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Martha Gaustad is a Professor in the Department of Special Education, Bowling Green State University. This photograph was downloaded from the web.

Comparing the Morphological Knowledge of Deaf and Hearing Students

by Martha G. Gaustad, Ronald R. Kelly, John-Allen Payne, and Eugene Lylak

Introduction

When a printed word is recognized, successfully accessing appropriate mental associations, the word's meaning(s) become consciously available to the reader. Together with context and graphics the meaning accumulated from each printed word enables the reader to conclude an interpretation for the text.

The role and importance of morphographic analysis in word identification by normally developing skilled readers has been substantiated through research. The printed form of English employs a "deeply alphabetic" system (Moats, 1998). That is, the printed forms of words reflect not only some phonemic content but syllabic, morphemic and orthographic regularities as well. In the early stages of reading both "sight reading" and "sounding out" processes are used to greater or lesser extents by both hearing and deaf readers to accomplish the initial recognition of printed forms for words in the students' conversational vocabularies (Merrills et al., 1994). A word's spelling-meaning association is practiced every time a reader recognizes and identifies the word and eventually its recognition becomes "automatic" (Ehri, 1992). Beyond the first few identifications, the recognition process takes on an increasing morphological character until, in the mature reader, morphologically reflective orthographic processing contributes to speed and efficiency. With successful hearing readers, there is evidence of substantial morphological contribution to word recognition at both the perceptual and lexical terminuses of the process (Stanovich, West, & Cunningham, 1991; White, Power, & White, 1989; Wysocki & Jenkins, 1987).

Relatively little is known about the word recognition process of deaf readers (Merrills, Underwood, & Wood, 1994; Paul, 1998). Presumed impediments to abstracting a phonological form through which to process words has been cited principally as an underlying cause of deaf readers' difficulties (Hanson, 1982, 1991). Others have blamed failure of word recognition as responsible for more generalized comprehension failure at the sentence and discourse levels (Marschark & Harris, 1996) which typically results in severe restriction of reading achievement beyond the forth grade level of reading for the average deaf student.

Research with deaf subjects concerning word knowledge has been confined mostly to examination of vocabulary acquisition by young children and of meanings that deaf students have for vocabulary they can read. Little research is available concerning structural analysis strategies deaf readers use in decoding words. However, there is accumulating data supporting the role and value of vision in the processing of auditory linguistic information by deaf individuals (Mann, 1991; Campbell, 1992) as well as their reliance upon orthographic information as the basis for performances in spelling (Mayer & Moscos, 1998; Sutcliffe, Dowker, & Campbell, 1999) and reading (Merrills et al., 1994). Gaustad (2000) stressed both the accessibility and functionality of vision-based word analysis while

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Notes of Note

Cindy Campbell, instructor in the ASLIE Department, received her Doctor of Arts in Communication from the State University of New York at Albany on October 26, 2001. Her dissertation analyzed "speech acts" in ASL. Speech acts are the language mechanisms (often indirect) that speakers/signers use to get things done. Hers is the first study to examine how ASL users produce and understand promises, orders, permissions, excuses, or assertions.

John Albertini, **Harry Lang**, and **Marc Marschark** have just published a new book *Educating Deaf Students: From Research to Practice* (Marschark, Lang, & Albertini, 2002). According to the publisher, Oxford University Press, "This book presents a summary of the current state-of-the-art in deaf education…"

During the summer, **Marc Marschark**, **Diane Clark**

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Deaf students experience authentic marine science laboratory activities on board the R/V Connecticut*, a 77' coastal research ship of the University of Connecticut.*

This photograph was downloaded from the web.

Classroom of the Sea

by Harry G. Lang (NTID Department of Research), Ivar G. Babb, Project Director, and Peter Scheifele (National Undersea Research – North Atlantic and Great Lakes, University of Connecticut), Scott W. Brown (University of Connecticut), Mary LaPorta-Hupper and Denise Monte (American School for the Deaf), Paula R. Johnson and Dongping Zheng (University of Connecticut).

Introduction

The Classroom of the Sea (COS) is an innovative National Science Foundation-sponsored three-year grant project that offers high school deaf students an integrated curriculum based on an interdisciplinary field — marine science. The project also is a collaborative effort among professionals at the University of Connecticut, the American School for the Deaf in Hartford, Connecticut, and the National Technical Institute for the Deaf at Rochester Institute of Technology. The range of expertise in this partnership allows for effectively developing, implementing and assessing a novel approach to science education that includes authentic laboratory and ship-based enrichment opportunities that utilize low-cost technologies to link these experiences back to the classroom to provide real-time experiences for deaf students. COS has two major components: 1) Science Through Marine Science and 2) Communications Access. A significant Technology Integration element is also being developed to implement and link these two major elements.

