the Clovis Community College and Herndon campus for students, staff, faculty, and guests using district owned laptops or personal devices. Access for students, staff, and faculty requires users to authenticate using their district issued username and password. Guests are redirected to a portal page where they must accept a Terms of Use.

The current wireless access points will be replaced to the newer access points that supports the newest wireless standard, Wi-Fi 6 at the Clovis Community College campus. The Wi-Fi 6 capable access points will improve performance and capacity for wireless users. After completing the replacement of the existing access points, an audit will also be performed on the wireless coverage to identify gaps and bottlenecks and formulate a plan to address those areas.

Video Surveillance

The video surveillance is integrated into a districtwide system that is accessible by designated people. SCCC PD can view live feeds and review recorded footage of all cameras across the district. At each campus, designated users have been identified that have been granted to access a set of cameras on their campus based on their need.

Instructional Use of Technology

Students encounter and utilize technology continually, in classrooms and labs, all which helps support their success. The following are some of the examples of technology used in instructional situations and does not reflect a comprehensive list of all technologies and software used.

Additional student support (enrollment and registration applications and routing, transcript requests, and password resets for WebAdvisor) is provided using Internet-based services.

Faculty have access to the Canvas learning management system for both face-to-face and distance education courses. All course sections and rosters are automatically loaded into the system at the beginning of the semester and updated regularly throughout the semester. Students can access Canvas from home and/or from numerous locations on campus, including the open computer lab. Students also use personal devices (computers, tablets, and smart phones) and/or numerous locations on campus, including the open computer lab for online test-taking and research for their courses. Within Canvas, instructors can check student submissions using Turnitin, a plagiarism-checking program. Online instructors have access to the Confer Zoom tool to hold and record class meetings for online courses.

All classrooms include a networked computer with a digital projector, presenter, and sound system. Technology-based courses such as Digital Media, Computer Aided Design and Drafting (CADD), and Computer Science (programming) use personal computers extensively to simulate their work environments. Hardware and software used in these courses is periodically assessed and upgraded to meet current industry standards, as expected by the faculty and students in these courses. Laptop carts are available for faculty to request for their classrooms for student use.

Clovis Community College provides full-time faculty members with a laptop computer, access to Office 365, and other software as needed. Adjunct faculty have access to Office 365, and designated workspaces with computers. Faculty use the Colleague/WebAdvisor system for student and scheduling information, class rosters, and for final grade entry.

Technology Services staff provide instructor technical support, and the Instructional Designer provides instructor technology-integration support. Many tutorials are online, and the Computer Services staff is available for personal instruction and various training sessions.

Student Services and Administrative Use of Technology

Technology is used extensively by administrative and student services departments to meet the needs of students. The following are some of the examples of technology used by student services and administration and does not reflect a comprehensive list of all technologies and software used.

Access to services is available on the Clovis Community College website and by Internet-based application providers, and students are directed to use WebAdvisor for enrollment and various status checks. Other state-based services provide student eligibility status tracking, loan and grant application and processing, and transcript requests.

Ellucian Colleague is an integrated database used for all of the major district functions, such as Human Resources, Financials, Student Records, and Curriculum Management. This database feeds information to all other systems, such as Canvas, Scheduling and Reporting System (SARS) and is the source of state and federal report content and institutional research data. Staff, counseling, faculty, and administrators use Colleague extensively throughout each workday and a substantial amount of the district's technology staffing is required to maintain this software.

Ellucian Colleague is used extensively for district information and processes. Students interact with the system using WebAdvisor, and can update email and residence address information. Students also use WebAdvisor to register for classes. Students may also call a central help desk for assistance with WebAdvisor. Colleague records are updated with student contact information, and summary information is transferred for State MIS reporting and internal Institutional Research.

eLumen was implemented in Fall 2019 as the Curriculum Committee's main repository of course information. The tool is used for storing Course Outline of Record (COR) for each course and information for programs. The Committee works from the eLumen platform for business during regular meetings. Changes to eLumen have both an internal view for the work of the committee and a public view so that all CORs and Programs can be seen publicly once they are published. The platform has additional functions including SLO tracking which CCC has implemented. The district has considered their catalog function but has not committed to it at this time.

