# NTID Research Bulletin

Department of Research · National Technical Institute for the Deaf · Rochester Institute of Technology

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Frank Caccamise is a Professor in the Department of Research at NTID.

Frank Caccamise has done extensive work in the area of communication skills assessment, co-developing the Sign Communication Proficiency Interview (see www.rit.edu/ntid/scpi and www.ntid.rit.edu/ scpi/policies), and leading development of sign language instructional materials for technical terminology (see www.rit. edu/~fccncr/ASLDCM). With NTID colleagues, he is developing a new sign language curriculum for NTID faculty and staff. For more information, he can be contacted at FCCNCR@RIT.EDU.

## The Classroom Sign Language Assessment (CSLA): A Process for Assessing and Supporting Development of Instructors' Sign Language Skills

By Frank Caccamise, June Reeves, Geoff Poor, and Joan Carr

#### Introduction

This article provides a progress report on development of a classroom-based communication assessment tool. The first goal of this tool is to assess the effectiveness of NTID instructors' classroom sign language communication skills and to use this information to assist instructors in their sign language skills development. A second goal of this assessment is to provide NTID faculty with information for their annual appraisals and their tenure and promotion documentation. This tool, the Classroom Sign Language Assessment (CSLA), owes much to the work of an earlier NTID project team that developed the Sign Language Skills Classroom Observation (SLSCO) (Reeves, Newell, Holcomb, & Stinson, 2000). Given this, our discussion of progress on the CSLA recognizes major aspects of the SLSCO Project that have informed our CSLA work.

## The Sign Language Skills Classroom Observation (SLSCO)

In developing the SLSCO over a three-year period, Reeves et al. identified seven sign language linguistic features important for effective classroom communication (p.4-5), and discussed, via interviews with faculty, the process for providing feedback and the type of feedback most useful for professional development. The SLSCO involves:

- 1. One videotaping session of the instructor in her/his classroom
- 2. An independent viewing of this videotape (VT) by a team of three trained observers to identify priority linguistic features for improvement
- 3. Re-viewing the VT by the team to provide examples for the priority areas in 2. above
- 4. Writing an observation report
- 5. A report sharing and goal setting follow-up meeting between the instructor and an observation team member

#### **CSLA Project Progress**

Our CSLA project efforts began with a review and discussion of the SLSCO, with a focus on the seven sign language features included in the SLSCO, SLSCO procedures, information the SLSCO provides NTID instructors, and the best way to share observation results with instructors. We adopted the seven sign language linguistic features included in the SLSCO as valid indicators of sign language skills important for effective classroom communication, and we adopted the basic structure of the SLSCO.

The purpose of the SLSCO is to identify priority sign language linguistic features for improvement. SLSCO observers identified these features and recommended courses/activities for supporting skills development. We have maintained these two SLSCO aspects as shown on the CSLA Report Form (see p.5, last two sections of the form). In addition, since one goal of our project is to provide instructors with information about the effectiveness of their sign language communication skills, CSLA observers

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#### Notes of Note

In June, 2003, 18 mainstream postsecondary faculty from four institutions in the northeast attended a Faculty Summer Institute as part of a US Dept. of Education grant, *Promoting Access and Inclusion for Deaf and Hard-of-Hearing Students in Postsecondary Education*, led by **Susan Foster** and **Gary Long**. Faculty from these partner sites engaged in intensive, customized training utilizing activities designed to increase their ability to include and

engage deaf and hard-of-hearing students enrolled in their classes. Follow up and support for partner sites and faculty began this fall and will continue through the spring of 2004. For further information please contact Foster at *SBFNIS@RIT.EDU* or Long, *GLLERD@RIT.EDU*.

As part of a second grant of the same title, Foster, Long and Sharon Rasmussen (CBGS) shared experiential activities and materials designed

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Language Assessment
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\*These two projects
build upon the previous
work of NTID faculty.
Recognition and
appreciation is extended
to June Reeves, Bill
Newell, Sam Holcomb
and Michael Stinson for
their continuing efforts
to provide quality and
effective communication
for all within the NTID
environment.

