Training Response to COVID-19

Current trends and a look at the future of Technology-Enhanced Learning

Like many other organizations across Canada and around the world, police services and public safety organizations have had to quickly innovate and adapt to new ways of working in response to the COVID-19 global pandemic. This included the ability to move certain members of staff to remote work, accessing Personal Protective Equipment, providing training in pandemic preparedness and response, changing the way services are provided to the public; and, altering how police services and public safety organizations continue to provide mandatory training for their members and train new recruits.

Early discussions with police services across the country demonstrated a diverse response to the challenges presented by the need to continue providing training to both new recruits and active members and staff. These responses included:

- Continuing classroom learning while following physical distancing guidelines
- Quickly shifting classroom training to online classrooms
- Providing a mix of online, virtual classroom and in-person training
- Halting all training until September in order to develop a plan.

As a national leader in technology-enhanced learning, CPKN took this initial information scan and outlined a research and investigation into the virtual training needs of Canadian police services and public safety organizations. The focus of the research and consultation was primarily on virtual classroom technology as this responded to the most immediate and pressing need of the public safety community; however, early and exploratory questions around technologies to be explored in the next three years were also investigated.

Project Objectives

The objectives of this project were to identify:

- What requirements need to be met with regards to data privacy and residency?
- Are there integration requirements with existing systems and technology?
- What are organizations using now, what do they like/not like about those?
- Identify barriers (current and potential) to adoption.
- Research, Identify and compare existing technologies and software used for virtual training.
- If a need exists for an on-line community of practice?
- Are virtual shared spaces where learners and instructors can work together simultaneously needed?
- Is there a preference for open source vs paid software services?
- Evaluate identified technologies and software against the developed criteria.
- What technologies/software will not work and why?
- What technologies/software could work and why?

To meet the project objectives, CPKN undertook the following activities:

- Conducted two focus group meetings with large Canadian police services and public safety organizations who are early adopters and lead in training innovations including:
    - Toronto Police Service
    - Hamilton Police Service
    - Environment Canada
    - Pacific Region Training Centre (RCMP)
    - Vancouver Police Department
    - York Regional Police Service
    - Canadian Police College
- Conducted a focus group and poll with the National Advisory Committee.
- Conducted a survey with a representative sample of Canadian police organizations which received 37 replies from police services large and small.
- Reviewed online resource materials related to virtual classroom software, their individual strengths and weaknesses.
- Developed a detailed data table outlining the features and functionality of 20 virtual classroom and training technologies.

Research Findings

Focus Group

Focus group participants expressed that various software for virtual classrooms and meetings were explored. Often there was disconnect between what was happening or being recommended at an administrative level versus what was needed or being considered in training units. With the need to purchase a license to virtual classroom software, the general consensus was that one solution would be used that could meet the most needs for both administrative meetings and training. Further consideration when choosing software were internal procurement processes that could be tied to municipal, provincial or federal procurement guidelines. This added a layer of complication for some.

From the focus group, we understood that the primary need was for a software that could function well for meetings and training; met procurement requirements; was easy to use; and adhered to good cyber safety and security.

Focus group participants were also given the opportunity to test Big Blue Button, an open source virtual classroom and meeting space currently integrated within CPKN's Learning Management System (LMS). Big Blue Button offers much of the functionality and interactivity required by police services and public safety organizations to deliver training while having the added benefit of full integration with the LMS. For some training units and public safety organizations, Big Blue Button is a workable solution and is currently being used for training and meetings. For most, the Big Blue Button software was not a workable solution due to a variety of factors including firewalls blocking screen sharing tools and slow network speeds impacting learner ability to log on.

