Strategies for Using Instructional Technology to Support Classroom Education

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June 20, 2006

A workshop presented to the Korean Delegation
Visiting PEN-International and NTID

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

From: "Enhancing the Craft of Teaching with Technology: The Instructional Design Factor" PowerPoint Presentation, Accessed from the Internet January 25, 2006, by Les Howles, Academic Technology Solutions, DoIT, University of Wisconsin-Madison 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

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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

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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

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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

Pedagogy, Technology & Instructional Design

- 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

From: "Instructional Strategies for Online Courses" Web page by Accessed from the Internet January 25, 2006, Illinois Online Network, University of Illinois. 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

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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

*Gagne, Briggs & Wager 1992, Principles of Instructional Design.

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

*Gagne, Briggs & Wager 1992, Principles of Instructional Design.

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?*

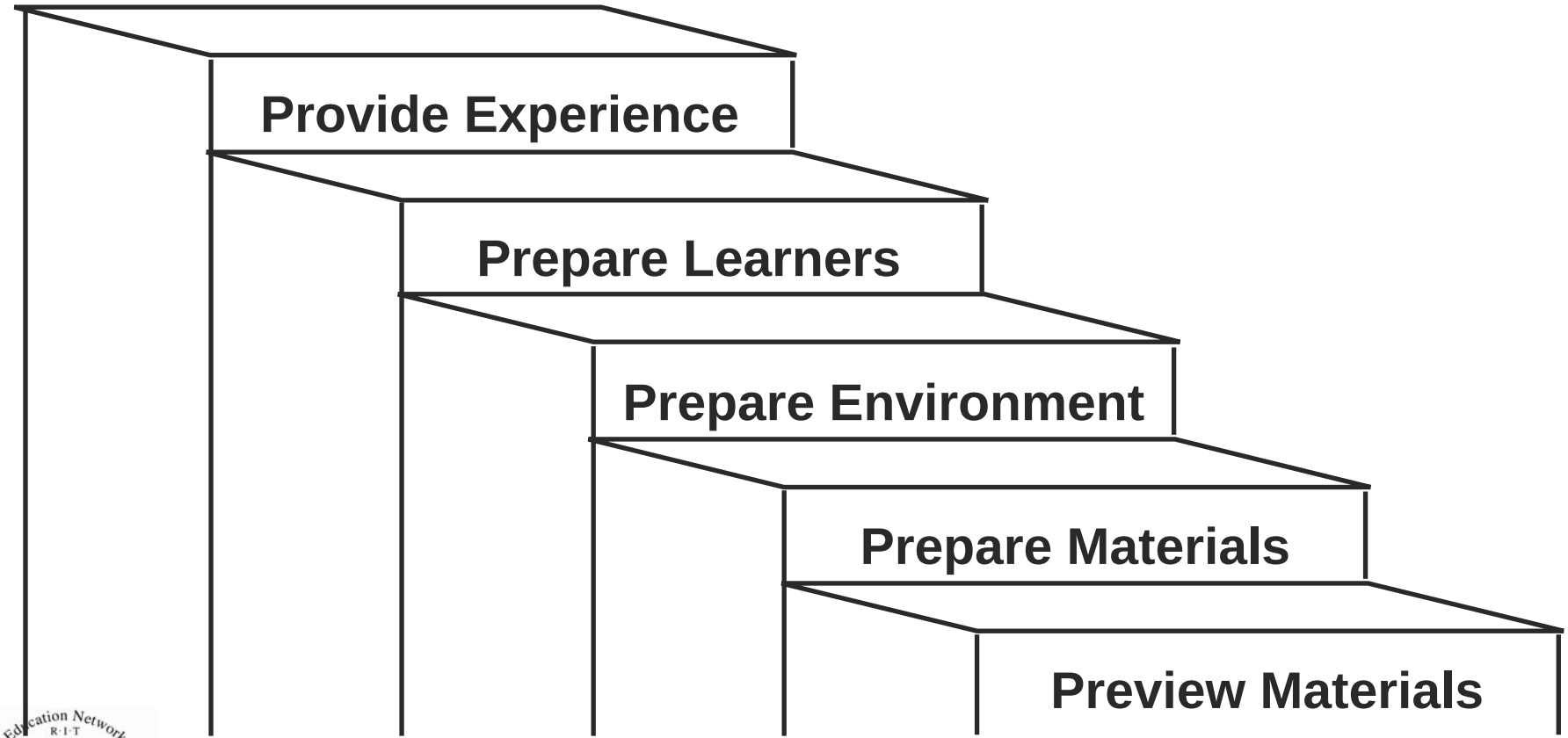
Pedagogy, Technology & Instructional Design

- 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



Best Practices for Technology in Classroom …

- *Technology Tips*
- Kathleen Eilers 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.

