

Making Postsecondary Classes Accessible to Deaf and Hard-Of-Hearing Students: Research, Strategies, and Practices

**Dianne P. Bills
Judith E. Ferrari
Susan B. Foster
Gary L. Long
Karen B. Snell**

National Technical Institute for the Deaf
Rochester Institute of Technology
Rochester, New York

Background

Deaf¹ students are attending mainstream postsecondary educational programs in ever-increasing numbers. Currently, 20,000 deaf and hard of hearing students are mainstreamed in approximately 2,360 postsecondary programs (Lewes, Farris, & Greene, 1994). We have come a long way in terms of providing support services such as interpreters, notetakers, and tutors. Yet we have not systematically documented what works and does not work in gaining complete inclusion for this population. There is always the danger that instructors and even the students themselves will perceive the presence of support services in their classes as providing "full accommodation." In fact, support services are only the first step. Some examples help illustrate this:

- Deaf students who use an interpreter experience a "lag time" in receiving information. An interpreter normally finishes signing what has been said 5-10 seconds after the instructor stops speaking. This delay can subtly exclude deaf students from full participation. By the time the student has received the full message and desires to participate, the instructor may have already identified and called on another student or changed the topic thereby making timely interaction difficult.
- Deaf students who rely on speechreading can also experience challenges. Instructors often unconsciously interfere with students' line of sight to their speech when they turn to write on the board, hold papers too close to their faces, focus down on a computer, or pace while lecturing.
- In laboratory or "high tech" courses, instructors lecture while manipulating equipment and performing tasks. Deaf students must choose between watching the interpreter, the instructor, or the demonstration. Catching all of the presentation is impossible. Even students who depend primarily upon their residual hearing can lose information in this type of setting because of interference from noisy equipment and air conditioning.
- Deaf students also often miss important casual information. They are rarely included in the informal exchanges that occur between hearing peers about instructor expectations, study tips, and unspoken rules for class behavior and organization.

Obviously, there is more to inclusive instruction than physical proximity to the educational process and the provision of support services. Informal conversations, peer interaction, instructor styles and behaviors, and the nature of the information being conveyed subtly but significantly shape the teaching and learning experience.

The purpose of this project is to identify the conditions that affect access to mainstream postsecondary education and participation in the learning process for deaf students. Critical areas explored include the perceptions of deaf students regarding communication and engagement within the classroom and the perceptions of instructors

¹ The term "deaf" as used in this paper refers to both deaf and hard-of-hearing individuals.

regarding their teaching experiences with deaf students. This research also attempts to identify conditions and strategies that enhance full academic access and accommodation of deaf college students.

The National Technical Institute for the Deaf at the Rochester Institute of Technology (RIT/NTID) is in a unique position to evaluate the efficacy of inclusion strategies in achieving equal educational opportunity and access across a variety of curricula. More than four hundred deaf students are fully matriculated into the other six colleges of RIT and receive support services through NTID. Thus, RIT/NTID has a wealth of experience and expertise in providing advising, tutoring, notetaking, and interpreting services to students who are deaf.

Research Design

During the 1996/97 academic year, NTID support faculty and RIT instructors working with deaf RIT students majoring in business, computer science or information technology were invited to participate in a collaborative study on academic mainstreaming. Quantitative and qualitative research methods were used to collect data from students, instructors, and support faculty regarding academic inclusion. The quantitative tools included the Academic Engagement Form (AEF) and the Classroom Communication Ease Scale (CCES). Qualitative tools included interviews with instructors using both open-ended and semi-structured techniques and classroom observations.

Both deaf and hearing students matriculating in the three academic programs participated in the study. The hearing students were matched to the deaf participants by gender, winter quarter course, and major. The AEF and CCES questionnaires were placed in student's departmental mail folders. The students were informed about the study and later encouraged to return their questionnaires via electronic mail. A total of seventy-six students (46 deaf, 30 hearing) filled out the questionnaires (business = 24, computer science = 4, and information technology = 48) for a response rate of approximately 70%. The average student was 23 years old; 26 were female and 50 were male.

