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

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
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

Pedagogy, Technology & Instructional Design

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

- 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

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
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

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

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?

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

Choose a Method of Instruction
Choose a Media Format
Obtain Materials
- Obtain Available Materials
- Modify Available Materials
- Design New Materials

Educational Technology and Teaching
- http://www.rit.edu/~pen2
- http://mycourses.rit.edu
Utilization of Materials in Lecture Format

Best Practices for Technology in Classroom...

- Technology Tips
  - Kathleen Elers crandall, Ph.D.
  - www.rit.edu/~kecncp/
- 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.

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.

Communication Issues

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

Logistical Concerns

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

Three Popular Classroom Technologies

- Visualizer
- PowerPoint
- Web

Document Camera “Visualizer”

- Used to display...
  - Articles
  - Objects
  - Slides
  - Video

Advantages...
- Great for showing objects (pagers, TTY display)
- ‘Zoom’ function for small print and fine detail

Limitations...
- Poor resolution for text
- Glare
- Barrier to communication

PEN-International is funded by a grant from The Nippon Foundation of Japan to NTID
PowerPoint®

**Strengths…**
- No overhead transparencies!
- Visual
- Outline format useful for preparing lectures
- Insert video and hot links
- Quick revisions

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

Web

**Strengths…**
- Easy to post on the web
- Handouts
- High-tech look
- Keeps students focused on topic
- Can send as an e-mail attachment

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

---

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

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

Technology Used in NTID Classrooms

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

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

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
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.