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.

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Used with permission of the author.

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 Break-down
- Equipment Obstacle Course

Logistical Concerns

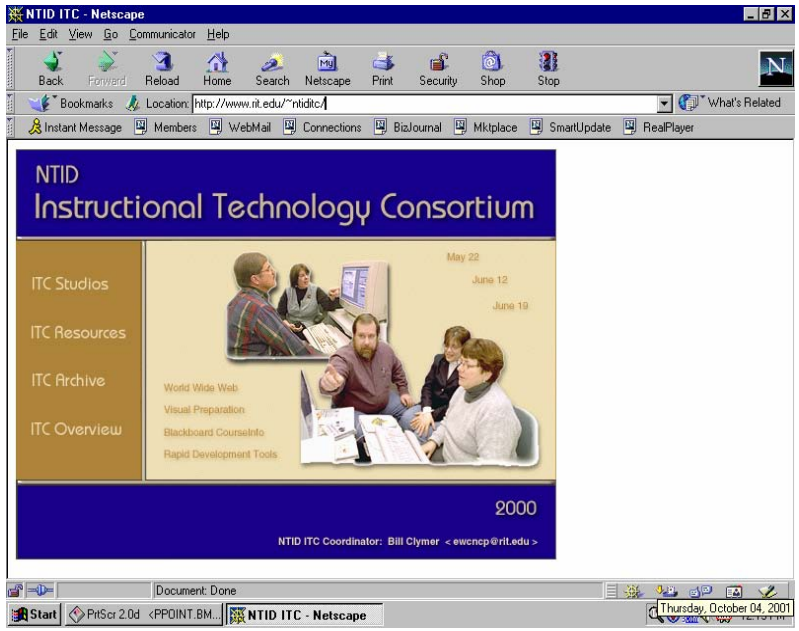
- Will Technical Help be Available?
- Need for a Back-up Plan
- Installing New Software
- Different Software Versions in Office vs. Classroom
- *"Okay…Who has Been Messing with the Equipment?"*

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



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

Document Camera "Visualizer"

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

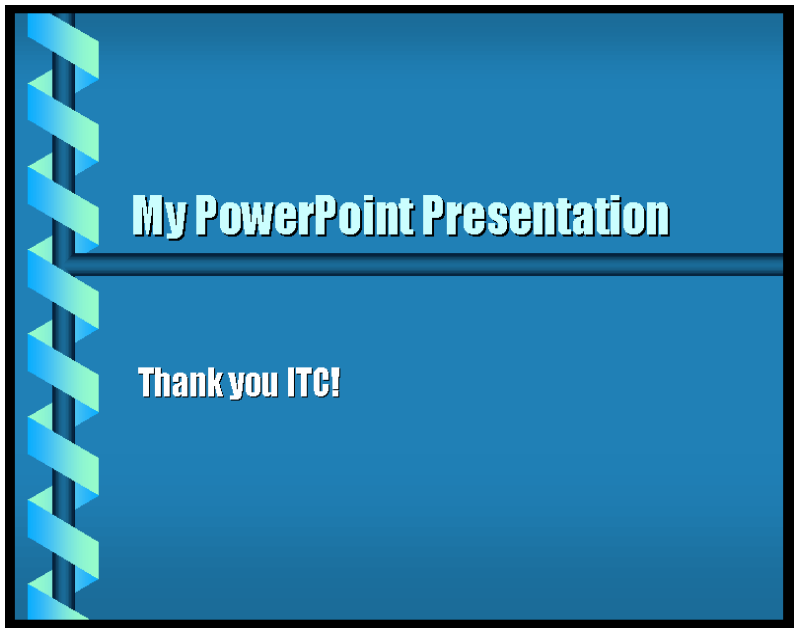
Document Camera "Visualizer"

- Advantages…
  - Great for showing objects (pagers, TTY display)
  - "Zoom" function for small print and fine detail

Document Camera "Visualizer"

