

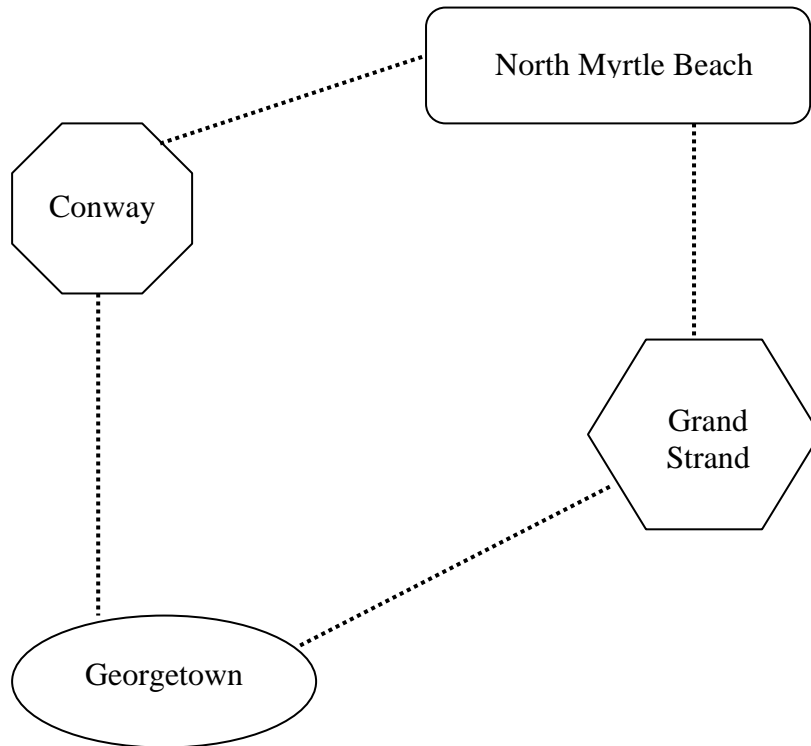
Teaching by Teleclass:



A Best Practices Guide for Instructors

Distance Learning Department
Horry-Georgetown Technical College

Horry-Georgetown Technical College Campus Networked Teleclasses



Teleclassrooms on each of Horry-Georgetown Technical College's three campuses (Conway, Georgetown and Grand Strand) and the North Myrtle Beach Off-Campus Site connect the four sites for the purpose of sharing courses and conducting meetings. A classroom on each campus is equipped with cameras and microphones to allow an instructor on one campus to teach students on the other campuses simultaneously through a two-way compressed video system. Teleclasses are designed to increase the selection of and access to credit and non-credit course offerings at each campus.

What is a Teleclass?

Teleclasses are courses that are delivered live from one origination site to multiple receive sites. This allows the student to attend class at the receive site nearest his/her home and see the live instruction on television monitors or a projection system in the classroom. Teleclasses are interactive, meaning that the student can see and communicate with the instructor at the origination site and the students at the other receive sites. This allows the student to save valuable travel time by taking the class at the most convenient sites. At Horry-Georgetown Technical College we have **Teleclassrooms** at each campus (Conway, Georgetown and Grand Strand) and the North Myrtle Beach Off-Campus Site to accomplish the task of videoconferencing through the use of cameras (to capture and send video from your local endpoint), video displays (to display video received from remote endpoints), microphones (to capture and send audio from your local endpoint), and speakers (to play audio received from remote endpoints).

What is Videoconferencing?

Videoconferencing in its most basic form is the transmission of synchronized image (video) and speech (audio) back and forth between two or more physically separate locations, simulating an exchange as if the participants were in the same physical conversation. You can think of videoconferencing as a phone call with vision. Videoconferencing allows people in different locations to meet and share information without traveling. It is a communication tool that allows you to see and hear each other as well as being able to:

- Display pictures, graphs, maps, objects, etc.
- Play a DVD or VHS video so people at the other locations can see it
- Display computer images or websites to other locations

The videoconferencing system we use at Horry-Georgetown Technical College uses IP (internet Protocol) to connect between campuses over our network.

What is Compressed Video?

Compression is the reduction in size of data in order to save space or transmission time. Transmission of compressed video over a communications network requires sophisticated compression algorithms. When the vast amount of information in a normal TV transmission is squeezed into a fraction of its former bandwidth by a codec, the resulting compressed video can be transmitted more economically over a smaller carrier signal. Some information is sacrificed in the process, which may result in diminished picture and sound quality.