The Clovis Community College website (www.cloviscollege.edu) is used in many ways. It provides resources and information for prospective, new, and continuing students, including registration, enrollment services, program offerings, articulation and transfer/career resources. The site is used to communicate district news and events with students and the community. The site also serves staff and faculty with links to departments and committees for reporting and communication.

New student applications are collected by CCCApply, an Internet service partially funded by the Chancellor's Office. This service is used by most California Community Colleges. Information is supplied by applicants at the Web site then downloaded daily by the schools to which the individual has applied. The information is moved into Colleague automatically then verified by staff. Any individual exceptions are manually resolved before processing proceeds.

Financial Aid uses NextGen Scholarship Manager to manage student applications to scholarships through CCC and the SCCC Foundation. This program also manages the selection and ranking processes. Ocelot provides short, financial aid specific videos that can be embedded on the website. Ocelot also comes with a chatbot, which is able to provide 24/7 service to students by answering general questions. SQL is used extensively in financial aid processing. Jobspeaker is software provided by the Career Resource Center and is utilized by Financial Aid to advertise Federal Work Study positions. This software assists students in building their resume for the applications.

Maxient is a software used for Title IX and discipline. A group of Title IX and discipline administrators from around the district met with them for a demo a couple years ago and spent last academic year setting the system up. We rolled it out in Spring 2020. Cases are created for different situations (student

conduct/academic dishonesty/sexual harassment/etc.) and all corresponding documentation is added to the electronic file cabinet. Maxient pulls info from Datatel but does not push info back in. Some of the things pull include student schedules. This is helpful and allows us to schedule appointments with parties or witnesses directly through the software. Our templates are built in for notices of investigation and suspension type letters.

Access to Maxient is limited to your role. It is a districtwide system; however, only those who are HR, discipline deans, or involved in the Title IX process currently have access. There is a public facing side that allows reports to be filed. Eventually, the disruptive behavior report form, academic dishonesty form, and complaint form will be submitted through this process.

The CCC Counseling Department utilizes a variety of online resources to provide student support services for students and faculty.

Each component of the matriculation process is available online. The Live Help, Online Academic Counseling, has been utilized to provide students with live chat counseling sessions for the past 15 years. Additionally, students have access to following matriculation components: college orientation, admission application (CCC Apply), and Transfer and Career Counseling services.

CCC Counselors are currently utilizing the Starfish Educational Planner which currently allows counselors to develop an online student educational plan. In time, this will be available for students to preview and update online. Ultimately, this tool will allow for students to register for classes in line with their approved student educational plan and will lead to improved enrollment management.

CCC Counselors have implemented two online resources to assist in student retention: Starfish Early Alert and online probation services. Starfish Early Alert provides an online resource for faculty to identify students early in the semester and work with counseling to provide the appropriate resources and services. Online probation services have also been in place to assist student on all levels of academic and/or progress probation. The Online Probation Workshop, originally developed through Cynosure, that provides students on a Level one probation with information on probation, steps to succeed, and ultimately clearance for registration has been revised and set up on Canvas.

The counseling department also relies on various online resources to assist students; some of which include www.assist.org (articulation agreements), Cal State Apply (CSU Admissions Application), Transfer Counselor Website, and transfer college websites.

The SARS (Student Appointment and Recording System) Anywhere application is also used by the CCC Counseling Department and other student services, including financial aid and the veterans center. SARS provides a system used to schedule student appointments, track walk-ins, schedule meetings, implement SARS Message to text students, and generate reports on services provided. Recently, the counseling department worked closely with SARS to establish through SARS Anywhere the following services completely online for students and counselors:

- Setting up and maintaining counselor's schedules
- Documenting and tracking all counseling sessions and mapped to Colleague for MIS purposes
- Making future and same day counseling appointments automatically connected to ZOOM
- Drop In system for Academic Counseling sessions via ZOOM
- Text/Messaging system to notify student of appointments and/or place in DROP In line via e-mail/text

CCC Counselors have also developed Starfish Connect system to be in line with all of the other SCCC colleges and centers. As we transition to Starfish Connect, we will slowly move away from SARS.