National Advisory Committee

The National Advisory Committee consists of senior managers from police training units across Canada and includes representation from the following organizations:

- York Regional Police
- École nationale de police du Québec
- Vancouver Police Department
- Ontario Provincial Police
- Ontario Police College
- Edmonton Police Service
- Calgary Police Service
- RCMP
- Canadian Police College
- Toronto Police Service
- Justice Institute of British Columbia
- Peel Regional Police Service
- Canadian Police Association
- Public Safety Canada

In discussion with the National Advisory Committee, the most important innovation to be considered was investigating virtual classroom spaces. When asked the question: *'Please rank the following innovations in technology enhanced learning in which CPKN should research for most important to least important'*, the following was the result with one being most important and five the least important:

1. Virtual classrooms
2. Micro learning
3. Learning apps
4. Virtual reality
5. Augmented reality

"TECHNOLOGY IS CONSTANTLY CHANGING AND UPGRADING. WE NEED TO KEEP OUR EYES OPEN FOR UPDATES AND NEW WAYS OF DOING THINGS."

Virtual classrooms were ranked as most urgently important because of the impacts of COVID-19 on public safety training units. The belief is that even post-pandemic, there will be a significant enough backlog of training requiring classroom space that moving some training to virtual classrooms will continue to be a solution.

With this information, CPKN built a survey for distribution to mix of police services representing small and large organizations from municipal, provincial and federal policing. We had responses from 36 organizations to our survey and the results from the survey allowed CPKN to make recommendations for next steps and the most effective virtual classroom software for consideration and integration.

Survey Results

All organizations reported using virtual software for meetings, while 96% are also using the software for 'Live Online Training', 69% for 'Discussion forums and group work' and 35% for 'Pre-recorded training'. Responses to the 'Other' category included submission of assignment and exams and further exploration for recording on-demand webinars.

The most important considerations for selecting a software were 'Data Retention and Security' and 'Security Settings for accessing the classroom space'. But also high on the list of requirements were: 'Software works within a browser', 'Cost', and 'Already had an organizational license'.

Depending on the organization, some had a preference for a desktop application versus hosted online or in the cloud. Comments on this category were that IT departments were leading the service-wide integration of new software.

For 81% of respondents, integrating the virtual classroom into the LMS was important. The reason this was considered important was to reduce the number of programs students needed to access and to provide seamless access to content, assignments and evaluations for hybrid training.

Is it important to integrate virtual classrooms within an LMS?
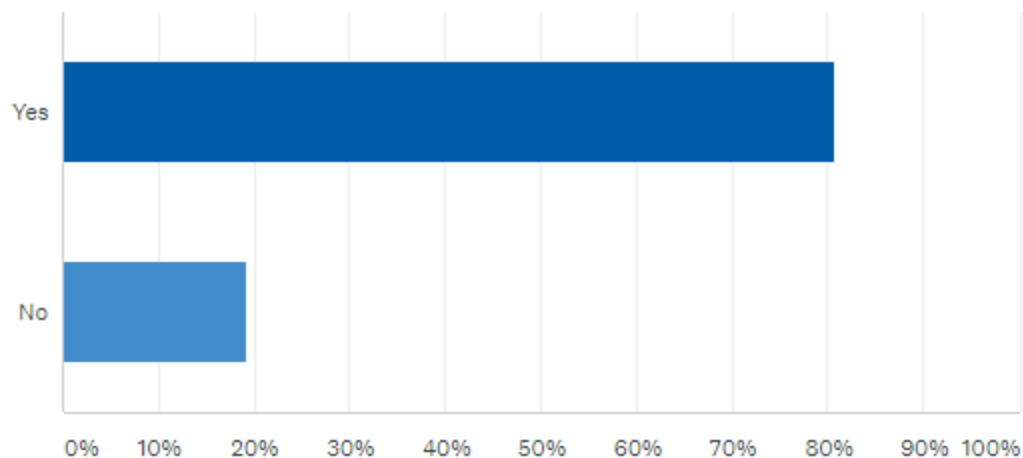
In order to achieve training goals, the following functionality was listed as being the most important: 'Capacity for simultaneous learners', 'Quizzing', 'Tools for instructor such as highlighting', 'Chat and discussion boards' and 'Break-out rooms'.