#### **Communication and Access**

Since 1987, the faculty and administration of NTID have worked together to improve communication within the NTID community, setting communication standards for tenure and promotion and creating the training opportunities for achieving these standards.

In the 1987-89 NTID Communication Task Force/CTF Recommendations to the Dean, NTID, for Institute Expectations and Guidelines for Faculty Communication Skill Development, 1990, the CTF stressed their recommendations "...focused specifically on the expressive/receptive communication skills needed for one-to-one and group interaction among students and faculty/staff." Their task included, but was not limited to, sign language, speaking, simultaneous communication, and receptive understanding in academic, professional, and social situations; it included all areas of professional responsibility for faculty (teaching, research, counseling/advising, support service provision, academic administrative, and clinical work).

Recommendations for consideration in NTID faculty tenure and promotion processes included (1) participation/persistence in learning activities/ efforts to develop, maintain, and improve communication skills and sensitivity to Deaf cultural issues; (2) development of skills in sign language and spoken communication strategies and techniques; and (3) achievement of a specified sign language communication skill level rating on the Sign Communication Proficiency Interview (SCPI).

The CTF further stated that determination of competence should not rest on a single test result; there must be other options offered for documenting communication competence.

To provide NTID faculty additional options, the NTID Communication Assessment Options Faculty/Staff Communication Research Project Team submitted a proposal for seven projects to a research group formed during the 2001-02 academic year. This NTID Research Bulletin issue reports on progress of two of these projects,\* two new assessment tools:

- 1. Classroom Sign Language Assessment, an observational technique to identify faculty members' sign language communication skills and to identify skills that may be appropriate for their further development.
- 2. Students' Judgments of Faculty Members' Communication Skills, to focus on development of a process for obtaining NTID students' judgments of faculty members' communication skills, with a focus on faculty members' skills in classroom and advising environments.

Both project teams are applying the principle stated in the 1990 CTF report that "...the recommendations are based on the notion that building and maintaining a language community requires the facilitating of each person's development through both learning and evaluation experiences." These projects, and those that follow, will help to ensure continued progress in NTID's efforts to provide a communication environment that supports students' access to a quality education and access for all NTID faculty/staff to full participation in the NTID community.

#### NTID RESEARCH BULLETIN

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John Albertini, Chair, Department of Research Gail Hyde, Editor

#### Sign Language Assessment continued from page 1

provide "positive" examples of instructors' sign language linguistic features use, as well as error and omission examples (see CSLA Report Form). The comments of two NTID faculty members who participated in the piloting of the SLSCO support this decision. One faculty member responded, "It is supportive in reporting on areas in need of improvement. It is unsupportive in that it is not balanced with a critique of areas of strength;" a second faculty member responded, "Although a lot was pointed out and listed, the statement that I did some things well went a long way."

An aspect of the SLSCO that we agreed was critically important to maintain is a follow-up meeting, which received strong support from NTID faculty participating in the SLSCO piloting. Of 12 faculty responding to the statement that "My (SLSCO) follow-up meeting was helpful in understanding my written report," on a six point rating scale with "6" being "Strongly agree", there were nine "6" ratings and three "5" ratings. Comments included, "The best kind of one-on-one teaching," "Absolutely enlightening," and "It was nice to see my videotape and have someone point out the places where my shortcomings were illustrated.... [the] follow-up meeting helped me understand how to rectify my shortcomings." CSLA Follow-Up Meetings, together with CSLA Reports, are critical to achieving the first project goal of using CSLA results to assist instructors in their sign language skills development.

As stated earlier, a second goal of this project is to provide NTID faculty with information for their annual appraisals and tenure and promotion documentation. To help achieve this goal, we have worked on developing rating scales for the seven SLSCO sign language linguistic features and we made some edits to the descriptors for these features. As shown on the CSLA Report Form (p.4-5), this process resulted in development of one five point rating scale for two of the linguistic features, a second five-point rating scale for four of the linguistic features, and one feature (comprehension) being moved to an "Additional Comments" section on the CSLA Report Form. This latter decision was based on feedback from SLSCO project team

members, who stated that classroom taping with a single camera does not provide a view of students communicating, and, therefore, faculty members' comprehension cannot be fairly rated. We considered adding a second camera for taping, but decided this would be too intrusive for a classroom setting.