Science Through Marine Science

To develop the marine science curriculum it was first necessary to define academic standards for all major subjects (physics, physical science, chemistry, life science, and biology). In completing this task, the national and Connecticut State benchmarks were also incorporated into the curriculum.

Another goal was to provide authentic science activities through marine science laboratory activities. COS has received two years' support from the Connecticut Sea Grant Program for the *R/V Connecticut* (a 77 foot coastal research ship of the University of Connecticut) to immerse students in an authentic learning environment. Examples of the real-world research activities conducted on the *R/V Connecticut* to date include a research cruise held on November 6, 2001, in which deaf students collected water samples, conducted titrations to determine water salinity, and compared their results to measurements obtained from the CTD (conductivity, temperature and depth) recorder. Another research cruise held on December 4, 2001 focused on observations at a Harbor Seal colony in Fishers Island sound. Students gathered natural history observations to provide the basis of a problem-based learning module on Harbor Seals in Long Island Sound: the impact of low frequency ambient noise on the colony. A student marine science research program has been developed and deaf students are currently performing field and laboratory research in marine biology, physical oceanography, and interdisciplinary topics.

The apprenticeships with real scientists, the problem-based learning approach, and the emphasis

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NTID Research Bulletin

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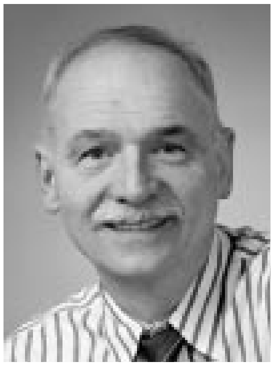
Jeffrey Porter, Interim Director, CRTL
John Albertini, Editor

In order to design effective instruction, teachers need specific information about how deaf learners process words — especially how they analyze printed words visually. This study examined the morphological skills and strategies of deaf students for decoding and comprehending printed English words.



John Allen-Payne is an associate professor in the English Department at NTID.

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advocating a morphographic approach to decoding instruction for deaf and hard-of-hearing students.

In order to design effective instruction, teachers need specific information about how deaf learners process words — especially how they analyze printed words visually. This study examined the morphological skills and strategies of deaf students for decoding and comprehending printed English words.

Method

Data was gathered from deaf and hearing students at two age levels: college and middle school. There were 145 participating students — 70 deaf students (43 in college and 27 in middle school) and 75 hearing students (33 in college, 42 in middle school). Two paper and pencil measures of component morphological processes were utilized: tests of word segmentation and the meaningfulness of a variety of English morphemes including inflectional affixes (e.g.-*ed*), derivational affixes (*re-*, *-ment*) and word roots (*struct, port*). Vocabulary used in the measures were selected with reference to their frequency of occurrence in print materials, the number of letters and morphemes they contained, and their familiarity to deaf students. The tests were scored using sub component levels derived according to the types and levels of difficulty of the morphemes examined.

The first test, *Split Decisions* (SD), measured students' knowledge of the segmentation of English words into morphemes. This part contained 75 items that presented words of varying length and morphemic complexity. Embedded within the 75 items were 127 morphemes distributed as follows: Level 1 (SDL1) = 18; Level 2 (SDL2) = 25; Level 3 (SDL3) = 11; and Level 4 (SD-multi) = 21.

The second measure, *Meaningful Parts* (MP), measured students' knowledge of the meaning associated with individual English morphemes. It consisted of 40 multiple choice items where each item presented a morpheme, examples of words that contained the morpheme, and choices from among which the student could select the meaning of the morpheme. Morphemes examined in the Meaningful Parts measure contained a subset of those examined in the Split Decisions measure. The Meaningful Parts test items were distributed as follows: Level 1 (MPL1) = 6; Level 2 (MPL2) = 14; and Level 3 (MPL3) = 20.

Results

Multivariate analysis of variance (MANOVA) was used to examine differences in the participating students' word morphology skills on the Split Decisions and Meaningful Parts tests. For the Split Decisions analysis, a 4 x 4 MANOVA was used to examine performance of the four groups of students (college-deaf Ss, college-hearing Ss, middle school-deaf, and middle school-hearing) for the four dependent measures (SDL1, SDL2, SDL3, and SD-multi).