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

PowerPoint®



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

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

PowerPoint®

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

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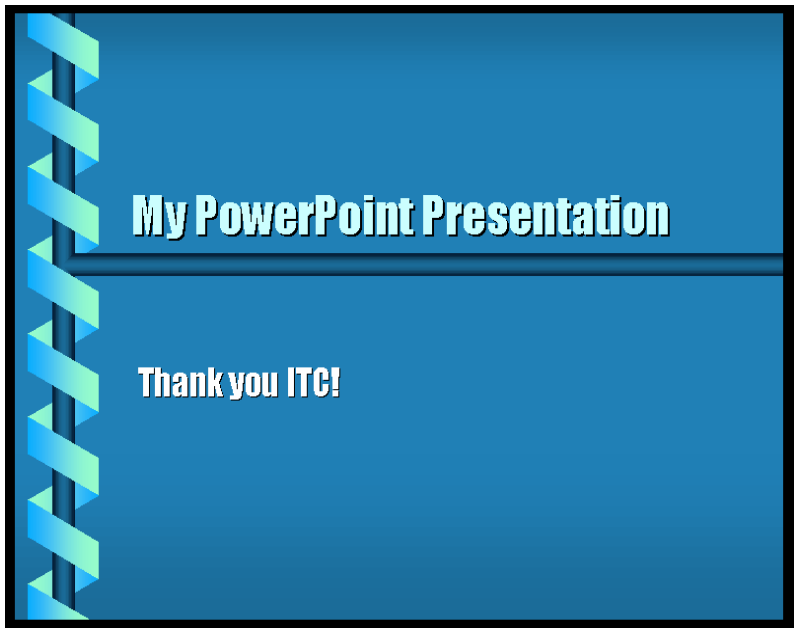
PowerPoint®



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

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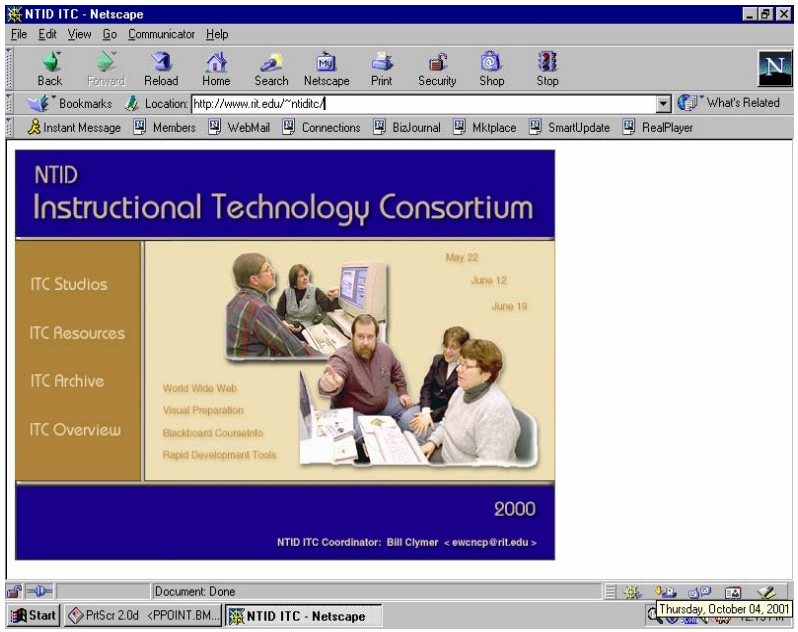
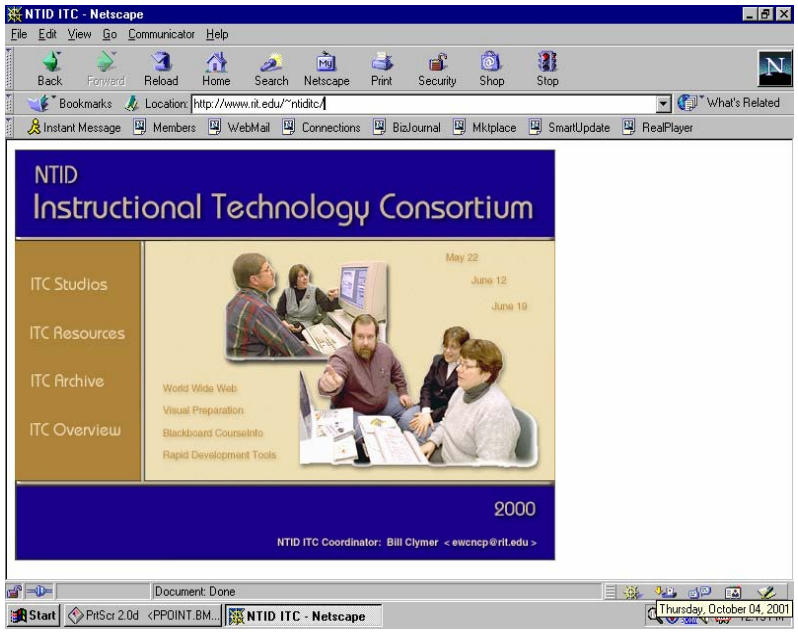
Web