In addition to the above, progress during our first two years has included development of a working document entitled Classroom Sign Language Assessment (CSLA) Purposes, Materials, and Procedures. This document includes a set of CSLA forms and in-depth information about CSLA procedures that are designed to help ensure consistency in conducting the CSLA. For example, rating procedures specify a minimum of two raters per CSLA videotape, and standard procedures are detailed when independent ratings of one or more sign language linguistic features are not in agreement.

In order to provide continuity to CSLA development, CSLA training and development of training materials began during Summer 2003. During Fall 2003, training for CSLA Observers continues, which is helping us refine our Classroom Sign Language Assessment (CSLA) Purposes, Materials, and Procedures document. Piloting of the CSLA is expected to continue through the winter of 2003-04.

Further validation of the CLSA may include comparing the ratings of CSLA raters: (1) to those of independent, non-professional judges, (2) to Sign Communication Proficiency Interview (SCPI) results, and/or (3) to the Student/Faculty Communication Survey currently being piloted at NTID (see article, p.6). Also, we will investigate CSLA reliability via comparison of the two observers' first independent ratings for each sign language linguistic feature and, as resources permit, will conduct observations to allow rating comparisons across all CSLA Observers.

#### Possible Steps in CSLA Process

CSLA training and piloting will likely result in additional refinements to CSLA materials and procedures. The CSLA steps listed on p.4 provide a general description of what the final CSLA process might entail:

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June Reeves is an associate professor in the Department of American Sign Language and Interpreting Education at NTID.

June Reeves holds Professional Level Certification from the ASLTA, Comprehensive Skills Certificate from the RID, and Permanent Professional Certification from the Council on Education of the Deaf. She currently teaches courses in ASL and linguistics of ASL to faculty/staff and students at NTID/RIT, and is an interviewer/rater and trainer for the SCPI. For more information, she may be contacted at JBRNCM@RIT.EDU.

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for instructors who have deaf and hard-of-hearing students in their classes at the AHEAD conference in July. The focus of the presentation was specifically on pedagogy, and the ways in which teaching practices enhance or impede access for these learners. The project's website, "ClassAct" is currently being evaluated at four beta sites and will be open to the public early in 2004.

Marc Marschark has received the Edmund Lyon

Founder's Award from the Rochester School for the Deaf (RSD) in recognition of his professional contributions to the field of education of deaf and hard-of-hearing children. The award was presented at RSD's Underwriters' Dinner as part of their Adventures in Education celebration.

Also, Marschark has been invited by Oxford University Press to edit their new *Perspectives on* 

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#### Sign Language Assessment continued from page 3

- 1. One videotaping session of the instructor in her/his classroom using a lecture format.
- 2. Viewing of this videotape (VT) by trained observers to provide ratings, and examples (positives, errors, and omissions) as appropriate, for six sign language linguistic features.
- 3. Feedback/other comments pertinent to instructor's classroom use of sign language, including comprehension skills if observable.
- 4. When observers' first independent ratings are not in agreement, additional viewing and observer discussion to finalize ratings.
- 5. Preparation of an observation report for the instructor.
- 6. A follow-up meeting between the instructor

and CSLA Team member to review the videotape, discuss the instructor's current sign language skills and suggestions for improving these skills.

#### Conclusion

The CSLA project's primary goals are to develop a classroom-based observation assessment tool to assess the effectiveness of NTID instructors' classroom sign language communication skills and to assist instructors in their sign language communication skills development; the secondary goal is to give NTID instructors information to include in their annual appraisals and in their tenure and promotion documentation. Achievement of these CSLA project goals, hopefully, will contribute to the Institute's goal of full communication access for all NTID community members.



Geoffrey Poor is an associate professor in the Department of American Sign Language and Interpreting Education at NTID.