Academic Engagement Form

Engagement refers to the extent to which a student's efforts, persistence, and emotional states during learning activities reflect a commitment to learning and successful academic performance (Skinner, Wellborn, & Connell, 1990). Engaged students show persistence and interest in academic tasks, and tend to achieve well academically. In this study, students were asked to respond to 110 items designed to assess affective and behavioral aspects of engagement. Evaluation items looked at aspects of active learning, perceptions of teachers, strength of association with other students in class, and feelings of belonging at RIT. These items were adopted from the Rochester Assessment Package for Schools (RAPS), an instrument designed to assess a number of motivational dimensions with hearing students. Students were also asked four open-ended questions covering class participation and feelings of belonging.

Classroom Communication Ease Scale

To assess how successfully an educational environment promotes equal access to instruction we compared the perceptions of deaf and hearing students about their ease or difficulty of communication in educational settings. For this study a modified version of the CCES (Garrison, Long, & Stinson, 1993) with 108 items was used. Both cognitive and the affective dimensions of communication were measured using a six alternative Likert scale. The cognitive dimension evaluated students' self-perceptions about the amount and quality of information that they receive and send. The affective dimension asked students to rate how they feel when communicating with hearing and deaf peers, teachers and support staff. Both positive (feeling good, relaxed, comfortable, confident) and negative (frustrated, nervous, upset) affective responses were explored. Two open-ended questions regarding best and worst classroom communication experiences were included.

Instructor Interviews

Interviews are a conventional qualitative research technique used to explore research participants' experiences, beliefs and perspectives regarding a particular idea, practice, circumstance or event (Spradley, 1979). By asking general questions and encouraging participants to elaborate on their ideas through personal stories and examples, data can be collected and analyzed for code categories, i.e. groups of similar responses. This approach often yields information that is inaccessible through traditional quantitative collection strategies.

Semi-structured interviews were conducted with seventeen RIT instructors (business = 8, computer science = 4, and information technology = 5). Efforts were made to include a diverse group of instructors. The instructors interviewed included 11 males and 6 females, had 2 to 23 years of teaching experience (12 years average), and different teaching styles and course structures, e.g. lecture vs. group discussion. The selected instructors were contacted, the project was explained, and they were invited to participate. The interviews focused on three core topics: (1) perceptions of the deaf students in their classes, (2) barriers to access within their classes, and (3) the strategies they use to facilitate access to their course materials. The interviews were recorded and transcribed verbatim.

In-Class Observations

Three (3) classes, one from each teaching area, were observed during the winter quarter. The classes varied in size and teaching style. Classroom behaviors and participation levels of deaf and hearing students plus any access barriers noticed were recorded. The instructor and students were periodically engaged in impromptu discussions about what was observed. At the end of the quarter the instructors, interpreters, and several students were informally interviewed for their feelings and impressions about the class.

Results and Implications

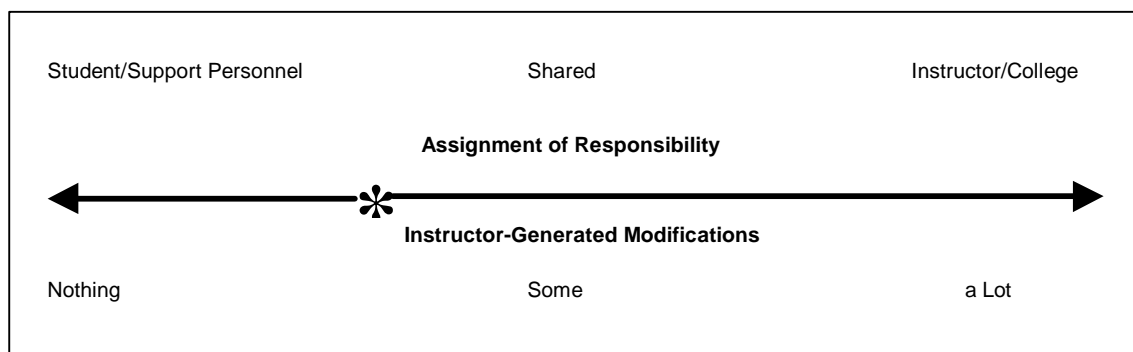
Several important points emerged from the quantitative and qualitative findings. First, deaf students' perceptions as expressed on the AEF and CCES were not significantly different from those of the hearing students. Both groups expressed similar levels of classroom engagement and communication ease. Both groups identified participation and understanding lecture material as central to their feeling a part of the class, and both indicated that instructor pace was a primary factor influencing their ease of communication. However the deaf students expressed less satisfaction with the lecture pace, and they did not feel as much a part of the college "community."

