

NTID RESEARCH BULLETIN

Center for Research, Teaching and Learning · National Technical Institute for the Deaf · Rochester Institute of Technology

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Susan Foster is a professor in the Department of Research at NTID.

Promoting Inclusion and Access for Deaf Students in Postsecondary Education through Participatory Action Research

by Susan Foster and Gary Long

Introduction

Deaf and hard-of-hearing students are attending mainstream postsecondary educational programs in the United States in ever-increasing numbers. At least two national studies conducted within the past six years estimate that more than 25,000 such students are mainstreamed in approximately 2300 postsecondary programs. We have come a long way in terms of providing support services such as interpreters, notetakers and tutors for these students. Yet we have not systematically documented what works and does not work regarding full inclusion of this population.

NTID, one of the eight colleges of RIT, is in a unique position to identify the efficacy of inclusive education in achieving the goal of equal opportunity and access to the general curriculum. Approximately 1100 deaf students attend classes at NTID/RIT; 400 of these are fully matriculated in the other seven colleges of RIT. Over the past 30 plus years, NTID has developed a very high level of experience and expertise in providing support services to these deaf students.

Data from a four-year longitudinal study of the conditions that effect access to teaching and participation in learning by deaf postsecondary students in mainstream classes show that full inclusion requires more than the provision of support services (Foster, Long, Snell, 1999; Foster, Long, Ferrari & Snell, 2000). The attitude of the instructors, the competence of the interpreters,

notetakers and tutors (both knowledge of sign language and subject content knowledge), the venue for instruction (e.g., classroom or laboratory setting), class size, instructors' teaching approaches, classroom materials and evaluation methods all impact the academic success of deaf college students. While faculty in other RIT colleges may have experience working with both deaf and hearing students, they do not always have the knowledge to modify their instructional approach and materials in ways that provide access for deaf students. New faculty may have neither the experience nor the knowledge or resources.

During AY 2001-02, a project was funded through an RIT Provost's Learning Innovations Grant with the goal of increasing access and participation for deaf students enrolled in courses within the RIT College of Science (COS). This project reflects a Participatory Action Research (PAR) approach involving instructors, support service providers, researchers, deaf students, and professional staff within NTID, COS, and the RIT Center for Professional Development. PAR involves several key facets, including having the community to be served (1) identify the problem, (2) work collaboratively as peers with researchers to find solutions, and (3) gain knowledge and skill from the research that benefit them directly. For this project, PAR is being used to develop and disseminate strategies that enhance access for deaf students within the COS; regular feedback is used to continuously review and refine these strategies.

The project design involves four concurrent activities: (1) college-wide programming,

Promoting Inclusion and Access continued on page 3



Gary Long is an associate professor in the Department of Research at NTID.

Notes of Note

Ronald R. Kelly, John Albertini and Nora Shannon have recently published an article, "Deaf college students' reading comprehension and strategy use," in the *American Annals of the Deaf*, 146(5), 385-400, 2001.

In February, **Ronald R. Kelly, Harry Lang**, and Claudia Pagliaro (University of Pittsburgh, Program for the Education of Deaf and Hard-of-Hearing Students) presented a paper, "A national survey of instructional practices in grades 6-12 for teaching

mathematics word problem solving to deaf students," at the Association of College Educators-Deaf and Hard of Hearing 2002 Conference: The Challenge of Curriculum, and Consistency in Charleston, SC.

Ronald R. Kelly, Harry Lang, Keith Mousley (NTID Science and Mathematics) and Stacey Davis presented "Deaf college students' ability to solve arithmetic word problems" at the same conference in Charleston, SC.

Notes of Note continued on page 3



Jeffrey Porter
Interim Director, CRTL

Your Input on Our Research is Invited...

Research conducted through NTID aims at both generating knowledge and providing solutions regarding the educational, social, personal, and career-related issues facing deaf and hard-of-hearing individuals.