Geoff Poor is the
Coordinator of NTID's
Office of Communication
Assessment Services. He is
the project director for the
ASL Video Dictionary
and Inflection Guide CD
(http://www.rit.edu/ntid/dig), published in
August, 2002. For more
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### CLASSROOM SIGN LANGUAGE ASSESSMENT (CSLA) DRAFT REPORT FORMa

November, 2003

Instructor: NAME Lesson Topic: TITLE

Primary Communication Mode(s) Used:

Course: TITLE
Date of Taping: DATE

## Ratings for Six Sign Language Linguistic Features Important to Effective Classroom Communication with Deaf Students

### Rating Scale for sign language features #1 & #2:

Always/ Almost Always	Errors Did Not CauseInterference with Intelligibility	Errors Caused Some Interference with Intelligibility	Errors Caused Significant Interference with Intelligibility	Generally Not Understandable
5	4	3	2	1

1. **Signs and Fingerspelling Produced Accurately & Clearly:** This feature involves use of appropriate production characteristics of signs and fingerspelling. These include handshape, movement, placement/location, and orientation of the hands/arms while producing signs. Also included under sign and fingerspelling production are the appropriate positioning of hands and arms and their movement within the signing space.

Rating: Errors:

2. **Sign Knowledge and Use Convey Message Intent:** This feature involves breadth of sign vocabulary knowledge and the ability to select and use signs appropriate to intended meanings. It also includes the ability to modify signs as appropriate to communicate more complex meanings, for example, number, size, degree, intensity, manner, distance, and time/duration.

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Deafness series, which focuses on issues related to language, education, culture, and other topics of interest to deaf individuals, educators of deaf students, and investigators across a variety of fields. Patricia Spencer (Gallaudet University) will co-edit the series.

In August, 2003, **Frank Caccamise** and **Bill Newell** conducted a Sign Communication Proficiency Interview (SCPI) Training Workshop at the Ohio

School for the Deaf. Also, Caccamise, Vince Ortolani, Mary Lou Basile, Camille Aidala, Don Feigal, and Cea Dorn completed their work on development of a sign language CD-ROM for Administrative Support Technology (AST) terminology, and presented their work at the International Symposium on Instructional Technology and Education of the Deaf at NTID in June, 2003. For additional information, contact Caccamise at *FCCNCR@RIT.EDU*.



#### Rating Scale for sign language features #3 to #6:

Always/ Almost Always	Most of the Time	About Half the Time	Occassionally	Never/ Almost Never
5	4	3	2	1

**3. Space Used Effectively to Refer to Noun Referents:** This feature involves establishing and using referents for nouns in the signing space in order to discuss them and to compare and contrast ideas, people, and places. Skills important for this area are establishing points in space as referents, eye-gaze, producing noun signs so that they are consistent with real world orientation, using directional verbs consistently, and shifting of the body to show contrast/comparison and for assuming roles when reporting indirect discourse (includes role shift).

Rating: Positives: Errors/Omissions:

**4. Non-Manual Signals Convey & Support Meaning:** This feature involves the use of facial expression, eye gaze, head movements, body shift and pausing to convey information regarding sentence types; that is, to distinguish statements vs. questions, to distinguish Wh (what, who, etc.) from yes/no questions, and to mark conditional statements, rhetorical questions and topics. It also includes use of non-manual signals to convey information regarding relative size, degree, intensity, manner, distance, and time/duration.



**5. Classifiers Convey Accurate Information about the Physical World:** This feature involves the use of specified handshapes to communicate efficiently and effectively about the physical world. These specific handshapes are used to show location and movement of nouns, to describe nouns, to show how objects are handled and used and to show how the body appears/moves. Classifiers are referred to/written about in the following way: CL:B (table located there).

Rating: Positives: Errors/Omissions: Comment:

**6. Discourse Organization is Visually Effective:** This feature involves using signs and sign language techniques for organizing the whole, and the sub-narratives/statements within, in extended communication sequences (such as classroom lectures). Specialized signs (for example, NOW, FINISH & OFF-POINT), rhetorical questions, listing on the non-dominant hand for related items and sequence of events, and other signing techniques (for example, non-manual signals such as body shifts & pauses) are used to signal topic introductions, reviews, endings, transitions, and asides. These signs and techniques help to make the entire discourse visually clear and easy to follow.