CCC Counseling also relies on other online resources including:

- **OnBase**; which is an electronic document imaging and storage used to increase efficiency and responsiveness of Student Services, Financial Aid, and Admissions & Records.
- **Microsoft Teams, SharePoint, Canvas** to communicate and share information within student support services

The CCC DSP&S office utilizes Accessible Information Management (AIM) to house student disability documentation and to coordinate academic adjustments and auxiliary aides. AIM is a districtwide computerized data management system that DSP&S staff, instructional faculty, and students are required to use to access DSP&S services. AIM allows DSP&S departments to be 100% paperless. It also allows DSP&S to produce internal data that provide detailed analytics about academic adjustments, auxiliary aides, and services utilized.

The district libraries in conjunction with the California Community Colleges began migrating to ExLibris Alma/Primo VE Library Services Platform in February 2019. Migration was completed and the system went live in early Spring 2020. Libraries use library services platforms to catalog and manage the circulation of all items in the district. The LSP also provides a service-side view for library users to search the catalog and manage their library accounts. The library collection can be queried using any browser, but dedicated PCs connected to the Bibliotheca RFID Workstations are required for new item processing as well as the checking in and checking out of materials and subsequent deactivation and reactivation of the security of the materials being checked in and out of the library. Library staff and faculty log in to Alma using Single Sign-On and Primo VE (branded “OneSearch”) patron-side accounts are also authenticated through SSO. Each college has a librarian Lead to manage and maintain the system. Brooke Ramos is the lead for Clovis as well as the district administrator. Ongoing maintenance of the project is coordinated using Microsoft Teams and all leads and District IT are in the LSP Team.

The library website links out to the library’s subscription databases. Access to these databases is authenticated using SSO through the OCLC EZ-Proxy. The library works with the Network Coordinator on maintenance. Access is granted to current students, faculty, and staff at CCC.

The library uses the PaperCut system to allow students to pay for printing. One cash/coin vend unit is located in the library. The library also has a book scanner for students to use to send free PDF scans to their email or cloud storage. The KIC Sprout from Digital Library Systems Group was purchased in March 2018 along with a 20-month extended maintenance plan. The scanner was replaced by DLSG in September 2020 due to equipment failure.

Student workers in the Library and Tutorial Center log in and out of shifts using TimeClock Plus. Students who visit the Tutorial Center are logged into TutorTrac. An option for online tutoring through Zoom is offered during Tutorial Center hours. 24/7 synchronous and asynchronous tutoring is available through NetTutor, which is integrated into the Canvas course navigation.

The Business Office uses Colleague for all district purchasing and accounts receivable. The cashiers are able to accept credit and debit cards from students and secure transactions can be made through the website. The library also has trained staff able to accept credit and debit card transactions.

Adoption and Implementation of Office 365

Realizing the need for shared collaboration spaces, a districtwide project was undertaken in the spring of 2018 that included the upgrade of the Microsoft network infrastructure components that would allow integration with Microsoft’s Office 365. This would allow staff, faculty, and administrators to utilize Office 365’s suite of applications such as OneDrive, Word Online, Excel Online, PowerPoint Online, SharePoint Online, and Teams. In the fall of 2018, users’ email mailboxes were migrated from an on-premises mail store to Office 365’s Exchange Online.

Response to the COVID-19 Pandemic

In response to the COVID-19 closures and the decision to move instruction online in March 2020, and to continue online for the duration of the 2020-2021 school year, the following steps have been taken to ensure that student, faculty, staff, and administrative needs are met through the duration of the closure.

Updates to the Website and Communicating Information

The Web Content Engineer regularly liaises with department leads, content experts, and administrators to ensure that website content is constantly updated in order to provide current and accurate information about campus resources. A page was created to help students with [transitioning to online learning](#). The page links out to a [Frequently Asked Questions](#) page that addresses questions that were being asked in response to the closures. Student services pages were updated with identifying icons that can be seen across several webpages and a centralized [Student Services Online page](#) was created. A similarly designed [Special Programs page](#) was also created. A [social media page](#) was also created to provide a complete list of handles for the college's social media accounts.

CCC continues to use multiple avenues to communicate including the website, announcements in the Portal, email, social media, and Crush Alerts. Crush Alerts were continued over Summer 2020 and are being sent to personal email addresses when provided. We also create a more detailed Crush Alert webpage which is updated each week to supplement the student email. The district is currently working on a communication messaging hub.

