

# Music Teaching and Learning from a Distance: Viable and Effective Through Technology

Paul Bauer – NIU, Greg Howe – CIM, Christianne Orto - MSM

Midwest Clinic, Chicago, IL

12/17/2008

## Music Teaching and Learning from a Distance: Viable and Effective Through Technology

Paul Bauer  
Northern Illinois University

Greg Howe  
Cleveland Institute of Music

Christianne Orto  
Manhattan School of Music

62<sup>nd</sup> Annual Midwest Clinic – Chicago, IL – December 17, 2008

## Paul Bauer



Director,  
School of Music

**Northern Illinois University**

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## Technology in Instruction

- computer-assisted/aided instruction
- asynchronous learning
- online instruction
- hybrid instruction
- distance learning

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## New World Symphony

### Master Class

- student in Miami
- teacher in New York City
- Video

<http://www.nws.edu/AcademyInternet2.asp>

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## Videoconferencing Technology Glossary

**IP** – (Internet Protocol) standardized method of transporting information across the Internet

**Codec** – Hardware or software that codes and decodes audio and video information for digital transmission

**Latency** – time delay

**HD** – high definition, usually refers to video – 720 or 1080 lines of resolution and 16:9 aspect ratio

**H.323 Standard** – Umbrella including multiple audio and video codecs for videoconferencing, allows hardware/software of various manufacturers to communicate

**Internet2** – High speed internet whose restricted membership (350+) is comprised of universities, corporations, and other non-profit research oriented organizations

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## Videoconferencing Technology Glossary - continued

**Bandwidth** – capacity or speed of data transfer measured in bits per second

- compressed, lowest quality H.323 audio stream = 24 Kbps
- compressed audio portion of a typical streaming YouTube file = 64 Kbps
- compressed stereo MP-3 (or iPod) file/highest quality H.323 = 128 Kbps
- uncompressed 16-bit/44.1kHz stereo standard audio CD = 1.4 Mbps
- H.323 bandwidth typically 75 – 95% video (5-25% audio)

**Audio frequency response range**

- human hearing = 20 – 20,000 cycles per second (Hz)
- telephone = 300 – 3,300 Hz  
(instruments that play below 300 Hz – trumpet, violin, and flute...)
- lower quality H.323 = 50 – 7,000 Hz
- highest quality H.323 = 50 – 22,000 Hz