One such “avenue of openness” (and believe me, it is a two-way street!) is between faculty who are primarily researchers and faculty who are primarily teachers. Members throughout the NTID community have worked hard over the years to build the bridges and implement the strategies that link and “cross-pollinate” the all-too-often separate realms of research and practice with education. Much of NTID’s best research is informed by the realities of learning/teaching practice; much of NTID’s best learning/teaching practice is illuminated by research findings.

Another important “avenue of openness” runs between NTID and the greater field of deafness, and it too is a heavily traveled two-way thoroughfare! Last year, research faculty within NTID’s Department of Research disseminated the results of their activities to the greater field through publishing 23 articles and book chapters and 6 books. They also delivered 51 external presentations and submitted 7 grant proposals (of which 3 were funded). But the notion of “two-way” requires as well the sharing of views and experiences by the greater field with NTID’s program of research. It is this particular “direction of sharing” that I’d like to focus on, in the form of a personal invitation.

I invite you to visit the NTID Research Advisory Group’s website at www.rit.edu/490www/RAG.

The Research Advisory Group (RAG) is responsible for providing recommendations to NTID’s Dean and Vice President on an annual basis regarding the needed focus of NTID’s future research efforts. Five priority areas comprise NTID’s programmatic research agenda. These areas, listed on the RAG website, are: Language and Literacy, Teaching and Learning, Sociocultural Influences, Career Development and Technology Integration. For each priority area, a listing of current research projects is provided. Take some time to provide your feedback about additional projects that NTID should consider under each primary area.

We all at NTID value highly the role research plays in improving practice and the role practice plays in improving research. We also value highly the time you take to provide us your suggestions and insights regarding future directions of NTID research. RAG appreciates any feedback you provide, and will use it to inform its annual recommendations.

NTID RESEARCH BULLETIN

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Jeffrey Porter, Interim Director, CRTL
Gail Hyde, Editor

*Sue Foster's work has focused on the issues of access and accommodation of deaf persons in mainstream settings. She has presented and published extensively, including **Deaf Students in Postsecondary Education** (co-edited with G. G. Walter) and **Working with Deaf People: Accessibility and Accommodation in the Workplace**. Current research interests also include international perspectives on inclusion of deaf persons in school and society and factors that facilitate or impede the promotion of deaf professionals into supervisory roles. For more information, contact Foster at SBFNIS@RIT.EDU.*

The majority of Gary Long's research efforts has focused on the interplay of cognitive and social/emotional variables that impact on academic achievement for persons who are deaf. He has published extensively, and has also developed instruments that help researchers better understand the extent to which students identify with their schools, are actively engaged in learning, and feel that they can communicate clearly with their instructors. For more information, contact Long at GLLERD@RIT.EDU.

Promoting Inclusion and Access continued from page 1

(2) individual coaching for instructors and deaf students, (3) creation of materials through cycles of activity and reflection, and (4) the identification of critical components for an intervention model that can be used with other colleges.

College-Wide Programming

These activities are designed for instructional faculty and students in larger groups, in which they come together to learn about and discuss strategies that will increase access for deaf college students. Content includes discussion of barriers as well as strategies to enhance classroom practices in ways that increase access to course instruction and materials for deaf students. Specific topics include pedagogy, learning in lab courses, group work both in and out of class, use of support services, and self-advocacy regarding learning activities.

Individualized Faculty and Student Development

These activities involve 1:1 and small group coaching/mentoring for selected instructional faculty and students. Faculty participants are accepted for individualized coaching and deaf students for small group mentoring. The goal of this activity is to "grow" a cohort of faculty and student experts at the partner college who can later share ideas and strategies with other faculty and students once the project activities are concluded. Faculty coaching involves (1) environmental assessment of the instructional setting (classroom or lab), (2) classroom observations by project staff (deaf student assistants, researchers and support service providers), and (3) individual debriefing

and coaching. The focus of these activities is on improving the physical environment for access, effective use of notes and interpreters, use of technology in teaching deaf students, modifications in pedagogy, suggestions for enhanced inclusion of deaf students in group work and class participation, and other special topics as needed.

