UNIVERSITY OF CALGARY | Taylor Institute for Teaching and Learning

# TI Learning Spaces Report 2022

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# **EXECUTIVE SUMMARY**

The Taylor Institute for Teaching and Learning (TI) building opened in April 2016. It was designed to provide facilities to enable exploration and evaluation of innovative teaching practices in 6 state of the art, flexible learning spaces. In the **6 years** since opening, **714 courses** have been taught in the Institute's classroom spaces, enabling instructors to integrate rich active learning into their classes, and providing **23,905 students** with the opportunity to experience these courses. Courses from all faculties across the University of Calgary have been taught within the Institute, as well as many informal learning activities and events related to fostering and celebrating outstanding teaching and leadership. This report documents the design, implementation, operation, and support of learning spaces and technologies within the Taylor Institute for Teaching and Learning since opening in 2016, with a focus on 2020-2022.

There are many campus partners that support the TI learning spaces, emphasizing the importance of taking a communitybased approach to the planning, design, and use of active learning spaces. The TI has established a classroom working group with representation from the TI, IT, and the Registrar's Office that collaborates regularly to review and support these spaces. The working group also consults with colleagues from campus planning, Student Accessibility Services, Accommodations and Events, academic staff, and students. The working group has worked to streamlined booking processes and is actively engaged in planning for on-going evergreening.

These spaces promote collaboration, engagement, and connection. Course instructors using TI spaces enjoy teaching in these learning environments and acknowledge that they encourage active learning and strengthen student engagement. Support is needed for course instructors using these spaces, both from technological and pedagogical perspectives. The technology and furniture incorporated in these classrooms provide flexibility, increase access, and strengthen collaboration. They also require ongoing and intentional maintenance.

Through the operation of the Institute since 2016, we have implemented a set of common technologies, features, and principles that provide a solid foundation for active learning spaces:

- 1. Clean, safe, and accessible learning spaces
- 2. Easy and consistent access to electrical power for all participants
- 3. Strong wireless connectivity with reliable broadband internet is available to everyone in the learning spaces
- 4. Ability for course instructors to project or share digital media on large displays in the learning spaces
- 5. Availability of hands-on technical support, and access to consultation on instructional and technology design
- 6. Furniture that is easy to reconfigure, with everything on wheels
- Accessibility as a fundamental design principle, including large table surfaces, height-adjustable teaching podiums, and moveable classroom furniture
- 8. Whiteboards or other writable surfaces available throughout the learning spaces
- 9. Ability for participants to share their own work and to collaborate with others, through small and large group collaboration and sharable technology
- 10. Remote participants can be integrated into the learning spaces
- 11. Ability to record and/or livestream presentations and interactions within the learning spaces

The following five priorities have been identified to be addressed for the Taylor Institute learning spaces and technologies over the next year:

- 1. Furthering integration with existing UCalgary processes and collaboration and key partners across the institution
- 2. Ensuring accessibility for all community members teaching and learning in these spaces
- 3. Continuing to explore, support, and evaluate the full spectrum of on-campus, blended, hybrid, and online teaching and learning
- 4. Enhancing the role of the TI as a "learning lab" to inform the evidence-based development of innovative spaces, technologies, and teaching practices across the University of Calgary
- 5. Ensuring a sustainable support model for users of the TI learning spaces, and an evergreening plan to continuously renew technologies and furniture within the TI

Foundational research-informed principles for learning space design including collaboration, community, flexibility, transparency, and access (Kenny & Watson, 2021; Finkelstein and Winer, 2020) can be used to help inform the planning, design and use of learning spaces across the University of Calgary. As we continue to build future-focused programs and learning experiences for students across disciplines at UCalgary, there are opportunities to develop a more robust and integrated approach to the planning, design, and use of learning spaces - including revised classroom design standards.

# **INTRODUCTION**

The Taylor Institute for Teaching and Learning (TI) building opened in April 2016. It was designed to enable exploration and evaluation of innovative teaching practices in 6 state of the art, flexible learning spaces. In the **6 years** since opening, **714 courses** have been taught in the Institute's classroom spaces, enabling instructors to integrate rich active learning into their classes, and providing **23,905 students** with the opportunity to experience these courses. Courses from all faculties across the University of Calgary have been taught within the Institute (Figure 1), as well as many informal learning activities and events related to fostering and celebrating outstanding teaching and leadership. The TI spaces have also been used to host non-credit courses, institutional events such as the Annual Celebration of Teaching, the Annual Conference on Postsecondary Learning and Teaching, Alumni Arch Awards, Killam Awards, and art exhibitions.