The ability to receive feedback and surveys, record sessions, and use a multi-use whiteboard were also nice to have features. Also noted as additional considerations were tracking time spent by the learners in the meeting or session, and that recording sessions can lead to considerations for disclosure agreements from participants and trainers alike.

"END USERS ARE STRUGGLING WITH ADAPTING TO THE PLATFORM; MIGRATING IN DOCUMENTS; AND, USING CHAT ROOMS. WE DID NOT RECEIVE A LOT OF 'TRAINING' ON THE USE OF THE PLATFORM MAKING IT LESS ADAPTIVE THAN IT COULD BE."

The majority of respondents, 62%, do not have trainers who have been trained in eLearning and virtual classroom deliver. Further, 54% are not developing this training. This means the software selected needs to have robust support and easy to navigate tools and functionality, especially considering 88% will continue to use virtual classrooms to replace existing in-class learning even after the COVID-19 pandemic.

Will you continue to use virtual classrooms/meetings to replace existing in-class learning even after the COVID-19 pandemic?
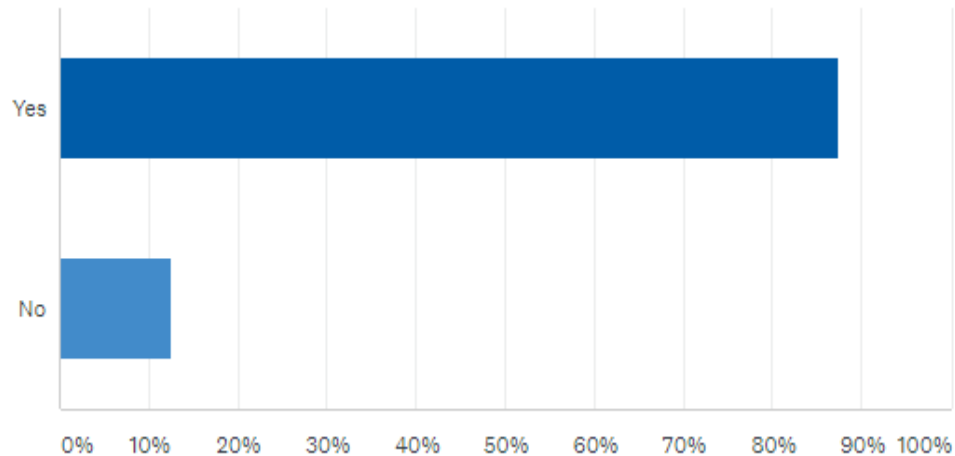
When considering integration with the LMS, it will be important for CPKN to consider the use of the following functionality: 'Content pages with videos', infographics, and refresher info'; 'Activities and assignments'; and, 'Discussion forums'. Other considerations include assessments, app-based functionality, quizzes and interactive elements, and attestation pages.

When asked *'In the next three years, what other technology-enhanced learning are you considering integrating with your training programs?'*, 57% of respondents said both 'Learning applications' and 'Micro learning' while 51% said 'Virtual reality'.

"WE ARE LOOKING AT CONTINUING A BLENDED LEARNING STYLE OF INSTRUCTION FOR THE FUTURE. WE ARE USING THIS AS AN OPPORTUNITY TO STREAMLINE TRAINING AND HAVE IT BE MORE TIMELY AND PROACTIVE. IN CLASS INSTRUCTION WILL ALWAYS BE IMPORTANT, BUT IS CAN BE VERY INEFFICIENT WITH SHIFT WORKERS, RESULTING IN IT ALSO NOT BEING VERY TIMELY. BLENDED LEARNING ALLOWS USERS TO WORK AT THEIR OWN PACE FOR THE CONTENT HEAVY PORTIONS AND CAN REDUCE THE AMOUNT OF TIME IN CLASS AND HOPEFULLY PROVIDE A MORE EFFICIENT DELIVERY OF INFORMATION THEN SOMETIME OCCURS WITH IN PERSON INFORMATION DUMPS."

