DEVELOPMENTAL ARTICLES

IMPLEMENTATION OF INDIAN SIGN LANGUAGE IN EDUCATIONAL SETTINGS

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ABSTRACT

This article reports on several sub-projects of research and development related to the use of Indian Sign Language in educational settings. In many countries around the world, sign languages are now recognised as the legitimate, full-fledged languages of the deaf communities that use them. In India, the development of sign language resources and their application in educational contexts, is still in its initial stages. The work reported on here, is the first principled and comprehensive effort of establishing educational programmes in Indian Sign Language at a national level. Programmes are of several types: a) Indian Sign Language instruction for hearing people; b) sign language teacher training programmes for deaf people; and c) educational materials for use in schools for the Deaf. The conceptual approach used in the programmes for deaf students is known as bilingual education, which emphasises the acquisition of a first language, Indian Sign Language, alongside the acquisition of spoken languages, primarily in their written form.

INTRODUCTION

India, with its one billion people, is the second most populated country in the world. It is estimated that there are over a million people who are profoundly deaf and approximately 10 million hard of hearing people, in India. No formal census data are available. These figures are extrapolated from the number of people who are deaf and hard of hearing, in Western nations (1‰ for individuals who are deaf and 10‰ for the hard of hearing). It would be realistic to believe that the actual number of people who are deaf and hard of hearing is much higher, because of poor hygienic conditions and lack of adequate medical services in India. Based on these numbers, one of every five people who are deaf in the world, lives in India. According to an UNESCO report in the 1980's, only 5% of children

who were deaf attended any special educational programme (1). Applied to the present situation, this would mean that only 50,000 children who are deaf, receive any education while the other 950,000 are left to their own devices.

BACKGROUND: PREVIOUS RESEARCH ON INDIAN SIGN LANGUAGE

For a country the size of India, the paucity of research on people who are deaf and hard of hearing is not understandable. Miles (2), compiled a historical bibliography on the education of children who are handicapped in South Asia and found only a few citations relative to deafness and the education of children who are Deaf over a span of 4,000 years. Miles pointed out that until the 20th century, deafness was considered as punishment for sins of earlier incarnations. People who were deaf were not allowed to inherit property by law, until the beginning of the 20th Century (3). With the prevalence of such beliefs, it is not surprising that Indian society does not make deaf education a priority.

Until 1978, it was generally believed that there was no Indian Sign Language (ISL). Banerjee (4) compared signs used in three schools for the deaf situated in Bengal (present W. Bengal and part of Assam). His conclusion was that gestures used in each school were different. He believed that signing started in India in the 18th century but its use was strongly discouraged, as signing was believed to impede learning to read. In 1975, Madan Vasishta sent a questionnaire to the heads of the 117 schools for the deaf in India. Almost all the respondents agreed that there was no Indian Sign Language. They did, however, acknowledge that deaf children used some kind of "collection of gestures" (5). A similar survey was conducted by D. Deshmukh 20 years later, again using questionnaires sent out to schools for the Deaf. Some of the responses show the same misconceptions about sign language, saying, for instance, that signing is "based on spoken language", or "is based on English", or that, "it is difficult to provide a sign for every spoken word". However, there were also some statements that showed a more positive attitude towards manual communication, and here respondents did talk about "sign language", rather than "gestures". Increasing awareness about the nature of sign languages is evidenced in statements such as: "Through sign languages, there is free and easy communication", "Sign language is the mother tongue of the Deaf", and the like (6).

Linguistic work on Indian Sign Language (ISL) began in the 1970's. In 1977, Vasishta, Woodward, and Wilson visited India with partial support from the National Science Foundation (USA) and collected signs from four major urban centres (Delhi, Calcutta, Bombay, and Bangalore) for linguistic analyses. Vasishta et al. (7), found that ISL is a language in its own right and is indigenous to the Indian subcontinent. Subsequent efforts by Vasishta et al between 1977 and 1982, resulted in four dictionaries of ISL regional varieties and some articles (8, 5, 9). The All India Federation of the Deaf, supposedly distributed these dictionaries

to selected programmes serving the Deaf in India. In 2001, another dictionary was published by the Ramakrishna Mission Vidyalaya in Coimbatore (10).