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## Greg Howe



**Director of  
Distance  
Learning**

**Cleveland Institute of Music**

**Cleveland Institute of Music**

## Distance Learning

## Why?

# EDUCATION

**Cleveland Institute of Music**



**Joel Smirnoff**  
**CIM President**



**David Cerone**  
**Retired President**

**Cleveland Institute of Music**

**1998 Ohio Grant**

**K thru 12**

**Interdisciplinary**

**Cleveland Institute of Music**



**Cleveland Institute of Music**

**430**

**H.323 codecs**

**Music Classes**

**Cleveland Institute of Music**

**High School Music Clip**

**Cleveland Institute of Music**



**CIM Faculty Teaching**

**CIM Student Performances**

**CIM Student Instructors**

**CIM Student Technicians**

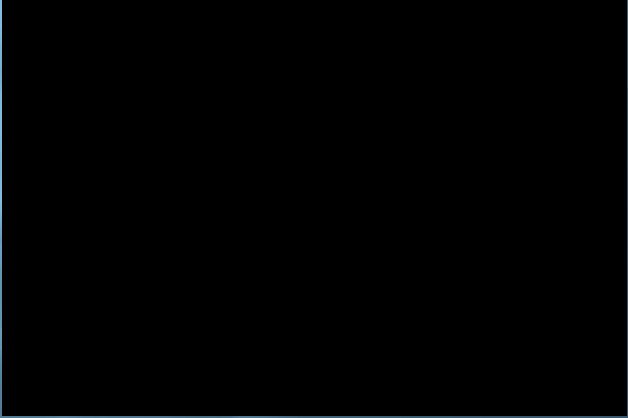
**Cleveland Institute of Music**

**Conservatory**

**Master Classes**

**Peer Exchanges**

**Cleveland Institute of Music**



**Cleveland Institute of Music**

# **Master Class**

**NOT like being in  
the same room**

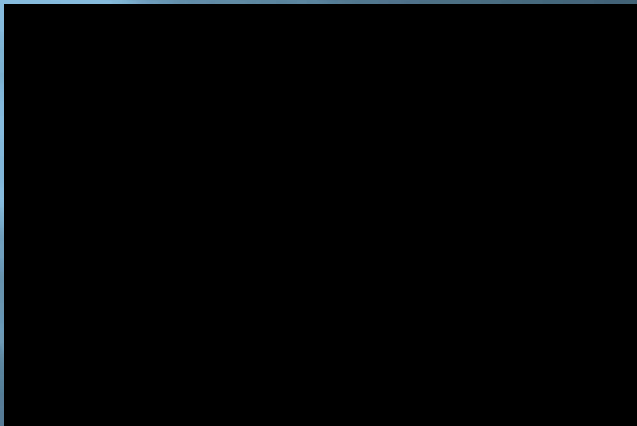
**Never will be**

**Cleveland Institute of Music**

# **Master Class**

**Cannot quite  
play together**

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**Cleveland Institute of Music**

# **Conservatory Performances**

**Connected to 35 Schools**

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*2006 Report*  
Alan Greenberg  
Wainhouse Research, LLC

**Taking the Wraps off Videoconferencing in the U.S. Classroom**

*A State-by-State Analysis*

**25% of the 92,000 K-12 schools in the United States have access to videoconferencing technology**

<http://www.wrplatinum.com/Downloads/5912.aspx>

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## Current Videoconference Technology Uses for Music Instruction

- Guest Master classes
- Students performing for other students
- Auditions
- Collaborative Teaching
- Professional Development
- Local and International Connections

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*2007 Report*  
Wainhouse Research, LLC

**HD Videoconferencing**

Three Leading Contenders Face Off

**LifeSize®**

**POLYCOM™**

**TANDBERG**

**WR EVALUATION**

[http://www.polycom.com/common/documents/whitepapers/hd\\_video\\_conferencing\\_three\\_leading\\_contenders\\_face\\_off.pdf](http://www.polycom.com/common/documents/whitepapers/hd_video_conferencing_three_leading_contenders_face_off.pdf)

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## Northern Illinois University H.323 Videoconferencing Cart Higher Cost – Best H.323 Audio - \$20,000+

- Polycom HDX 9004 HD Videoconference Codec – \$15,000
- Polycom Eagle Eye HD (pan and tilt) Camera – \$3,500
- flat-screen display (Plasma /LCD 46-47") – \$1,000
- audio mixing board with built-in compression (Yamaha MG12C) – \$300
- active (built-in amplifier) studio monitors – pair (Dynaudio BM-5A) – \$1,000
- LCD projector (optional) – \$1,000
- battery back-up (uninterruptible power supply) (optional) – \$250

## Frugal Budget – Good H.323 Audio - \$12,000+

- LifeSize Room HD Videoconference Codec (includes camera and microphone) – \$11,000
- flat-screen display or LCD projector – \$500
- active speakers – \$500

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## Funding the purchase of Videoconferencing Equipment

### Grant assistance

#### Polycom Grant Assistance Program

<http://www.polycom.com/pgap>  
[grants@polycom.com](mailto:grants@polycom.com)

#### Tandberg Grant Services

[http://www.tandberg.com/services/grant\\_services.jsp](http://www.tandberg.com/services/grant_services.jsp)  
[grantservices@tandberg.com](mailto:grantservices@tandberg.com)  
888-308-7595 x 556

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## H.323 codec expensive, but includes echo cancellation

### Higher Bandwidth Alternative to H.323

- Free software – DVTS, Access Grid, VideoLan Client...
- Equipment – Computer and Digital Video Camera
- Somewhat complicated IT configuration
- Uncompressed video and audio – highest quality audio
- 30 Mbps bandwidth – access to Internet2
- Not viable option for majority of K-12 schools

### Another Alternative to H.323

- Free software – **Conference XP**
- Equipment – Computer, Digital Video Camera & microphone
- Simple or somewhat complicated IT configuration
- Adjustable compression for audio and video 256 Kbps – 28 Mbps
- Viable option for many schools and individuals
- 3 Mbps bandwidth – uncompressed audio with compressed video**

