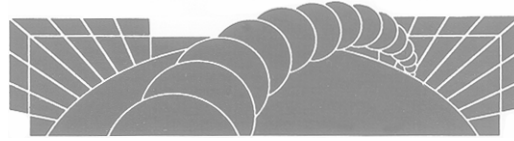


Instructional Technology and Education of the Deaf



Supporting Learners, K – College
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National Technical Institute for the Deaf
Rochester Institute of Technology
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Recommendations Report

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OVERVIEW

One of the primary goals of the Symposium was to generate a Recommendation Report regarding instructional technology to detail specific recommendations to governmental, educational, commercial and non-profit organizations serving deaf and hard of hearing students. The issues identified by this process also will guide the planning of future Instructional Technology Symposia. The Report contains the collective recommendations contributed by symposium participants and summarized at the closing session of the Symposium on June 27, 2001.

EYES OF THE SYMPOSIUM

During the Symposium, three participants, representing the perspectives of “post-secondary,” (Alan Hurwitz, National Technical Institute for the Deaf), “K-12 education” (Francisco Abeyta, American School for the Deaf), and “instructional technology”, (Rhonda Parish, Rochester School for the Deaf), were asked to attend as many diverse sessions as possible and keep track of their impressions (through the perspectives of their respective specialties). These three individuals were designated as the “Eyes of Symposium.”

At the “Recommendations” session, on Wednesday, June 27, 2001, Dr. Jeff Porter asked each of these individuals to provide a brief overview of their impressions as to the most significant challenges and opportunities facing the application of instructional technology in support of deaf and hard-of-hearing learners. After these three reviews were completed, there was an open discussion of the issues among symposium participants, with the goal of providing direction for the final form and substance of the Recommendations Report.

FOUR SYMPOSIUM THEMES

Input for the Recommendations Report was collected in light of the following four symposium themes:

1. *Using Technology to Support Learning* (K-12, postsecondary, general).
2. *Assessing the Impact of Technology in the Teaching/Learning Process* (K-12, postsecondary, general).
3. *Using Technology to Support Student Transition to the Workplace* (K-12, postsecondary, general)
4. *Using Online and Distance Learning Technologies* (K-12, postsecondary, general)
5. *Other topics* (not addressed by the above subject areas).

By analyzing the individual “input” forms that were submitted, and the reports submitted by the “Eyes of Symposium,” the authors were able to categorize recommendations according to the following topics:

1. *Training*
2. *Teaching/Learning Issues*
3. *Clearinghouse/networking Activity*
4. *Transition Between K-12 and Postsecondary Programs*
5. *Assessment*
6. *Literacy Issues*

7. *Keeping Current/Anticipating the Future*
8. *Videoconferencing*
9. *Future Innovations*
10. *Parents*
11. *Accessibility*

It is hoped the following Recommendations will be useful to policy makers, administrators, and both educational and technology practitioners throughout deaf education as we move ahead. It will be interesting to reassess these topics at the June 2003 Symposium scheduled to be held at NTID.

TRAINING

Overall, the need for greater emphasis on in-service training for educators regarding the application of instructional technologies in support of student learning (both in and beyond the classroom) is viewed as a critical issue.

Recommended *nature* of in-service training:

- goals should be that of increasing teacher competence and confidence;
- should extend to teachers in both mainstreamed and residential settings (conducted collaboratively wherever possible);
- should be presented within the context of “real-life” teaching/learning projects (with pilot implementation, feedback/discussion, and revision of these projects based on student experience along the way);
- should require teachers from different subjects/disciplines to work together in an integrative manner, along with teachers from different settings (residential and mainstream), different levels (K–12 and post-secondary), and involving people with complementary roles (teachers, instructional technology specialists, and researchers);
- should encourage teachers to adopt an “experimental attitude” in working with instructional technologies, and include strategies (traditional and non-traditional) for “impact assessment” regarding learning and teaching;
- should include training on “how to design, implement, and evaluate such training experiences.”

Recommended *logistical considerations* for in-service training:

- requires “top-down” administrative support, money, and creative scheduling to overcome lack of “free time” for teachers;

- Senior administrators need to know what technologies their school/districts have, what these technologies do and how they could be used in the classroom.
- requires coming up with incentives and support for those teachers who are less than willing to experiment with technological tools on the one hand, and, on the other hand, support and recognition for those who are so enthusiastic that “burn-out” is a danger;
 - Offer hardware upgrades to the teacher's classroom computer or the choice of a particular software title used as incentives to get knowledgeable teachers to conduct in-service training. This could provide an opportunity to offer more classes while diversifying training costs.
 - Encourage staff-to-staff mentoring programs: recruit teachers comfortable with a certain technology to serve as an approachable peer to others who may be trying something new. This way teachers will not feel as though they have to wait for a class in order to learn a particular program; with knowledgeable and accessible coworkers, teachers may be more likely to try learning new technologies on their own.
 - Consistently provide short presentations at staff meetings by teachers who have used technology in their curriculum. These presentations should not focus on the specifics of the technology, but how the curriculum was developed and enhanced with the technology.
- requires staff with the expertise to provide such training, as well as staff with the expertise to support and maintain the technological infrastructure of hardware and software;
- requires training that is “on time” with acquisition of new hardware and software;
- requires the creative and cost-efficient use of on-line/distance learning technologies to conduct such training (throughout regions, the country, and the world).

