**Academic Technology Task Force Recommendations**

**During the COVID-19 Pandemic 2020**

Task Force Members: Harald Beck (Chair), Suranjan Chakraborty, Sam Collins, Cindy Davis, Josh Dehlinger, Joyce Garczynski, Sam Houston, Kay Kazinski, Halcyon Lawrence, David Merino, Peter Morin, Stuart Stein, and Matt Wynd

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We recommend the following tasks:

1. Assessment of current classroom technology; providing the Fall technology updates and best practice of technology
2. Recommendations for technology solutions for hybrid, high-flexibility delivery
3. Procurement/installation of classroom technology
4. Recommendations for cleaning classroom technology

**Note:** By the nature of this pandemic, many recommendations might need an adjustment in the future, yet we did consider both a hybrid delivery and a sudden switch to a fully online teaching mode.

Synopsis

**I. Classroom Technology and Best Uses for Classroom Technology**

A. Current State:

* 87% of the classrooms have been equipped with Elmo or WolfVision document cameras.
* 17% of the classrooms have interactive, web-conferencing technology-enabled instructor monitors.
* 27% of the classrooms (or 118 classrooms) on the main campus and at Northern Maryland (TUNE) campus have fixed cameras and microphones.

B. By August 2020:

* An additional 32 classrooms will have fixed cameras and microphones.
* Overall, 69% of classrooms (or 296 classrooms) will be updated with audio and video technology.
* Additional portable plug-and-play technology, i.e., OWL Conference cameras and microphones, will be available across the campus. This will increase the classroom with audio and video technology to roughly 87%.

C. Recommendations on how to utilize the available technology, software, and cleaning of equipment are provided (See Task 1 – Best Uses for Classroom Technology).

**II. Technology Solutions for Hybrid High-flex Delivery**

* We recommend providing technology liaisons, engaging with FACET to develop even more tailored training, and setting up a resource repository.
* Additional recommendations focused on a technology loan program for laptops and webcams, and assessing course technology needs. Appendix A provides examples of classroom classifications (Tiers 1 to 3) based on available technology and what hybrid high-flex delivery is possible.

**III. Procurement/Installation of Classroom Technology**

* We recommend additional training tailored to specific classrooms, various modes of assistance and support during troubleshoot, mobile technology for under-equipped classrooms. Furthermore, different teaching modes are discussed, depending on existence technology and software (Tiers 1 to 4).

**IV. Cleaning of Classroom Technology**

* We recommend that the University provide appropriate cleaning supplies in order to minimize damage to classroom technology.
* We provide cleaning protocols for shared classroom technology.
* We recommend that users of shared classroom technology use university-provided cleaning supplies to clean shared classroom technology according to these protocols.

**Task 1: Classroom Technology Update**

Prepared by Cindy Davis, Joyce Garczynski, Matthew Wynd, and Harald Beck

## Background

Since 2013, the Classroom and Computer Lab Technologies (CCLT) team in OTS has been working with departments and colleges to systematically add cameras and microphones to classrooms to meet the increased faculty demand for this technology. Elmo or WolfVision document cameras (or visual presenters), which have been a standard in classroom technology since the adoption of standards and the start of the Student Technology Fee Program in 2010, have been added to 87% of academic classrooms, and interactive, web-conferencing-enabled instructor monitors have been installed in 17%.

## Current State

As of January 2020, fixed cameras and microphones are in 118 academic classrooms, or 27% of all classrooms on the main campus and at Northeastern Maryland (TUNE) campus. These rooms are identified on the [Classroom Virtual Tour](http://webapps.towson.edu/classroomtechnology/virtualtour/) as “Universal” in both the “Video Conferencing” and “Capture Recording” columns. “Universal” designates that they can be connected to any of our support software recording or streaming apps.