Table 1 provides a breakdown of the SD group scores for deaf and hearing students at the college level and middle school levels. The Wilkes lambda multivariate statistic showed significant differences for both the main effects of college students compared to middle school students,

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(Shippensburg University), and **Michael Karchmer** (Gallaudet University) published an edited book *Context, cognition, and deafness* (Clark, Marschark, & Karchmer, 2001). Published by Gallaudet University Press, the book focuses on ways in which cognition among deaf adults and children is influenced by various learning environments. **Jennifer Lukomski** (NTID/CLA Joint Program in School Psychology and Deafness) co-authored the chapter, "Understanding language and learning in deaf children."

Frank Caccamise and **William Newell** presented Sign Communication Proficiency Interview (SCPI) Training Workshops at Mill Neck Manor and American Schools for the Deaf in November 2001. **Geoff Poor** (NTID Office of Communication Assessment Services) and **Donna Gustina** (American Sign Language and Interpreting Education) conducted the workshop for the Arkansas Division of Rehabilitation Services and Arkansas School for the Deaf.

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Table 1.

Split Decisions Test: Means and Standard Deviations for Group Comparisons of Sub-test Performances According to Education Level and Hearing Status

Participating Ss	SDL1 (18 items)	SDL2 (25 items)	SDL3 (11 items)	SD-multi (21 items)
College-hearing students Ss(n=33)	17.2 (1.1)	20.5 (3.6)	9.1 (1.3)	11.4 (3.2)
College-deaf students Ss(n=43)	16.0 (1.9)	18.7 (1.9)	7.5 (1.9)	8.1 (3.1)
Mid Sch-hearing students Ss(n=25)	16.2 (1.5)	18.7 (2.5)	7.6 (2.0)	9.1 (4.9)
Mid Sch-deaf students Ss(n=27)	14.6 (3.3)	17.1 (2.9)	5.1 (2.2)	4.9 (3.1)

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$F(4,138) = 13.08$, $p < .01$ and deaf students compared to hearing students, $F(4,138) = 17.84$, $p < .01$. For the interaction effects of college/middle school x deaf/hearing, no statistical significance occurred. Analysis of sub-component means showed that the college students performed consistently higher across all four dependent measures (SDL1, SDL2, SDL3, and SD-multi), and similarly, the hearing students performed consistently higher than did the deaf students on all four of the dependent measures that made up the Split Decisions measure. Further, the data show that hearing college students consistently score the highest on all four of the Split Decisions sub-tests while the deaf middle school students consistently score the lowest on these sub-tests. It is also evident from the data that the performance of deaf college students consistently was equal to that of the hearing middle school students on all four Split Decisions sub-tests.

For the Meaningful Parts test, a 4 x 4 MANOVA was used to examine performance of the four groups of students on the three dependent measures (MPL1, MPL2, and MPL3). Table 2 provides a breakdown of the MP group scores for deaf and hearing students at both the college and middle school levels. The Wilkes lambda multivariate statistic showed a significant interaction effect for college/middle school x deaf/hearing, $F(4,138) = 4.65$, $p < .01$. To understand the interaction effects for deaf and hearing students at college and middle school levels, post hoc analyses were conducted (Fisher's PLSD) for group differences on the MPL1, MPL2, and MPL3 sub-tests using. To summarize these post hoc comparisons: the deaf and hearing college students and the hearing middle school students all performed comparably on the MPL1 while the deaf middle school students performed significantly lower than all three other groups (Fisher's PLSD critical differences = .385, .405, $p<.01$). For the remaining levels, MPL2 & MPL3, deaf college students performed significantly below their hearing counterparts and similarly to the hearing middle school students. The middle school deaf students consistently (significantly) had the lowest scores on this measure.

At the most basic levels deaf students appear to have knowledge about the morphological make-up of words almost equal to that of their hearing peers.

Finally, a correlation was conducted on the overall scores for the Split Decisions and Meaningful Parts tests. For each measure, the overall scores for each student were the sum of their sub-test scores. There was a high positive correlation (.72) between the students' overall scores on the Split Decisions and Meaningful Parts tests, suggesting a relatively strong relationship between their performances on the two tests.