Rating: Positives: Errors/Omissions:

Additional Comments (Optional): Additional examples, comments about comprehension skills if clearly observable, & other comments pertinent to instructor's classroom use of sign language based on observation. Priority Sign Language Linguistic Features for Skills Development<sup>b</sup>
Course/Activities Recommended for Skills Development<sup>b</sup>

<sup>a</sup> Based on a form in Reeves, J., Newell, W., Holcomb, B.R., & Stinson, M. (2000). The Sign Language Skills Classroom Observation: A process for describing sign language proficiency in classroom settings. *American Annals of the Deaf, 145*, 315-341.

<sup>b</sup> These two sections completed by CSLA Team member conducting CSLA Follow-Up Meeting

Mike Stinson has just received two grants from the US Department of Education, one from the Steppingstones of Technology Innovation program in the amount of \$399,999, and a second from the Model Demonstration Projects for Children with Disabilities program \$699,999. Both projects build on the work that Mike and his team have done over the last 15 years with C-Print, developing it into one of the premier support services for students who are deaf or hard of hearing. The new projects

expand the C-Print model using automatic speech recognition (ASR). While the Steppingstones project will focus on middle and high school students in public schools, the Model Demonstration project will focus on undergraduate students at RIT and at Louisiana State University. A major focus of both projects will be to foster student use of the new C-Print Pro educational

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Joan Carr is an associate professor in the Department of Science and Mathematics at NTID.

Joan Carr has been at NTID for 29 years. During this time, she has taught math at all levels in the Department of Science and Mathematics, and she is currently the mathematics coordinator for the department. For more information, she can be contacted at JACNTM@RIT.EDU.



Carol DeFilippo is an associate professor in the Department of Research at NTID.

Carol De Filippo's research focuses on the postsecondary experiences of deaf students, techniques for assessing or enhancing their speech reception skills, and perceptual processes underlying speech reception. She teaches an orientation course to first-year NTID students and a course in audition and spoken language to graduate students in the Master of Science in Secondary Education (MSSE) program. For more information, she may be contacted at CDFNCP@RIT.EDU.

### Student/Faculty Communication Survey: A Process and a Tool to Obtain Student Ratings of Instructors' Classroom Communication

by Carol Lee De Filippo

#### Introduction

Do instructors communicate effectively with their students? Instructors ask this question to guide their professional development and to document their skills for annual performance appraisals, tenure review, and promotion. One way to answer the question is to survey students. A team at NTID, including Frank Caccamise, Ron Kelly, Gary Long, Lynette Finton, and the author, is developing a new tool for this purpose.

At NTID, a transcript of sign language coursework, a rating on the Sign Communication Proficiency Interview (SCPI), and evidence of continued participation in spoken language workshops all contribute valuable information regarding communication. However, instructors have voiced a need for something more, and many are interested in opening a window directly onto their primary setting, the classroom, because it is a real-life situation where knowledge, communication skills, attitudes, strategies, and teaching creativity can combine synergistically.

RIT and NTID both have a history of using rating scales in the classroom. This project focuses student ratings directly on communication.

#### The Survey Tool

The Student/Faculty Communication Survey is comprised of 20 items that sample global

visual-communication strategies, sign language communication, and spoken language communication. It covers perceptions of skills, behaviors, and attitudes. The number of items was limited to avoid rater fatigue, which can occur if students are asked to provide many ratings at one time.

While drafting items, we consulted the Language/Communication Background Questionnaire, the American College Test survey for deaf/hard-of-hearing students, the Communication Ease Scale, and the NTID Student Rating System. Items were written for ease of reading comprehension and represent best practices in communication instruction:

- 1. I understood the instructor most of the time.
- 2. My instructor understood me most of the time.
- 3. My instructor made good use of visual materials (overheads, illustrations, videotapes, etc.).
- 4. My instructor's speech helped me understand.
- 5. My instructor used clear mouth movements for speech.
- 6. My instructor used pauses to help make his/her speech clear.
- 7. My instructor used facial expression appropriately.
- 8. When I didn't understand my instructor's speech, he/she said things a different way.
- 9. My instructor used writing to introduce new words before I tried to lipread them.
- 10. When I tried to lipread my instructor, I felt comfortable.
- 11. My instructor's overall sign language skills were good.
- 12. My instructor explained course content clearly in sign language.
- 13. My instructor's signing with speech was clear and easy to understand.