Student mentoring involves (1) class observations by student assistants and service providers, and (2) small group debriefing and discussions led by deaf student assistants. The focus of these activities is on giving students strategies for enhanced participation in class activities, positive forms of self-advocacy in learning situations, and information regarding appropriate and optimal use of support services.

Creation of Materials

Following the PAR model, project researchers collaborate with other members of the project team, as well as with participants in college-wide and individualized activities, to identify and generate strategies to overcome or eliminate barriers to access. Concerns and suggestions raised during workshops, interviews, and class observations are treated as a kind of experiential data. For example, workshop participants may be asked to write their reflections on selected topics, or to summarize key points raised in small group discussions. Participants in the individualized development activities are observed in the classroom and interviewed at the beginning and end of this activity regarding their experiences, concerns, and expectations. Through small group discussions, deaf students are invited to share their perceptions of barriers to access in mainstream classes.

Promoting Inclusion and Access continued on page 4

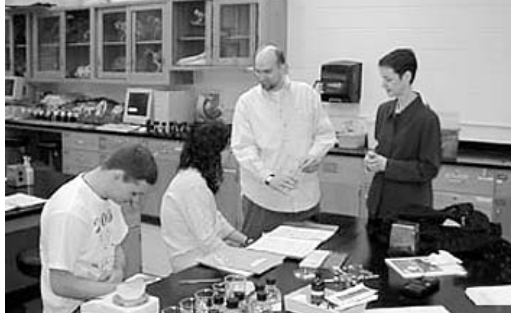
Notes of Note
continued from page 1

Susan Fischer presented "The cross-linguistic study of sign language" at a colloquium at California State University, Northridge on March 7, jointly sponsored by the Linguistics and Deaf Studies programs. A number of foreign students who were interested in studying the sign languages of their native countries contacted Susan afterwards for leads on whom to talk with on the topic.

In April, **Marc Marschark** will give the keynote address, "Development of deaf children: What's

(A)typical?" at the opening conference for the "Expertcenter on Atypical Communication Development," located at the University of Nijmegen in the Netherlands. The primary goal of this center, founded by The Intituut voor Doven (Institute for the Deaf) and the University of Nijmegen, is to study the communication and development of children and youngsters whose conditions for acquiring language can be labeled atypical. Deaf children will be a particular research focus.

Notes of Note continued on page 4



Kate Rizzolo interprets for Mark Deutschlander (COS Biological Sciences) in a laboratory setting.

Promoting Inclusion and Access continued from page 3

In combination with their own expertise and experience, the project team uses participants' ideas to develop (and over time, refine) collections of materials that describe access barriers and strategies to overcome barriers. Below we offer just two examples from materials that have been developed through this process and used during project workshops. The first focuses on working effectively with interpreters in lecture settings, the second on pedagogy regarding materials and procedures in labs. For both examples, the format is to first define the type of class setting and the topic, and then describe access challenges and strategies to meet the challenges.

Type of Class: Lectures
Topic: Instructor and Interpreter Roles

Challenges
The presence of deaf students and interpreters alters the conventional communication dynamic in a classroom. The presence of an interpreter may make you [the instructor] feel removed from the deaf and hard-of-hearing students in your class. The temptation is to refer to them as "the deaf students" or as "the interpreter's students." As a professor, you are responsible for setting the tone and rules of interaction within the classroom.

Strategies

- Acknowledge that your audience is different. If it is your first time working with deaf students and interpreters or if you are wary due to past difficulties, it is especially important to be open to the experience for the sake of all involved.
- Meet and greet the deaf students and interpreters.

Two or three minutes at the beginning of the course will help you to establish rapport and set a positive tone for the quarter or semester.