FIGURE 1. FOR-CREDIT ACADEMIC COURSES HOSTED IN THE TAYLOR INSTITUTE, BY FACULTY (SPRING 2016 - SUMMER 2022)

## **Overview of TI Learning spaces**

The Taylor Institute is the first building in Canada dedicated solely to improving postsecondary teaching and learning. The groundbreaking building is located at the heart of campus, supporting the institute's work to build communities and link networks. The building was designed by Diamond Schmitt Architects and Gibbs Gage with three guiding principles: **flexibility, transparency**, and **collaboration**. The Taylor Institute's learning spaces are fully flexible and are infused with technology, enabling instructors and students to experiment with advanced teaching and learning approaches. The main floor of the Taylor Institute includes 5 flexible learning spaces, 1 large open space forum, and an informal gallery, all of which are available for instructors to teach university courses in and to support teaching and learning activities (Figure 2). The building first opened its doors in the spring of 2016 with a few pilot courses, leading toward the first full semester of courses that fall.

The building has three flexible learning spaces that encourage instructors to experiment with advanced teaching and learning approaches. On the south side of the atrium, the Forum has retractable seating that allows it to convert from a flat-floor learning space to 340-seat public lecture space. Two other learning spaces on the north and east sides of the building feature movable walls that enable subdivision into two or three smaller spaces.

All learning spaces have furniture that can be arranged in different configurations. The spaces are infused with technology, including a grid of "floor boxes" that allow displays to be located throughout each learning space. Teaching stations are mobile, giving instructors the option to set up spaces in different ways.

The building's transparent design – including observation pods outside the learning spaces – ensures that others can observe and learn from this experimentation. The Taylor Institute provides a window to the future of teaching and learning: the discoveries made in the building will continue to inform the design of new learning spaces and new approaches to teaching and learning across campus and beyond.



FIGURE 2. MAP OF LEARNING SPACES IN THE TAYLOR INSTITUTE

# **LEARNING TECHNOLOGIES**

The Taylor Institute was designed to provide a flexible and technology-rich environment for instructors and students to collaborate, using leading-edge hardware and software to support their work within the TI's classrooms. The initial design of the audiovisual systems in the TI was developed by Sextant AV Consultants, in collaboration with UCalgary IT. Implementation was completed by Matrix Video Communications.

Based on input from instructors and students using the classroom spaces, there have been many adaptations over the years to continually improve the teaching and learning experiences. Some of these advances include Zoom-enabling all meeting rooms and classrooms, adding automatically-tracking video cameras for lecture capture, and providing more mobile whiteboards throughout the TI.

## Audiovisual system components in the learning spaces

The TI learning spaces provide 2 main components:

- 1. teaching podium station
- 2. "collaboration carts"

#### **Teaching Podium**

The teaching podium station (figures 3, 4) is moveable and has a powered adjustable-height mechanism, enabling accessibility for all users. It provides a Windows-based computer (with touch display, wireless keyboard and mouse), as well as 3 microphones (a wired podium microphone, a wireless handheld microphone, and a wireless lavalier microphone), as well as a high-resolution document camera. The Crestron touch panel provided on the podium is used to control all audiovisual and lighting settings in the room, including both a "Presentation" mode or "Active Learning" mode.

#### **Presentation Mode**

Presentation mode allows the instructor to display content from either the built-in classroom computer or from their own device (through HDMI or wirelessly through Crestron AirMedia) to the projection screen as well as to all displays in the room.

#### Active Learning Mode

In this mode participants connect wirelessly to the displays in the learning space using Crestron AirMedia from their own devices. This allows people to share any software or content to support collaboration and engagement in an active learning classroom. Group work on these displays can be sent to the main projector in the room as well as to all other displays to support sharing and discussion of subject material.

The podium is based on an "instructor desk" provided by Exact Furniture. The desk is height adjustable, allowing for greater accessibility.