Repurposing and Acquiring New Technology

Technology Services department repurposed laptops that were stored in carts in the classrooms to be used for technology equipment checkout to staff, faculty, and students. Webcams were also made available to faculty who needed one.

The Technology Services department purchased additional technology equipment to loan out to staff, faculty, and students and close equity gaps. Technology equipment included webcams, headsets, hotspots (MiFis), laptops, and software licenses.

Technology Checkout Program

The library and IT are coordinating to check out technology to students. In addition to the library's own technology holdings, IT has contributed laptops from the campus' three laptop carts to check out to students in addition to technology purchased to close equity gaps. The library has also worked with individual programs and departments to catalog and check out their equipment to their students through the Technology Checkout Program. This includes laptops, kits, and calculators. All items are cataloged into ExLibris Alma, where the library can keep track of items, renew, send notices, and notify of late or lost items.

To request technology, students are required to fill out a technology agreement and then specify what technology they need to check out. Students are able to check out laptops, tablets, MiFis, webcams, headphones, scientific calculators, and graphing calculators. The library works with the student to set an appointment time and when the student arrives, the item is then checked out and a receipt is automatically emailed to the email on file with Colleague. Students verify their identity by showing photo id and their technology is given to them. All technology is checked out for the semester.

Software Security

With the move to online meetings for instruction and events using the Zoom platform, hackers were crashing and disrupting the meetings a.k.a. Zoom bombing. To mitigate such occurrences, the IT leadership districtwide along with the instructional designers and distance education coordinators came together to craft a document of best practices for Zoom meeting security settings. The best practices were designed to make it harder for a Zoom bombing occur, in addition, helps the meeting host and co-hosts restore control of the meeting.

Online Instruction

Instruction continues to use the Canvas LMS to facilitate instruction online. Instruction, as well as other campus services, have made greater use of Confer Zoom, available to us through the [California Community Colleges Chancellor's Office Tech Connect](#).

Online Certification

The college offers a fully online asynchronous Online Teaching Certification for faculty to teach online. This certification provides instruction in best practices for online course design, the CVC-OEI course design rubric, and accessibility training. Faculty also have access to the Clovis Teacher's Toolbox in Canvas. This Canvas shell includes recorded trainings and links to how-to resources for various instructional technologies, like Padlet, Confer Zoom, Canvas, Canvas Studio, Proctorio, Flip Grid, Captioning, etc.

Online Training

In light of COVID-19, Clovis used existing training structures to train a larger number of faculty. In addition to online certification, various other professional development/Flex opportunities have been provided from Distance Education, Instructional Design, and Professional Development. These opportunities are sent out to all instructors' email. Instructors can also enroll in the Pandemic Professional Development Canvas course for instructional resources and The Teacher's Toolbox to find specific information about technology tools and the PD Book Clubs. In addition, specific Canvas resources were developed for students to test their online readiness and provide training in the Canvas LMS.

Student Use Software Licenses

Specific applications used for instruction were identified that students need a license to be able to complete coursework at home. Using CARES funding, we procured the necessary Adobe Creative Cloud and MATLAB licenses to cover the number of students registered in the course sections.

Online Services

In response to the COVID-19 closures, student services moved services online to continue to meet student needs.

Tutorial Services

The Tutorial Center continues to offer 24/7 services through NetTutor and has increased their online Zoom tutorial services. Students can access the Zoom information via the Tutorial Center's website and once they sign in, provide their ID number to a coordinator, and state which class they need help on, they will be sent into a breakout room to meet with a tutor for that area. Instructors can request verification reports to confirm student attendance. Students can connect to the Tutorial Center through their Canvas Page, which lists the hours and a majority of the resources that are physically in the Tutorial Center. The Tutorial Center has also put on online events via Zoom such as an Open Mic Night and monthly Book Club and actively uses social media to connect and communicate information.

Counseling Services

Counseling upgraded SARS Anywhere to provide all counseling sessions via Zoom and to expand options including drop-in sessions, same-day ½ hour appointments, and future 1-hour appointments. SARS has been customized for Career Counseling, EOPS, CalWORKs, and DSP&S while a separate grid has been set up for TRIO counselors. A SARS text/messaging system was added to remind students of Zoom appointments and to alert students when in line for a drop-in appointment. Live Help Online Counseling hours were increased.