- Remember that **all** of the students in the class are **your** students. Deaf and hard-of-hearing students are not the responsibility of the interpreter and are subject to the same rules of conduct and participation as the hearing members of the class.
- Understand that interpreters are present to provide communication access. While they're not participants in the class, it is critical to recognize them as professionals and relate to them accordingly.

Type of Class: Lab
Topic: Materials and Procedures

Challenges
In preparing for labs you [the instructor] (a) routinely must alter the basic lab procedure materials to make them appropriate for your specific course, or (b) sometimes have last-minute changes in the lab procedure. At the start of the lab, you ask the students to open their books to the procedure and then proceed to state the needed changes. Deaf students are in the position of trying to read the book, look at the instructor, and follow the interpreter at the same time. This leads to confusion on the part of the deaf students when they begin to carry out the lab.

Strategies

- Give students a handout with the changes incorporated into the other lab procedures.
- Discuss the lab changes during the lecture.
- Send out an e-mail or post information on the Web that spells out lab procedures and changes.
- Use an overhead of the lab procedure and write the changes on the overhead. Leave this overhead up

Notes of Note
continued from page 3

At the 2002 American Educational Research Association annual meeting in New Orleans, Rose Marie Toscano (NTID Liberal Arts Support), **Barbara McKee** and Dominique LePoutre (NTID American Sign Language and Interpreter Education) received the AERA Special Interest Group on Deafness' Best Paper Award for "Success with academic English: Reflections of D/deaf college students." This study identified social, educational and demographic characteristics of deaf postsecondary students who demonstrated high

reading and writing skills. Several themes emerged from the study results, including the importance of heavy parental involvement in early education, extensive family communication (despite different modes of communication), a relatively limited social life, high parental and school expectations, and a positive self-image.

Harry Lang and Karen Conner (NTID Business Occupations) recently published a history, *From Dream to Reality: The National Technical Institute for the Deaf, A College of Rochester Institute of Technology.*

The Project Team:

Marcia Birkin (COS Mathematics and Statistics)
Sue Foster (NTID Research)
Dwight Godwin (NTID Interpreting Services)
Gary Long (NTID Research)
Deborah Makowski (NTID Interpreting Services)
Eileen Marron (COS Assistant Dean)
Sharon Rasmussen (NTID Support)
Annemarie Ross (COS Student-Biochemistry)
Rosemary Saur (NTID Support)
Michael Short (COS Student-Mathematics)

Stephanie Shubert (COS Student-Imaging Science)
Jill Smink (COS Student-Biology)
Paul Thompson (Graduate Student-NTID Support)
Erin Vlahos (COS Student-Undecided Science)
Kristen Waterstram-Rich (COS Allied Health Sciences)
Markelia Weaver (RIT Professional Development)
Faculty Participants for Class Observations and Individualized Coaching:
Mark Deutschlander (COS Biological Sciences)
Carol Marchetti (COS Mathematics and Statistics)

during the lab so that all students can refer to it.
• Use a handout of the procedure and then write any changes on the blackboard. Again, leave these written changes on the board during the lab.

Critical Components for an Intervention Model

Finally, the project team is identifying the critical components of an intervention model that can be used with other colleges. This activity involves identifying and describing those individuals, events, resources, conditions, and activities that are proving most central to the success of the project. Examples of critical components documented thus far include the following:

- Establish a liaison within the partner college who then joins the project team and has the ability to motivate faculty, engineer college calendars, and generally resolve barriers to project implementation.
- Balance expertise and experience in the project team—e.g., include researchers, interpreters and support faculty, deaf students, instructional faculty, administrators from the partner college, and university-wide professional development staff.
- Maintain sufficient flexibility within the project (e.g., time, expertise, and resources) to re-orient workshops or other activities in response to emerging goals and needs identified by partner college faculty and deaf students.
- Design workshops in ways that move participants from passive to active problem solving modes, and shift leadership from project team members to faculty and students in the partner college. This will eventually lead to the establishment of “multi-perspective” teams (e.g., deaf student, instructor, interpreter) who can collaborate to resolve access barriers and will become the

- “in-house experts” for their colleagues and peers.
- Create opportunities for the needs and concerns of deaf students from within the college to be heard and acknowledged by the project team and instructional faculty.
 - Celebrate the developing learning community through regularly scheduled informal gatherings.