## Plans for Fall 2020

In late Spring 2020, under guidance of the provost, CCLT drafted a framework for adding additional technology to classrooms. Because of the high cost of the equipment and the finite amount of resources to install that equipment, this framework focused on outfitting larger, more general-purpose classrooms over smaller, specialty spaces. Specifically, the following criteria were used in determining which classrooms to outfit:

* Academic classrooms with 40 or more seats
* Tiered classroom
* Percentage of classrooms already outfitted in the building
* Except for 2 tiered classrooms in SMITH – suggesting OWL in other spaces
	+ Due to scheduled move to new building and difficulty of installs in SMITH
	+ New Science complex has fixed cameras in classroom spaces that will be available for teaching in Spring 2021 semester
* Did not include specialty or unique spaces not appropriate for general instruction
	+ Center for the Arts especially has unique spaces and feel portable cameras or document cameras with an added microphone would better suit their instructional style
* Ability to install camera equipment with minimal extra expense or time needed
	+ All work must be completed by Aug 24, there is not enough time to handle complicated additions (i.e. extra high ceilings, already complicated systems)

A proposed list of classrooms to be outfitted was generated and feedback from the deans were incorporated to formulate the final list.

By August 24, an additional 32 classrooms will have fixed cameras and microphones at an average cost of $17,000 per room. Additionally, 30 portable OWL Conference cameras/microphones will be available for use in smaller classrooms ($751 per unit). CCLT also had planned upgrades to add fixed cameras and microphones in seven classrooms and web-conferencing enabled instructor computers in 87 classrooms.

Ultimately, 296 of TU's 430\* (or 69%) academic classrooms will have a microphone and camera device, either installed, embedded or portable, that will connect with campus supported software (Blackboard Collaborate Ultra, Panopto, Webex, and ZOOM), allowing professors to record or live stream lectures for students who are not able to attend class in-person. As each installation is completed, the “Universal” wording will be added to the Classroom Virtual Tour.

## Best Uses for Classroom Technology

It is recommended that faculty consider the technology in their classroom when designing their pedagogical approaches. Fixed cameras and microphones allow faculty to capture a large area of the room on video or zoom into just the instructor. The microphones can be set to capture just the instructor or all students sitting in the room.

To address camera and mic needs in other rooms, many classrooms have a camera and microphone built into the instructor monitor. This is an ideal setup for instructors using a classroom to pre-record lectures.

TU has also purchased a number of OWL Pro cameras. This is a portable, plug-and-play, USB, camera/microphone/speaker, all-in-one device. CCTL tested the use of these units in several departments and have seen them be deployed successfully. A quick set-up guide will be included with the device. They easily connect to the instructor computer with USB and do not increase overall setup time as compared to setup in rooms with permanently installed cameras. These devices work best when used to capture a single point in the room, such as the instructor, rather than a classroom discussion.

With any of these cameras, it is not considered best practice to capture slide presentations displayed on a projection screen, as those are captured more clearly through the software on the instructor computer.

Document cameras are also connected to the instructor computer, which allows remote students to follow instruction live. Faculty can capture writing, objects, or even experiments onto the computer and share using the web conferencing software (Blackboard Collaborate, Webex, and ZOOM). The camera head can also be angled and manipulated to capture the instructor or the students.

We are investigating options for providing additional microphones that can be connected via USB to the instructor computer at the podium. This will provide audio capture and will work best for lectures that either don’t require video of the instructor or are using the document camera to share content. These mics will be usable with all of the software platforms for distance learning.

As we have done during the maturation of the Student Technology Fee program, a continuous effort is made to improve technologies available for a variety of pedagogical approaches.

\*Includes spaces in Residence Halls (common areas), does not include 7400 York Road, Childcare Center, Columbus Center, Conference Rooms, University Union or West Village. Active Learning spaces that have a computer and may have presentation equipment is not included in this count but could be available if needed.

