



Teaching and Learning with Web and Videoconference Technologies

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Overview of Tools for Live Collaboration

Synchronous (live) communication and collaboration for teaching and learning can be achieved using various Internet based technologies. Using the suite of Learning Platform tools, staff can utilise videoconferencing hardware and software and web-based virtual classroom software for classes and group sessions with students. Other tools including Skype and Chat can be used for individual consultations and small group sessions. Each tool has features and functionality that need to be explored to determine the best approach for the specific learning and teaching context.

Additionally, although not synchronous, Personal Capture (PCAP), a part of the ECHO360 lecture recording system can be installed on UOW managed computers, allowing staff to pre-record a presentation and make it available to their students prior to their class, allowing face-to-face or web or videoconferencing time for questions and activities. Table 1 provides a comparison of the features of Skype, Connect Lounge and Videoconference.

FEATURE COMPARISON

Table 1 Feature comparison of different teaching and learning tools

	Skype	Connect Lounge	Videoconference
Maximum attendees	2 max unless paid premium	300 max	20 connections
Video quality	Average	Average	Above average
Web based	✓	✓	✗
Mobile option	✓	✓	Yes
Presentation	✗	✓	✓
Chat/ notes/ whiteboard	✗	✓	Yes. Interacts with PC
Share files	✓	✓	✗
Hand raising mode	✗	✓	✓
Break out rooms	✗	✓	✗
Record session	Use PCAP/Echo360	Yes (or use PCAP)	✓
UOW/IMTS Supported	✗	✓	✓

BASIC TIPS

To maximise the use of any of the Learning Platform tools in teaching and learning, it is strongly recommended that staff use this guide in conjunction with advice from the staff in Learning, Teaching and Curriculum (LTC) for designing activities and curriculum, and the support staff in IMTS for technical advise and assistance.

This is a list of tips to help staff think about how to use web conferencing and videoconferencing in teaching and learning.

1. Teaching with web and videoconference is different to teaching face-to-face. Staff may need to change the way they teach.
2. Careful planning is essential to effective teaching and learning with web and videoconference.
3. Prepare materials and upload them before the web conference starts.
4. Use guides and advice from experienced users to learn how the technology works and to increase your confidence with the technology before the session starts.
5. Offer students a trial run through with you acting as guide to explain how to use the technology.
6. Provide resources, guides, and instructions for students to refer to before and during the sessions.
7. Create engaging activities that prompt students to discuss and interact with each other and with the teacher.
8. When using presentations e.g. PowerPoint slides, make sure that at least every five to eight minutes there are opportunities for student interaction and discussion.
9. For question and answer sessions, direct some questions to individual students to emphasise that all students are expected to participate.
10. Give students a session agenda that lists the elements or topic breakdown of the session. Include items such as the session objectives, student expectations and the learning activities.
11. Stay close to the microphone so that audio is clear; run a microphone and sound test before the session starts.
12. Repeat questions from students before providing a response to ensure all students know the context of your answer.
13. For videoconferencing, engage with all connected locations directly to maintain student engagement.
14. Engage a volunteer meeting host at each location to facilitate discussion from that location. Figure 1 shows a model of interaction where students collaborate within their own location, and then use the technology to collaborate with other locations.
15. When videoconferencing, wear appropriate clothing and colours that contrast with the background.
16. Utilise conferencing tools to facilitate meetings with subject tutors at other locations.

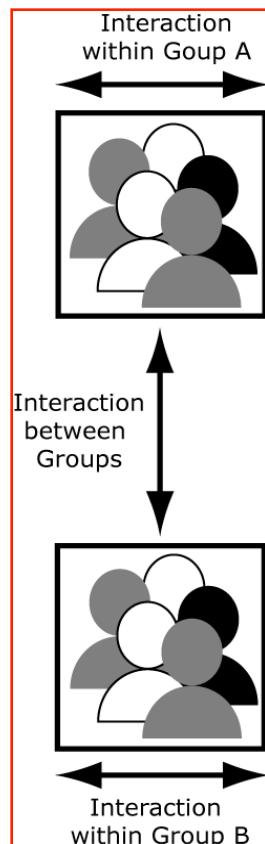


Figure 1 Interaction model

Developing Learning Activities

An effective videoconference uses a high level of interaction between as many participants as possible.

CREATING ACTIVE PARTICIPATION WITH CONNECTED LEARNING GROUPS

Web and videoconference is most effective for learning when used in an interactive mode (Caladine 1999, Mitchell 1993). Engagement can range from attentive listening (passive) to dialogue and resource building at the other end (active).