Most of the respondents were familiar with or using Microsoft Teams, Zoom, or Cisco WebEx for current virtual and training needs. Further, there was greater comfort in software systems that were an off the shelf solution versus open source. With the findings from our survey, focus groups, and consultation with the National Advisory Committee, the team compared the research findings to data collected on 20 different virtual classroom/meeting technologies.

Keeping in mind the security requirements, cost, and interactive functionality, CPKN recommends Cisco WebEx and Microsoft Teams as the top two options. Zoom is a second-place option due only to early security concerns which have mostly been addressed. Each of the recommended software meet the requirements of the public safety community. Work is currently underway to integrate WebEx within the LMS and next steps will be to investigate the potential integration of Microsoft Teams.

Our research has demonstrated ways that we can enhance the virtual learning in response to COVID-19 and additional emerging technologies that could be explored to meet future learning needs.

Virtual Classroom Tips for Success

Meet Technical Requirements

- Complete system tests prior to logging into the classroom. This includes a speed test (https://www.speedtest.net/) and sound check. Your downloads speeds should be at least 5mp per second. Anything slower will affect sound and video.
- When available it is suggested that users use a wired internet connection over a wireless connection.
- Test your sound, you can do this using an automatic soundcheck tool every time you login to the classroom space. Additionally, you can check your sound and others by greeting your classmates/students when they sign in.
- Close all other programs that are not required to participate in the virtual classroom. Having multiple programs opened will reduce performance in the virtual classroom setting.
- Use a headset that includes an attached microphone. Speakers on a laptop/desktop may cause an echo and mic feedback.

Provide an Organized and Engaged Classroom

- Prior to each session, provide students with a list of tasks to have completed for the class. This may include learning goals, anonymous polling tolls, reading assignments, or a list of programs or website to have opened and ready to use for the class. Sending an email reminder 24-72 hours prior to the session will also ensure everyone comes prepared for the class.
- Involve each member in the class by asking an icebreaker question.
- If using discussion boards, ensure both learners and teachers are actively engaged and participating.

- Create rules of engagement for your class to set expectations and let students best know how to participate. Do students as questions throughout the presentation? Hold questions to the end? Use a chat functionality or audio?
- Using polling software or chat check-ins throughout to poll learners about the material. This will help the trainer understand where to focus the lesson and can help to hold students' attention.
- Provide after class assignments and exercises to better measure understanding and also provide more time to review the learning.
- Use short surveys or discussion groups to get feedback about the class. This will allow trainers to change any aspect of the lesson that might need improving.

Trends in eLearning

In 2020, the global impacts of COVID-19 has contributed to an increasingly growing trend in education and training to e-learning. Many organizations, including traditional educational institutions, have turned to e-learning solutions more broadly across their organizations. Quarantine efforts have led to an increased sense of isolation, so it's no wonder that social/collaborative learning platforms, technology focusing on engagement/interactivity, and virtual reality engaging are trending.

Many of the technological innovations have sought to close gaps previously identified when comparing tradition classroom education to e-learning; increased functionality is working to build the credibility of e-learning as comparable method of teaching and learning.

Where organizations previously wanted to adopt new technologies and approaches and were cautious in doing so (slow adopters), organizations are finding themselves plunging ahead out of necessity.

The trends in e-learning technologies for 2020 include, but are note limited to:

- Mobile learning
- Microlearning
- Social learning platforms
- Immersive learning technologies (AR/VR)
- Gamification

With these technologies, e-learning is:

- Deployed quickly
- Responsive
- Provided as individualized content/learning based on data/analytics
- Incorporating high levels of engagement/interactivity
- An immersive learning experience.