**Task 2: Recommendations for Technology Solutions**

 **for Hybrid High-flex Delivery**

Prepared by Suranjan Chakraborty, Cindy Davis, Josh Dehlinger, Kay Kazinski,

Halcyon Lawrence, David Merino, and Stuart Stein

Introduction

The following table contains recommendations for the support of hybrid high-flex delivery in line with TU’s fall reopening plans. The table (organized under the categories of Training, Communication, and Technology Assessment) offers details for each recommendation, pros and cons (where not self-evident), and a status update of relevant initiatives by FACET, OTS generally, or CCLT specifically.

We have refrained from providing any ranking of these recommendations because adoption of any recommendation will be based on very specific college and department needs.

Appendix A provides examples of classroom scenarios and the activities that can be accomplished in each classification of classrooms. Appendix B includes a list of equipment mentioned very generally in the recommendations below, but we defer to OTS to set a standard equipment purchase for each classroom type to maintain cross-compatibility of technology.

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| **Type** | **Recommendations** | **Details** | **Pros** | **Cons** | **Status update** |
| 1. **Training**
 | 1. **Establish technology Liaison**
 | Colleges or departments should consider appointing a technology liaison who can help can help provide tailored answers to instructors’ questions about technology use in the classroom or questions about specific technologies to accomplish tasks. These liaisons can be student workers or another staff or faculty member who is trained to respond to these types of questions. | Possible reduction in the sharing of erroneous information. | Dependent on volunteerism (some compensation should be considered or added as official workload). | OTS Classroom and Computer Lab Technologies (CCLT) Coordinators can assist. A coordinator has been appointed in the interim for FCSM. |
| 1. **Engage with FACET instructional designers**
 | Colleges or departments should engage with FACET to offer tailored disciplinary training if a specific pedagogical need arises that a liaison cannot address. | Avoids overlaps as FACET has developed a range of training to facilitate flex-delivery options. |  | FACET is hosting four Online and Hybrid Course Design workshops during the summer that include OTS Technology Trainings. |
| 1. **Setup a repository of practices**
 | Colleges or departments should consider setting up both push (i.e. resources are being delivered to faculty) and pull (i.e. resources are available but must be “requested” by faculty) resources. These resources could include videos created by faculty demonstrating how they complete certain tasks, tutorials that address technology challenges, or a wiki page that answers specific questions. | Provides tailored resources at a department or college level. |  | General resources site already in review process. Content added starting July 14 in a Blackboard Community site called “One-Stop Shop for Faculty Resources.” |
| 1. **Establish virtual pop-up sessions**
 | Colleges or departments can promote virtual “pop-up sessions” that allow faculty to learn about and discuss specific technology needs and problems. | Can support practical hands-on training.  |  | General sessions started in March and are ongoing. These sessions include Blackboard, OTS Training, and CCLT Coordinators. |

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| **Type** | **Recommendations** | **Details** | **Pros** | **Cons** | **Status update** |
| 1. **Commu-nication**
 | 1. **Install signage in classrooms**
 | Signage should be placed strategically in instructional rooms to remind instructions about the care of technology.Signage should also indicate to instructors that should only use approved supplies (not household or commercial cleaners) to clean IT equipment. | Assist with issues of compliance in the care and management of technology resources; Low cost initiative. |  | CCLT has already [created a document](https://tu-my.sharepoint.com/%3Aw%3A/g/personal/jgarczynski_towson_edu/EY1pJHUuYi9Ks6zbC9rDFDUB-dQXQ4pSThZzu02Q_IL6MA?rtime=MZ3WJG4j2Eg) for proper cleaning protocols for distribution to local technical people. |
| 1. **Establish documentation and reporting system**
 | Colleges should develop a centralized documentation and reporting system (both top-down and bottom-up) to capture all technology initiatives which are implemented. |  |  |  |

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| **Type** | **Recommendations** | **Details** | **Pros** | **Cons** | **Status update** |
| 1. **Technology**