The Learning Activities Model (Figure 2) illustrates how web and videoconferencing can support interaction with the facilitator as well as interactions between students.

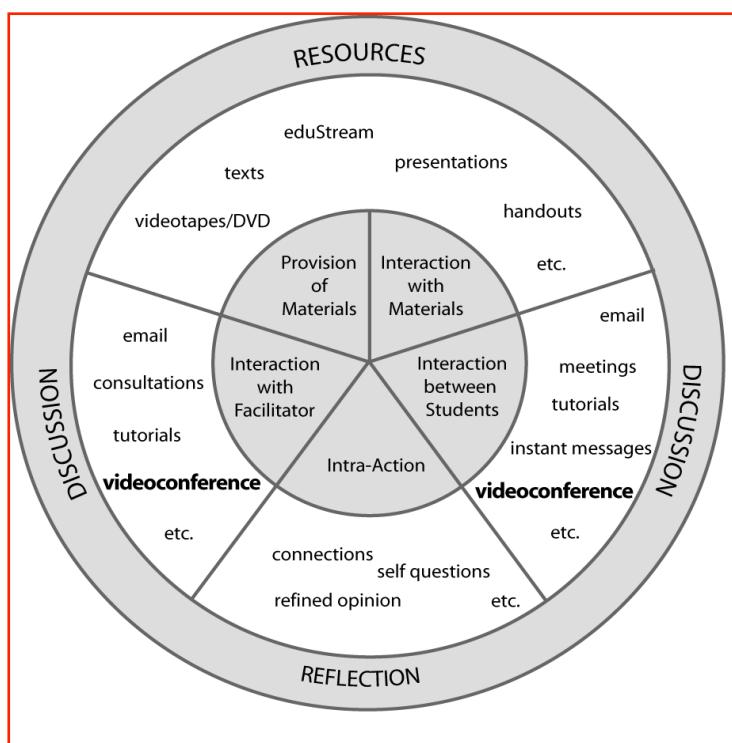


Figure 2 Learning Activities Model (Caladine 1999)

INTERACTIVE LEARNING ACTIVITIES

Interaction is achieved through collaboration with learning resources, the facilitator and students.

When a presentation is delivered via conferencing technologies it is important to break the session up with interactive sessions. Table 2 shows the communication options for Skype, Adobe Connect and Videoconference.

NOTE: One way communication strategies such as a presentation is best suited to alternative tools like the Echo360 lecture recording system.

COMPARISON OF MODE OF COMMUNICATION & LEARNING ACTIVITY ORGANISED BY TOOL TYPE

Table 2 Communication options by type of tool (adapted from Bower et al. 2013)

	Mode of communication	Skype – Desktop Videoconferencing	Adobe Connect – Web Conferencing	Videoconferencing
Visual	Present slides or display computer screen /web site/spreadsheet etc)	x (possible using screen broadcast, to more than one person is premium paid feature)	✓ Slide presentation tool	✓ (work-around using screen broadcast and audio/text
	Co-create slides	x	✓ Screen sharing	x
	Present image / diagram / handwriting	x (work-around using screen broadcast, file share, or third party whiteboard plug-in)	✓ Whiteboard	✓ document camera when available
	Co-create image / diagram / handwriting	x	✓ Whiteboard	x
	Present computing process	✓ Screen broadcast	✓ Screen broadcast	✓ Screen broadcast
	Present live process (e.g. lab experiment	✓ Webcam	✓ Webcam	✓ Main camera or document camera
Text	Deliver text monologue	✓ Text chat	✓ Text chat	x (work-around using screen broadcast and audio/text Twitter or Moodle Chat)
	Hold text conversation	✓ Text chat (all)	✓ Text chat (all)	x (work-around using screen broadcast and audio/text Twitter or Moodle Chat)
	Create typed text (including live edit)	x (work-around by one person screen broadcasting a document)	✓ Notes tool	x (work-around using screen broadcast and audio/text Twitter or Moodle Chat)
	Co-create typed text	x (work-around by one person screen broadcasting a document and others using text/audio)	✓ Notes tool	x (work-around using screen broadcast and audio/text - Moodle Chat