Other differences related to the ways in which deaf and hearing students interact within their learning environments. While the expressed ease of communication was similar for both groups, deaf students emphasized the role of the interpreter in effective transfer of information and their ability to interact. Hearing students naturally focused on the role of the instructor. Similarly, while both groups agreed that participation was the most important factor in feeling a part of the class, deaf students expressed this sentiment less frequently than hearing students, probably because of the constraints imposed by indirect communication. Deaf students also indicated that they used a wider range of learning resources (text, teacher, friends, tutor, staff) than hearing students (text, teacher, friend), undoubtedly due to the difficulty of getting the full lecture content and their use of support services. Also while hearing students indicated they relied on the instructor and the text about equally, deaf students said the course text was their primary learning vehicle, a result that points out the importance of text selection in their academic success.

The open-ended CCES question "Communication is best for me when..." resulted in some unexpected responses from hearing students. Surprisingly, hearing respondents indicated that they preferred having deaf students in their classes. Their supporting comments indicated that the presence of deaf students with an interpreter tended to moderate the pace of the class and allow them to better understand and participate.

Instructors had a range of opinions about who is responsible for the success of the deaf students in their classes. Their responses can best be understood as a continuum of responsibility (*Figure 1*) that affects both deaf and hearing students. At one end of the continuum are teachers who feel it is their responsibility to share information in a way that helps all students learn, regardless of hearing status. They want all their students to “get it.” At the other end of the continuum are teachers who assume that the primary responsibility for understanding the information presented rests with the student. These teachers don't differentiate in their treatment of deaf and hearing students as much as they emphasize that all students must learn for themselves and that they are not personally responsible if someone doesn't understand. They are quick to point out that deaf students have support services. In parallel with this responsibility continuum is another continuum of instructor-generated teaching modifications. In general, instructors who felt more responsible for the learning of all their students tended to be more willing to modify their educational style to accommodate student needs.

Figure 1.
Continuums of Responsibility and Modifications
(* indicates the position of most instructors interviewed)



An interesting result from the interviews and observations was the overall passivity of the students, both deaf and hearing. While instructors may not have recognized the access problems that occurred in their classrooms, they did feel that their students were too passive and they were frustrated by it. And although the students did experience problems, they generally were unwilling to directly address them, expressing an unwillingness to “rock the boat” or hurt people’s feelings.

These data, along with discussions among the committee members, were used to generate six (6) categories of access barriers that deaf students often experience in mainstream postsecondary educational settings. These categories are defined in *Figure 2* below.

Figure 2.
Categories of Access Barriers

Barrier Category	Barrier Explanation
Classroom Configuration	Problems caused by the design of the teaching environment
Teaching Style/Pedagogical	Instructor teaching habits that make it challenging for deaf students to engage and participate
Instructor-Imposed	Barriers that arise from instructor policies, attitudes, or expectations
Student-Imposed	Things that students do or don't do that impede their educational progress
Miscellaneous	Other problems that fall outside the above categories, such as student isolation or uncaptioned educational media

We operationalized these categories by identifying specific examples from typical educational situations and suggestions for their resolution. We recognize that our efforts are only a beginning. Other colleagues at RIT and the educational community at large who serve deaf students have a wealth of experience and information regarding access barriers and resolution strategies. The next phase of this project was to tap into these collegial networks. Our workshop at PEPNet '98 was the first step.

PEPNet '98 Conference

The research activities and results discussed herein were presented in a session entitled “Making Postsecondary Classes Accessible to Deaf and Hard-Of-Hearing Students: Research, Strategies, and Practices” at the 1998 PEPNet conference.² We explained our research and invited session attendees to participate. Each attendee was given a 3” x 5” white card and asked to describe an access barrier experienced plus any resolution strategies used. On the other side of the card, they were asked to write contact and background information. Participants then broke into small groups to discuss their barriers and share strategies. At the end of the session, the groups reconvened and summarized their discussions for all participants. The presenters collected the white cards and group discussion notes for inclusion in this study.

The PEPNet session participants identified many of the same access barriers we had previously documented as well as some additional ones. Many of the additional barriers related to resource limitations such as providing support with insufficient staff or administrative policies that prohibit the advertising of support services in an attempt to keep costs down by limiting the number of deaf applicants.

Experiences and ideas contributed at PEPNet and in similar sessions conducted with RIT colleagues are currently being reviewed for inclusion in our access barrier database and will be available at our research web site.³

Recommendations for Practice

The following specific recommendations for practice are based on this study.