TEACHING/LEARNING ISSUES

The real and potential impact of instructional technologies on learning is tremendous . . . Web-supported instruction, “virtual field trips,” electronic communications within and beyond classroom settings, distance learning strategies, videostreaming, multimedia software, enhanced accessibility through C-Print and voice recognition systems . . . the possibilities seem endless. At the same time, widespread agreement exists that a basic premise anchoring such real and possible uses is that instructional technologies are a means to the end of enhanced learning, not an end unto themselves.

Recommendations:

- There is need for more experimentation, innovation, dialogue, and impact assessment at all levels of deaf education regarding the use of instructional technologies to support student mastery of learning outcomes. Special foci for such activity include the role of instructional technologies in:
 - individualizing instruction to support diverse learners at diverse times in diverse places;
 - providing instant and tailored feedback within the learning process;
 - enabling student access to a literal world of information and sharpening critical student judgment regarding the valid and invalid use of such information; and
 - serving as an “engine of integration” regarding the development of knowledge, skills, and ways of understanding that transcend traditional subject/discipline-based boundaries.
- More conceptualization, experimentation, and innovation are needed in better *interweaving* instructional technology and curriculum as different aspects of a unified learning experience for students, rather than as separate, parallel, and perhaps awkwardly aligned components. Which technologies best support which curricular goals for which students, in terms of enhancing the meaning and power of the overall learning experience?
- There is need for finding better ways of using and adapting instructional technologies to meet the real needs of teachers and learners (so that their lives are made simpler, not more complicated).

CLEARINGHOUSE/NETWORKING ACTIVITY

The magnitude of the challenges in applying instructional technologies to deaf education, the required levels of resources, and the wealth of widely dispersed expertise argue against anyone “going it alone.”

Recommendations:

- Establish an on-line community among educators, researchers, instructional technologists, and administrators to foster the cohesive sharing of information, advice, project summaries, and identified “best practices” regarding the application of instructional technologies to deaf education
 - perhaps by subject/discipline area and grade level,
 - perhaps Web-based, with anyone/anytime/anywhere accessibility;
- Establish more formal partnerships among all levels of educational programs, governmental agencies, and private businesses to share costs, resources, and

expertise in exploring and learning from the application of instructional technologies to deaf education;

- Conduct regional forums (perhaps using on-line technologies) among all interested parties to maintain awareness and currency about “what’s going on where, and what’s coming down the pike”;
- Establish both systematic mechanisms for tracking what is happening in the larger world of “instructional technology,” beyond its application to deaf education, and systematic means for communicating such developments to individuals involved in deaf education;
- Establish more strategies (both formal and informal) for back-and-forth communication and collaboration among deaf educators in mainstreamed and residential settings.

TRANSITION BETWEEN K-12 AND POSTSECONDARY PROGRAMS

Recommendations:

- Greater emphasis, at all educational levels, on student skill development regarding information/instructional technologies, both for:
 - use as “tools for learning,”
 - developing critical and marketable “workplace skills” regarding ongoing career development;
- In terms of such skill development, intentional and explicit articulation between high school and postsecondary curricula regarding expected student competencies. As well, intentional and explicit articulation between high school curricula and workforce requirements for students not continuing with postsecondary education.

ASSESSMENT

“Do we know whether or not, and how, any of this makes a difference—and whether it’s worth it?!”

Recommendations:

- As a “built-in” dimension of implementation efforts regarding the application of instructional technologies to deaf education, more systematic “research efforts” are required to assess the impact of instructional technologies on learning outcomes, learning processes, learning productivity, and the roles of student and teacher. Beyond opinions and perceptions, what are the actual “differences made” in the education of deaf and hard-of-hearing students, in terms of language and literacy, content mastery, and thinking skills? What are the costs?;

- Such research efforts need to be conducted not only at the level of individual classrooms and projects, but collaboratively within and among educational programs representing K–12 and postsecondary levels (within regional, national, and international realms);
- Results of such efforts need to be compiled and summarized in a cohesive and cumulative manner, and made easily accessible for practitioners and researchers;
- Through such efforts, “best practices” for particular students in light of particular curricular goals need to be identified and disseminated.

LITERACY ISSUES

The trap of using technologies in ways that amplify literacy problems, rather than support literacy development, must be avoided.

Recommendations:

- The use of on-line learning strategies must account for the alignment between the language and reading levels of deaf and hard-of-hearing students and the language and reading levels of the content;
- More innovation and experimentation is required in using on-line learning strategies as a tool for developing English literacy skills in deaf and hard-of-hearing students (from pre-K through adult learners).