Until Zeshan began publishing her work on Indo-Pakistani Sign Language from 1996 onwards, no other work in this area was done in India. However, some efforts were made in inventing sign morphemes on the line of SEE II (Signed Exact English-in this form of sign language, efforts are made to sign every morpheme of English vocabulary) in the United States. Little is known about the actual use of these contrived signs in classrooms. Deaf adults, however outrightly rejected these signs. Some articles on the existence of a rural sign language in India, were also published (11, 12). It is claimed that a rural Indian Sign Language (RISL) also exists and it is very different from the ISL included in Vasishta et al's dictionaries. The examples given by the author, however, do not support this contention. Development of any language, including sign languages, requires ongoing interaction between the speakers of that language. Deaf people in rural areas have little, or no opportunity, to meet other deaf people. What the author had observed, appears to be literally the gestures used by hearing people to communicate with the deaf. Such systems of manual communication used by isolated deaf people and their immediate environment are known as "home signing". Home sign systems lack the linguistic complexity of sign languages that are used in deaf communities (13). Instead, deaf home signers rely on gestures, mime and shared context to communicate with a few hearing people, on an ad hoc basis. Vasishta experienced this himself, while growing up in a small village in Himachal Pradesh. A few hearing people could communicate with him using gestures and mime very effectively, while the rest used writing for communication. The problem of how to provide access to Indian Sign Language for deaf people in rural areas of the Indian subcontinent, is a matter of great urgency and concern.

Zeshan's publication of her Master's thesis on ISL grammar (14), was the first work of its kind on ISL, closely followed by the publication of the more extensive PhD thesis (6). Since then, a regular succession of articles has resulted in ISL being a relatively well described sign language today (In a number of linguistic publications, the term 'Indo-Pakistani Sign Language' is used because deaf communities use the same sign language in these countries) (15, 16, 17). Research by Zeshan has confirmed and expanded earlier work, showing that ISL is indigenous to India and is used in the form of regional dialects all over the Indian subcontinent, that ISL has a complex linguistic structure of its own and is not based on any spoken language, and that its grammar can be described by means of linguistic analysis. However, this literature is not readily available within India, and most of it requires the reader to have at least some background in sign language linguistics. A textbook on a broad range of historical, social, and linguistic aspects of ISL and the Indian Deaf community, written in non-technical language for a general readership, would be greatly needed to fill this gap. Meanwhile, the present article is intended as a first step towards

bringing the results of ISL research and application to the attention of a wider public, within and outside India.

APPLYING THE RESEARCH: AN "INDIAN SIGN LANGUAGE CELL"

During all this time when some research was being conducted, no efforts were made to teach ISL to teachers, parents and professionals working with the Deaf. Teacher training programmes never included ISL as part of their curriculum. Principals of schools for the Deaf, where students used ISL to communicate with each other did not formally acknowledge use of ISL. However, knowing well the importance of communication, they did not discourage its use either. Devoted and conscientious teachers of the Deaf learned ISL from their students and used it in classrooms for instruction and communication. Still, the existence of ISL as a tool for teaching was not wholly acknowledged. Moreover, courses, curricula and teaching materials for ISL instruction were not available, nor were there any training programmes for generating qualified ISL instructors. Therefore, even for schools and teachers with a more positive attitude towards sign language, there were no resources for including ISL in classroom instruction in a principled way.

This situation began to change in 2001**,** when the second author spent a month at the Ali Yavar Jung National Institute for the Hearing Handicapped (NIHH) in Mumbai. During his stay, he gave several formal and informal talks to faculty, students and administrators about the importance of sign language in deaf education and rehabilitation. The acting director of NIHH showed interest and asked the second author to develop a proposal for starting ISL classes and an interpreter training programme at NIHH. The proposal included in addition to ISL classes and interpreter training, development of curricula and instructional materials, orientation programmes on Deafness for employers, research on the effectiveness of ISL in teaching the Deaf, and Deaf awareness programmes.

The authors of this paper conducted a two-day workshop on bilingual education and ISL in Hyderabad, for educators of the Deaf in March 2001. This was the first national workshop on sign language in India and was sponsored by the Rehabilitation Council of India. While the impact of the workshop was limited due to the small number of participants (150), it was historic in that, the main topics were sign language and bilingualism in Deaf education.

Additionally, this was the first time that deaf researchers were addressing an audience of hearing people. Such an event would have been inconceivable even a few years earlier.