What is an Algorithm?

A sequential problem-solving procedure. For example, a text compression algorithm can be as simple as removing all extra space characters, inserting a single repeat character to indicate a string of repeated characters, and substituting smaller bit strings for frequently occurring characters. This simple step-by-step process, or algorithm, can reduce a text file to 50% of its original size. The algorithm also determines how to decompress data.

What is a Codec?

Codec (Coder-Decoder or Compression - Decompression)

Videoconferencing hardware uses a codec to code the outgoing video and audio signals and decode the incoming signals. Prior to transmission, the codec converts analog signals to digital signals and compresses the digital signals. Incoming audio and video must be decompressed and converted from digital back to analog.

What is Bandwidth?

Generally, the amount of information that can be transmitted over an information channel. High bandwidth Internet access means those audio, video, and graphics load quickly. High bandwidth videoconferencing means picture and sound will be clear. In computers, bandwidth is the speed at which data can be transmitted on a communications frequency. In telecommunications, the maximum frequency (spectrum) measured in Hertz or cycles per second, between the two limiting frequencies of a channel.

Call Quality

In videoconferencing, the main factors contributing to the quality of the image are:

- Quality of the codec
- Amount of bandwidth available
- Proper configuration

A video signal is composed of vast amounts of data. Transmitting all of that data can be costly. Therefore videoconferencing relies on cost effective techniques called “sampling” and “compression”. The codec samples the video signal feed by taking a snapshot of portions of the video signal at precisely timed intervals. It also compresses the signal by reducing the redundant data associated with the video image. Therefore, only changes are transmitted.

Working with Videoconferencing & Videoconferencing Constraints

The quality of videoconferencing is getting better and better all the time! Still, compressed video does behave differently than the TV-quality broadcast video to which most of us are accustomed. Video compression algorithms rely on the assumption that there are usually only small changes from one "frame" to the next. You can see where trouble might occur when you have an entire class of moving students or even the natural movements of a solitary adult in a wildly patterned outfit.

In addition to the technical constraints, the politics of interaction are somewhat altered during a videoconference. Understanding these technological constraints and working with the human factors can greatly improve a videoconference. Once you are past these initial barriers, the technology fades away and the personal interaction between participants begins.

Technological Constraints

Transmission of compressed video is done via a smaller "pipe" than a televised broadcast. The camera and microphone take in more information than the "pipe" can handle. Outgoing video and audio information must be processed by a piece of equipment called the codec (coder-decoder) before it can be transmitted. Incoming signals are then decoded before they are sent to the monitor and speakers. All this processing takes its toll on the resulting picture and sound, and can result in the following:

Video "ghosting" or "pixilation" is the codec's way of compensating for rapid information flow. One way the codec compacts information is by reducing frame rate (number of video images per second), which can make rapid motions appear jerky. The codec also drops resolution to compress information, which can make an image fuzzy or chunky. To reduce these effects, reduce the amount of change. Avoid rapid motion and wear plain clothing to reduce extraneous visual information. This does not mean that you need to restrict your movements so that you become stiff or stilted – just act naturally.

Audio delays can occur because it takes a little longer for information to compress, travel, and decompress. Videoconferencing novices usually experience a few awkward conversations due to this time delay. Since there's no way to prevent the delay, learn to finish thoughts in a single statement with an obvious conclusion.

Teleclassroom Equipment

Monitors/Projectors

At Horry-Georgetown Technical College we have television monitors or projection systems at each campus site so that participants can view the incoming video from the teaching site and in some cases we have multiple monitors so that participants can view the incoming video and also the video from their home site which is being broadcast back to the instructor.

Main Camera (Classroom Camera)

The main camera at each of our sites is positioned in the front of the classroom and displays the classroom view. This camera is controlled by the touch panel at each site and can be moved through the use of the touch panel to change its view or zoom in or out. The view from this camera is seen by the instructor at the location (teleclassroom) they are teaching from.

Auxiliary Camera (Instructor Camera)

The auxiliary camera or instructor camera at each site is positioned in the back of the classroom and displays the view of the teaching station/desk. This camera is controlled by the touch panel at each site and can be moved through the use of the touch panel to change its view or zoom in or out. This is the view an instructor projects to the other sites and the view the students are viewing when the instructor camera is selected from the touch panel.