KEEPING CURRENT/ANTICIPATING THE FUTURE

“We now have students arriving at schools and colleges who have so much prior experience that they are asking for this or that; educational programs need to catch up with students regarding where they are in their technological skills; we can only imagine what the future will be like!”
[Participant Comment]

“Limited budgets and resources could make some of what we’ve seen at the Symposium out of reach for some schools; older computers in the classrooms, slow internet connections (or no connections at all), and untrained staff make it difficult for some schools to keep up with advancements in this area.” [Participant Comment]

Recommendations:

- Educational programs, at all levels and in all settings, need to develop a strategic “Technology Infrastructure Plan.” This Plan should address the following elements: (1) an evolving Internet/cable network, (2) “tools” (both hardware and software) that plug into this network, (3) faculty development regarding the application of instructional technologies within the context of instructional design and development, (4) specialists to support faculty development, the production of instructional materials and strategies, technological innovation, and technical

maintenance, and (5) an ongoing evaluation system regarding the impact of instructional technologies on learning;

- A program's developed Technology Infrastructure Plan should be considered a TOP PRIORITY, with a designated portion of the Plan's funding built into the overall annual operating budget. Other portions should be funded from federal and state grants, private foundations, and corporate sponsorship;
- The developed Technology Infrastructure Plan needs to be strategic in nature, anticipating technological "waves of advancement" (e.g., wireless transmission) and emergent applications (e.g., speech recognition) that are on the horizon. Likewise, the designation of needed funds annually and the accumulation of them over time to support such investments requires "strategic budgeting";
- Technology Infrastructure Plans developed within a "deaf education" context need to be tied to ongoing developments within the "regular education" context. Equally important, collaboration between deaf and regular education in this area needs to occur, so that respective expertise is capitalized on and as few as possible "wheels are re-created!"

VIDEOCONFERENCING

"Videoconferencing gives students opportunities to experience other parts of the world with real-time interaction, and provides an entirely new form of communication for deaf and hard-of-hearing learners; this technology will grow as more schools are connected with videoconferencing capabilities, with more and more inter-school projects possible." [Participant Comment]

Recommendations:

- Formal consortia among participating deaf education programs (nationally and world-wide) need to be established to encourage the use and growth of videoconferencing;
- A system of incentives (access to unique programming, lowered equipment costs, discounts on line rental costs, etc.) is required to encourage educational programs to join such consortia;
- Need to extend the use of this technology for a greater range of purposes, including formal and informal educational experiences for students at and among all levels, professional development of educators (including training experiences on the application of instructional technologies), and program planning/development activities among educational and professional agencies;
- Over the next 4-5 years, need to monitor the cost/benefits of videoconferencing activity supported through ISDN technology vs. through the Internet (including the particular strengths and weaknesses of the different technologies for different purposes).

FUTURE INNOVATIONS

Recommendations:

- Educational programs need to catch up with their students, in terms of the technological exposure, experiences, skills, and expectations that students are bringing to school;
- Educational programs need to be strategic in their thinking and their funding plans in order to anticipate and implement future technological advances (“wireless technologies,” “broad-band upgrades,” speech recognition technologies, etc.);
- Educational programs in all settings need to commit themselves to become educated consumers of instructional technologies, hardware options, and software developments (regarding costs and benefits in support of deaf and hard-of-hearing learners).

PARENTS

Recommendations:

- Need more effective strategies for including parents, as “first-teachers” and ongoing partners, in ongoing efforts to apply instructional technologies to deaf education;
- As “first teachers” and ongoing partners, parents, wherever possible, need access at home to the same instructional technologies being used at educational programs, so that learning can be reinforced and advanced in both contexts.

ACCESSIBILITY

The potential power of informational and instructional technologies for deaf and hard-of-hearing students and teachers in diverse educational settings pivots on the accessibility of their delivered content.

Recommendations:

- Much of today’s content delivered through informational and instructional technologies remains inaccessible (both in terms of auditory information and literacy levels) for deaf and hard-of-hearing students. Given this, increased commitment is needed to caption all media for use by deaf and hard-of-hearing individuals. The scope of this commitment is not limited to the TV industry, but includes as well web content, software manufacturers, and videotape production;
- As a positive trend, it is clear that progressively more captioning is being applied to media, and is becoming more readily available to the public. It also is clear that the education of deaf and hard-of-hearing learners more and more is being taken

into consideration. An example of this is the recent innovation of providing slower rate and modified language captioning, so that the watcher has more opportunity to become the learner. Such innovation, experimentation, broad-based application, and wide-spread dissemination needs to continue;

- Continue to invest in the development and piloting of automatic speech recognition technologies (e.g., C-Print) so that it can be used effectively for accessing oral/aural environments by a wide variety of deaf and hard-of-hearing individuals.

ADDITIONAL RECOMMENDATIONS

- Need to diminish the “digital divides” in this country among students (e.g., PCs in every home with Internet connection), staff (e.g., laptops for administrative and instructional purposes), and schools (e.g., technology and training for all levels of instruction).
- Need more deaf colleagues, from the US and around the world, presenting at gatherings like the Symposium, (regarding such issues as the “visual learning” implications of instructional technologies).

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