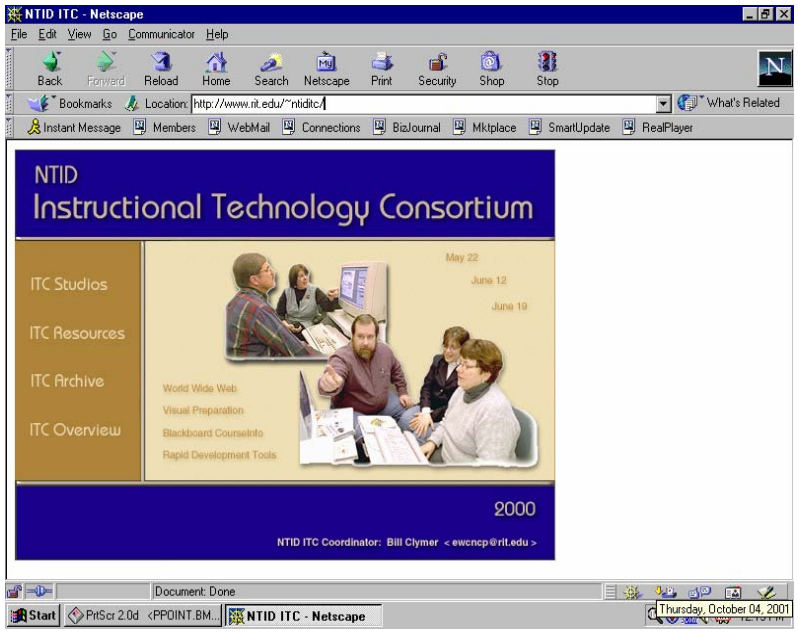
- Strengths…
  - Visual
  - Current
  - Interesting
  - Interactive
  - Good for organization of course materials

Web



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

Web



- Weaknesses…
  - Some students have difficulty evaluating web content:
    - Credibility
    - Bias
    - Fact vs. opinion
    - Parody sites

Students with Vision Problems

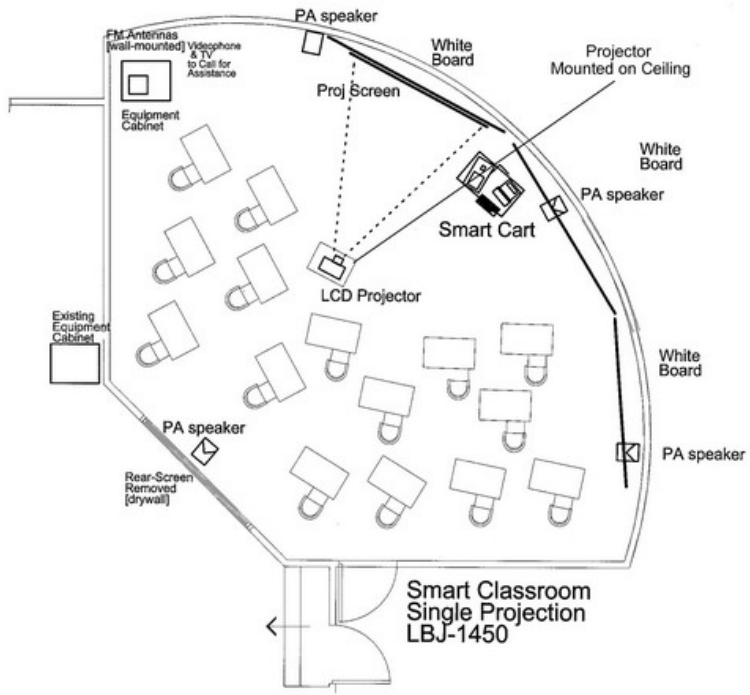
- Room Lighting
- Seating
- LCD Projector
- Individual Computer Workstations
- Color Choices (text and background)
- Glare from Projector and Visualizer

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

- http://www.pen.ntid.rit.edu/ewc/csb/tech/index.htm

References

- “Technology Tips for the Classroom” by Kathleen Eilers crandall, June 1999 NTID/RIT.
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