Fileshare	Disseminate file	✓ File share	✓ File share	✗ (work-around using file sharing service or Moodle)
	Many-to-many file sharing	✓ File share (all)	✓ File share (all)	✗ (work-around using file sharing service or Moodle)
Audio	Deliver an audio presentation (broadcast)	✓ Microphone	✓ Microphone	✓ Microphone
	Audio discussion	✓ Microphone (all)	✓ Microphone (all)	✓ Microphone (all)
Spatial	Present a 3D virtual space	✓ (work-around using screen broadcast of virtual world)	✓ (work-around using screen broadcast of virtual world)	✓ (work-around using screen broadcast of virtual world)
Presence	Represent Identity	✓ Name / photo / webcam	✓ Name / photo / webcam	✗ (not native but can indicate through text, name cards or video gesture)
	Display Status	✗ (not native but can indicate through text or video gesture)	✓ Status tool	✗ (not native but can indicate through text or video gesture)
	Indicate preference	✗ Not native tool but can be done by text, audio or webcam	✓ Voting tool, or can be done by text, audio or webcam	✗ Not native tool but can be done by text, audio or webcam

PREPARING YOUR LEARNING ACTIVITY

Planning to teach with videoconference technology takes on a new dimension due to the array of technologies available. Plan a variety of activities and use a variety of different content input tools, including the document camera, main camera, video sources and computer.

Elements of a videoconference class may include opening interactions, closing interactions, student led discussions, group discussions, presentations, learning activities, question and answer sessions, feedback sessions, demonstrations, individual and group project work.

Initial preparation

Careful planning and preparation determines the success of a videoconference. There are a number of practical details that are best organised well in advance of the scheduled videoconference. Contact details, such as who is going to call whom, the address or number and protocol of the other party, or the Multi Campus Unit need to be readily available. It is also good practice to know where the local technical support staff will be and to have phone numbers for these staff

members at each endpoint. For new endpoints, testing the connection before the videoconference commences is highly recommended. Testing prior to the actual event helps resolve issues such as firewall traversal and mismatches of quality, which can disrupt or close down a session.

Set an agenda

Effective teaching and learning videoconferences include a variety of activities and inputs. To keep the videoconference on track it is good practice to distribute an agenda prior to the event to inform all participants of what is going to happen during the event. Student names can be added to items that they will address.

TIP: An agenda sets the tone for the session

The agenda can serve as an advance organiser and improve the efficiency of videoconferences by:

- Announcing the aims and objectives of the videoconference
- Outlining the structure and designating who is responsible for each item
- Grouping (chunking) similar material into points
- Indicating the relative importance of the points
- Providing bridges and links between the points
- Providing sample questions
- Summarising key points

In addition to an agenda, prepare and distribute a handout that explains the schedule for the activities and the protocols for communication using the videoconferencing facilities.

PREPARE YOUR STUDENTS FOR THE VIDEOCONFERENCE

For effective learning to occur, students should become active participants, yet students who are new to videoconference may come to the class expecting to be passive receivers of information. Lecturers can encourage active learning by clearly communicating the learning objectives to the students and using an agenda that includes statements of activities for example “you will be expected to...”

Tip: Preparing students for a videoconference

- Test audio and video prior to start of event
- Practice camera and microphone operation
- Prepare the agenda
- Discuss the principles of active learning
- Use legible name cards
- If required, you can use videoconferencing for consultations

It is good practice to prepare students with a test videoconference prior to the actual class. This will give them the opportunity to become familiar with the camera and the microphone, to see and hear what other participants look and sound like, and by extension understand what they will look like to the other participants. Ask students to use the remote control to set up pre-set shots of themselves. Name cards can be used to increase communication across the multiple locations, use the practice session to test for legibility.

INCREASE PARTICIPATION

Just as a teacher or instructor may need to encourage participation in face-to-face discussions and activities, the same is true of web and videoconferences. The teacher should use methods to engage students and encourage them to

communicate with each other. Online conference sessions should be structured with opportunities for students to talk formally and informally. If there is a break in the session, it is good practice to leave the conference link connected so that students can use it to chat with their peers in other connected locations.

Tip: Know your students

If the numbers of students at each location are small, ask them to introduce themselves. While they do this, draw a map of each location, including the name of each student, or use name cards to recognise the students.

During the lesson, direct questions to specific students or groups (e.g. “Students in Batemans Bay, do you have …” and seek comment from individual students by name, if possible.

It is good practice to include an ice breaking activity. This can create a feeling of collegiality and inclusion within the first 5 minutes of the class.

When responding to a question, paraphrase the question prior to answering to benefit students who may not have heard the question. When responding, looking directly at the camera will make you appear to be directly responding to the students. Follow up by clarifying with the student that their question has been answered, then bring the session back to the whole group by throwing it open, ask another question or ask other students to elaborate or comment.

