Strategies for Using Instructional Technology to Support Classroom Education

E. William Clymer
NTID, USA
http://www.pen.ntid.rit.edu

March 9, 2006

A workshop presented at the College of St. Benilde, De La Salle University, Manila, Philippines
Technology in the Classroom

Topics for Today

- Why Use Technology in the Classroom?
- Pedagogy, Technology & Instructional Design
- Best Practices for Technology in the Classroom
- Technology Used in NTID Classrooms
Why Use Technology in the Classroom?

- Improve Access by Deaf Students
- Examples
  - Materials Specially Designed for Deaf Students
  - Captioning
  - Notetaking
  - Listening Technology
Why Use Technology in the Classroom?

- Address an Existing Deficiency or Problem
- Examples
  - Organization
  - Visual
  - Time
  - Communication

http://academictech.doit.wisc.edu/ORFI/pts/support%20files/teaching.ppt
Why Use Technology in the Classroom?

- **Alternative Medium**
  - Transfer Activities to Another Medium

- **Examples**
  - Show Video
  - Access the Web
  - Share Examples
  - Facilitate Collaboration

Why Use Technology in the Classroom?

- **Improve Effectiveness & Efficiency**
  - Better Able to Follow Instructional Design

- **Examples**
  - Better Implement Best Practices
  - Increased Structure
  - Improve Content Presentation
  - Alternative Presentation of Content

http://academictech.doit.wisc.edu/ORFI/pts/support%20files/teaching.ppt
Why Use Technology in the Classroom?

- **Only When There is a Reason**
  - Educational Solution Before Technology Solution

- **Examples**
  - Educational Problem
  - Impact on Classroom Management
  - Improve Content Presentation
  - Alternative Presentation of Content

http://academictech.doit.wisc.edu/ORFI/pts/support%20files/teaching.ppt
Pedagogy, Technology & Instructional Design

- Pedagogy
  - 1: the principles and methods of instruction [syn: *teaching method*,]
  - 2: the profession of a teacher
Pedagogy, Technology & Instructional Design

Technology

1: the science of the application of knowledge to practical purposes

2: Electronic or digital products and systems considered as a group
Instructional Design

- Instructional Design is the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction.

- It is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs.

- It includes development of instructional materials and activities; and tryout and evaluation of all instruction and learner activities.

http://www.ion.uillinois.edu/resources/tutorials/pedagogy/instructionalstrategies.asp#LECTURE
Pedagogy & Classroom Presentation

- Classroom Presentation Generally Means a Lecture
- Lectures: an Efficient Way for an Expert to Share Knowledge
- Most Effective When Linked to Other Activities
Structuring a Lecture

- Consider Audience
- Goals and Learning Outcomes
- Logical Progression for Material
- Structure to Help Students….
  - Take Notes
  - Retain Important Information
- Strong Opening and Closing
- Interaction

Pedagogy, Technology & Instructional Design

- Instructional Design (ID)
  - Recall Definition?
    - …learning theory…goals….delivery system….development of materials….tryout & evaluation….revision

- ID Can Be Employed to Improve Pedagogy for Classroom Presentations
Pedagogy, Technology & Instructional Design

- Instructional Design*
  - Analysis/Objectives
  - Instructional Strategy/Materials
  - Formative/Summative Evaluation

- Educational Technology and Teaching
  - http://www.rit.edu/~pen2
  - http://mycourses.rit.edu

Pedagogy, Technology & Instructional Design

- Events of Instruction and Processes of Learning*
  - Get Attention/Share Objectives
  - Present Material/Guide Learning
  - Performance/Feedback
  - Assess Performance/Retention & Transfer

Pedagogy, Technology & Instructional Design

- What do you want students to do?
- Not how they will spend their time or what you will cover in class;
  - What evidence do you want to see that proves students have met the learning outcome you specified?
Pedagogy, Technology & Instructional Design

- Integrating Technology & Your Teaching
- What is the Most Appropriate Technology?
  - What is Available!!!
- Design Presentation Based on Good Instructional Design and Processes
Presentation Format

Selection Process

- Choose a Method of Instruction
- Choose a Media Format
- Obtain Materials
  - Obtain Available Materials
  - or
  - Modify Available Materials
  - or
  - Design New Materials
Utilization of Materials in Lecture Format

- Provide Experience
- Prepare Learners
- Prepare Environment
- Prepare Materials
- Preview Materials
Best Practices for Technology in Classroom ...

- Technology Tips
  - Kathleen Eilers crandall, Ph.D.
  - www.rit.edu/~kecnep/

- Best Practices
  - Douglas MacKenzie, Au.D.
  - www.geneseo.edu/~mackenzi/
How to Prepare for Class

- More time when first using technology; less time once technology is in place.
- Allow lots of set up time.
- Go to room the day before class & practice.
- Keep notes of set up steps.
- Have alternative plans if technology fails.