Conclusions and Discussion

The performance patterns produced by both the *Split Decisions* and *Meaningful Parts* tests are related and fairly uniform. At the most basic levels deaf students appear to have knowledge about the morphological make-up of words almost equal to that of their hearing peers. They are able to analyze and remember information pertaining not just to whole words but to bound morphemes and to apply this information to the task of segmenting larger words and identifying the associated meanings of morphographic segments of words. At all levels beyond that, even at the level of early derivational affixes (*un*-, -*ish*) the performance of deaf students is significantly less than that demonstrated by hearing students at comparable ages. The gap is defined by the overall similarity of performance between deaf college students and that of hearing middle school students.

The nature and comparative inconsistencies of graphophonemic as opposed to morphographic correspondence in English has been demonstrated as well as the difficulties these inconsistencies present for hearing "non-readers" (Mattingly, 1991). Because of the fit between mastery of phonological processing and fluent reading, deaf students have little choice but to develop some alternative or at least supplemental strategy that uses information sources and processes which are visual to access the raw materials fundamental to comprehension of text. The morphographic system

Table 2. **Multiple Parts Test: Means and Standard Deviations of Students' Performance**			
Participating Ss	**MPL1** (6 items)	**MPL2** (14 items)	**MPL3** (20 items)
College-hearing students (n=33)	5.9 (.2)	13.7 (.8)	17.9 (1.9)
College-deaf students (n=42)	5.7 (.5)	11.3 (1.8)	15.0 (2.4)
Mid Sch-hearing students (n=25)	5.6 (1.1)	11.9 (1.9)	14.1 (2.4)
Mid Sch-deaf students (n=27)	4.8 (1.1)	7.6 (2.8)	8.8 (2.8)

in English is visual, segmental and predictable. Morphographic analysis expedites text processing and is trainable. It is essential to advanced levels of reading. While a morphographic decoding strategy will not, in itself, "solve" the reading problem for deaf or other problem readers, it may permit other cognitive operations to function more efficiently, thus improving possibilities for general comprehension. Our research shows that the types of segmentation and semantic analysis necessary to morphographic decoding are apparent in deaf students, however, the levels of their mastery of such skills fall far below those of normally developing readers. The data from this study suggest areas that may be exploited for the design of word identification instruction.

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Research at NTID shows that teachers' sign communication skills are viewed by deaf students as important in learning content. The COS project team developed a lexicon of the technical terms used in classroom and laboratory/cruise activities during the first year. Six hundred and twenty-four technical vocabulary terms have been identified so far in the marine science curriculum materials.

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on active participation in authentic science addresses the needs of deaf learners. Deaf adolescents value content expertise in teachers and meaningful learning experiences. While teachers of deaf students emphasize drill and practice type problem solving, there is a need for the development of higher level thinking skills through "true problem solving" activities in authentic contexts. Research on learning styles conducted with deaf students indicates that those who actively participate in the learning experience tend to achieve higher course grades (Lang, Stinson, Basile, Kavanagh & Liu, 1998).

Communications Access

The second major component of the COS grant project deals with the issue of communicating technical course content through American Sign Language (ASL) and the use of "technical signs" in science. This has been a challenge that teachers across the country have been grappling with for many years. Research at NTID shows that teachers' sign communication skills are viewed by deaf students as important in learning content (Lang, McKee & Conner, 1993). The project team developed a lexicon of the technical terms used in classroom and laboratory/cruise activities during the first year. Six hundred and twenty-four technical vocabulary terms have been identified so far in the marine science curriculum materials. Of these terms, 158 (or 25.3 percent) have "technical signs" identified in the NTID technical signs project. Other resources, including American Sign Language dictionaries, resource books, and web sites, are being examined to identify additional technical signs. The use of documented and invented technical signs, as well as conceptual signing in ASL, is being carefully studied in consultation with linguists, sign language instructors, and researchers.

Videotapes of authentic science communication among students and professionals are being collected and analyzed. For example, a videotape of a lab on the *R/V Connecticut* research vessel, showing communication among Chemistry and Advanced Marine Science students, their instructors, and the boat crew, is being evaluated. The Critical Incident Technique is being employed to collect and record data regarding difficulties experienced by science teachers in communicating course content during classroom and laboratory experiences. COS teachers are logging journal entries when they encounter technical communication challenges.

