

Summit on Cyberinfrastructure

## Captioning & Interpreting for STEM Students Using Cyberinfrastructure: A Recommendation Report

E. William Clymer, MS Ed., MBA, Associate Director  
James J. DeCaro, PhD, Director, PEN-International

22 July 2009


32<sup>nd</sup> Conference of the Association on Higher Education And Disability (AHEAD)  
Louisville, KY USA

The Summit was led by RIT and the University of Washington (UW) and supported by the  
National Science Foundation under Award No. OCI-0749253


Summit on Cyberinfrastructure

## NTID Center on Access Technology Team

**James DeCaro**



**E. William Clymer**



The Summit was led by RIT and the University of Washington (UW) and supported by the  
National Science Foundation under Award No. OCI-0749253

2

## Project Team

---

- E. William Clymer
  - RIT/NTID, Center on Access Technology
- James DeCaro
  - RIT/NTID, Center on Access Technology
- Richard E. Ladner
  - University of Washington
- Jorge L. Diaz-Herrera
  - Rochester Institute of Technology

This material is based upon work supported by the  
National Science Foundation under Award No. OCI-0749253

## Project Information

---

- Led by Rochester Institute of Technology (RIT) National Technical Institute for the Deaf (NTID) and University of Washington (UW)
- Supported by the National Science Foundation (NSF)
- Held on Campus of RIT immediately following NTID Technology Symposium
- 50 leaders of support service provision for postsecondary deaf students in STEM (Science, Technology, Engineering, and Mathematics) programs

## Goals of Summit

- Report on the current state of online remote interpreting and captioning
- Identify the benefits and challenges associated with implementing a multimedia cyberinfrastructure to support students in STEM mainstreamed classrooms

## Background and Need

- Increase in number of students mainstreamed in STEM programs throughout United States
- 10% US population (or 28 million) significant hearing loss
- 1-2 million use ASL
- 300 mainstreamed in STEM programs at NTID/RIT
- Approx. 400 mainstreamed in STEM in over 100 different universities

## Background and Need (con't)

- Growing need for skilled interpreters and captioners competent in STEM programs
  - Beginner, intermediate, and advanced levels
- Lack of easy access to interpreters, captioners and support services knowledgeable with scientific and technical language

## Proposal to NSF Based on a Unique Collaboration

- Richard Ladner's work with Cyber-community at University of Washington
- Jorge Diaz-Herrera's interest in the RIT Center for Advancing the Study of Cyberinfrastructure (CASCI)
- NTID's Interest in the Evaluation, Research and Development of Remote Services

Summit on Cyberinfrastructure

## Project WWW Site

---

- <http://www.ntid.rit.edu/cat/summit/resources.html>

The Summit was led by RIT and the University of Washington (UW) and supported by the National Science Foundation under Award No. OCI-0749253

9

Summit on Cyberinfrastructure

## Plan of Execution

---

50 leaders divided into 6 constituency groups

- Educational, Linguistic & Sign Language Researchers/ Developers
- Coordinators of Support Services
- STEM Faculty
- Cyberinfrastructure Specialists
- Educational Captioners & Interpreters
- Students

The Summit was led by RIT and the University of Washington (UW) and supported by the National Science Foundation under Award No. OCI-0749253

10

## Plan of Execution

- Each group to present to Summit gathering benefits and challenges associated with developing a multimedia cyberinfrastructure specific to area of expertise
- Break into groups to address challenges and develop recommendations on how to implement a multimedia cyberinfrastructure for students mainstreamed in STEM
- Each group to present to Summit participants their recommendations for review

## Constituency Group Leadership

Facilitators assigned to each group

- Educational, Linguistic & Sign Language Researchers/Developers
  - E. William Clymer, NTID/RIT, PEN-International
- Coordinator of Support Services
  - Denise Kavin, NTID/RIT, PEN-International
  - Marcia Kolvitz, PEPNet-South, University of Tennessee
- STEM Faculty
  - Richard Ladner, University of Washington
  - Caroline Solomon, Gallaudet University

## Constituency Group Leadership

---

- Cyberinfrastructure Specialists
  - Jorge Diaz-Herrera, RIT
  - Gurcharan Khanna, RIT
- Educational Captioners & Interpreters
  - Rico Peterson, Northeastern University
  - Mike Stinson, NTID/RIT
- Students
  - Ellie Rosenfield, NTID/RIT
  - T. Alan Hurwitz, CEO NTID
  - Joshua Beal, Student Support

## Researchers and Developers

---

### Benefits

- Utilization of Cyberinfrastructure would provide new areas of research and evaluation related to education, linguistics and cognitive development.