RECORD THE CONFERENCE

Recordings can be used for review and for students who missed the session. Unfortunately recordings of conferences do not equate to being there and do not come close to the experience of participating in an effective conference. It is recommended that the use and availability of recordings of conferences be carefully monitored so that recordings are not viewed merely as an alternative to attending class.

TIP: Record session and making available for later

If you would like to record your videoconference session and have it made available to staff and or students through Echo360 contact IMTS via extension 02 4221 3002 (x3002)

Strategies for interactive Web & Videoconferencing

Interactive learning activities suitable for web and videoconferencing include student presentations, debates, interviews, panel discussions and games. It is important to think about the practicalities of engaging participants prior to planning activities.

THE LECTURE

A well prepared and delivered lecture can be an effective learning activity to deliver a large amount of material in a short period of time. They can be a good way to introduce a new subject or topic and work well with highly motivated students who are used to learning this way. However, lectures are predominantly one-way communication and videoconference is a two-way technology.

If a lecture is required it is advisable to break it down into small chunks with opportunities for student interaction in between. At least every 5 to 8 minutes provide an opportunity for students to interact by asking questions of, or seeking comments from, particular students, or having them discuss a point in small groups to report back to the larger group.

ACTIVITIES FOR LECTURES

- Ask students to connect what has been said with their own experience or contrast it to their own opinions e.g. students to compare their attitude, belief or ideas with the person sitting next to them.
- Use direct questions to break up presentations.

Tip -Generate active listening through direct questions

Rather than asking: "Are there any questions?" direct questions to participants e.g.:

"Students at Southern Sydney how does this idea align with your experience?"

GUEST LECTURERS

A guest lecturer can be an engaging opportunity for learning. Using Experts in the topic area can have an impact on learning by motivating and engaging students and provide access to most recent developments and research in the topic. Regardless of their location, conferencing technologies allow guests to log in remotely to participate in your class. You may consider having more than one guest lecturer in the session, to create rich interaction for students. This helps to share the load for the guests, but can also present students with differing viewpoints and approaches.

An alternative to an informal structure is to use a **debate format**, particularly if the guests have opposing viewpoints. Clearly if the guests disagree vehemently it's probably best if they are not in the same location. With multiple guests a conversational approach can work well by providing variety as the speaker changes from one speaker to the other and to the teacher. However, it must be remembered to clearly identify each guest and the position they are taking on the topic so that confusion is avoided.

USE STRATEGIES SUCH AS THE FOLLOWING TO PREPARE THE GUEST LECTURER/S

- Provide the presenter information about technical details, the time, learning objectives and about the students/audience.
- Organise a practice with the technology if possible.
- Discuss the presentation format including ideas for presentations or Q&A interview format.
- Develop a rapport with the guest who may not be used to talking to students over conference and make them as comfortable as possible.
- Check whether they will take questions from students during the conference or would prefer to have them beforehand.
- Check if they would prefer the teacher to act as chairperson or whether students will direct their questions directly to the guest?

PREPARE THE STUDENTS:

- Provide brief but salient biographical information about the guest and outline how they and their work connect with the /subject course being studied.
- Ask students for questions as pre-preparation.
- If there are small groups of students connecting to the lecture ask one at each location to act as speaker or coordinator for their group.

STUDENT REPRESENTATIVES IN EACH LOCATION

In very large classes where it is not feasible to get microphones to each student, it is often practical to have student a representative act as speakers for groups of students who share the same point of view or attitude. In this way students serve as audience representatives. The representatives don't need to be in the same location as those they represent so long as sufficient time and access to the technology has been previously allocated for briefing purposes.

A session that includes student representatives can be structured in the following way. Firstly the lecturer sets up the topic or question to be discussed and ascertains the rough split of attitudes and opinions. Student representatives the volunteer or are then appointed. Allow time for students to brief their representatives. This part of the session will take some management; if more than one videoconference can be held then each group can brief its representative at the

same time. However, this is often not possible and in such cases setting up the briefing before hand can be a good idea. Student Representatives can then present the viewpoint, using activities including short presentations or debate.

STRATEGIES FOR GROUP BASED LEARNING ACTIVITIES

The principles that underpin face-to-face group work generally also apply to videoconference group work. Depending on student numbers, each location of the conference can be a group. In multipoint conferences individual groups can be formed at each location. However, if there are locations with only one or two participants a strategy to include them can be to use the videoconference link so that they form a group with those in a different location.