FIGURE 3. TI 110 IN PRESENTATION MODE, WITH CONTENT DISPLAYED ON PROJECTOR AND COLLABORATION CARTS



FIGURE 4. TI 160 (FORUM) WITH TEACHING PODIUM

#### **Collaboration Carts**

The audiovisual systems for the main floor learning spaces have been designed to maximize flexibility. 37 "collaboration carts" (figures 5, 6) can be moved to several different locations within the spaces, by accessing the audiovisual infrastructure through junction boxes installed in the floor. These junction boxes provide power, network connectivity, and connections to the audio system. The image shown on the cart's 55" display is provided over the network connection, from devices located in the "IT room" on the Mezzanine floor of the Taylor Institute. This allows the Crestron 128 video switcher to automatically send different video signals to each collaboration cart, allowing the instructor to control how content is presented within the learning space.



FIGURE 5. A COLLABORATION CART BEING USED TO SHARE INTERACTIVE RESEARCH DATA



FIGURE 6. GROUP WORK IN ACTIVE LEARNING MODE

## **Connections to UCalgary Community**

A Taylor Institute Classrooms Working Group was formed in 2020, with representation from the Taylor Institute, Information Technologies' Com/Media unit, and the Registrar's Office. Other colleagues from Campus Planning, the Office of Accessibility, Accommodations & Events, academic staff, students, as well as various experts on spaces and technology from other universities are asked to join, where appropriate. This working group is actively reviewing the use and support of the learning spaces within the TI and has used some of this learning to inform the design and support of learning spaces across the university.

There are currently 98 classrooms with flexible furniture distributed at various locations across the university that support reconfiguration for active learning and small group activities. Some of these classrooms also provide wireless presentation capability through Crestron AirMedia available within the teaching podium. The classroom audiovisual technology standards that are used to guide upgrades and renovations of these classrooms are being informed by the lessons learned at the TI.

The design of learning spaces in the Taylor Institute was informed by a number of other innovative classroom spaces that had been previously implemented as standalone projects. These classrooms provided flexibility and access to technologies that were not available in standard classrooms, typically funded through faculty-specific funding in combination with the University's CAR/FAR (Classroom Alteration Request / Facilities Alteration Request) project process.

Due to the central location of the TI, updated technology, and the modern open design, it has become a desirable place for high profile events, photo shoots, interviews, media releases, conferences, retreats and art exhibitions run through Advancement, Accommodations and Events, and Development. Events offered outside of the context of academic courses in the TI are coordinated by University Calgary Accommodations and Events (UCAE).

# **TEACHING AND LEARNING IN THE TI**

## **Feedback from Instructors**

Instructors who teach courses in the TI are asked to complete a survey at the end of the semester, to gather feedback on their experiences teaching in the TI's learning studios. Survey responses from Fall 2019 through Winter 2022 semesters were analyzed for this report. Responses were grouped into a number of emergent themes. Feedback about the learning spaces and their effects on student learning, and suggestions for improvement, are summarized below.

#### Themes

**Course instructors and students enjoy teaching and learning in theses spaces.** Course instructors acknowledged that these spaces do encourage active learning, and that students also enjoy being in the space:

"Towards the end of term, I spontaneously suggested that the students get in groups and do the problem on the white boards. All but one student participated. They then went around the room and looked at the solutions of other groups. If I taught in this room again, I would do the same."

"[students] told us explicitly how much they enjoyed the blend of high technology with a kind of intimate atmosphere "

The physical design of the learning spaces is largely appreciated, including the natural light. Some instructors did acknowledge that the long and narrow shape of some of the classrooms was challenging, "I have to do a lot of walking." Another acknowledged that having this amount of flexibility posed challenges when conducting midterm exams. The "movable furniture" to allow for flexible space configuration and active learning was appreciated. The "high ceilings" and "opportunities for students to move around" were helpful during the transition back to the classroom following the COVID restrictions. Some instructors still expressed a desire for access to a large whiteboard at the front of the room, "Still miss having a single large whiteboard (would want in addition to the moveable ones)."

**Support is needed to use these spaces.** Participants who are already knowledgeable about the TI or who are looking for active learning classrooms expressed being more comfortable with the space. As the registrar optimizes use of these spaces, course instructors who did not specifically request to teach in these spaces to facilitate active learning did not express as much comfort with the physical design or technology used in these spaces. Following the return to on-campus teaching, course instructors expected to be able to teach in a hybrid style (simultaneous, synchronous in person and online) in the TI and found that the technology to foster hybrid learning is challenging to use, and could continue to be improved:

"I think I'd like to see more options to better facilitate hybrid learning - dual monitors for the podium would be amazing. If I hadn't been able to assign a TA to monitor Zoom in both classes, it would have been super awkward."