Document Camera

The document camera acts as an overhead projector and can be used to display documents, photographs, diagrams, objects, etc. The document cameras at all our sites display items in color.

Video Cassette Recorder/DVD Player

Each teleclassroom at HGTC has a VCR/DVD combination unit which can be used to show either VHS video tapes or play DVD videos.

Teleclassroom Equipment (cont)

Computer

There is a computer at each site which can be used to display PowerPoint presentations, websites, graphics, etc. Anything you can show on your computer can be transmitted during the videoconference. However, a crowded computer screen with small text and graphics may be difficult to read or see from the teleclassroom monitors.

Touch Panel

Each teleclassroom has a touch panel on the teaching station which the instructor uses to select what equipment and view they want to send to the other sites. The touch panel also contains the buttons used to increase or decrease the volume at the local site and also to mute the sound from the local site. Our touch panels at HGTC have the following options:

- Main Camera or Classroom Camera – displays the classroom view
- Auxiliary or Instructor Camera – displays the instructor or teaching station view
- Document Camera – displays the view projected from the document camera
- VCR/DVD – used to display the view projected from the VCR/DVD player
- PC Presenter – displays the view from the teaching desk computer

Microphones

At Horry-Georgetown Technical College we use ceiling mounted Audio-Science Microphones which give the classrooms an open environment as they pick up all the sounds in the classroom and can be heard at all the other sites.

Mode of Operation

Multipoint

At Horry-Georgetown Technical College we can connect all of our campus and off-campus sites in a multipoint videoconference through a piece of equipment called a Multipoint Control Unit (MCU) which is also commonly called a “bridge”. The bridge can dial out to all sites using each sites IP address to connect into a conference.

Multipoint Mode – Continuous Presence

Continuous Presence refers to the mode we use to display a videoconference at all the sites. We use continuous presence 4 which divides the sites into four quadrants displayed on the monitors. When a general meeting is broadcast without anyone needing to display documents, computer screens, etc. we can set the conference so that everyone can see everyone else at all times. In teaching modes, we assign the floor to the site where the instructor is teaching from in order for all the sites to see a full screen of the teacher and the items a teacher is displaying to their students. In this mode, only the site where the instructor is located sees the four quadrants and the receiving sites only receive the full picture of the instructor.

Best Practices & Tips for Instructors

- Become familiar with the equipment at the sites you will be teaching from and learn how to operate the equipment without assistance. Personal training on the teleclassroom equipment is available through the Distance Learning Department.
- Set expectations of students
- Prepare a videoconferencing etiquette summary for your students so they understand how the open microphones work and the importance of not tapping pens and pencils on the desks, shuffling papers, or making any unnecessary noises that will be picked up through the microphones and amplified at all the other sites
- Let your students know the protocol for asking questions. Do you want them to interrupt you as you're speaking (with a question or raised hand) or will you allow certain times for questions?
- Give prompt feedback to students
- Learn the names of your students and ask them questions directly. Many professors will have their students sit in assigned seats and create a seating chart to help with identifying and learning their student's names at the remote sites
- Maintain continuity between sites – give back graded assignments/tests simultaneously
- If possible, travel to the remote locations two or more times during a semester and teach from that location. The first time should be close to the beginning of the semester to give students a chance to meet with you in person and discuss any concerns they have. The other visits should be centered on critical points in the course, such as exam preparation or project reviews
- Adapt your normal classroom techniques into a distance learning style
- Because of the audio delay in videoconferencing, it is a good practice to allow a few extra seconds from the time you make a statement or ask a question for any possible responses from the remote sites

Best Practices & Tips for Instructors (cont)

- Bring participants into each interaction by repeating every question or comment a participant makes, ensuring that the other sites have heard the incoming question or comment
- Prepare materials in advance and provide pertinent materials to the remote sites ahead of time. You may opt to put assignments, handouts, etc. on WaveNet or WebCT for students to access
- Encourage correspondence through e-mail, phone, WebCT/Blackboard discussions, etc.
- Vary instructional method to get students involved and interactive
 - Diversify teaching methods with group work, games, problem solving activities, role-playing, etc.
 - Vary center of focus between presenter, students, remote sites, and media
 - Break up lecture with interaction
 - Use visuals such as photographs, cartoons, charts, computer graphics, and video clips
 - Use humor
 - Take class roll to involve students using system
 - Use icebreakers
 - Involve students early in semester to make them at ease
 - Design assignments where students use the teaching station to make them more comfortable with the technology
- Videotape and critique classes, observe other teleclass instructors and share ideas with other instructors
- Develop a contingency plan for when technical problems arise
- Prepare for additional workload and prepare and organize materials in advance. Test videotapes, DVD's, documents, and computer presentations that you will be using in teleclasses