Conclusion

We have seen exciting dialogue occur among participants from different departments and disciplines, including instructors, support service providers, researchers, and students. Importantly, deaf student assistants have generated a high level of involvement and enthusiasm. Through the PAR approach we are generating a wealth of anecdotal information “from the field” and will continue to collect stories that reflect the experiences and ideas. We are currently seeking funding for expansion of this project and hope to establish a website in the near future that will enable us to reach instructors, support service providers, and students at other colleges. We look forward to continued study of this important topic.

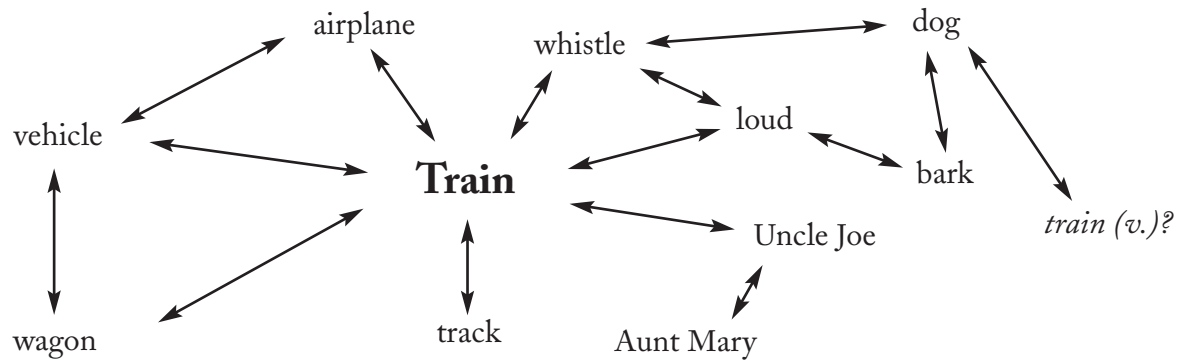
References

- Foster, S., Long, G., & Snell, K. (1999). Inclusive instruction and learning for deaf students in post-secondary education. *Journal of Deaf Studies and Deaf Education*, 4(3), 225-235.
- Foster, S., Long, G., Ferrari, J., & Snell, K. (2000). *Providing access for deaf students in a technical university in the USA: Perspectives of students and instructors*. Paper presented at the 19th International Congress on Education of the Deaf, July 9-13, Sydney, Australia.

Faculty from the American Sign Language and Interpreting Education (ASLIE) department (Cindy Campbell and Rico Peterson), the Office of Communication Assessment (Geoff Poor), and the Department of Research (**Frank Caccamise, Susan Fischer, Sue Foster, Ron Kelly, Harry Lang, Gary Long, Janet MacLeod, Sara Schley, and Mike Stinson**) have begun a three-year collaborative research program on the development of sign language proficiency among NTID faculty. At the

request of the Dean of NTID, the group will conduct research in three areas: (1) background and environmental characteristics associated with adult acquisition of sign language in general and achievement of an “Advanced” rating on the Sign Communication Proficiency Interview (SCPI) in particular; (2) new ways of documenting sign language proficiency; and (3) the reliability of the SCPI. Rico Peterson (Chair, ASLIE) and Frank Caccamise serve as the group’s liaisons to the Dean.

Figure 1. A schematic of part of the associative network surrounding the concept train.