"The camera for Zoom is SO zoomed out. I'm not sure if there is a way for it to Zoom in so that students can see your face."

**The technology is appreciated and requires ongoing maintenance**. One instructor noted, "If it doesn't work, it doesn't matter if it is fancy." In contrast another instructor noted, "Up to date equipment, multiple screens in the room, adaptable space for small group work, all equipment worked and the user interface on the console was intuitive." Getting set up is not as intuitive as course instructors had hoped, and specific challenges with technology do emerge regularly.

## Adapting in response to feedback from instructors and students

Based on feedback and recommendations, several changes and improvements have been made in TI Spaces, including:

- collaborated with campus planning to ensure all ground floor spaces in the TI are smudge friendly
- purchased additional whiteboards
- removed Arrive touch-screen computers from the collaboration carts to improve functionality and access
- replaced Solstice wireless presentation devices with Crestron AirMedia, to be consistent with classrooms across the university
- upgraded the video cameras in all TI classrooms with a new AI-powered auto-tracking camera system
- Zoom- (videoconferencing) and YuJa- (lecture capture) enabled classrooms by integrating the video and audio sources into the classroom computers
- explored new methods of integrating remote participants, including a pilot evaluation of the Neat Board videoconferencing device
- replaced "scholar chairs" with adjustable tables and chairs (in progress)

# **PARTNERSHIPS AND PROCESSES TO SUPPORT TI SPACES**

The TI Learning spaces are supported by a community of campus partners. Below is a table that outlines the key relationships and partners who support the use and operations of the TI learning spaces.

CAMPUS PARTNERS	PROCESS	INTERNAL TI RESOURCES & SUPPORT
Registrar's Office	Scheduling academic courses in TI classrooms for each semester.	Collaborate to prioritize academic courses in TI classrooms and meet prior to each semester to confirm schedule / make adjustments as needed.
Office of Indigenous Engagement	Work together in a good way around decisions for use of TI spaces to support the Indigenous Strategy	Collaborate as part of monthly TI Indigenous Strategy Working Group
Information Technologies	UService helpdesk and ServiceNow support ticket management system Software acquisition and licensing Networking infrastructure and connectivity, installation and maintenance of computers and hardware deployed within the TI	TI Building Operations Specialist TI Tech Coaches (undergraduate students to support TI spaces)
Com/Media	First contact for immediate tech support in TI classrooms	Collaborate with TI building operations staff and tech coaches as second contact for

		troubleshooting and support of tech issues /questions in classrooms.
Campus Planning/ Architecture	Upgrading furniture, evergreening spaces	Collaborate as needed on key projects related to TI spaces.
Nickle Art Museum	Curator in Taylor Family Digital Library provides guidance on exhibitions and graduate thesis gallery presentations Provides guidance around licensing agreements for artwork displayed in TI spaces	Associate Director, Strategic Operations consults with Curator
UC Accommodations & Events	Coordinates all non-academic events in TI spaces, providing event support and arranging for catering, risk management assessment, setup and takedown of special AV and furniture requirements.	Associate Director, Strategic Operations, meets monthly with Director, UCAE, to coordinate and schedule requests and to review and mitigate challenges as they are identified
Advancement	Coordinates high profile University Events in the TI learning spaces, including funding announcements through Development.	Associate Director, Strategic Operations works with Registrar's Office and Advancement to ensure academic activities are not disrupted, moving and rescheduling as needed
Facilities Management	Ensures primary infrastructure (plumbing, electrical, HVAC, lighting) and caretaking	Strategic Operations team communicates to inform of any issues, and coordinates with Facilities to plan service as needed
Risk Management	Campus security, Electronic access provisioning	Strategic Operations team coordinates with Risk Management to inform of any personnel changes and to report any security concerns
Matrix Video Communications (external vendor)	Installation, repairs, troubleshooting, and recommendations for all audiovisual technologies in the TI	Building Operations Specialist coordinates with Matrix project manager

## **The Booking Process**

Spaces in the TI are prioritized for teaching and learning. Prior to the start of each academic year, core University events such as the annual Celebration of Teaching event and University of Calgary Conference on Postsecondary Learning and Teaching are scheduled. Following that, the Registrar's Office optimizes the use of TI learning spaces for academic courses each semester. Departments and Faculties that request TI learning spaces for courses are accommodated first, then the remaining spaces are filled to optimize use throughout the semester. Once the schedule is set, the Learning Technology and Design Team reaches out to all course instructors scheduled to teach in the TI, to welcome them and to offer support as needed.