**Assessment** | 1. **Setup technology loan program**
 | Departments and colleges can explore a loan program for laptops, webcams, etc. This initiative needs to be more accessible and thorough to create access to appropriate technology for students that cannot come to campus. A loan program should extend to all available computers on campus, including decommissioned lab computers. Faculty could serve as facilitators for special requests. |  | There is a limited amount of equipment available for this initiative. | CCLT did this in the spring 2020, but the program needs to be formalized and a criteria set for approving request. |
| 1. **Draft classroom scenarios**
 | Departments/colleges should develop classroom scenarios (see Appendix A) to help in the decision-making process of classroom allocation for courses.OTS has extensive knowledge of existing spaces and can aid in creating new ‘popup’ spaces.If/when in-person student capacity determined for colleges/departments warrants additional instruction spaces, departments should consider a focus on creating the additional spaces to accommodate smaller groups rather than upgrades to existing spaces. | Enable more specific targeting of classroom resources to instructor/ student needs. | Might be a timely endeavor.Should involve personnel who know what is installed in each classroom. |  |
| 1. **Assess courses for technology needs**
 | At a college level, some assessment should be done about the level of difficulty to shift courses from face-to-face (F2F) to online/hybrid sessions. Courses that are more difficult to shift, might have some priority in terms of scheduling of rooms, access to technology resources for live streaming of sessions, etc.Faculty and Program Managers need to consult OTS CCLT coordinators or local college technology staff to ensure course system and software platform requirements are met. | Ensure technology, hardware and software, currently used in courses is enabled for online or hybrid learning. | Time is needed to research and implement solutions. | OTS already working with several departments to convert licenses to web-based for ease of access. |
| 1. **Purchase/install mobile outlets/quick charging stations**
 | Students are going to need more access to charging stations to be able to participate in online classes. |  | Time and human resources required to assess where these stations are needed. |  |
| 1. **Purchase USB microphones for academic classrooms**
 | This initiative would allow faculty to walk into any classroom and be able to record their voice, the computer screen, and the document camera. By assigning these to faculty members instead of rooms, it would reduce loss of the devices and possibly the spread of germs. USB mics would cover the immediate needs for most courses but assigning them could present a challenge given the number of adjunct faculty who may be using one of these spaces. | Giving to all faculty ensure minimum technology available no matter where they teach.Only need it for faculty teaching on campus. | Not needed in rooms with installed microphones and may cause confusion; Funding would be needed for a $50 microphone for 1600 faculty. | OTS does have some type of microphone, installed or portable mic available in 77% of all classrooms. |
| 1. **Establish portable classrooms on mobile crash cart**
 | A college or department initiative could include the setting up of portable crash carts with large screen flat panel displays/computer on stand with video conferencing capabilities that can be moved between rooms. | Allows instructors to turn any room into a classroom quickly. | Plan needed for allocation of these carts, return policy, etc.Equipment needs to be maintained and reporting process needed for problems.Could be expensive and cumbersome. | All classrooms have projection and a computer, so the portable camera systems or microphones could handle this issue. Also, many conference rooms have video conferencing equipment, which means they could be used as classrooms. |
| 1. **Assess mounting equipment needs**
 | Mounting equipment may be needed e.g. tripod for cameras, adjustable monitor stands, monitor arm. | Not needed for installed equipment. | Not enough time to purchase and install by 8/24. | Many instructor monitors are on articulating arms. The portable cameras and mics can sit on the instructor podium or a table. |
| 1. **Upgrade video/audio capability at student stations in computer labs**
 | Students need to be able to access the labs and use stations. Each computer needs to be outfitted with audio/video capability. For health considerations, students should be encouraged to use their own earbuds w/ built-in mics. | Offers students additional options for participating in online classes.These lab spaces have the potential to become noisy if students need to talk and participate during online classes. |  |  |
| 1. **Identify custom software requirements**
 | Faculty should identify early any custom software required for courses and ensure that access to software are adapted to a remote instruction scenario. This could be coordinated by the liaison (suggested above) or existing unit representatives, who could seek OTS help along regular lines of communication. |  |  | Existing tech resources from OTS related to virtual desktop and software available as local downloads through the university. |
|  | 1. **Set up student-facing cameras for overflow rooms**
 | Colleges should identify and ensure that overflow rooms (e.g. in the event there is a problem in the primary room and there is the need to two smaller rooms) have student-facing cameras so that instructors could see students who are attending class in an overflow room. | Requires someone in the room to login, start and monitor the virtual session.Limited engagement with students in these rooms. |  | The cameras in CLA are setup this way; in all other classrooms, cameras capture the instructor. |