Video and Audio Tips

- Be aware of outgoing video
- Create eye contact with remote sites by looking into the instructor camera or at the monitor near the camera. Envision the video camera as one of your class participants
- Preset cameras in advance if necessary
- Use proper camera framing.
 - Eyes should be above center of monitor
 - Head room should be given
- Be aware of your body language. Rocking, pacing, and nervous habits can appear exaggerated
- Wear clothing with solid colors or muted patterns
- Avoid wearing busy patterns (ex. Pinstripes)
- Avoid wearing highly reflective fabric
- Wear only subtle jewelry
- Avoid large jewelry or dangling jewelry
- Avoid beeping watches
- Project your voice and speak clearly
 - Pause when you expect a response from another site
 - Wait until the speaker from the other site has finished talking before you reply
 - Speak at a comfortable pace but not too quickly
 - Enunciate clearly
- Avoid rattling papers or flipping through books
- Avoid tapping pencil/pen or strumming fingers on teaching desk

Computer & Document Camera Tips

- Design of computer presentations or documents should incorporate simplicity and clarity
- Pay attention to the screens aspect ratio. A television monitor has a different shape than a 8.5 X 11 paper or overhead transparencies, so make sure printed visuals are made horizontal (landscape orientation) and allow a “safe area” around the edges of presentations as television monitors tend to distort items around the edge
- Use brief bullet points and you explain the material, while the visual aid shows only key words
- Always left align bullets
- Titles can be left aligned or centered
- Keep line spacing consistent
- Use a consistent, unifying style by keeping the background and text similar throughout the presentation
- When using text in presentations and documents try to adhere to the “Rule of Seven”
 - No more than seven words per line
 - No more than seven lines per page
- Use of 32 point font or larger is recommended for presentations.
- Use bold San-Serif fonts (which do not have feet), such as “Arial”
- Use only 2-3 fonts in your presentation
- Use only 2-3 colors in your presentation
- Underline sparingly
- ALL-CAPS may be used in a title but avoid using ALL-CAPS in the text body as ALL-CAPS is hard to read
- Use solid background colors in presentations – busy patterns can be distracting

Computer & Document Camera Tips (cont)

- Avoid hot colors as backgrounds (red, orange, yellow) as they tend to vibrate and glow on the screen
- Use cool colors as backgrounds (blue, purple, green) as they are more soothing to the eye
- Contrast the color of text and background
 - Dark backgrounds and light text is best for television monitors
- Avoid the following:
 - Black letters on white backgrounds
 - Red letters on bright backgrounds
 - Bright letters on red backgrounds

Distance Learning General Classroom Equipment Instruction

To display **Classroom** to local & remote sites – Select the **Classroom Camera** (Main Camera) button under **Sources** on left side of Touch Panel. **Classroom Camera** (Main Camera) button will be highlighted and you will see classroom on desktop TV monitor.

Once you are in the **Classroom** mode you can select different views of the classroom by selecting one of the **Preset** buttons located on the right side of the Touch Panel. The **Classroom** camera can also be moved manually by selecting the **Zoom** buttons and the four **Arrow** buttons located near the center bottom of the Touch Panel.

To display the **Instructor** view to local & remote sites – Select the **Instructor Camera** (Aux Camera) button under **Sources** on left side of Touch Panel. **Instructor Camera** (Aux Camera) button will be highlighted and you will see instructor view on desktop TV monitor.

Once you are in the **Instructor** mode you can select different views of the Instructor work station by selecting one of the **Preset** buttons located on the right side of the Touch Panel. The **Instructor** camera can also be moved manually by selecting the **Zoom** buttons and the four **Arrow** buttons located near the center bottom of the Touch Panel.

To display the **Document Camera** to local and remote sites – Select the **Document Camera** button under **Sources** on left hand side of Touch Panel. **Document Camera** button will be highlighted and you will see the document camera on the desktop TV monitor.