Marc Marschark has published 10 books and more than 100 articles and chapters. He is founder and editor of both the *Journal of Deaf Studies and Deaf Education* and the *Counterpoints: Debates in Psychology* book series, both for Oxford University Press. He is co-editor of the forthcoming *Handbook of Deaf Studies, Language, and Education*. For more information, contact Marschark at MEMRTL@RIT.EDU

Carol Convertino received a master's degree in Secondary Education for the Deaf and Hard of Hearing from NTID in 2001. She has been working as an interpreter since 1983, primarily for the RIT College of Imaging Arts and Sciences.

Organization and Use of Word Knowledge by Deaf Students

by Marc Marschark & Carol Convertino

Introduction

Reading requires that we know what the words on a page mean, but also much more. Knowing the meaning of a word implies a host of cognitive abilities: After a word is read (a complex process in itself), its meaning must be retrieved from memory. But meaning is not just a tag of information linked to a word and waiting to be activated, dangling like a price tag on Minnie Pearl's hat. Words have a dynamic associative structure in memory (the *mental lexicon*) that involves connections to other words and concepts, drawing on the entire context of reading (see figure 1). As word meanings "light up" during reading, this *spreading activation* of broader linguistic and nonlinguistic conceptual knowledge also facilitates comprehension of text. If the spread is misdirected or prematurely halted, comprehension will be limited or unsuccessful.

This interaction of *bottom-up-processing* and *top-down processing* is not just limited to reading, but is involved in all kinds of social, language, and cognitive activity. We are always making use of existing knowledge in dealing with incoming information, and new information influences what we already know (a process described in biological terms by Jean Piaget). For those interested in the interactions of language and learning among deaf students, understanding such processes is especially important.

Although it has often been assumed that, except for language differences, deaf and hearing students learn "the same way" in the classroom, this may not be true. Several recent studies have indicated that because of their different early environments, communication histories, and educational experiences, deaf and hearing children may have somewhat different organizations of their word and world knowledge (Marschark, Lang, & Albertini, 2002). Deaf and hearing college students' conceptual knowledge is remarkably similar (McEvoy, Marschark, & Nelson, 1999). Nevertheless, there are significant differences in the strength of associative connections and other

measures of lexical knowledge—enough to influence reading, problem solving, and academic performance (Marschark & Everhart, 1999).

Following from these earlier studies, a recent study at NTID/RIT grew from the idea that if organization of the mental lexicon is important for achievement in reading (and we know it is), then understanding its structure in deaf students could aid in improving reading through targeted instructional methods (Convertino, 2001). For many deaf students, reading is a formidable task. The Stanford Achievement Test (SAT) has consistently measured the median reading score for 18-year-old deaf students at around the fourth grade level (e.g., Traxler, 2000). A better picture of deaf students' mental lexicons may help to determine methods to change that troubling statistic.

Organization of Word Knowledge

In this study, three experiments explored the organization of the mental lexicons in deaf and hearing college students. Two experiments involved examining word associations made by deaf and hearing students. Word associations are a reliable, well-documented index of word meaning and related processes (Nelson, & Schreiber, 1992). A third experiment involved verbal analogies. Analogies offer a robust and effective means of examining the use of conceptual and word knowledge (Goswami, 1992), and play an important role in college entrance examinations and other standardized tests.

Experiment 1 made use of responses collected for 80 different words from over 135 deaf and 135 hearing students in a single-word free association task (McEvoy et al., 1999). Their responses were examined and classified according to the kinds of connections observed. Seven dominant types of associations were found, including superordinates (e.g., *dog-animal*), subordinates (e.g., *utensil-spoon*), part-whole relations (e.g., *table-leg*), and completion/qualifier associations (e.g., *bar-bell*, *flag-pole*). Only the frequency of giving completion/qualifier associations differed reliably between groups, with hearing students giving more. Examining that category responses more closely, no difference was found between the groups in responses that were simple qualifiers; but when



Carol Convertino and Marc Marschark look up word origins and alternative meanings in the Oxford English Dictionary.

responses made up compound words, the hearing students reliably exceeded the deaf students. This finding suggested that the differences observed in the word association task primarily reflected variation in vocabulary (not category) knowledge.