Next Steps

As a result of this project, work is underway to integrate WebEx into the ILIAS Learning Management System (LMS). It is anticipated that this work will be complete by end of December 2020 and will give users the ability to integrate virtual classrooms hosted using WebEx with other features of the LMS and online learning.

Further exploration is underway to identify opportunities to integrate Microsoft Teams within the ILIAS LMS.

Research has demonstrated that police and public safety organizations are exploring virtual reality learning but are at various stages of readiness to test and implement this type of training. Some police and public safety organizations have begun the implementation of this type of training, others are participating in research into the effectiveness of virtual learning. For CPKN, the next steps will be to identify opportunities around virtual learning like:

- The cost of development
- Hosting, maintaining, and quality assurance
- Cost of required software to implement the training
- Keeping informed about research underway into the effectiveness of virtual learning.

In addition, using the data and information gathered, CPKN will cross-reference with another survey about use of applications for police training and operations. This will help to better inform future development and exploration of learning-based applications.

Further exploration to define micro-learning will be undertaken to best understand what infrastructure is needed to deliver micro-learning and the most effective methods of development and delivery.

Resources

How to Run a Virtual Classroom

As many services and public safety organizations modify training to meet social distancing requirements, training departments are either using or exploring virtual classrooms. In our Spring Newsletter, we published some *Tips and Tricks* for running a successful virtual classroom.

Here are links to other helpful articles from around the web:

1. The Harvard Business Review has published an article on elevating your personal presence in virtual meetings and how to best manage them.

2. A white paper from Adobe discusses Best Practices for Virtual Classroom Training.

3. Research Gate has a published article used as the foundation for our newsletter story with best practices for virtual classrooms.

Virtual Learning Resources

https://www.pcmag.com/picks/the-best-video-conferencing-software
https://elearningindustry.com/virtual-classrooms-vs-web-conferencing
https://library.educause.edu/resources/2020/3/2020-educause-horizon-report-teaching-and-learning-edition