Counseling developed and synced documents to their Microsoft SharePoint site and are maintaining communications with Microsoft Teams. Counseling and Admissions & Records collaborated to establish workflows for processing student documentation. Counseling has utilized Canvas to educate students and connect them with special programs and services. They developed an Online Probation Workshop and there are modules for Transfer Services, DSP&S, Athletics, and Early Alert. Counseling has also worked with Athletics to coordinate virtual study sessions. To connect students with information about transferring, counseling worked with transfer institutions to provide Zoom informational sessions and one-on-one Zoom appointment opportunities in lieu of Transfer Day activities. Counseling also took Extreme Registration and Registration-to-Go events online with Zoom.

Library Services

The library offered options for library instruction and Book-a-Librarian appointments prior to the closures but has completely moved online. Library instruction is now offered both synchronously through Zoom and asynchronously with options for supplemental Canvas modules completed just prior to closures. The library uses Microsoft Forms with Power Automate to book and confirm library instruction and appointments as well as keep track of statistics. The library faculty and staff coordinate services using Microsoft Teams and SharePoint.

The library offers Zoom drop-in office hours twice a week. Most student interactions occur through Springshare LibChat/LibAnswers (Ask-a-Librarian 24/7), which is functioning as On Demand reference services. The migration from OCLC QuestionPoint to LibChat was in process prior to closure. The new system offers a frequently asked questions module (LibAnswers) and LibChat allows the ability for CCC Librarian to directly answer student questions via chat and they can jump to Zoom screenshare from within the app if necessary. The chat is maintained by state and global co-ops that field questions when CCC librarians are offline. The library actively uses social media to engage students and communicate information on resources, services, and events.

The library expanded its Overdrive collection to begin offering eBooks for checkout. The library has also worked to get free access to existing print resources such as the DSM-V and CHOICE Reviews. Because the closure limits access to the library's reserve textbook collection, the library will be offering scanning services for reserve textbooks. Requests are limited to a maximum of 2 chapters per book per semester and copyright notices will be included to instruct on fair use and copyright restrictions. Access will be provided through shared documents in Microsoft OneDrive and all links will expire at the end of the semester.

Identifying and Assessing Future Technology Needs

As technology continues to develop, improve, and diversify in its application, Clovis Community College staff are encouraged to request and implement technology tools in support of increased student success.

- Through annual action plan processes, staff submit requests for technology in support of classroom instruction. Action plans are reviewed by the college's Technology Committee and prioritized through input from the Department Chairs Council, President's Council and College Council.

- Staff are encouraged to request of the Director of Technology Services any innovative technology they may have seen in professional development presentations, conferences, or other avenues.
- Staff involved in the college's distance education program coordinate with the college's Technology Services staff to identify and implement emerging technologies to improve the delivery of online courses. Examples of technology supporting distance education courses are Canvas, Turn-it-in.com, and other online components to ensure that instructors and students maintain regular and effective contact in their courses.

Refresh Model

Based on a review of technology plans from similar community colleges, the following refresh model is recommended to provide consistent quality and reliability of technology tools campus wide.

Equipment Type	Cycle	Estimated Cost
<i>Computer Lab (General Use)</i>	5 years	\$1,200 per desktop PC \$3,000 per desktop Mac
<i>Computer Lab (Advanced)</i>	4 years – upgrade or replace as funding allows	\$2,000 per desktop PC \$9,000 per desktop Mac
<i>On-Premises Servers</i>	5 years	\$35,000 per server
<i>VDI Terminals</i>	6 years	\$400 per terminal
<i>Staff Laptops/Desktops</i>	5 years – See below regarding mid-cycle upgrades	\$1,500 per PC laptop \$2,500 per Mac Laptop \$1,200 per desktop PC
<i>Network Infrastructure</i>	5-10 years – depending on physical layer (copper, fiber, wireless) and network load, congestions and equipment obsolescence.	\$6,000 per switch
<i>Technical Staff Computers</i>	2 years – machines are more heavily used and perform advanced functions (virtual imaging, test environments) directly related to providing service to the rest of the campus. Upgraded machines will be cycled to other uses.	\$1,700 per desktop PC \$2,500 per desktop PC
<i>Classroom AV infrastructure wiring Projectors Updated</i>	10 years 5 Years	\$3,000 per projector
<i>Phones (VoIP)</i>	As needed when phones are end-of-life (EOL) or as a result of a upgrade from the district call-manager	\$200 per phone
<i>Printers</i>	As needed	\$500 per printer

The above recommendations do not preclude mid-cycle upgrades such as improvements in RAM or HD capacity. Whenever possible, refreshed computers will be cycled to other uses. For example, refreshed staff computers may be used to expand student computer access or support IS/CSCI classes.