**Appendix A – Classroom Scenarios**

Below is an example of how classrooms can be classified and the activities that can be accomplished in each classification of classrooms. Departments are free to establish their own classification systems and scenarios.

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| **Classroom type** | **Available Technologies** | **Classroom Scenarios** |
| **Tier 1** | PTZ (pan, tilt, zoom) cameras and ceiling mics. Integrated Crestron system ‘standard’ lecture classroom. Software: Webex, ZOOM, Panopto lecture capture (can also live stream) | * Live lecture style instruction with students in the room
* Instructor is recording and requires additional equipment available in this classroom environment (e.g. document camera)
* Record/live stream - Panopto, Webex, ZOOM
* Camera and microphone built into the room
 |
| **Tier 2** | Video conferencing cameras like the OWL, large screen monitors, might need equipment like a tripod to mount camera depending on layout of room to capture student audio/video | * Live lecture style instruction and primary room is at capacity, ‘overflow’ room is needed
* Small class that does not exceed room capacity
* Class that has combination of in person students and distance students where room capacity is not exceeded
* This room can be a ‘distance’ room with video conferencing participants (overflow room scenario)
* Or a primary instruction room for small group where recording/live stream may be needed (scenario 2 and 3)
* Video conferencing camera/mic, flat screen monitor(s) built in speakers or external speakers; required cabling for connection (e.g. HDMI, display port, USB, network)
 |
| **Tier 3** | Rooms with webcams and microphone or a monitor with built in webcam and microphone (every classroom has a computer). | * Lecture capture recording
* NO additional equipment is needed (e.g. document camera) to provide instruction
* Webcam / microphone
* Lecture capture software
 |

**Appendix B – Equipment examples**

Cameras

* OWL - 1080p 360 degree field of view <https://www.amazon.com/dp/B07WNK4PHW/?tag=19gh-20>
* Logitech group video conferencing: 1080p; 90-degree field of view <https://www.amazon.com/dp/B01BBKZ520?ref=emc_p_m_9_b&th=1>
* Logitech Meet up: 4k; 1080p; 120 degree; Bluetooth

<https://www.amazon.com/Logitech-MeetUp-Conferencing-System-Meeting/dp/B072JQ98DF/?tag=19gh-20>

Microphone

* Blue Snowball USB microphone

[https://www.amazon.com/Blue-Snowball-Condenser-Microphone-Cardioid/dp/B014PYGTUQ/ref=sr\_1\_2?dchild=1&keywords=Blue+snowball&qid=1594217109&s=musical-instruments&sr=1-2](https://www.amazon.com/Blue-Snowball-Condenser-Microphone-Cardioid/dp/B014PYGTUQ/ref%3Dsr_1_2?dchild=1&keywords=Blue+snowball&qid=1594217109&s=musical-instruments&sr=1-2)

Monitors

* Monitor with web cam built in

<https://www.dell.com/en-us/work/shop/accessories/apd/210-anme?gacd=9646510-1028-5761040-0-0&dgc=st&gclid=CjwKCAjwltH3BRB6EiwAhj0IUD8nt6AZERh54NhqWZAp0crxOfReXlWiQeWfA1DzpVW3tVx_YoEaLRoCUNAQAvD_BwE&gclsrc=aw.ds>

