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PROVISION FOR DEAF AND HEARING IMPAIRED STUDENTS IN UNIVERSITIES

J A Marsh (1), S Olohan (2) & J Turnbull (3)

(1) The Nottingham Trent University, CRBE, Faculty of Environmental Studies
(2) The Nottingham Trent University, Department of Academic Support Services
(3) Service for Hearing Impaired Students, Derbyshire County Council

1. INTRODUCTION

A generation ago Goldsmith (1) wrote about designing environments for disabled people: *"it can be predicted that a student whose medical needs are not acute, will even if he is severely disabled, be sufficiently motivated to cope satisfactorily in a conventional university environment, and will be able to manage without any of the special 'props' which are needed elsewhere to enable handicapped people to operate....For these reasons the arrangements advocated for disabled people in university buildings are not as stringent as those recommended for many other building types. In some university buildings, e.g. certain training colleges and medical schools, it is permissible if no allowances at all are made for disabled students. This is not because it can be guaranteed that no disabled students will ever be trained in such buildings but because it is certain that any who do will be such determined people that they will not allow themselves to be defeated by any physical obstacles."*
Fortunately such attitudes no longer prevail and universities are becoming increasingly concerned that access for disabled students, whatever their disability, is improved. Prior to 1990 organised support services for deaf and hearing impaired students were available at only two universities, but during the last five years a number of factors, such as the up-rating and extension of the Disabled Students' Allowance and introduction of Equal Opportunities policies, have led to an increase in the number of deaf students seeking admission to universities. The Higher Education Funding Council for England (HEFCE) created a "Special Initiatives to Encourage Wider Participation for Students with Special Needs" to which universities were invited to submit proposals. The Nottingham Trent University project on "Provision for Deaf and Hearing Impaired Students" was established under this initiative. The project was set up in November 1993 by the university, with support from HEFCE, and focused on the following five areas related to the accessibility of university education for deaf and hearing impaired students:

(i) structure/funding of universities' support provision
(ii) admissions systems
(iii) provision of technical/environmental aids
(iv) staff development
(v) entry of deaf students to initial teacher training

In this paper the support provision, both human and technical will be discussed.

2 STUDENT NUMBERS

2.1 A short questionnaire about resources and numbers of deaf students was sent to 99 universities in the United Kingdom in December 1993. This questionnaire produced an unusually high response (87 out of the 99) which we attributed to its brevity and to the fact that it had been sent to the person previously nominated by their university as the appropriate contact. The majority of questionnaires were completed by co-ordinators or tutors with special responsibility for disabled students.

2.2 Thirty-five universities were able to give the exact number of deaf students enrolled at the time of our survey.

Year	Number of universities	Number of deaf students
1990 - 1991	15	83
1991 - 1992	17	101
1992 - 1993	25	107
1993 - 1994	35	348

Table 1 Deaf student enrolment - universities with exact figures.

Other universities gave an approximate number within certain bands. Combining both sets of figures allows an estimate to be made of the total number of deaf students enrolled in the universities that responded to the questionnaire.

Year	Estimated total number of deaf students excluding Open University	Number of deaf students Open University only
1990 - 1991	409	342
1991 - 1992	425	362
1992 - 1993	468	416
1993 - 1994	690	464

Table 2 Estimated total number of deaf students.

2.3 The number of deaf students entering higher education in 1986 was 54, in 1987 - 82 and in 1988 - 69. These figures were obtained from a survey, conducted by the Royal National Institute for Deaf People (RNID), of 233 universities, polytechnics, and colleges of higher education (2), they do not include admissions to the Open University. Thus there has been a substantial rise in numbers enrolled in recent years.

The big increase between 1992 and 1993 may be partly attributable to the new UCAS system of categorising disabilities on university application forms but other reasons, such as the expansion of services for deaf students in colleges of further education in the 1980s and the extension and up-rating in 1990 of the Disabled Students' Allowance, may also have contributed to the increase in numbers throughout the 1990s.

3. HUMAN RESOURCES

3.1 The term "deaf and hearing impaired" can cover a wide range; from profoundly to mildly deaf. A loss of 95dB or more averaged over five frequencies 250Hz, 500Hz, 1000Hz, 2000Hz and 4000Hz, is usually described as a "profound" loss and "mild" refers to an average loss between 25-40dB (3). Even students with a mild loss who do not normally wear a hearing aid may experience difficulties in large lecture theatres when both speaker and subject matter are unfamiliar. Whilst students with the less severe forms of deafness can be assisted by technical equipment, technical equipment alone cannot fulfil the needs of profoundly deaf students. They are likely to need human support as well as technical. The RNID (2) reported in 1990 that at those institutions where support was available it was usually technical. The human resources in the 87 universities who responded to the questionnaire in the present study are summarised in Table 3.