Experiment 2 focused on relations between categories and category members. Deaf students gave single-word associations to 20 category names for which hearing students most often responded with category members (e.g., *pasta-spaghetti*) and 20 category members for which hearing students usually responded with category names (e.g., *canary-bird*). Results indicated reliable, asymmetric patterns of responding in deaf and hearing individuals. Hearing students were no more likely to respond to a category member with a category name than the reverse. Deaf students, in contrast, were significantly more likely to respond to a category member with a category name than they were to respond to a category name with a category member, and they were significantly less likely than hearing peers to respond to a category name with a category member. This asymmetry in category-member relations reflects a difference in organization (and use) of knowledge similar to cross-cultural studies in the 1950s for less versus more educated groups.

Experiment 3 used an analogies task based on six types of associates observed in Experiment 1 (sound-based associates were not included). Significant differences between deaf and hearing students were found for all six types, as hearing students' patterns of responses reflected their lexical organization whereas deaf students' did not. Analyses involving deaf students' reading abilities indicated that success in solving analogies was strongly related to their reading skill, as was the similarity of their responses to those of hearing peers in Experiment 2.

Taken together, these findings suggest that for common concepts, the organization of associative knowledge is relatively similar for deaf and hearing students, at least at the college level. Both groups produced much the same associates, with much the same probabilities. Deaf students, however, demonstrated less strongly interconnected, less readily available, and more "fuzzy" word meanings. These findings are consistent with research showing

that deaf students are well familiar with semantic categories and can produce category exemplars when asked, but are less likely than hearing students to do so spontaneously (e.g., Marschark & Everhart, 1999).

The results of this study suggest that despite marked similarities in the knowledge organizations of deaf and hearing students, there are consistent differences that could influence academic performance. Assuming that simply overcoming the communication barrier in the classroom will lead to effective access to what is being taught thus appears to be an oversimplification. It is essential that we understand both the content and structure of deaf students' knowledge, if we are to effectively match instructional techniques to their strengths as well as their needs. Whether we are teaching reading to young deaf children or information technology to deaf college students, parents and teachers need to foster experience with diverse examples and connections among objects in the same or related categories. Deaf and hearing students have different experiences, knowledge, and cognitive strategies; it should not surprise us if they benefit from different kinds of instruction as well.

References

- Convertino, C.M. (2001). *Words and their primary associates: A comparison of deaf and hearing students*. Unpublished Master's thesis, Rochester Institute of Technology.
- Goswami, U. (1992). *Analogical reasoning in children*. Hillsdale, NJ: Lawrence Erlbaum and Associates.
- Marschark, M., & Everhart, V.S. (1999). Problem solving by deaf and hearing children: Twenty questions. *Deafness and Education International*, 1, 63-79.
- Marschark, M., Lang, H.G., & Albertini, J.A. (2002). *Educating deaf students: From research to practice*. New York: Oxford University Press.
- McEvoy, C., Marschark, M., & Nelson, D. L. (1999). Comparing the mental lexicons of deaf and hearing individuals. *Journal of Educational Psychology*, 91, 1-9.
- Nelson, D.L., & Schreiber, T.A. (1992). Processing implicit and explicit representations. *Psychological Review*, 99, 322-348.

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Bill DeGroote interprets for Carol Marchetti (RIT Department of Mathematics and Statistics). See article on p. 1 for a summary of a research project that promotes inclusion and access for deaf students in postsecondary education.



IMPLICATIONS OF NTID RESEARCH

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

Vol.7 No.2 Spring 2002

In 1993, the National Technical Institute for the Deaf established the Center for Research, Teaching and Learning. A primary mission of the Center 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 Center both conducts research relevant to that goal and supports research conducted by colleagues from across NTID.