The proposal for starting ISL classes and an interpreter training programme was approved and an ISL Cell was established at NIHH, in May 2001, with a co-ordinator, a deaf university graduate as the first teacher, and two Senior Research Fellows/Consultants. The Director of

NIHH provided full support for these efforts. Over the following years, the ISL Cell developed video-based teaching materials, conducted sign language training for hearing people inside and outside NIHH, trained deaf people to be professional ISL teachers, and organised lectures, seminars and workshops about sign language and bilingual education for the Deaf.

TEACHING INDIAN SIGN LANGUAGE

ISL Teaching Materials

The complete set of ISL teaching materials consists of three courses at the basic, advanced and professional levels (level A, B, and C). The first two courses are completed and have been published (19, 20), the third level is currently under development. The team involved in the development of the teaching materials consisted of a hearing linguist responsible for the development of the course contents, a deaf research assistant responsible for rendering the course contents in ISL on the teaching video, and a number of ISL models contributing scripted signed dialogues and freely signed texts to the courses. The materials correspond closely to, and are officially recognised in a syllabus for sign language interpreter training, that was approved by the Rehabilitation Council of India in 2002.

All teaching materials are bilingual in ISL and English, that is, all explanations, instructions and examples are signed by the deaf assistant, with voiceover and/or written text added in English. It is planned to also include subtitles in Indian languages, beginning with Hindi, as soon as possible. Each course consists of a teaching video and an accompanying workbook. The units in level A and B are built around grammatical topics, so that all the main grammatical structures of ISL are covered, progressing from easier and more basic structures to the more difficult ones. For instance, wh-questions, negation and the expression of possession are part of the basic level course, whereas if-clauses and auxiliaries are part of the advanced level course. Table 1 provides a few examples of the structure of the course materials, based on some of the units in the level A and the level B courses. The course contents are part of the officially recognised syllabus, for the sign language interpreter training programme mentioned earlier.

Table 1. Units in the basic level and advanced level ISL course (level A and B)

UNIT	GRAMMAR	TOPICS
Level A Unit 3	Questions with question words	Places People and professions Actions
Level A Unit 5	Negative sentences (1)	Fingerspelling (letters) Dialogue: The exam Opposites
Level A Unit 7	Numbers	Dialogue: Buying a car Talking about money
Level B Unit 2	Revision: fingerspelling, negation, possession. Place names and pointing signs. Imperative	Activities within the deaf community Co-operation of deaf and hearing people Continents and countries Indian States and Union Territories Cities, towns and languages
Level B Unit 4	If-clauses Enumeration	Communication issues Government set-up
Level B Unit 7	Auxiliary construction Expressing movement	Interpreting

A typical unit first starts with explanations introducing the topic of the unit, for instance, explaining how wh-questions are formed in ISL, followed by examples illustrating the main points, and related exercises, sometimes referring to the workbook. Then, each unit has texts for communication practice with further exercises. In the basic level course, most of the texts are carefully scripted dialogues matching the students' level of initial proficiency in ISL. At the advanced level, there are longer continuous texts in ISL, grouped around various subject areas such as communication, deaf culture, interpreting, and the like. Over the three course levels, the amount of English voiceover gradually decreases, as students become able to work with signed texts directly.

Unlike some sign language course materials in other countries, the ISL course materials do not initially focus on vocabulary, or rely on gesture. Rather, ISL is taught just as any spoken language would be taught and includes a grammar component from the very beginning. This has several consequences for the kind of proficiency that the hearing learners acquire, and consequences for the deaf teachers, when they follow a training programme that builds on the course materials.

From the start, the most salient feature of the ISL classes was that deaf people taught them and that ISL grammar was introduced from the very beginning. In Western nations, most sign language classes in the early days of sign language research and its application were vocabulary classes. People learned sign vocabulary and used it in their respective spoken language syntax. Only recently, have some countries started teaching sign language using the grammar approach. India, on the other hand, started with this linguistically appropriate model from the very beginning.

ISL courses and students

Since its inception in May 2001, deaf staff in the Indian Sign Language Cell has been teaching ISL classes, both within NIHH and outside. Training outside NIHH was sometimes conducted in the form of shorter orientation courses that did not cover the entire content of a course. Table 2 gives an overview of the types of training programmes and the numbers of hearing people who have followed the various kinds of ISL classes taught by staff of the ISL Cell Mumbai, up to May 2003. In July 2003, the ISL programmes were extended to all regional centres of the NIHH network. Thus, ISL classes are now available in Delhi, Hyderabad, Bhubaneshwar and Calcutta, with teams of qualified deaf teachers providing the instruction under the same programme.