Column1	Skype for Business	Zoom	Adobe Connect	Cisco WebEx Meetings	Cisco WebEx Training	GoToWebinar	Teams	Big Blue Button	Bongo	Virtual Meeting Softwares>	Apache Open Meetings	V Mukti (very vague website)	M Conf (Elos- through Big Blue Button)	Web Huddle- No website	Jitsi	Virtual Classroom Softwares>	Newrow Smart (Kaltura)	Vedamo	Learn Cube	Electa Live	Wiz IQ
Audio / Video Conferencing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes			Yes		Yes	Yes	Yes	Yes	Yes
Text Conversation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	No		No	No		Yes	Yes	Yes	Yes	Yes
Session Duration	24h	40 minutes on Free account; 24 hours on paid account	24h	24h	24h		24 h	24 h	60 minutes free; 240 minutes premium		24h										
Number of Participants	Up to 250	Up to 100; Up to 500 for "Large Meeting" add-on	100-200 for meetings and classrooms; up to 1000-1500 for webinar rooms/manager	Up to 100	100-200 for meetings and classrooms; 1000 for webinar	100 Starter; 500 Pro; 1000 Plus	Up to 250	Up to 150 users	50 for free version; 150 with premium									Up to 25/room	up to 8/room	Up to 7/room	
Accounts Needed	Internal accounts required.	Hosts/Presenters will need an account.	Host/Presenters will need an account.	Host will need an account with host licence.	Host will need a WebEx account.	Admin needs account	Host requires an account	Hosted in LMS, Admin host needs access to LMS and some admin functionality.	No		All users need software downloaded to use	All users need software downloaded and account to use		All users need software downloaded to use	All users need software download ed to use		Yes	Yes	Yes	Yes	Yes
		Participants do not require accounts*	Participants do not require accounts.	Presenter/Participants do not require accounts.	Panelists/Participants do not require accounts	Panelists/Participants do not require account	Participants/panelists do not require an account	Participants could access with a link, depending on the account settings from admin													
		*Account administrator determines this. Accounts are needed for participants if the meeting has "user authentication" turned on																			
Installation Required	Installation required	Web application	Web application – appears to be flash-based		Web application or internet browser extension	Download application, can call in to 1-800 number but don't get the interactive elements, sound only	Desktop and Mobile App available, participants can also "Join on Web" or access a toll-free number to join.	No, cloud-based/hosted on LMS			All users need software downloaded to use	All users need software downloaded to use		All users need software downloaded to use	All users need software download ed to use		No	All users need software download ed to use	No	No	No
		Browser optional	HTML5 Browser optional	External devices use a web application or internet browser extension																	
Privacy and Security	Purchase a license	User-enabled cloud storage for archived sessions; user-enabled end-to-end encryption	Adobe cloud storage and servers for archived sessions.	licenced tool	Cloud storage and servers for archived sessions.	Your sessions are completely private and secure. All of our solutions feature end-to-end Secure Sockets Layer (SSL) and 128-bit Advanced Encryption Standard (AES) encryption. No unencrypted information is ever stored on our system.	Teams enforces team-wide and organization-wide two-factor authentication, single sign-on through Active Directory, and encryption of data in transit and at rest. Files are stored in SharePoint and are backed by SharePoint encryption. Notes are stored in OneNote and are backed by OneNote encryption. The OneNote data is stored in the team SharePoint site. The Wiki tab can also be used for note taking and its content is also stored within the team				The Apache Security Team exists to provide help and advice to Apache projects on security issues and to provide co-ordination of the handling of security vulnerabilities.	No info found- all services cloud based									
		Recent security risks from "zoom-hacking" and other miscellaneous hacking attempts due to influx of popularity	Custom meeting IDs, passwords for meetings...etc.	Hosts have virtual personal rooms with a fixed address	Pre-registration is possible with a maximum amount of attendees and a waitlist. Can approve or deny registration requests.				Hosted on CPKN servers												
				Meetings are run directly from a local server so nothing is stored external to local server (clients																	
		A lot of security features seem to be enabled by default now after all that negative press. New features include:																			
		• Pass word prote		Customizable meeting IDs, passwords for meetings.	Customizable meeting IDs, passwords for meetings.																
		• Acco unt																			