Hardware standards

The following standards will be updated periodically by the Technology Services Department with the intent that all new purchases will provide effective functionality throughout the expected life of the device.

Computer Component	High	Medium	Low
<i>Processor</i>	Intel Core i7/i9 or AMD Threadripper or Ryzen 9	Intel Core i5 or AMD Ryzen 5/7	Intel Core i3 or AMD Ryzen 3
<i>Memory</i>	32 gigabyte (GB) with expansion space for up to 64 GB or greater	16 GB with expansion space for up to 32 GB	8 GB
<i>Video Card*</i>	Nvidia '80 or '90 card	Nvidia '60 or '70 card	Integrated Graphics
<i>Hard Drive</i>	1TB M.2. SSD + 10TB HDD	512 GB SSD	256 GB SSD

*Video card requirements are for desktops only. Laptops should have integrated graphics or separate graphics based on need.

All devices are to be procured with a minimum of 3-year hardware and support warranty. Accidental Damage Protection (ADP) coverage is highly recommended for all mobile (Laptop/tablet) devices.

Only devices designated business-class will be considered for purchase. The following are recommended hardware manufacturers for administrative and academic applications. Additional manufacturers may be considered after review from the Technology Services Department.

- *Dell EMC*
- *Lenovo*
- *Apple, Inc.*

Printer specifications:

The following specifications seek to improve efficiency of printing.

<i>Manufacturer</i>	HP/Canon
<i>Warranty</i>	3 years
<i>Toner</i>	High yield (if available)
<i>Features</i>	Duplex (2-sided printing by default) Networked (allowing wireless printing when possible) Scanning tray when requested by a department
<i>B/W or Color</i>	Unless there is a specific need, printers will be B&W. Campus-wide color printing is provided through the college's Canon multifunction copier/printers.

Facility Technology Guidelines

New construction or facility upgrades

District facilities in cooperation with district and campus IT departments will review standards for new classrooms, offices, and other meeting spaces. Current standards are as follows:

- At least 2 network drops in the ceiling
- 3 network drops in each plate
- CAT6a
- A/V - Projector, document camera, speaker system, optical disc (blu-ray)

New CTE Building

Clovis Community College has submitted the plans for the new CTE building for approval. The building is planned to be opened for Fall 2023. The new building will house offices, classrooms, and an area for study. To support the different room utilizations, the building will contain three telecom rooms to house the network equipment and serve as a wiring termination location. One telecom room will serve as the termination room for the network fiber from the main cross connect in building AC-1.

Every office will have at least two plates of three network data drops.

Every classroom will have at least one plate of three network data drops for the instructor station, at least two network drops in the ceiling to be utilized for wireless access point connectivity. Where there is a ceiling mounted projector, there will be at least two network data drops going from the instructor station to the projector for use with the audio-video system. In addition, there will at minimum two pairs of speak wires from the instructor station to the wall or ceiling-mounted speakers for audio amplification. Classrooms should be compatible with assistive listening devices and can accommodate students with hearing impairment.

In the areas where there is a computer lab, there will be adequate network data drops to support the quantity of computers planned to be in the space. In an area where it would be logical to place a wall mounted cabinet and terminate network wiring to that location, it will be done so.

Throughout the building, network data drops will be strategically placed to be utilized for wireless access points as well as video surveillance cameras.

The building will utilize WiFi 6 access points that are compatible with the current wireless management system. In addition, the building will utilize video surveillance cameras that are compatible with the current video surveillance system.