Table 2. Training in Indian Sign Language for hearing people

Course type	Number of participants
Certificate course in Indian Sign Language (Level A)	61
Certificate course in Indian Sign Language (Level B)	7
Short-term ISL training programmes	61
Internal training for faculty, students and staff at NIHH	29
All courses	158

Students in the ISL classes come from a wide variety of backgrounds. Apart from NIHH staff members who undergo internal training, people from outside the Institute have the option of attending for each course level, full-time classes for three months, or part-time classes for six months. The six-month program is generally more effective, particularly for students who are learning a sign language for the first time. This is probably due to the fact that they have more time to absorb what they are learning when the course spreads over a longer time, and learning is more effective when it is reinforced by repetition over time. However, for people from outside Mumbai, full-time classes initially provided the only opportunity to learn ISL, in a structured programme.

People join sign language classes for a variety of reasons. Many are involved with deaf people professionally, working, for instance, as audiologists or social workers, or they are studying towards a degree in special education, with a focus on hearing impairment or mental retardation. With the expansion of the ISL courses to regional centres, a larger number of hearing students who are enrolled in courses run by NIHH, such as teaching diplomas, or the Bachelor in Education (Hearing Impaired) programme, have also started learning Indian Sign Language. On the other hand, it has not been possible yet to recruit larger numbers of in-service teachers currently working at schools for the Deaf. It will be a major aim for the near future to design special programmes to suit this important target group. These programmes will have to include some practical training on the use of bilingual teaching materials, and the time schedule will have to be compacted and adjusted, to allow for full-time training at suitable times, for example, during school holidays. Similarly, hearing parents of deaf children are a very important target group who will have to be focussed upon in the near future.

Apart from learning actual ISL communication, one of the major achievements of the training programme is to change the students' attitudes about sign language and deaf people. In fact, the basic level course starts with a general introduction to sign language. This introduction consists of a 45-minute signed lecture (with English voiceover and a corresponding printed text in the workbook) that explains the nature of sign language and the status of Indian Sign Language in India. Thus before students learn their first signs, the most common prejudices against sign languages are addressed, and the students learn that:

- Sign languages are NOT the same all over the world.
- Sign languages are NOT just gestures and pantomime, but do have their own grammar.
- Sign languages are NOT dependent on spoken languages and do not resemble spoken languages used in the same region.
- Sign languages are NOT "languages of the hands" only, but use non-manual expressions as well.
- Sign languages have NOT been invented by hearing people.

- Western sign languages (e.g. American Sign Language) are NOT better than Indian Sign Language.
- Signed codes for spoken languages (e.g. Signed English) are NOT better than Indian Sign Language.

Even more important than this theoretical knowledge, is the hearing students' direct contact with an educated deaf person who is their teacher. This novel setting for which there are few precedents in India has a profound impact on both hearing students and on the deaf teachers themselves. For many hearing students, this is the first time that they encounter a deaf person who is professionally qualified, confident, and "in charge" of the situation. Consequently and automatically, the old patterns of patronising attitudes towards deaf people are no longer viable. For here suddenly, is a deaf person who is a specialist in something that the hearing people know nothing, or little about, and rather than being a "patient" in need of "help", the deaf teacher is, for once, in a position of authority. From the very beginning, since all teachers are deaf signers, the only language of classroom instruction is their own language, Indian Sign Language. The slogan that "deaf people can do it" is practically illustrated, and this practical example is naturally more powerful than any theoretical instruction.

The change in attitude among hearing students of ISL is likely to remain even if the signing skills that can be learned in a relatively short time are necessarily limited, especially at the basic level. In countries where university-level sign language programmes exist, studying towards a degree in sign language interpreting, sign language linguistics, or sign language teaching involves several years of study, often in the form of regular Bachelor's or Master's degrees. Such courses conform to the same requirements as courses in any other subject in the humanities. In the near to medium-term future, there is no doubt that the increasing demand for sign language-related services, will also produce the corresponding professional profiles in India, so that it will become viable to offer similar programmes here as well.