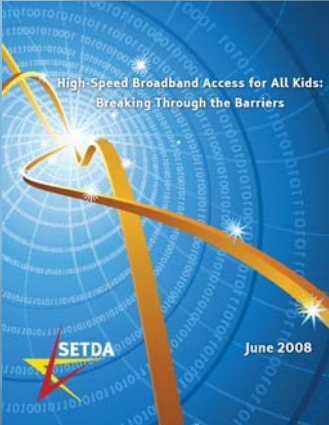
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High-Speed Broadband Access for All Kids:  
Breaking Through the Barriers

State Educational Technology Directors Association is the principal association representing the state directors for educational technology. *June 2008 Report*

In a technology-rich learning environment for the next 5-7 years, SETDA recommends:

- An external Internet connection to the Internet Service Provider of at least 100 Mbps per 1,000 students/staff
- Internal wide area network connections from the district to each school and between schools of at least 1 Gbps per 1,000 students/staff

June 2008

[http://www.setda.org/c/document\\_library/get\\_file?folderId=270&name=DLFE-211.pdf](http://www.setda.org/c/document_library/get_file?folderId=270&name=DLFE-211.pdf)

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## Christianne Orto



Assistant Dean,  
Distance Learning  
and  
Director of Recording

### Manhattan School of Music

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Christianne Orto Manhattan School of Music Distance Learning

Manhattan School of Music Distance Learning

## MSM Distance Learning

- ▣ 1996
- ▣ 1<sup>st</sup> Conservatory in United States
- ▣ Maestro Pinchas Zukerman & President Marta Istomin
- ▣ Concept: Access & Accommodation



Christianne Orto Manhattan School of Music Distance Learning

Manhattan School of Music Distance Learning



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## Collaborators & Partners

- Conservatories
- Music Schools
- Performing & Presenting Organizations
- K-12 Schools
- Libraries & Hospitals

**M** Christianne Orto Manhattan School of Music Distance Learning

Manhattan School of Music Distance Learning

## MSM Distance Learning

- 27 of 50 States
- 15 Foreign countries
- 1700 students/each year
- Wide-adoption from MSM Faculty
- Jazz, Orchestral Program, Voice Dept.

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Manhattan School of Music Distance Learning

## Program Content

### Types of Music Applications

- Masterclasses
- One-to-One Lessons
- Clinics
- Coachings
- Workshops
- Professional Development
- Composer Colloquia
- Sectionals
- Educational & Community Outreach



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## Program Content

### Types of Music Applications

- “Telementoring”
- Recruitment Demos
- Remote Auditions
- Mock Auditions
- Panel Discussions
- Humanities Exchanges
- Webcasting



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## Classical Programs with Manhattan School of Music



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## Jazz Programs with Manhattan School of Music



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[www.msmnyc.edu/special/distancelearning](http://www.msmnyc.edu/special/distancelearning)

[distancelearning.msmnyc.edu/live](http://distancelearning.msmnyc.edu/live)



Manhattan School of Music Distance Learning

**José Feghali, Artist-in-Residence**  
**Texas Christian University School of Music**  
**Van Cliburn International Piano Competition – Gold Medal**



- Experienced Recording Engineer and Producer
- Six months of dialogue with Microsoft about Conference XP
- Repeatedly told impossible to independently control audio and video compression
- Self-taught computer code - changed one line of code and fixed it
- Microsoft – Not possible, you're just a piano player...
- Impossible is now part of Conference XP !

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Microsoft is funding the Center for Collaborative Technologies at the University of Washington to develop Conference XP

#### ConferenceXP Main Page

[http://cct.cs.washington.edu/project-wiki/index.php/Main\\_Page](http://cct.cs.washington.edu/project-wiki/index.php/Main_Page)

#### ConferenceXP 5.0 free download

<http://cct.cs.washington.edu/downloads/CXP/>

#### Equipment needed:

- Computer with Windows XP or Vista OS
- Digital Video Camera connected to a computer via firewire or a video interface

#### Special Notes:

- If using DV camera, must use separate audio (mic) input
- May have to downgrade to Windows Media 10 to resolve compatibility problems with Windows Media 11
- Verify audio/video synchronization on receiving computer, not sending computer

José Feghali – Music Instruction via Conference XP expert [j.feghali@tcu.edu](mailto:j.feghali@tcu.edu)

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