From: "Technology Tips for the Classroom" by Kathleen Eilers crandall, June 1999 NTID/RIT. Used with permission of the author.
Technology Should Enhance...

- Use technology when it serves a specific purpose.
- If technology gets in the way of teaching, don’t use it!
- Technology does not make teaching better or even easier.

From: “Technology Tips for the Classroom” by Kathleen Eilers crandall, June 1999 NTID/RIT. Used with permission of the author.
Communication Issues

- Establish a Communication Plan
- Equipment can Reduce Visibility
- Have a Plan to Regain StudentAttention
- Keep Switching Between Computer Displays to Minimum

From: “Technology Tips for the Classroom” by Kathleen Eilers crandall, June 1999 NTID/RIT. Used with permission of the author.
Logistical Concerns

- Scheduling a “Smart” Classroom
- Learning to Use and Troubleshoot Equipment
- Time for Equipment Set-up and Break-down
- Equipment Obstacle Course

From: “Deaf Students and Technology: Best Teaching Practices” PowerPoint Presentation, November 9, 2001
by Sam Holcomb and Doug MacKenzie. NTID/RIT
Logistical Concerns

- Will Technical Help be Available?
- Need for a Back-up Plan
- Installing New Software
- Different Software Versions in Office vs. Classroom
- “Okay…Who has Been Messing with the Equipment?”
Classroom Management Issues

- Where do I Stand for Best Communication?
- What Lighting is Best for Communication?
- Lack of Writing (Whiteboard) Space
- Projecting More than One Source
- What Effect is Technology Having on Faculty Sign Skills?

From: “Deaf Students and Technology: Best Teaching Practices” PowerPoint Presentation, November 9, 2001 by Sam Holcomb and Doug MacKenzie. NTID/RIT
Three Popular Classroom Technologies

- Visualizer
- PowerPoint
- Web
Document Camera
“Visualizer”

- Used to display...
  - Articles
  - Objects
  - Slides
  - Video
Document Camera
“Visualizer”

Advantages...

- Great for showing objects (pagers, TTY display)
- “Zoom” function for small print and fine detail

From: “Deaf Students and Technology: Best Teaching Practices” PowerPoint Presentation, November 9, 2001 by Sam Holcomb and Doug MacKenzie. NTID/RIT
Document Camera
“Visualizer”

Limitations…

- Poor resolution for text
- Glare
- Barrier to communication
Strengths…
- No overhead transparencies!
- Visual
- Outline format useful for preparing lectures
- Insert video and hot links
- Quick revisions
**Strengths…**
- Easy to post on the web
- Handouts
- High-tech look
- Keeps students focused on topic
- Can send as an e-mail attachment
PowerPoint®

- Weaknesses…
  - Overused!
  - Too much text
  - Selecting good color schemes
  - Typography issues
  - Overuse of animation
  - Not flexible
  - Requires more preparation time

From: “Deaf Students and Technology: Best Teaching Practices” PowerPoint Presentation, November 9, 2001 by Sam Holcomb and Doug MacKenzie. NTID/RIT
Web

Strengths…

- Visual
- Current
- Interesting
- Interactive
- Good for organization of course materials
Web

- Weaknesses...
  - Problems with roaming IP addresses
  - What's there today may look different or be gone tomorrow
  - Can be visually distracting
Weaknesses…

- Some students have difficulty evaluating web content:
  - Credibility
  - Bias
  - Fact vs. opinion
  - Parody sites
Students with Vision Problems

- Room Lighting
- Seating
- LCD Projector
- Individual Computer Workstations
- Color Choices (text and background)
- Glare from Projector and Visualizer

From: “Deaf Students and Technology: Best Teaching Practices” PowerPoint Presentation, November 9, 2001 by Sam Holcomb and Doug MacKenzie. NTID/RIT
Technology Used in NTID Classrooms

- Standard NTID Classroom Based on Years of Experience
- Incorporates Latest Technology
- Access Emphasis

Video Overview at:
http://www.ntid.rit.edu/co/TSS/NTID_Smart_Classroom.cfm
Typical Configuration
Smart Cart with Smart Board
Equipment Cabinet & Display for Low Vision Students
Close-up of Smart Cart
Equipment Cabinet
Features of an NTID Classroom

- Help System
- Control Room Lights
- Whiteboards
- Smart Board
- Resident Computer
- VHS/DVD
- Visualizer
- Connect Laptop
- Connect Video Phone
- FM System
- Freeze Image
Conclusion

- Use Technology When it Helps
- Consider Applying Instructional Design Systems to Your Teaching
- Follow the “Best Practices” Offered by Experienced Teachers of the Deaf
- Design Classrooms Based Upon Your Experience, Needs & Budget
Web Resources

References

- “Technology Tips for the Classroom” by Kathleen Eilers crandall, June 1999 NTID/RIT.
- “Deaf Students and Technology: Best Teaching Practices” PowerPoint Presentation, November 9, 2001 by Sam Holcomb and Doug MacKenzie. NTID/RIT.