## Scheduling for TI Spaces



For non-academic courses, conferences, and events related to teaching and learning, Accommodation & Events are able to book TI spaces once the academic schedule is set for each semester.

### **Learning Spaces Support**

Providing pedagogical and technical support for instructors who use the technology-enabled learning spaces requires a multi-faceted approach, with several different support roles providing consultation, training, and troubleshooting.



#### Support for TI Spaces

#### **TI** Operations staff

Operations staff ensure that the TI learning spaces and technologies are maintained, updated, and working. Technology updates require a close collaboration with IT's Com/Media team to ensure instructors can use the learning technologies efficiently and effectively. Updating technology often occurs during downtime between semesters. As well, this close relationship also helps support instructor's immediate requests during class time. TI staff also work closely with the Registrar's Office and Accommodations and Events to support both academic and non-academic courses and events.

#### **Building assistants**

The flexible nature of the TI learning spaces creates opportunities for instructors and students to use them in creative ways, which often means moving furniture around, using the whiteboards, and leveraging the technology. To ensure the rooms are ready, building assistants, who are undergraduate students, reset the learning spaces at the end of each day. The daily reset includes moving furniture back to its default position, clearing whiteboards, double-checking technology

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(replacing batteries in podium mouse, for example), and communicating any identified issues back to the TI Operations staff for resolution.

#### Learning Technology and Design Team

LTDT is a multi-disciplinary team of full-time staff members with expertise in learning technologies and instructional design. They collaborate to provide support for course instructors in both pedagogy and the design and integration of various learning technologies. Before each semester, LTDT staff welcome all instructors to the TI, provide learning space orientations, offer consultations on technology use and course design, and provide ongoing support on how best to teach and facilitate learning in these spaces.

#### TI Classroom Technology Coaches

For the Fall 2021 semester, to support the return to campus, the TI hired three undergraduate students to support the TI technology in the meeting spaces and learning spaces available within the TI. As part of LTDT, their main role was to help instructors teaching in the TI learning spaces with technology to ensure their classes run smoothly. TI Tech Coaches were involved in exploring and developing feasible options to support the emerging need of connecting remote students to the physical space using Zoom. They provided orientations for instructors, supported special educational events such as student digital poster presentations, and documented the variety of teaching and learning activities and experiences that happen in the TI learning spaces.

#### Learning Technology Production Coaches

Learning Technology Production Coaches (LTPC) are graduate students that were hired at the beginning of the pandemic to support the use of learning technology during the quick transition to online delivery. At its peak, there were over 20 LTPC's supporting faculties and instructors across the university. As more instructors became familiar with teaching online, the demand for technology support has lessened and currently 4 LTPCs support the campus needs. This is a continuation of the Learning Technology Coaches Program that successfully supported the university-wide migration from Blackboard to D2L Brightspace, and has helped with the adoption of several new platforms as they have been incorporated into our campus online learning environment.

#### Information Technologies Com/Media

The Com/Media unit provides technical services to support instructors who are using classrooms across the entire university. They are primarily focused on ensuring that the audiovisual technologies that are deployed in classrooms, including projectors and classroom computers, are working effectively. They respond to urgent requests when issues are encountered with these technologies. Com/Media supports special events that are hosted in the TI, and provides backup coverage to our TI Operations staff.

# **CHANGES RESULTING FROM A GLOBAL PANDEMIC**

During the pandemic, the physical spaces within the Taylor Institute were largely vacant, as learning spaces across campus were not in use. Learning spaces in the TI were quickly adapted to enable remote participation in classroom activities, and to be available as video recording studios using Zoom or YuJa as software-based lecture capture tools. This period of reduced learning space utilization also allowed us the opportunity to upgrade video cameras, replace computers, and do maintenance that is otherwise challenging to schedule during a regular in-person semester with academic courses in TI spaces.