As part of our collaborative efforts, the Center regularly undertakes the collection and dissemination of relevant research findings from across NTID. Included for each publication is a description of the implications of the research findings the author thinks will be most relevant for NTID's audiences.

Kelly, R.R., & Mousley, K. (2001). Solving word problems: More than reading issues for deaf students. *American Annals of the Deaf*, 146(3), 251-262.

Deaf and hearing college students were given 15 numeric/graphic math problems and 15 corresponding word problems, with both conditions sequenced for a progressive increase in problem complexity. Deaf college students, regardless of reading level, were comparable in performance to the hearing college students when solving the numeric/graphic math problems and the initial, least complex set of corresponding word problems. Increased complexity of the descriptive information in the word problems and of the problem situations, reading ability level, computational errors, leaving problems blank, and not applying prior learned information to the word problems all contributed to poor performance with math word problems.

Implications:

Generic thinking skills, problem analysis strategies, connecting current tasks to previous tasks or related information, review and evaluation strategies, persistence, and experience in processing increasingly

complex information may all be improved through sustained purposeful practice with appropriate educational activities.

Richardson, J., MacLeod-Gallinger, J., McKee, B., & Long, L. (2000). Approaches to studying in deaf and hearing students in higher education. *Journal of Deaf Studies and Deaf Education*, 5, 156-173.

Richardson (Brunel University, UK) and NTID researchers adapted and administered an "Approaches to Studying Inventory" to a matched group of deaf and hearing RIT students. Results indicate that deaf and hearing students use similar conceptual structures when they describe their study habits, but deaf students score higher on need for systematic structure in their approach to studying, while hearing students score higher on relating ideas.

Implications:

For the past 40 years or more, researchers have been interested in the methods students use to approach the task of learning. Early work demonstrated positive correlations with certain study skills (e.g., underlining and reading aloud) and students' grade point averages. More

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recently, work has focused “surface-level processing” vs. “deep-level processing.” Further studies will show whether there is a relationship between demographic variables (major, GPA, credit hours completed) and self-reported approaches to learning.

Berent, G.P., Samar, V.J., & Parasnis, I. (2000). College teachers’ perceptions of English language characteristics that identify English language learning disabled deaf students. *American Annals of the Deaf*, 145, 342-358.

Although the existence of deaf individuals who also have LD has been recognized for many years, there are no clearly defined criteria for identifying them, partly because of the confounding effects of deafness and LD on English language development. Despite the confound, previous surveys suggest that teachers believe that atypical English language behavior is a potential diagnostic marker for LD in deaf individuals. A survey administered to experienced teachers and tutors of English to deaf college students

indicated that spelling knowledge and a variety of English discourse, lexical, syntactic, and morphological phenomena emerged as priority candidates for further study as potential markers of LD in the deaf population.

Implications:

The results of this research suggest that the perceptions of expert English language professionals regarding the incidental English language characteristics of deaf LD students are consistent with previous empirical findings on hearing LD students. In-depth investigation of the areas of knowledge identified by the participants in this study might lead to the discovery of a distinct profile of English language knowledge for deaf LD students compared with their non-LD peers. Such a profile would provide additional valuable information for educational planning and intervention services and could lead to new methods and approaches to educating deaf LD students.

If you would like to obtain information in an area beyond what you see listed, you can write to the first author of closely related papers, c/o NTID. If you are unable to obtain one of the publications on this sheet from your local library, you may send this form to: Educational Technology Resource Room, National Technical Institute for the Deaf, 52 Lomb Memorial Drive, Rochester, NY 14623-5604.

___ Kelly, R.R., & Mousley, K. (2001). *Solving word problems: More than reading issues for deaf students.*

___ Richardson, J., et al. (2000). *Approaches to studying in deaf and hearing students in higher education.*

___ Berent, G.P., et al. (2000). *College teachers’ perceptions of English language characteristics that identify English language learning disabled deaf students.*

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