The COS project is also collaborating with an NSF-funded project at NTID (See *NTID Research Bulletin*, Vol. 6, No. 2, Spring, 2001), the Clearinghouse On Mathematics, Engineering, Technology, and Science (COMETS) in order to disseminate information for professional development purposes (http://www.rit.edu/~comets).

A second goal of the Communications Access part of the COS project is the development of "Guidelines for Sign Communication in Science/ Mathematics." These guidelines include recommendations for optimizing communication of technical course content in physics, chemistry, biology, and other science classes, and video examples (available through QuickTime) of how to introduce and use technical sign language. Aspects of the COS project are being evaluated,

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Sarah Perkins, NTID Educational Resources Media Specialist, **Cheryl Mawhiney**, Marketing Communications Staff Assistant, and **Frank Caccamise** recently published a sign language book that documents signs currently used by skilled signers for English, Theater, Communication (Audiology and Speech & Language), and Career Education. The book includes: (1) an appendix by NTID Interpreter **David Bar-Tzur**, entitled, *Technical/Specialized Communication: Resources and Strategies for the ASL Interpreter*, (b) four articles from the *Registry of Interpreters for the Deaf (RID) Views*, and (c) an article by **Bonnie Meath-Lang**, *Dramatic Interactions: Theater Work and the Formation of Learning Communities.*

Susan Fischer delivered the first keynote address, "The importance of studying Asian sign languages." at the Asian Conference on Sign Linguistics, Deaf Culture, and Deaf Education in Hong Kong in

Students on board the research vessel discuss their findings.

These photographs were downloaded from the web.

using pre- and post- assessments of scientific literacy, self-efficacy, and interest in science with experimental and control groups. To date, the project has demonstrated that deaf students' interest in science increases as they become involved in authentic science learning. The older students in the project have had increased exposure to career opportunities in the field of science and have taken a vested interest in broadening their own communication skills.

Technological Integration

The COS project involves extensive use of a variety of technologies. Multimedia classroom, lab and field experiences (video, graphical, audio, animation) are being integrated into web sites and CD-ROM materials. Two COS project objectives will be enhanced by development of effective live multimedia and data transmission: 1) to provide real-world oceanographic research opportunities, "hands-on" and to enrich the marine science curriculum virtually; and 2) to adapt and develop technologies to disseminate the curriculum, language enhancement strategies, and research results to the Deaf community, and educators. VBrick Systems Inc. loaned equipment to the COS team to test its capability of providing video of sufficient quality to allow communication via American Sign Language. The company has since donated web-encoding software technologies to the project for future broadcasts.

The research cruises have provided opportunities to field test the wireless network and live Webcast technologies being developed at the University of Connecticut. Video cameras followed the students' activities, the video signal was encoded and broadcast to the Marine Sciences Building on shore, and from there the signal was re-encoded into Windows Media File format and streamed into the classroom at ASD via the Web. The quality of the transmission allowed the students on the R/V Connecticut to communicate with their peers in the classroom through American Sign Language. Enhanced quality video transmission using the Internet 2 capabilities of UConn and RIT was attempted with less favorable results and is the subject on on-going research and testing.

Other forms of technology are being integrated into the COS project. WebBoard©, an asynchronous communication tool, allows the COS team to address questions for all members to view, problem-solve collaboratively, as well as maintain a record of conversations. The primary applications have been for on-line classes, interactive homework, and class administration. Students also have been using WebBoard© in class to ask questions of their peers, teachers, and scientists.

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December. She also gave workshops and lectures on sign linguistics, deaf life, and deaf education at Liaoning Normal University in Dalian, China.

With the help of NTID Department of English faculty members, **Stephen Aldersley**, **Margaret Brophy**, **John-Allen Payne**, and **Kathy Varone** and an RIT Provost's Learning Innovations Grant, **Jerry Berent** has expanded the "Supporting English Acquisition" (SEA) web site (www.rit.edu/~seawww). The team has produced nine new modules focusing on problematic English structures and processes.

Using chaos theory as a metaphor ("Butterfly Power"), **Sharon Rasmussen** and **Rosemary Saur** (NTID Science and Engineering Support Team) are investigating small-but-significant events in the lives of deaf and hard-of-hearing college students. Faculty mentors are identifying significant experiences or events that may have brought a student to an important career or life changing decision.

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NTID RESEARCH BULLETIN

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The Classroom of the Sea (COS) project, sponsored by the National Science Foundation, immerses students in an authentic learning environment, as well as provides the opportunity for communicating course content through American Sign Language (ASL) and the use of "technical signs" in science, while integrating a variety of technologies. Please refer to the full article on p.2.