One of the first adaptations that was made to the audiovisual technologies in TI learning spaces was replacing the Vaddio PTZ (pan/tilt/zoom) video cameras that were initially installed in the rooms in 2016. The Vaddio cameras were replaced with more capable devices provided by Crestron 1Beyond, providing increased video quality and the ability to integrate with the classroom computer as a video input source for Zoom and YuJa, as well as significantly increased auto-tracking capabilities.

In the initial months of the university's pandemic response, the primary use of the TI's learning spaces was in support of the Haskayne School of Business's Global Energy Executive MBA (GEMBA) program, especially the TI 160 Forum large active learning space. Other Haskayne programs were able to offer in-person classroom activities in the TI's larger learning spaces which accommodated physical distancing of classroom participants.

TI learning spaces quickly became highly utilized as the return to in-person teaching progressed. Instructors who were not previously familiar with the technologies available in these spaces were supported by TI staff and by undergraduate student "TI Tech Coaches", who were able to provide guidance and technical support for instructors as they learned to use the various technologies. We piloted a student tech coach program with graduate students (remote/online support) as well as undergrad students (in-person/on-site) to meet the demand for greater support.

The TI learning spaces offered course instructors a few options during the pandemic. The flexible nature of the spaces allowed for physical distancing for small to medium sized classes. The technology-rich spaces also enabled connecting remote students, course instructors, and guest presenters into the physical space through Zoom. The TI spaces continued to be places for students to connect to their online classes, complete their course work, and meet in small groups.

# Benefits of TI learning spaces to support teaching during the COVID pandemic

- Flexible furniture allowed easy re-configuration of classrooms to ensure physical distancing between students
- Wireless presentation technologies enabled participants to share content from their own computer or tablet, from anywhere in the classroom without needing to use a shared classroom computer or to touch cables installed in the rooms
- Dedicated video cameras and microphones allowed high quality integration into Zoom meetings to bring remote participants into the activities, as well as enabling recording of these activities for later access by participants
- Moveability and the design of furniture allowed for effective regular cleaning of all surfaces, as well as reconfiguration to accommodate physical distancing
- Providing flexible and responsive hands-on technical support within classrooms enabled instructors to quickly learn to use and integrate new learning technologies and to adopt new teaching practices to include both in-class and remote students

# **LESSONS LEARNED**

# Five approaches to guide the planning, design, and use of active learning spaces

Drawing upon the work of Kenny and Watson (2021) and Finkelstein and Winer (2020), five research-informed approaches for active learning spaces that align with the planning, design, and use of the TI Spaces are highlighted below. These approaches can be used more broadly to inform the design of learning spaces across university campuses.

- 1. **Collaboration**: features of active learning classrooms such as flat floors, sharable technology, group seating, multiple screens, and the inclusion of multiple writable surfaces, do promote engagement and collaboration
- 2. **Community**: a community-based approach (that includes multiple campus partners) in the planning, design, and use of active learning spaces is key to success
- 3. **Flexibility**: features such as tables and chairs on wheels, wireless/sharable technology, large tabletop work surfaces, and mobile/height-adjustable podiums provide increased versatility, scalability and modification to meet teaching and learning needs
- 4. **Transparency**: transparency within and around active learning classrooms ensures that teaching and learning activities are visible to the campus community. Transparency in strategic decisions, booking processes, and support for active learning spaces create a shared community of learning and knowledge sharing
- 5. Access: active learning classrooms should demonstrate and support commitments to equitability, accessibility, and inclusion

## **Reducing barriers**

When the TI originally opened, instructors applied to teach their courses in the TI's learning spaces. A TI Learning Spaces Committee, with representation from TI staff, the Students Union, the Graduate Students Association, and academic staff reviewed applications to try to ensure that all courses were designed specifically for use in these learning spaces, and that the instructors had plans to evaluate and share what they learned from teaching in the TI. This resulted in highly impactful courses from a number of faculties but raised unintended barriers to access as instructors expressed their frustration with the effort required to prepare and submit an application.

Starting in 2019, the application process was replaced by integrating course scheduling into the Registrar's existing processes. Any instructor can indicate that they would like to teach their course in the TI on the standard course scheduling form, and the Registrar's office works with TI staff to coordinate the scheduling of these courses in the TI. This has greatly increased access and reduced staff and instructor workloads.