- First, when dealing with access and accommodation issues, emphasize the similarities between deaf and hearing learners. Practices that aid deaf students help all learners. Several instructors in this study indicated that, while they didn't make adaptations specifically for deaf students, they would do things to improve their overall teaching effectiveness if it enhanced their student ratings. Therefore, suggestions that accommodate the deaf while benefiting the hearing have the greatest chance of being adopted.
- Second, when trying to make an intervention breakthrough in a department, start with instructors who are already interested and willing to modify their teaching strategies to facilitate inclusion. Provide them with feedback and suggestions as well as opportunities to interact informally with the deaf student(s) in their classes. These instructors can model and encourage good practices in their colleagues.
- Third, don't forget the deaf students themselves. Encourage them to explain their needs and to speak up when they experience problems.
- Fourth, intervention strategies should be practical and reasonably easy to implement. It doesn't help to suggest that instructors “be more sensitive to deaf learners.” More practical suggestions might include placing the interpreter

² *PEPNet '98: Empowerment Through Partnerships*, Orlando, Florida, April 29 – May 2, 1998.

³ As part of this study we are developing an Access Barrier Database to document the problems deaf students experience in mainstreamed postsecondary educational settings. It can be reached from the “Applied Research” link on the NTID/Center for Graduate and Baccalaureate Studies web page at < <http://www.rit.edu/~471www> >.

near the instructor to decrease student's eye-shift distance and to give the instructor more opportunities to observe student feedback. Suggest organizational strategies that help deaf students keep pace such as providing handouts of lecture notes or counting to five after asking a question. These activities facilitate inclusion of both deaf and hearing students by giving them a few additional seconds to process information.

- Fifth, disseminate information and strategies through user friendly vehicles. Faculty indicated that their learning about deafness and the educational needs of deaf students was serendipitous. They tend ask for help from whomever is convenient. So place support services and personnel close to or even within academic departments where possible. And a web page with a variety of support information (strategies, personal stories of frustrations and successes, or a chat room) may be preferable to traditional workshops which disrupt busy schedules.
- Lastly, recognize and reward excellence in teaching. Professional recognition that supports positive appraisals and merit increments can be a powerful motivator in changing faculty behaviors.

Conclusion

In conclusion, mainstream postsecondary educational settings can pose special challenges for deaf students. Interventions should be designed which are specific, comfortable, involve changes in the behaviors of both students and instructors, and target and reward the best practices and educational models. Efforts that focus attention only on the needs of deaf students are almost certain to fail due to the relatively small numbers of these students and the overall reluctance of college faculty to modify their practices for a single target group. As a result, emphasize the applicability of improved access to instruction to all students in any intervention plan.

This paper reflects the initial outcomes of this project. Additional activities being conducted by various project team members include:

- 1) Continuation of the research project with other colleges and services at RIT/NTID,
- 2) dissemination of the research findings through presentations and workshops,
- 3) establishment of an interactive web site on issues of academic inclusion, with
- 4) a national database of barriers to inclusion and resolution strategies.

References

Garrison, W., Long G., & Stinson, M. (1993). The classroom communication ease scale. American Annals of the Deaf, 138, 132-140.

Lewes, L., Farris, E., & Greene, B. (1994). Deaf and hard of hearing students in postsecondary education. U.S. Department of Education, Office of Educational Research and Improvement.

Skinner, E. A., Wellborn, J. G., & Connell, J. P (1990). What it takes to do well in school and whether I've got it: The role of perceived control in children's engagement and school achievement. Journal of Educational Psychology, 82, 22-23.

Spradley, J. P. (1979). The ethnographic interview. New York; Holt, Rinehart and Winston.



Author note:

The research reported in this document was produced in the course of an agreement between the Rochester Institute of Technology and the U.S. Department of Education. This paper and associated presentation are part of a larger research project on postsecondary access currently being conducted by the Research On Access Committee at RIT/NTID. Current members of the committee include Dianne Bills, James Biser, Jack Clarcq, Judith Ferrari, Susan Foster, Aaron Gorelick, Ann Hager, Peter Lalley, Gary Long, Lynne Morley, Myra Pelz, Karen Snell, and Theresa White. The research review presented here includes excerpts from a paper entitled "Inclusive Instruction and Learning for Deaf Students in Postsecondary Education," which is forthcoming in a *Volta Review* monograph on inclusion, edited by Michael Stinson and Shirin Antia.