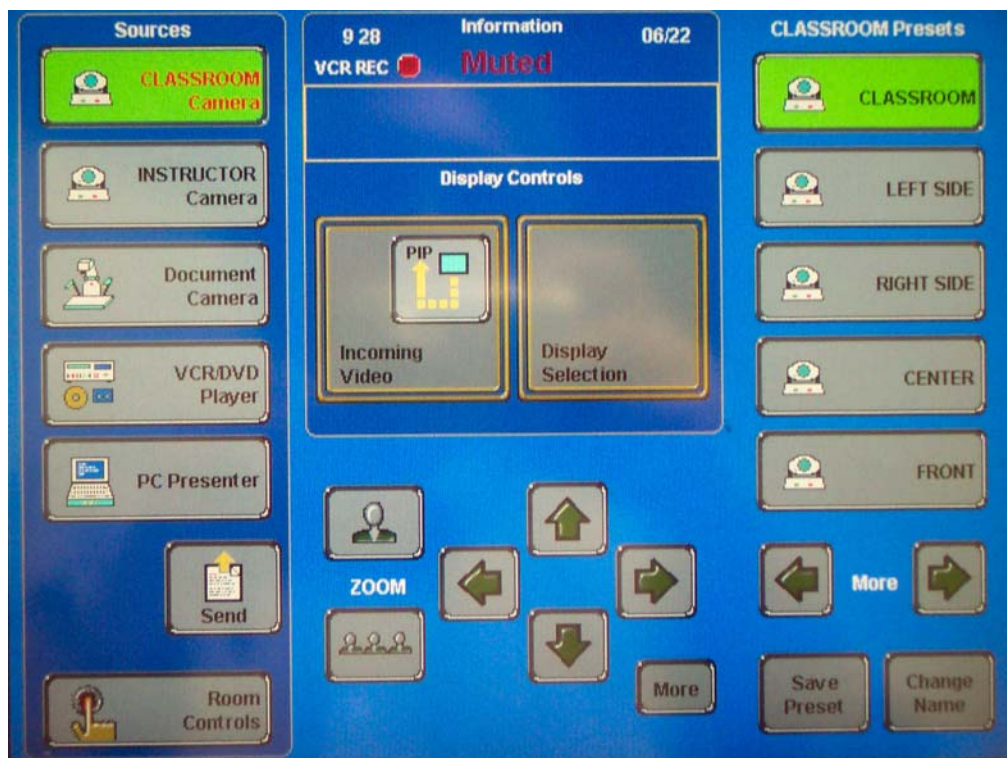
To play a **Videotape or DVD** to local & remote sites – Select **VCR** button under **Sources** on left hand side of Touch Panel. Insert VHS tape or DVD in VCR/DVD player and select DVD or Video (VHS) on player and select Play to start. **VCR** button will be highlighted and after tape has been started you will see tape playing on desktop TV monitor.

To display the **Computer Screen** to local and remote sites – Select the **PC Presenter** button under **Sources** on left hand side of Touch Panel. **PC Presenter** button will be highlighted and you will see the computer screen view on desktop TV monitor.

To **mute** sound at local site - Press small gray **Mute** button on lower left side of Touch Panel unit. A “Muted” signal should flash on top center of Touch Panel Display and a muted microphone symbol should appear on top right corner of monitor in back of classroom.

To increase or decrease **volume** level in classroom – press either up arrow or down arrow gray **Volume** buttons located on lower left side of Touch Panel Unit above mute button.

Sample Touch Panel Configuration



Distance Learning Teleclassroom & Department Contact Information

Conway Distance Learning Classroom Location – Building 200
Room 221

Conway Distance Learning Classroom Phone	349-5342
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Conway Distance Learning Fax	349-7533
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Georgetown Distance Learning Classroom Location – Building 100
Room 153

Georgetown Distance Learning Classroom Phone	520-1426
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Georgetown Distance Learning Fax – call first	520-1426
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Georgetown Front Office Fax	546-1437
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Grand Strand Distance Learning Classroom Location – Building 200
Room 103

Grand Strand Distance Learning Classroom Phone	477-2007
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Grand Strand Distance Learning Fax	477-2077
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NMB Distance Learning Classroom Location – NMB High School
Room E102

North Myrtle Beach Distance Learning Classroom Phone	390-8481
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North Myrtle Beach Distance Learning Fax	390-8480
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Distance Learning Department Support Staff - Technician

John Sharpe – Office Phone	349-7554
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John Sharpe – Fax	349-7533
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John Sharpe – E-mail Address	john.sharpe@hgtc.edu
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