Accessibility

All technology purchased and implemented within the college should meet the minimum standard outlined by [WCAG 2.0 AA, guidelines for accessibility](#). Clovis Community College's Technology Advisory Committee has established the following processes to ensure that all content and technology used by college constituents is accessible:

- Review of all action plans will include a check for accessibility guidelines.
- Communicate the process for managing website content: All documents published to the website go through a workflow managed by the Web Content Engineer. Documents are tested for accessibility issues and sent back for review where appropriate. Website accessibility is built into CMS (Content Management System) training facilitated by the Web Content Engineer.
- Review new technologies along with appropriate experts to ensure accessibility and consider necessary accommodations for students with disabilities.
- Review VPATs for tools integrated into Canvas to ensure that it meets accessibility requirements.
- Provide ongoing trainings through flex sessions, accessibility micro courses, and in the Online Teacher Certification. In addition, online resources for accessibility are available on the website and updated by the Web Content Engineer.

The web accessibility workgroup will review and revise [the accessibility plan](#) in accordance with District Web Accessibility Policy and recommendations outlined by WCAG 2.0 AA Standard.

Disaster Recovery and Backup

The on-premises datacenter utilizes a natural gas generator and UPS (uninterrupted power supply) battery backup unit to allow uninterrupted and prolonged operation in the event of a power failure. Generator testing is performed on a monthly basis by Operations to ensure correct operation. Physical access to datacenter is restricted staff that have a need to ensure safety and security of hardware, software, and information. The college technology staff work in collaboration with District IS staff to address on-site and off-site backup and disaster support of campus systems.

The college uses Amazon Web Services (AWS) S3 and Glacier products for warm and cold backup. Critical campus files for faculty and staff are accessible within 24 hours in the event of a complete loss of on-premises servers.

The backup and recovery plan will be tested at least twice a year to ensure recovery of data is possible.

Bring Your Own Devices (BYOD)

Staff, faculty, administrators, students, and guests have the capability to connect to the college wireless network. For security, each group has different levels of access. Guests wireless access only permits access to the Internet. The student wireless network access is also restricted to permit access to specific on campus resources and the Internet only. The staff wireless network access permit access to the entire network and Internet. Both the staff and student wireless utilize 802.1x authentication of the user in order for the device to connect.

Add any vendor recommendations for students to purchase personal devices at a discounted rate and that fit recommended configurations.

Cyber Security

Regular patching is a recommended to ensure that a server is not left in a vulnerable state that can be breached and compromised. Microsoft Windows patches are applied to the virtual servers on a regular basis. In addition, third party application patches and upgrades are applied when available. Windows Update settings on end user computers are configured for automatic monthly updates. Lab computers are configured to erase any changes made to the system on reboot.

In the event of an end user computer being lost or stolen, Windows BitLocker has been enabled and the local drive encrypted such that a successful login would be required to read the contents of the drive. Should the drive be removed and attached it to another system, the data cannot be read until the BitLocker decryption key is entered.

College owned computers are licensed to run antivirus software, Sophos Endpoint Protection, as part of the license agreement with Sophos. Sophos can be installed on computers running Windows, Mac OSX, and Linux operating systems. As the contract is entering its final year, districtwide we are exploring alternative antivirus and anti-malware products and services such as Microsoft Security Suite. In addition, we have acquired the use of Microsoft Advanced Threat Protection (ATP) which will provide real-time anti-phishing scanning for e-mails, OneDrive, SharePoint Online, and Teams.

Included in the new Microsoft licensing agreement is Intune for Education licensing which is Microsoft's endpoint device management solution that would allow remote management of Windows 10 devices.

We are planning to implement this technology to manage and secure the computers deployed to users and throughout the campus.

Despite technical implementations to prevent data breach and compromise, an end user is susceptible to social engineering attempts in order to gain access to their credentials. Awareness campaigns through opening day presentations, districtwide emails notifications, and portal announcements. A warning banners has also been implemented such that it is automatically placed on all emails that originate from an external source to visually cue end users that may receive an unexpected email purported from another District employee.

References

- Alpha Numeric Systems, Inc. “12-step Technology Refresh Deployment Checklist”
- Cuesta College Technology Plan 2012-2017
- Long Beach City College Technology Master Plan 2013-2018
- Moorpark College Strategic Technology Plan 2016-2019
- Santa Barbara City College District Technology Plan
- USC IT Recommendations (<https://itservices.usc.edu/recommendations/>)
- [W3C \(World Wide Web Consortium\)](#)