Human resources	Number	%
Co-ordinator for disabled students	77	88
Qualified teacher of the deaf	13	15
Subject based tutorial support	39	45
Additional counselling support	59	68
Sign language interpreters	32	37
Notetakers	42	48
Lipspeakers	23	26
Support from student groups	46	53
The support is provided by:		
Full time staff employed by the university	64	74
Part-time staff "contracted in" by the university	42	48
Local support services "contracted in" by the university	23	26

Table 3. Human resource provision in universities based on 87 responses.

3.2 The responses to the survey show that a substantial majority (over 80%) of universities have a co-ordinator for disabled students. In some universities this is a full-time post, in others it may be an additional responsibility for administrative or teaching staff. The brevity of our questionnaire did not allow us to analyse in detail the variations between institutions in the job specification for the role of co-ordinator.

3.3 As more deaf students with support requirements are entering universities the individual institutions are attempting to meet these students' needs as shown by the figures in Table 3, 48% of universities providing notetakers, 37% interpreters and 26% lipspeakers. However, these figures should be treated with some caution, notetakers are not always trained personnel but sometimes fellow students. Previously the RNID survey had found that "in-class" support was poor; the present figures do at least indicate an improvement in the situation.

4. TECHNICAL RESOURCES

4.1 For students with hearing difficulties recent technical progress has led to the improvement of hearing aids, both personal and environmental. Smaller components, better circuit design and smaller, longer-lasting batteries have contributed to better amplification characteristics and neater personal aids.

4.2 Our questionnaire included six items related to the provision of technical aids and the responses are summarised in the table below.

Technical resources	Number	%
Induction loop systems	63	72
Radio hearing aids	37	43
Minicom (telephone)	35	40
Teletext recorders and subtitling facilities	14	16
Adapted alarm systems	41	47
Adapted accommodation units	45	52

Table 4. Technical resource provision in universities based on 87 responses

The earlier survey by the RNID (2) had revealed that generally institutions found it easier to provide technical aids than human resources. The present survey indicates that a substantial majority of institutions have induction loop systems and just over half have adapted accommodation units. Other technical aids are reportedly less common. The information from the questionnaire was insufficiently detailed to reveal

whether the induction loops provided in the 73% of universities that responded affirmatively to the question are provided in all main lecture theatres or are located in only in departments that have had deaf students.

5. VISITS TO UNIVERSITIES

5.1 The information from our questionnaire enabled us to identify nine universities that had established a range of support services for deaf students. Visits to these universities were organised in Spring 1994. In addition to these nine, the regional service supporting students in London universities was also visited.

5.2 The university learning environment may range from lecture theatre to seminar room, from laboratory to field centre, and from computer room to library. Deaf and hearing impaired students may need access to all these environments depending on their course of study. A number of the universities that we visited had installed induction loops in some of their teaching rooms. Four different approaches to the installation of induction loop systems were identified, these are summarised in Table 5.

Induction loop systems in lecture theatres - options	
A	Specified for lecture theatre in new building. Installed in conjunction with state of the art audio-visual systems.
B	Loop wire fitted into existing lecture theatre together with amplifier and microphone.
C	Loop wire permanently installed but amplifier and microphone only connected when required.
D	Temporary installation of loop connected to portable amplification system.

Table 5

5.3 In a lecture theatre the loop wire must encircle the area in which reception is required. This need not be the whole of a lecture theatre but it is customary for the wire loop to be installed around the perimeter. For optimum performance the wire ought to be at shoulder height but this is not always possible and loop wires have been installed at floor level, ceiling level or followed a winding route around doorways and under windows. In a new lecture theatre a loop can be permanently installed at the construction stage and its location chosen for optimum performance (4). If only the

lecturer has use of a microphone any contributions or questions from the audience will need to be repeated into the microphone to ensure they are received by the system. Where induction loops are installed this should be clearly advertised; one university had fitted an induction loop system in a new lecture theatre but initially failed to advertise the fact.

5.4 In one university where a number of lecture theatres have been fitted with induction loops it has been found that, because the intake of deaf students is not predictable, students may not always be timetabled to use those rooms. Another university which has had a programme of installing induction loops in lecture theatres has at present only a few students who are able to take advantage of the systems. However, these loop systems will benefit deaf/hard of hearing non-students who use university facilities for meetings and conferences.