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software that promotes student participation and active learning.

The Department of Research welcomes Ms. Argiroula Zangana, Fulbright Exchange Visitor and a graduate of the NTID Masters of Science in Secondary Education program, who will assist Department of Research with research projects and teaching assignments as part of her academic training program throughout the academic year.

**Dr. Greg Leigh**, Head of Educational Services, Royal Institute for Deaf and Blind Children and Associate Professor of Special Education, University of Newcastle, New South Wales, Australia, will be a visiting scholar to the Department of Research from November 5 to December 20, 2003. He will conduct research, consult with colleagues, and hold informal research seminars for the community.



Student opinion about an instructor's communication in the classroom is the subject of a new tool to supplement current means of documentation for tenure, promotion, self-appraisal, and professional development of NTID faculty.

- 14. My instructor's signing without speech was clear and easy to understand.
- 15. My instructor's fingerspelling was clear and accurate.
- 16. My instructor knew signs for common "everyday" vocabulary.
- 17. My instructor clearly separated ideas when signing.
- 18. My instructor understood my signing.
- 19. When my instructor didn't understand my signing or fingerspelling, he/she let me know. 20. When my instructor signed in class, I felt

20. When my instructor signed in class, I felt comfortable.

Students also indicate their gender, age, race/ ethnicity, year in school, and preferred mode of communication. They provide a self-rating of signing skills, receptive speech understanding, and receptive simultaneous communication skills. This information will be used to examine the association between students' judgments and their communication characteristics.

We also needed a process and a survey format that was easy and informative to the users. We borrowed these from the Student Rating System, a well-tuned process, familiar to both students and faculty, with an established agreement scale and an automatic reporting function. The four summative items from the Student Rating System were included on the communication survey form, precluding the need for two paper surveys and satisfying the university-wide requirement to obtain standard student ratings while obtaining formative information about communication.

They are:

- 1. I am satisfied with this instructor's teaching skill.
- 2. I am satisfied with this instructor's communication skill.
- 3. I learned a lot from this instructor.
- 4. I would recommend this instructor to other students.

Faculty are asked to participate for a minimum of one quarter per year. Because the ultimate goal is to develop a means of documenting communication skills in addition to the SCPI, required for tenure and promotion, participants are also invited to share their SCPI ratings, which allows data analysis to show the relationship between student perceptions in a classroom setting and ratings in the SCPI interview setting.

#### Results

During the first project year, 53 faculty members used the experimental communication survey in their courses. The group data to date indicate that students use the response scale as expected; there is an orderly relation between students' ratings and other indicators of faculty communication skills.

As this project enters its second year, more faculty are coming forward to request the experimental communication survey. The outcome is expected to be an easy and informative means to provide student feedback on instructors' communication effectiveness in the classroom for tenure, promotion, self-appraisal, and professional development.

The National Science Foundation has funded the *Deaf Initiative in Information Technology* project for a second three-year phase for a total of \$686,000. Donna Lange and Donald Beil (CTS) are co-Pl's on the project. During phase one, 145 deaf and hard-of-hearing adults attended 21 IT workshops, 6 faculty received professional certifications, 5 new courses were offered and 5 courses were revised. In phase two, the project will continue with these activities and form relationships with corporations,

nonprofits, and the government to pursue the workforce development aspects of the project. Beil, Lange and **Gary Long**, evaluator on the project, presented papers the project at several conferences last spring, including the Society for Information Technology and Teacher Education International, Technology in Education, the Association for the Advancement of Computing in Education, and the American Association of Community Colleges.