Group work must be carefully planned and designed so that students have a clear idea of what is required and also have the skills to work cohesively. Group work also needs to be situated within the context of the course to ensure clear links between the activities and the learning objectives. Robust briefing and debriefing will go a long way towards successful group activities. In activities where groups produce materials, motivation levels can be increased through plans to use the student created materials as reference content for the course. If students know that the materials they are creating will have a use other than assessment and be used by subsequent classes they are more likely to perform well, as the work takes on a greater perceived importance. Some strategies that can be used for group work include buzz groups, brainstorming, case studies, role play, debates and presentation.

Buzz Groups

Buzz groups are small groups of students discussing or ‘buzzing’ an aspect of a topic and is a good strategy to encourage them to participate and share. To work effectively in videoconference mode, you must provide clear instructions, which include cover time limits and report back time, requirements for reporting etc. As the degree of supervision is limited by the mode of videoconferencing specific instructions for the assignment to be undertaken must be clearly articulated, either verbally or in writing. The instructions should pre-empt the deliverable that is required from each group. For example groups may be asked to:

- Develop one question relating to ...
- List one advantage and one disadvantage of ...
- Develop a mind map showing the relationship between ...

A typical structure of a Buzz group session consists of the following steps:

- Explanation of the process – hand out instructions
- Formation of small groups
- Nomination of recorders and reporters (these can be the same person)
- Allocation of time for activity
- Reporting of group findings
- Debriefing and summary

Brainstorming

Brainstorming is the pooling of ideas to try to solve a problem. The central concept of brainstorming is that the ideas suggested should not be evaluated until after the brainstorming phase has been completed. In this way ideas that on evaluation might be disregarded can become stimulus other useful ideas. In face-to-face brainstorms, the ideas are often written on a whiteboard or flipchart so that all can see them. In videoconference brainstorms the document camera can be used as the tool to record the ideas. Alternatively a camera pointed at a whiteboard or a flipchart can serve the same purpose. An open and supportive atmosphere needs to be created with the lecturer reminding participants that at the initial stage all ideas are valuable, and should not be discarded. Brainstorming is good way to stimulate creativity and participation within a dispersed group.

Case Studies

Case studies can be effective ways for students to apply their understanding to authentic situations. A case study should describe a problem in sufficient detail so that the group can work together to analyse the problem and recommend a suitable approach, with discussion around each approach that is devised. Case studies usually have three elements, a scenario, supporting materials and the problem. The scenario is the statement of the real world situation or problem

(often deidentified by removing real company and individual names). The supporting materials may include documents, web pages, media files or tables of data, often derived from authentic sources. The problem should be open-ended to allow students to identify possible solutions, accompanied with argument to support their approach. If paper based, distribute the case study prior to the videoconference. Alternatively the scenario may be a video, or verbal delivery via the videoconference link and students than divided into to groups to use the (previously distributed) supporting materials. Reporters from each group can then use the videoconference to share their group's response

Role Plays

Role-play provides opportunities for students to explore new behaviours in an environment where the consequences of mistakes are limited. The outcomes of a successful role-play can range from a solution to a real world problem through to a deep understanding of those with different beliefs, mores, knowledge and attitudes. Role-plays are short enactments of interactions between humans in which students assume a role and act it out. They are challenged to consider how their role might react in the described scenario. As such role-plays are good techniques for the development students' interpersonal skills. Typically there are three parts to role-plays; firstly the learners need to be briefed. The goals and objectives must be set, the rules made clear, roles assigned and time limits set. Secondly the role-play is conducted. Thirdly the debriefing session involving the whole group evaluates what was successful and what was not and connections are made to the learning objectives. Videoconference can be used in a number of ways to host role-plays. Roles may be pre-assigned to individuals or to small groups of individuals. It is possible to assign roles at the beginning of the teaching term and have a number of scenarios played out through the term.

Debates

Debating is a time-honoured method for teaching and learning about controversy. Students taking part in the debate as well as those observing can acquire critical thinking and analysis skills and appreciation of conflicting viewpoints. As the debating process is firmly based on argumentation, it is an excellent opportunity to develop reasoning and communication skills, analysis of multiple relationships and consideration of multiple perspectives. Debate involves the use of arguments to put forward and defend a position and as such is best applied to topical or controversial subjects, dilemmas and legal or ethical problems.