Meanwhile, it is a subject of continuing investigation in the Indian Sign Language Cell to study the way that ISL skills are acquired through our current programmes. The first results are in preparation, but have not been published yet, although data collection has been ongoing from the very beginning. ISL students at both levels were regularly videotaped, especially in connection with exams, of which there are two at each level. Since classes taught by the ISL Cell Mumbai have been going on for more than two years, the authors have been able to follow students from the start of their ISL acquisition (usually starting at zero competence) right up to the end of the second level course. Some initial informal impressions and observations can be reported at this stage, until a more detailed analysis becomes available. The aim of the basic level course (level A) is to achieve basic communicative competence in ISL. That is, at the end of the course, students should be able to communicate with deaf ISL signers in casual, informal situations. They should be able to understand conversational

ISL and to express themselves in unrehearsed situations. Students need to have grasped the basic grammatical structures of ISL because they should not only repeat phrases and sentences by heart, but use the language creatively. A basic core vocabulary of about 400 words is taught at this level. If the available interpreting module is also taught as part of the course, hearing people can play the role of a communication facilitator after completion of this course.

The most striking observation about the learning process at the basic level, is that students use genuine ISL structures from the very beginning. Learning a language, including a sign language for the first time, is difficult for most people, and this has to be taken into account when assessing the students' emerging competence in ISL. Although learners' problems and errors have not been studied in detail, preliminary evidence suggests that even at the basic level, students do not simply combine ISL signs with the structures of a spoken language. For example, they do not simply use ISL signs in the word order of a spoken language, be it English, or an indigenous Indian language.

This makes the programme different from many others that used to be taught and to some extent are still taught in India and elsewhere. Some programmes explicitly taught or teach signed codes for spoken languages, most prominently various forms of Signed English. This is problematic in the Indian context because very few deaf people can use and understand any form of Signed English. Therefore, a hearing person with skills in a form of Signed English will not be understood by the great majority of deaf ISL-using Indians. In other cases, a pidginised version of the sign language with heavy influence from spoken language structures is not intentional, but results from the fact that courses are, or were basically vocabulary courses. In this case, it is natural that learners would use the sign vocabulary in the order of their own spoken language.

At the second level of ISL instruction (level B), students achieve greater fluency and also become acquainted with the lives, cultural norms, and experiences of deaf Indians, in greater depth. Initial observations indicate that students at this level are able to communicate adequately with the deaf people they know well, such as their teachers, who communicate with them in ISL, exclusively during classroom time at all levels of instruction. More advanced ISL grammar is taught at this level, and the vocabulary expands to about 1,000 words. Level B students are generally able to understand longer ISL texts, of which there are many in the teaching materials, and they also produce longer signed utterances themselves. Students who do well at this level should also be able to do some ISL interpreting in semi-formal, non-professional settings. For example, a graduate of our last level B course has recently been employed in the ISL Cell in Mumbai as assistant coordinator and also assists with interpretation.

However, we can also note that skill levels in ISL diverge more widely across individual students at this level, than in the beginning. That is, some students' signing skills really take off

during this level of instruction and they become very fluent signers, while others progress at a much slower pace. The main reason for this seems to be the level of involvement with deaf people outside classroom hours. That is, students who have continuous contact with deaf people and spend much time in casual conversations with many different deaf people, become very fluent signers. By contrast, those who only attend the classes, but do not otherwise socialise with deaf people, make slower progress and may have more difficulty understanding deaf people they are not familiar with. This of course is not surprising. As with any language, true competence comes only through using the language in real-life situations on a daily basis. Consequently, one way to improve the signing skills of future students, would be to provide more opportunities for meeting a wider circle of deaf people on a regular basis.

It has been a regular practice from the beginning of the ISL Cell, to evaluate the programme. The following excerpts is from a report in July 2001, relating to the first ISL classes that were run in Mumbai:

"There are approximately 23 students attending classes regularly. Of these, 17 filled out evaluation forms. Eleven of the responding students are attending part time and six are full time students. All of them have been enrolled since the beginning of classes on July 1, 2001. Except for three students, all are attending classes regularly. These three have job requirements that call for periodic absence from Bombay.

The students have a wide variety of professional backgrounds. Thirteen of them are working as teachers or in support services (counsellors, audiologists, speech therapists) for the deaf. Of the remaining four, one is a medical doctor, one a retired counsellor, one an airline hostess, and one is an architect. Six of the students are employed at NIHH and the other 11 came from the community.

Most of the students are from Bombay except for two who are out of state. One is from Andhra Pradesh and the other is from Uttar Pradesh. The two out-of-state students are living in the hostel.