## Researchers and Developers

---

### Challenges

- Match student with technology
- Preference vs. performance
- Elements of a successful business model
- Determining best practices

## Researchers and Developers

---

### Recommendations

- Measure long term costs and benefits of technological solutions
- Further research on social and literary effects of technologies
- What are the effects of cohort differences and technological savvy
- Compare the advantages and disadvantages of synchronous vs. asynchronous services



## Coordinators of Support Services

---

### Benefits

- Rural school access to interpreting and captioning
- 24/7 Access

## Coordinators of Support Services

---

### Challenges

- Identifying and locating remote service providers
- Retaining service providers
- Effectively interpreting terminology, diagrams and graphs for STEM students
- Gaining support of faculty/administration

## Coordinators of Support Services

---

### Recommendations

- Establishment of service hubs
- Development of websites/databases to support remote services
- Development of remote service materials
- Technology equipment

## STEM Faculty

---

### Benefits

- Improving educational experience for deaf students
- Keep students interested and engaged
- Maximize learning

Summit on Cyberinfrastructure

## STEM Faculty

---

### Challenges

- Visual dispersion
- Access to appropriate accommodation
- Barriers to classroom participation
- Barriers to after-class activities

The Summit was led by RIT and the University of Washington (UW) and supported by the National Science Foundation under Award No. OCI-0749253

21

Summit on Cyberinfrastructure

## STEM Faculty

---

### Recommendations

- Need to adjust teaching style
- Create a faculty website
- Use of technology agreement
- Part-time faculty

The Summit was led by RIT and the University of Washington (UW) and supported by the National Science Foundation under Award No. OCI-0749253

22

## Cyberinfrastructure Specialists

---

### Benefits

- Develop approaches, methods and techniques
- Provide system integration, operation and administration
- Supplement existing facilities
- Ensure effective design

## Cyberinfrastructure Specialists

---

### Recommendations

- Create an experimental platform and test bed
- Requirements gathering
- Design process
- Platform independence is a challenge

## Educational Captionists & Interpreters

---

### Benefits

- On-demand services
- Coverage during a variety of times
- Variety of places
- Support of group communications

## Educational Captionists & Interpreters

---

### Challenges

- Technical/logistical
- Communicative/linguistic
- Pedagogical

## Educational Captionists & Interpreters

---

### Recommendations

- On-demand national agency
- Funding to support certification training
- Need for varying display captions

## Students

---

### Benefits

- Online database & centralized repository for STEM Signs
- Teaching tools of Educators
- Accessibility Guidelines
- Best Practices

## Students

---

### Challenges

- Respect and recognize diversity
- Cost of technology and service provider
- Availability of technology due to marketplace demand
- Educating the provider

## Students

---

### Recommendations

- Empower students
- Develop social networking opportunities
- Focus on STEM vocabulary and discourse
- Shared access to deaf-friendly STEM instructors across universities

## Evaluation & Research

---

- Self advocacy / empowerment
- Mobility
- Remote service training forum for educators and students
- Online training for interpreters and captioners in STEM
- Communicating access needs to organizations that develop technology
- Centralized service provider database/clearinghouse

## Reporting

---

- <http://www.ntid.rit.edu/cat/summit/resources.html>
- Summary Report, Initial Draft (September 15, 2008, 40 pages)
  - Summary of the group discussion and recommendations from the June 2008 Summit at RIT
- White Papers & Group Recommendations (June 28, 2008, 110 pages)
  - The members of each constituency group are listed, along with pre-summit whitepapers and recommendations generated at the Summit



## Reporting (cont)

---

- <http://www.ntid.rit.edu/cat/summit/resources.html>
- Participant Evaluation Report (September 15, 2008, 12 pages)
  - An analysis of the feedback and suggestions offered by Summit participants.
- Bibliography on Remote Interpreting and Captioning (May 2008, 300 pages)
  - References used to support discussion at the Summit.

## Next Steps

---

- Expand dissemination and recommendations at two national conferences by August 2009
- Seek ongoing support to focus on Cyberinfrastructure and Cyber Community by
  - Building a Cyber Community to Support STEM Students
  - Refine internet-based communication modules to provide classroom support

## Participant Evaluation Report: What Participants Had to Say.....

- Interaction, brainstorming great ideas, positive advances in STEM education on various fronts.
- Well organized! Good job soliciting and collecting ideas.
- Publicize the work and recommendations...

## Captioning & Interpreting for STEM Students Using Cyberinfrastructure: A Recommendation Report

E. William Clymer, MS Ed., MBA, Associate Director  
James J. DeCaro, PhD, Director, PEN-International

22 July 2009

32<sup>nd</sup> Conference of the Association on Higher Education and Disability (AHEAD)  
Louisville, KY USA