Traditionally debating in teaching and learning has three distinct phases. Firstly, teams of two or three students are formed and select, or are assigned a side of topic which they then research and prepare their approach and resources, while also taking into consideration opposing viewpoints which may occur during the debate. This preparation must be done before the debating session except in special instances where the prime learning objective is to teach students how to think on their feet, for example courtroom practice. Within a prescribed time, each team presents their opening argument, the rebuttal of the opposition's viewpoint, and closing summary.

Debates work best when a timekeeper enforces strict time limits. Like several other activities mentioned earlier, the learning opportunities of the debate are shared between the process itself and the discussion or other activities that follow. A task to follow the debate may include a written piece where students must use the information from the debate to compare and contrast both sides of the argument. Like role-plays and case studies teams can be located at different endpoints or consist of students at different endpoints, with the timekeeper, lecturer and audience located over a number of locations. Consider different formats of a traditional debate, e.g. allowing questions from the audience can provide evidence of preparation by the debaters, and also demonstrates that the audience are engaged in the process.

Presentations

Presentations by single or groups of students are great ways to share the teaching of the subject while providing students with an opportunity to develop their communication skills and presenting to an audience, using a range of technologies and communication modes. This is a skill that is sought after by many graduate employers, and as such is a valuable graduate quality. To be successful students should be provided with the time and opportunity to test and reflect on using videoconference communications and their supporting resources prior to the actual presentation.

Viewing a recording of themselves presenting is a valuable self-evaluation tool, so where possible, it is good practice to record the presentation for student review; this may also make it easier to assess if this is to be done at a later time. Using this approach is also good practice for teachers, who can view and reflect on their own presentation skills in order to improve. Additionally, if the recorded material is of good quality, and is suitable, it may be saved and used for future classes. Note: if using student work for this purpose you must obtain their written permission for their recording and/or work to be shared.

Connect Lounge learning activities

The Connect web-based system allows the instructor to present slides and web sites, to share files and applications from the computer's desktop, and to poll and query students. Instructors also can place students in online "breakout rooms," where they can have small-group discussions within the virtual room (Refer to Table 3) For large groups the 'hand raising' mode can be enabled passing control to the Instructor who allocates students time for specific questions.

Table 3 Connect Lounge communication strategies

Connect Lounge Element	Description
Interactive whiteboard	Virtual meeting rooms have a white board that can be used in similar ways to a tutorial room enabling students to contribute ideas and feedback on themes or questions. A common example is drawing a line horizontally and vertically in the middle of the screen, place a theme in each quadrant and ask student to give examples. Refer to a Google search on "Smart boards" to get new ideas.
Live chat	Within medium sized groups live chats work best for focused discussions. In a similar technique to that used in face-to-face tutorial groups, pose a question and allow learners to take turns in answering. A student facilitator can be appointed to summarise ideas from smaller 'break out' groups and feed it back to the main chat space.
Break out rooms	Allow time for students to discuss ideas in smaller groups using the Adobe Connect breakout rooms.

PCAP Screen Recording

Pre-record the class and make it available for review by students at a time suitable to them.

Echo360 Personal Capture (PCAP) is the screen capture component of the Echo360 system used by UOW. By incorporating PCAP you can record your teaching session they are then upload to ECHO360 and made accessible by students via the relevant subject Moodle page. This is a valuable approach if you want to use your time online facilitating activities and discussion based around the recorded content.

Web and Videoconference Resources

CASE STUDIES AND RESOURCES

Blended Synchronous Learning: a resource site from an OLT National grant

<http://blendsync.org/cases>

Case 1: Web conferencing to develop investment understanding (collaborative evaluation task)

Case 2: Room-based videoconferencing to develop understanding of healthcare quality improvement approaches (collaborative evaluation task)

Case 3: Web conferencing to develop microscopic tissue analysis and interpretation skills (group questioning)

Case 4: Web conferencing for participation in statistics tutorials (collaborative problem solving)

Case 5: Virtual worlds to facilitate Chinese language learning (paired role-play)

Case 6: Web conferencing to enable presence in sexology (lecture discussions)

Case 7: Virtual worlds for teacher education (collaborative evaluation and design)

VIDEOS

Tim Plumer (2011) Web-based Collaboration, E-Learning, and Presenting with Adobe Connect, Kent Smith Library, Case Western Reserve University, Cleveland, Ohio

www.youtube.com/watch?v=9Y_DughkX0

Adobe Connect YouTube Chanel

www.youtube.com/user/AdobeConnectPro

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DOCUMENT HISTORY

This document is the latest version. Original documentation developed by Dr. Richard Caladine in 2006.