The first and most salient impression of this programme can be summed up in one word: enthusiasm. Teachers, students, and administrators demonstrate a strong commitment to learning and teaching ISL. The result of this attitude is evident from the significant progress made by students and their positive attitude about ISL.

Students spend between one and four hours in commuting to and from the class. This shows their commitment to learning. The regular students are rarely absent, and focus on the subject in class, is exemplary. Almost all students have a professional background and they appear to take this class as a challenging experience."

Another important source of evaluation comes from the students themselves. The project staff has been collecting questionnaires from ISL learners in which they state their opinion

about the programme. These questionnaires ask students to evaluate, for instance, whether the amount of classroom instruction is adequate, how helpful the teaching materials are, whether the time schedule is appropriate for their circumstances, and how satisfied they are with the teacher's instruction. The first such questionnaires were used for the earlier mentioned report, but not all subsequent questionnaires have been analysed in detail yet, and their analysis is part of ongoing research into the acquisition of ISL by hearing students in this programme. However, one tendency is abundantly clear: virtually all learners rate the teachers' performance very highly, and many individual comments from students in the classes have confirmed that they value their teachers greatly and genuinely enjoy the classes. Indeed, the deaf teachers are the heart and soul of this programme, and their hard work, discipline and enthusiasm has been a large contributory factor in making the programme successful. Throughout the programme, they have been the best ambassadors for their language and the classes, that teach their language to hearing people.

Teacher training for deaf instructors

Right from the beginning of the sign language programmes, training qualified sign language teachers, has been a matter of high priority in the Indian Sign Language Cell. The training courses correspond to the three levels of ISL courses (level A, B and C). Deaf people who are admitted to the courses attend a full-time residential programme for about three months for each course level. Those who pass the exams become certified sign language teachers.

Over the first two years, courses were being conducted by the ISL Cell's first sign language Master Trainer, who had also contributed to the development of the teaching materials as a research assistant in the first place, and was thus most suitable for passing on his skills to other deaf people. The medium of instruction in the teacher-training program was of course ISL. So far, the ISL Cell in Mumbai has run teacher training programmes for four batches of trainees, three at the A level and one at the B level (Table 3). Almost all trainees who have passed the exams are currently employed in sign language teaching and training, and many have been absorbed into our own ISL programs via the expansion to the NIHH regional centres. For the first time in India, there is now a sizeable group of deaf people with heightened meta-linguistic awareness, self-confidence, and the skills to teach about their own language and culture.

Table 3. Trainees in the ISL teacher training programmes

Course	Passed	Failed	Total
level A first batch	6	7	13
level A second batch	5	4	9
level A third batch	8	4	12
level B first batch	9	1	10

There has been a learning curve in the organisation of the training programme, in particular, with respect to the choice of candidates. Out of the first and second batch of level A trainees, about half of the candidates failed the course. This was mostly because their competence in ISL was too low for them to be sign language teachers, and of course excellent ISL competence is a basic precondition for being a good ISL teacher. In the following programs, candidates were selected more carefully, so that the percentage of trainees who passed the course, rose sharply, to the extent where only one person failed the most recent course, the advanced level teacher training at level B.

The effect of the training on deaf people who participate in the course can only be described as dramatic. Usually, deaf Indians do not believe that their sign language is a "proper language" that has a grammar of its own. They think of signing as being some way of communicating that is inferior to spoken language, thus adopting some of the negative prejudice against the sign language that is so widespread among the hearing population in India. Through the training programme, they learn that this is not true, and this awareness, together with the new confidence that they gain through the programme, has a deep effect on their sense of identity and self-esteem. In fact, they all develop a great liking for grammar, which is quite strange when one thinks of hearing people who study grammar in high school and university and usually find the topic immensely dry, boring and abstract.

All deaf teacher trainees, even those who do not pass the exams, also get a new sense of what deaf people in general, and they themselves as individuals can achieve, and this motivates them to pursue goals that they would have thought to be out of reach earlier. In two recent parallel studies (21, 22), teachers and parents of deaf children on the one hand, and deaf adults on the other hand, were asked to name appropriate professions for deaf people in India. Professions mentioned frequently included vocational professions such as tailoring, painting, printing and carpentry, as well as fine art, computerised data processing, and jobs at lower levels of qualification such as typist and shop assistant. This list does not include teaching professions, or in fact any kind of profession which usually requires an academic background.