5.5 Although the principles of a loop system are simple there may be practical difficulties in installing them. Unfortunately loops can pick-up not only wanted magnetic signals but also those generated by a variety of sources such as fluorescent light fittings, computers, lighting dimmer equipment, heavy electrical machinery, high power AC mains cabling and metal-work in the building. Another disadvantage of induction loop systems is that the magnetic field is set-up both within the area enclosed by the loop and also in the surrounding area. This "spill-over" can lead to interference and is the reason why adjacent rooms cannot be fitted with perimeter loop systems. The quality of systems can be variable and it is important that the installation is not only checked on commissioning for dead spots and interference but also that it is clear who has the responsibility for maintaining the system. This may be the educational institution's audio-visual service, the resource centre for deaf students or the faculty or department in which the equipment is installed.

5.6 The seminar or discussion group is the situation that students find most difficult. Some hearing impaired students manage lectures satisfactorily using either an induction loop system, if fitted, or a radio hearing aid but the to and fro of conversations in small groups cannot always be followed and a notetaker may be needed. A variety of equipment can be used in the seminar situation including radio microphones, portable loop systems and conference microphones.

5.7 One other learning environment where hearing impaired students may encounter difficulties is the laboratory. Interference from electrical equipment may create problems, personal amplification devices are probably more practicable than room induction loops but staff awareness, technical staff as well as academic staff, makes an important contribution to enabling a deaf student make best use of practical work. Field work is another situation where the needs of deaf and hearing impaired students

have to be considered. Radio hearing aids are probably the most appropriate technical support in this context.

5.8 A university does not comprise solely of lecture theatres, seminar rooms and laboratories; libraries, social areas, medical centres, accommodation offices, cafeterias and bars may all be frequented by hearing impaired students at some time in their life at university. Their living accommodation may need to be equipped with appropriate communication aids not only visual alarms but also aids for social contacts with other students. We found that universities approach the allocation of accommodation to deaf and hearing impaired students in different ways, some allow their students a free choice of accommodation and then adapt it to the individual student's needs, others allocate particular rooms or sections in their halls of residence. For example, one university has 10 accommodation units in a hall of residence fitted with vibrating and flashing alarm systems; there are two rooms at the end of a corridor next to the staircase on each of five floors. A Minicom telephone has been installed in the hall. This arrangement allows the provision of alerting devices but avoids the creation of "deaf areas".

5.9 In addition to technical resources, better building design has a contribution to make. Campus universities do not usually have problems from external noise sources but those universities in noisy locations should ensure that new buildings have adequate sound insulation. As well as controlling the transmission of noise through the building facade the acoustic environment within rooms is important. Intelligibility decreases with an increase in reverberation time and a decrease in speech-to-noise ratio both for normal hearing and hearing impaired listeners but experiments have shown that the latter are more adversely affected. (5). Some rooms, both teaching and social, have unnecessarily high reverberation times, improvements in the acoustic environment of these spaces would be to everybody's benefit not only people with hearing difficulties. The visual environment is also important; lighting, particularly in teaching rooms, should be such that the lecturer's face is well lit. Directional top-lighting can make lip-reading very difficult. These improvements to the visual environment need not be expensive. What is of the utmost importance is that the needs of deaf and hearing impaired students should be considered at the design stage of buildings; modifications to existing buildings are expensive and disruptive.

FUTURE DEVELOPMENTS AND CONCLUSIONS

6.1 An electronic university where people of all ages communicate via remote links in a continuous learning process is one vision of the university of the future. The Head of Research at British Telecom has argued that universities as they now exist will be

redundant by the beginning of the next century and that libraries and laboratories will be replaced by computers, databases and video-telephones (Independent 8/06/94). Whilst there is much that is valid in this view, for example video-telephones are already in operation and the Open University has a long record of providing university level courses by distance learning, the experience gained from a university education is not only academic but as The Independent described "Rather a matter of belonging to a community of one's peers and of acquiring self-knowledge and independence."

6.2 Whatever view is taken of the future universities are being faced with the immediate problem of providing better access to deaf and hearing impaired students. There are differing views about what should be installed by universities; some people would like a large number of rooms to be fitted with induction loop systems, others prefer infra-red systems and others would opt for individual aids to communication. Because technology is changing so rapidly an extensive programme of installing fixed environmental aids would not be recommended. Even in universities which have had loop systems installed in several lecture theatres there is no guarantee that deaf students can be timetabled to use those rooms. Many students prefer the quality of sound from a radio hearing aid to that from a loop system. Also they are able to buy a radio aid from their DSA whereas, individually, they may not have any influence on an institution's decision to install loop systems. The emphasis should be on helping students to select those aids or forms of communication support best suited to their particular type of hearing loss.

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