Sessions Archived	Archived sessions are accessible for up to 14 days after meeting end date.	Yes. However, sessions will be stored on Zoom cloud servers	Yes. Howeverr sessions will be stored on Adobe servers	No	Yes. However sessions will be stored on WebEx servers	Sessions can be recorded and downloaded to host computer for distribution/saving. Pro accounts have access to storage and video editing within GoTo Webinar	Sessions can be recorded, admin settings I believe can determine who can record sessions. A link to the recording is sent to participants/admin	Sessions can be recorded, a link with access to the recording is stored in the BBB session on the lms, it can be accessed through web browser.	14 days free, unlimited with D2L platform		Recorded sessions contain everything including sound recorded from all audio streams in exactly the way you've seen it in the conference.	"Conversation Recording and easy retrieval"				Yes, recorded sessions are saved	Yes	Yes	Yes	Yes
Fees	$2.50 - $10.00/user/month depending on the package	Starts at $20/month/user for a personal account	Meetings/Webinars/Learning	n/a	$370/host/month minimum 5 hosts and 1 year commitment		Starting @ $5.00/user/month ; 12.50 for Premium; 20.00 for E3 plan				Free- OpenSource	Need to contact	Free	Free		Free Trial- cant find price beyond that	Free Trial- cant find price beyond that	Free Trial- cant find price beyond that	29.90/month	3 levels- "Contact Us"
			$50/$130/$370/month			104 / month Starter	A part of Office 365												39.90/month	
						239/month pro 539/month Plus													69.90/month	
File Share	Yes	Yes	Yes	Yes	Yes	Can upload files before the webinar for participant access	Connected to Word, Excel, One note, and other microsoft apps	Yes			Yes, private and public					Yes	No	Yes	Yes	Yes
Screen Sharing	Yes	Yes	Yes	Yes	Yes	Yes	Yes and desktop takeover	Yes			Yes			Yes		Yes	Yes	Yes	Yes	Yes
Classroom Features	n/a	Raising a hand; reactions; Breakout sessions	Raising hands; polls; customizable pod-interface; breakout sessions	Raising hands; polls; text chat; whiteboard; annotation tools/drawing, file transfer (to send a file)	Raising hands; polls; text chat; whiteboard; annotation tools/drawing; breakouts sessions; attention indication; Q&A; Registration & reporting; testing and instant grading/instructor scoring; attendee reports	Polls, handouts, Q&A, Video sharing in Pro and Plus	Whiteboard, file sharing, Rubrik (Teams Classroom); assignments, quizzes using microsoft product, fixed breakout rooms with some manual input required	Recording, Desktop share, Upload presentations, Annotation tools, Change presenter, Breakout rooms, polling, live chat, share files, Attendance log, Polls, Video assignements, comments, peer review, auto analysis			Recording, Audio, picture, Downloadable sessions, multi-whiteboard, screen sharing, file explorer, moderating system to adjust user permissions, Private messages, meeting planner, calendar, polls and votes (up to 10 Qs), data backup	Live Video chat between branch manager/relationship manager and their customers / Buffer free videos with minimal delay / Video call on bandwidth as low as 100 kbps / Supports Video Calling in All Major Smart Phones / Easy to Integrate with Existing call centers and CRM Solutions / Conversation Recording and easy retrieval of the same / Complete Cloud Based Solution, Software as service model / No Infrastructure setup required			Video Conferencing, File Sharing, Screen Sharing, Session Recording, Breakout rooms, Interactive Lessons, Polls, Playlist, link pushing	Online whiteboard, Video Conference, Screensharing, Breakout rooms, Media player, Recording, Session Templates, LTI Integrations	Video/Audio/ Whiteboard, Private Classes, Group Classes, Classroom Interaction, File sharing, Custom Branding. Class Review, Recordings, Scheduling, Reporting, Content Marketplace, Homework	Student profiles, collaboration tools, scheduling, recordings, Moodle integration	Secure live-streaming, server-side recording, advanced interactive whiteboard, live screen sharing, polls, surveys
Multitasking	Presenters can toggle between video chat and text box.	Presenters can toggle between video chat, text box, and screensharing; hand-raising from participants is available	Pod interface; user customizable; can see everything at a glance	Pod interface; user customizable; can see everything at a glance	Pod interface; user customizable; can see everything at a glance	Presenter can toggle between video, chat.	Can move between chat, files, resources, and video screen	Can chat, present, start polls, manage attendees			During Audio/Video conferencing the host can open the recording software, File Explorer, moderating system, multi-whiteboard and chat, user and room management, private message center, and Polls and Votes					Yes, can set up breakout rooms, push other links, share screen, see files and other lessons/rooms	Yes, can use all of the abovve features during an active conference call/session	Yes, can use all features during session		Yes, can use all features during session
Presenter Controls	n/a	One host at a time. Host has to pass the baton.	Host can change user roles on the fly; full control over users	Host can change user roles on the fly; full control over users	Host/Admin can pass presenters the control of screen		Can share presenter controls	Can change presenters, controls participant audio, and other controls			Host can change user roles on the fly; full control over users with access to all features in "multitasking" row	Doesn't appear to have "presenter" roles				Can share presenter controls	Can share presenter controls	Can share presenter controls	No, whoever is the "Teacher" has the controls	Can share presenter controls
		You can have multiple hosts and presenters at the same time.	Any participant can begin to present at any time (if enabled).	You can have multiple panelists at the same time who can present at any time.	Host has full control over users volume and etc	Give and take control from others on the call														