This photograph was downloaded from the web.

IMPLICATIONS OF NTID RESEARCH

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

Vol.7 No.1 Winter 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.

Samar, V.J., Parasnis, I., & Berent, G.P. (2002). Deaf poor readers' pattern reversal visual evoked potentials suggest magnocellular system deficits: Implications for neuroimaging of dyslexia in deaf individuals. *Brain and Language, 80,* 21-44. [AN 1713]

Deafness and developmental dyslexia in the same individual may jointly limit the acquisition of reading skills for different underlying reasons. A diagnostic marker for dyslexia in deaf individuals must therefore detect the presence of a neurobiologically-based dyslexia but be insensitive to the ordinary developmental influences of deafness on reading skill development. We propose that the functional status of the magnocellular visual system in deaf individuals is potentially such a marker. We present evidence based on pattern-reversal visual evoked potentials (VEP) recorded to low and high contrast checkerboard patterns, that adult deaf poor readers as a group display magnocellular system deficits not observed in deaf good readers. Our results indicate that developmental dyslexia exists within the deaf population and is associated with the same underlying magnocellular system deficit that has been observed in hearing dyslexics.

Implications

The results of this study have two important implications. First, the findings suggest that direct neural imaging of the status of the magnocellular visual system in deaf individuals may eventually provide differential diagnosis of developmental dyslexia in the deaf population. Second, our work provides the first objective neurobiological evidence that dyslexia and other learning disabilities (LD) exist in the deaf population. This result should be a boon to deafness professionals, teachers, parents, and deaf individuals with LD who are currently struggling with agencies and institutions that disallow the concurrent classification of a deaf individual as learning disabled. Such exclusionary policies inappropriately complicate or limit access to LD services for deaf people. These results and further objective evidence of the occurrence of dyslexia and other forms of LD in the deaf population will aid educators and disability activists in their efforts to eliminate such policies and to advocate for specific LD services for deaf people.

DeFilippo, C., Dagel, D., Foster, S., McKee B., Barefoot, S., Crandall, K., & Gustafson, M. (1999). Designing a

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learning community for young deaf adults: Can we improve program completion rates? In M. Kolvitz (Ed.), *Empowerment Through Partnerships: PEPNet '98 Conference Proceedings* (pp. 182-190). Knoxville, TN. [AN 1628] *

A learning community based on a model of linked courses was implemented for 14 freshmen with low reading and writing test scores compared to other entering students at a college for students who are deaf or hard of hearing. Instructors collaborated on curricular objectives supporting successful learner behaviors, and discussed student progress weekly. A deaf student teaching assistant and intensive career and personal counseling were also provided. Goals were to develop attitudes and behaviors that would support positive academic experiences, engender feelings of connection, and thereby increase the likelihood of program completion. Compared to a control group, the experimental group more often attended class and submitted homework on time, was perceived as putting in more effort, and completed more courses. Students appeared to benefit from the clustered learning environment and intensive monitoring of their progress. Weekly staff meetings and an older deaf student as a teaching assistant were other key components of the project.

Implications

Participation in a Learning Community is known to increase retention of students in colleges for normal-hearing students. It enhances feelings of connection to the academic environment, which can result in more time spent on learning. The outcome is greater academic success, which engenders greater persistence and, ultimately, completion of the program. This study suggests that the benefits report for normal hearing students can be achieved at the postsecondary level for students who are deaf and hard of hearing. The current effort, with three linked courses and regular faculty consultation, represented a modest "cost" to the students and the faculty. Despite its limited scope, the results still favored the Learning Community. If fewer students leave school before completing a program, we can achieve a more cost-effective program and benefit greater numbers of students in achieving their personal and career goals.

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.

___ Samar, V.J., Parasnis, I., & Berent, G.P. (2002). Deaf poor readers' pattern reversal visual evoked potentials suggest magnocellular system deficits: Implications for neuroimaging of dyslexia in deaf individuals. Brain and Language.

___ DeFilippo, C., Dagel, D., Foster, S., McKee B., Barefoot, S., Crandall, K., & Gustafson, M. (1999). Designing a learning community for young deaf adults: Can we improve program completion rates? In M. Kolvitz (Ed.), Empowerment Through Partnerships: PEPNet '98 Conference Proceedings.

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