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# IMPLICATIONS OF NTID RESEARCH

## FOR DEAF AND HARD-OF-HEARING PEOPLE • NTID RESEARCH BULLETIN

Vol.9 No.1 Fall 2003

A primary mission of the Department of Research is to "foster advances in teaching and learning that enhance the academic, professional, social and personal lives of people who are deaf or hard of hearing." Among its other functions, the Department of Research conducts research relevant to that goal and supports research conducted by colleagues from across NTID.

As part of our collaborative efforts, the Department of Research regularly undertakes the collection and dissemination of relevant research findings from across NTID. NTID Papers and Publications is published every two years. Implications of NTID Research, published in alternate years, includes the implications of the research findings for each publication that the author thinks will be most relevant for NTID's audiences.

Marschark, M., & Lukomski, J. (2001). Understanding language and learning in Deaf children. In M.D. Clark, M. Marschark, & M. Karchmer (Eds.), Cognition, context, and deafness (pp. 71-86). Washington, DC: Gallaudet University Press.

A review of research on cognitive development and the assessment of learning by deaf students suggests that there are differences in their learning, knowledge organization, and approaches to problem solving relative to hearing students. The origins of the observed differences are not entirely clear, nor is the extent to which they may have long-term, significant implications for educational achievement. The impact of these differences on classroom learning may be magnified or modified by the variability of the learners. The authors suggest ways in which educational methods might need to change to optimize academic success of the individuals, and emphasize the need for educational programs with sufficient flexibility to match diverse student needs.

## **Implications**

The most popular perspective on the interaction of language and learning in the

education of deaf children is the suggestion that "deaf and hard-of-hearing students are just like hearing students." The authors argue that, while egalitarian, such pronouncements are wrong, and following them blindly may be an even greater disservice to deaf children than treating deaf children as though they are different from hearing children.

Parasnis, I. (1998). Cognitive diversity in deaf people: Implications for communication and education. Scandinavian Audiology, 27 (Suppl. 49), 109-115.

Research and issues related to cognitive diversity in deaf people are reviewed, which indicate how the visual-perceptual skills and cognitive processes of deaf people may be different from those in hearing people. It is suggested that deafness and the use of a sign language may selectively contribute to the development of such differences.

#### **Implications**

The results of several research studies indicate that deaf fluent signers have better visual attentional control than hearing people and use different visual-perceptual strategies in processing visual information.

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These results have implications for designing and presenting curricula to deaf students. Teachers should use visual organizational principles and rely on the use of visual attention cues and visual aids. Multimedia displays could include visual information in the periphery to a greater extent than is appropriate for hearing students, and could use a panoramic view of the visual information to be presented. Finally, curricula and multimedia materials that encourage deaf students to rely on their visual imagery and visual memory may be particularly effective.

Stinson, M.S., & Antia, S. (1999). Considerations in education of deaf and hard-of-hearing students in inclusive settings. *Journal of Deaf Studies and Deaf Education*, 4, 163-175.

This article provides an overview of key issues pertinent to an inclusive approach to the education of deaf students. It discusses definitions of inclusion, integration, and mainstreaming from

placement-related, philosophical, and pragmatic perspectives. It also compares perspectives on inclusion in the general field of special education with those in the education of deaf and hard-of-hearing students. It considers the challenges of using an inclusive approach to achieve academic and social integration of deaf students.

#### **Implications**

In creating effective inclusive programs, educators must consider challenges to academic integration, including delayed academic achievement and difficulties with classroom participation. With regard to social integration, public school students with all degrees of hearing loss interact infrequently with their hearing classmates and engage in less linguistic and more nonlinguistic interaction than their hearing peers. Degree of acceptance by classmates may be less than that for hearing peers, resulting in numerous implications for deaf and hard-of-hearing students in regular classes.

closely related papers, c/o NTID. If you are unable to o library, you may send this form to: Educational Techn	btain one of the publica	3 3
Deaf, 52 Lomb Memorial Drive, Rochester, NY 1462.		J
Marschark, M., & Lukomski, J. (2001). Under Parasnis, I. (1998). Cognitive diversity in deay Stinson, M.S., & Antia, S. (1999). Considerat inclusive settings.	f people: Implications fo	r communication and education.
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