* Monitor with web cam and touch

[https://www.amazon.com/Planar-PCT2485-Widescreen-Multi-Touch-Monitor/dp/B00DFB8KRQ/ref=sr\_1\_1?dchild=1&keywords=PCT2485&qid=1594217190&sr=8-1](https://www.amazon.com/Planar-PCT2485-Widescreen-Multi-Touch-Monitor/dp/B00DFB8KRQ/ref%3Dsr_1_1?dchild=1&keywords=PCT2485&qid=1594217190&sr=8-1)

**Task 3: Procurement/Installation of Classroom Technology**

Prepared by Sam Collins, Matt Wynd, Sam Hudson, and Peter Morin

The "TU Academic Spaces with Room Cameras" report (Video-Lecture-Classrooms-20200603.xlsx) provides a baseline summary of current equipment and recommended upgrades for classroom video/recording technology. OTS has recommended upgrades within the limits of STF funding and the timeframe within which work can be scheduled. Additional spaces have been requested via the Chairs and the Academic Technology group.

Recommendations

Provide training videos for the use of classroom software, video, and audio equipment for the primary modes of instructional delivery. This should include Tier-1: PTZ camera, Tier-2 OWL, and Tier-3: webcam and be limited to basic delivery and recording scenarios.

Extend training and troubleshooting FAQs to local technical support, tech-savvy faculty, and/or student assistants to be able to independently address the need for troubleshooting or on-site assistance.

Establish "Plan-B" optional scenarios for when the primary PC, video, audio, or recording platforms are not working.

Extend classroom technology equipment with low-cost solutions such as a planar monitor, webcam, or audio microphone.

Local departments, in consultation with OTS and local technology support, proactively engage faculty to determine additional technology needs and viable options.

Establish resources for additional computing equipment to provide supplemental adapters or recording devices, or full-systems to meet gaps in access to technology.

Definition of Instructional Modes

1. Screencast and audio (video optional)

a. Panopto recording

2. Video live streaming with optional screen display and chat

a. Panopto live streaming

3. Video conference ("2-way") with optional screen share

a. Blackboard Collaborate

b. Webex teams or meetings

c. ZOOM meeting

Classroom Video and Audio Equipment Definition

1. PTZ room camera (positioned to record the front of classroom)

a. Room microphone and/or

b. Wireless lavalier microphone

2. Planar touch-monitor with built-in webcam and microphone

3. Webcam with microphone

4. Audio only microphone

**Task 4: Classroom and Learning Technology Cleaning**

Prepared by Joyce Garczynski and Cindy Davis

## Background

A [systematic literature review](https://www.webjunction.org/content/dam/WebJunction/Documents/webJunction/realm/systematic-lit-review.pdf) prepared by the REopening Archives, Libraries and Museums (REALM) project found that shared technology such as mice and keyboards can harbor viable traces of the SARS-CoV-2 virus for as long as 72 hours after becoming contaminated. Thus, cleaning classroom technology properly becomes vital in the efforts to reduce the spread of the virus. Not all cleaning products, however, are appropriate for use on technology and the use of certain products can substantially damage the technology. This section puts forth recommendations for TU faculty, students, and staff for cleaning classroom technology.

When and What to Clean

We recommend that users of shared classroom and learning technology, including but not limited to:

* Computer keyboards
* Computer mice
* Crestron touchscreens

Clean these technologies before and after use.

Cleaning Products to Use

TU should provide appropriate cleaning materials in classrooms and other spaces with shared technology. Users should not clean technology with household or commercial cleaners as they can damage the technology. Please consult the guide below to determine how to clean each technology.

Cleaning Procedures

Please see [this document](https://tu-my.sharepoint.com/%3Aw%3A/g/personal/jgarczynski_towson_edu/EY1pJHUuYi9Ks6zbC9rDFDUB-dQXQ4pSThZzu02Q_IL6MA?e=nU3hQd) created by OTS that details cleaning protocols for classroom technology.