## Designing for flexibility, agility, and innovation

We have learned through the experience of operating the Taylor Institute's learning spaces that classroom technology standards and investment cycles and technology evergreening are best handled in a way that is based on flexibility, agility, responsiveness, and sustainability. We can provide a core set of functionality: power, Wi-Fi, a computer (with campus platforms such as videoconferencing and lecture capture preconfigured), wired and wireless presentation from participants' own devices, adjustable-height teaching station, microphone(s), and camera(s). This core functionality can serve as a platform that will enable people to integrate other custom technologies as needed, rather than trying to predict these specific needs.

This lets us shift toward providing functionality through software on top of common set of connectivity features provided by hardware in the classroom. Decoupling specific features - for example, providing lecture capture functionality through the YuJa desktop capture software rather than from a hardware appliance - makes it much easier to respond to changes. If we need to replace a vendor, it is much easier to push a software update to all managed classroom computers than it is to pull out equipment and replace it with something else. And if we want to add functionality, it can be a simpler process of installing some software rather than planning a year-long infrastructure upgrade project.

This has already been implemented in the TI learning spaces, by providing both YuJa and Zoom on classroom computers. If a classroom has a camera and microphone, they can be selected as inputs within the software, and then an instructor can stream and/or record a classroom session using campus platforms. If either software is replaced as a campus platform, the classrooms do not need to be adjusted beyond installation of the new application on the provided computer.

By focusing on providing hardware that enables connectivity, and software that provides specific functionality, the TI learning spaces will be much better able to respond to changing demands.

Four key themes have shaped our approach to learning spaces and technologies:

- 1. Course instructors need a consistent platform of common technologies to enable a consistent teaching experience across courses
- 2. Course instructors need flexibility, to be able to use different technologies that enable discipline-specific teaching and learning practices
- 3. Students need to be able to access technologies, both within and outside of formal course activities
- 4. Everyone experiences a course differently, depending on their role in the course, their connections to others in the

course, and the various technologies that they use (both formally and informally)

The Taylor Institute continues to act as a testbed for new technologies. We now have several committees and working groups that help to lead and inform these efforts (including the Learning Technologies Advisory Committee, General Faculties Council Teaching & Learning Committee, and the TI Classrooms Working Group).

## Hybrid Teaching and Learning

Even in the TI's classrooms, with highly capable and adaptable technologies and infrastructure, implementing and facilitating hybrid teaching and learning (i.e., with both in-person and remote learners) is a challenge for all participants. Instructors need to design their classes to include in-person students as well as integrating remote students – either synchronously through Zoom, or asynchronously through lecture capture technologies. They need to balance facilitation of in-person activities with monitoring the online classroom in Zoom, checking the chat, looking for digital "hands" raised, engaging with remote students so they don't feel left out. This all takes time – for planning, preparation, implementation, and during facilitation of these sessions – and adds cognitive overhead for all participants that can negatively impact the experiences of teaching and learning.

Providing access to excellent audiovisual technologies is necessary, but is not sufficient to support high quality teaching and learning without also providing additional resources to support the design, implementation, and facilitation of these sessions. These resources can be technical – software and tools to enable effective and efficient course design and implementation. The resources can also involve providing access to personnel who can act as consultants during the design process, or as assistants within the classroom.

## **Common Technologies and Features as a Baseline**

Instructors and students can quickly and effectively adapt to their learning environments, especially if a common platform of technology is available. Through our learnings in the TI, we summarize the following primary requirements for instructors and students in flexible learning spaces:

- Clean, safe, and accessible learning spaces
- Easy and consistent access to electrical power for all participants
- Strong wireless connectivity with reliable broadband internet is available to everyone in the learning space
- Ability to project or share digital media on large displays in the learning space
- Hands-on technical support is available, and access to consultation on instructional and technology design
- Furniture is easily reconfigurable, with everything on wheels
- Accessibility as a fundamental design principle, including height-adjustable teaching podiums and classroom furniture
- Whiteboards or other writable surfaces are available throughout the learning space
- All participants can share their own work and collaborate with others, through small and large group collaboration and wireless technology
- Remote participants can be integrated into the learning space
- Ability to record and/or livestream presentations and interactions within the learning space

These primary requirements are served within the TI in several ways, including:

- Enabling integration of remote students into the classroom by providing access to improved technologies to support video recording and streaming in learning spaces. These technologies allow instructors to record and stream classroom presentations and activities using university platforms such as Zoom and YuJa. The platforms also integrate with D2L Brightspace, making all classroom recordings easily available to all students in the Brightspace course website for the course.
- Improving **support for accessibility** by providing wireless microphones, audio amplification, and multiple largeformat displays in each classroom, enabling instructors and students to easily and effectively share content within the classroom. These displays also enable all participants to easily see presented content, regardless of their location in the classroom. The displays can also be adapted for other uses, including sharing several presentations simultaneously to enable digital poster sessions.
- Supporting **flexible use of spaces**, for both formal and informal learning. The same flexible classrooms can easily be adapted to enable:
  - o classroom activities such as presentations and active learning
  - o institutional events to explore teaching and learning, such as conferences and academic meetings
  - o community sessions, such as open houses, gallery exhibitions, and public events
- Providing **technical and pedagogical support**, consultation, and resources to enable effective teaching and learning within the learning spaces

# **LOOKING AHEAD**

The following priorities have been identified for the upcoming year:

- A focus on blended and online learning, including ways to effectively integrate remote participants into oncampus learning opportunities.
- A focus on accessibility as a foundational design principle, including installing the Listen Everywhere accessibility platform deployment for Fall 2022.
- Developing a plan to implement a major technology refresh in the Taylor Institute, as many core technologies are now off warranty and are becoming obsolete.
- Continuing our exploration of new and emerging technologies, including Neat Board, Owl Labs cameras, Listen Technologies, etc.
- Collecting data about the design of TI learning spaces, using the EDUCAUSE Learning Space Rating System (LSRS Team members, 2020).
- Creating a clear structure of accountability and leadership for managing and reporting on learning spaces.

## **Roadmap for 2022-2023**

The primary goal for the coming year is to support and enable the return to classroom-based teaching and learning, after 2 years of interruption and adaptation to online and remote teaching. This will occur in several dimensions:

- enhancing accessible technologies available in TI classrooms to improve the experience for all instructors and students
- enhancing capabilities to further enable and integrate remote participants in classroom-based activities
- continuing the strong collaboration with the Registrar's Office and Information Technologies, through the TI Classrooms Working Group
- increasing the emphasis on the Taylor Institute as a "learning lab" for piloting new approaches to teaching and using what we learn to inform decisions across the university
- extending the support model provided within the Taylor Institute, and using this as a prototype to inform the development of a refreshed support model for classrooms across the university
- continuing to develop a robust technology evergreening strategy for the audiovisual systems within the Taylor Institute – specifically, preparing a plan to begin replacing the collaboration carts with current, modular alternatives
- contributing to and providing leadership to bring the university community together, to facilitate conversations on teaching spaces

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## **Further Reading**

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Tran, J., & Ng, C. (2018, April 17). Learning Technologies Coaches: Students Driving Technology Integration. *2018 University of Calgary Conference on Postsecondary Learning and Teaching*. 2018 University of Calgary Conference on Postsecondary Learning and Teaching. <u>https://ocs.ucalgary.ca/index.php/TaylorInstitute/2018/paper/view/358</u>

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# **APPENDIX 1: LINKS TO TI RESOURCES**

- Inside the Taylor Institute for Teaching and Learning (launch video) <u>https://ucalgary.yuja.com/V/Video?v=589199&node=2281676&a=311347999&autoplay=1</u> (YuJa-hosted copy doesn't have ads or tracking)
- TI Forum conversion timelapse
  <u>https://ucalgary.yuja.com/V/Video?v=30371&node=182589&a=1614116152&autoplay=1</u>
- TI Learning Studio conversion timelapse
  <u>https://ucalgary.yuja.com/V/Video?v=30369&node=182587&a=62401565&autoplay=1</u>
- Digital Posters
  <u>https://ucalgary.yuja.com/V/Video?v=27332&node=163819&a=200729882&autoplay=1</u>

#### **Related websites**

- About the building: <u>https://taylorinstitute.ucalgary.ca/about/the-building</u>
- About the learning spaces: <u>https://taylorinstitute.ucalgary.ca/about/spaces-detail</u>
- Book a consultation: <u>https://taylorinstitute.ucalgary.ca/book-consultation</u>
- Architect Magazine article on TI: <u>https://www.architectmagazine.com/project-gallery/taylor-institute-for-teaching-and-learning</u>