The deaf trainees generally enter the training programme with similar views and expectations. For instance, one of the recent graduates had passed the 10th standard at school, then dropped out of the school system and worked for an architect doing technical drawing. Everyone, including himself, believed this to be a great achievement, and nobody ever considered that he might have the potential of studying at university. He is now appearing for the 12th standard exams in order to go on to a university-level programme later. A number of deaf people who have passed through these training programmes are similarly pursuing higher levels of education, and in particular, those who work at the level of Master Trainers. Several of them are appearing, mostly for the 12th standard exams, sometimes after years of being out of touch with schooling, and a few are entering or seeking to enter Bachelors' and Masters' programmes. The contact with deaf role models who do pursue higher academic qualifications, and the experience of being able to function adequately in a teaching role themselves, motivates them to pursue higher levels of education.

As far as the training programmes themselves are concerned, the way the teaching materials have been designed, with all relevant explanations signed on the videotape, has proved to be highly effective in training teachers. The teaching videos can thus directly double up as an instructional aid in the teacher training programme. This is especially true of the introduction to the level A course and also of the individual course units. For example, the deaf trainees work with the videotape at one of the units where the signer on the video is explaining the way that questions with question words are formed in ISL. Through trying to understand the signed explanations, they first become aware that there are many specific rules involved here: that question words are always clause-final; that a specific facial expression is necessary in this sentence type; and that most question words are complex combinations of two signs. When they go on to studying the examples on the videotape, they will also notice that all these rules are different from English, and that the English sentences are completely different in structure from the ISL sentences. Finally, they will practice amongst themselves what it is like to stand in front of a class of people and direct them to do sign language exercises. For example, telling hearing people that they are not signing correctly is a novel experience for the trainees initially, and they need to get used to their role as responsible teachers.

The training itself is very practical and provides many opportunities for practising in classroom settings, either in role play among the deaf trainees themselves (a simulated teaching situation), or by assigning some ongoing ISL classes to the trainees to teach (an actual teaching situation). Given both the needs for making sign language teachers available quickly and the limited resources of the ISL Cell, initially there has been no pursuit of more theoretically oriented programmes with a richer academic grounding. However, in due course there should definitely be a next logical step forward, and deaf people should be able to pursue regular university-level degrees in education, so that they can work in schools for the deaf on an equal footing

with their hearing colleagues, as is already the reality in other countries. As has been mentioned above, the deaf teachers who have been working within NIHH are highly regarded by their students, and work with great dedication and responsibility. With the expansion of the ISL programmes to regional centres, the best and most experienced teachers were promoted and can now work as Master Trainers to train further groups of deaf people locally. Two new teacher training programmes started in October 2003, in Kolkata and in Delhi. The ISL Cell in Mumbai, currently concentrates on the development of further teaching materials.

In addition to the personal development of the deaf trainees, there was a second factor which was very striking and initially quite unexpected. The mere fact that the teaching materials are bilingual in ISL and English resulted in a dramatic increase in English proficiency in many deaf trainees, a development that was most marked in those who initially had the least competence in English. Thus trainees with virtually no knowledge of English progressed, within 2-3 months of their first level A teacher training programme, to a stage where they had a vocabulary of several hundred words, could understand the English phrases and sentences that were part of the teaching materials, and developed a basic understanding of English grammar without any formal instruction. For instance, when one of these trainees was asked what the *n't* meant in one of the negative sentences, he was aware that this was the same as the word *not*, and that it was a negative corresponding to a particular ISL sign. To varying degrees, these students were able to translate any English sentence from the teaching materials into ISL, although this was not explicitly practised in their classes. On the other hand, they were of course not able to do translations the other way around, nor were they able to use English structures productively in novel sentences.

Apart from the fact that this progress in English was unplanned and unexpected, another interesting factor is that the whole process took place in an exclusively signing environment, with the instructor and the trainees all being deaf. No effort was made to teach pronunciation or lip-reading in any language, since deaf teachers communicate in ISL (or a written language) exclusively in the classes. Therefore, deaf people who have acquired some English proficiency through various channels as a by-product of their training programme are typically unaware of how words are pronounced. For instance, they have no idea that some letters in the words they know are silent, such as **gh** in **light** and **night**, yet can use these words correctly in written communication. By the end of the training programme, most students have also started communicating their own ideas in written English. All sign language teachers who currently work in the ISL programmes in the five NIHH centres, communicate by e-mail in written English with each other and their project leaders, and some have only just started free writing in English. Initially, their writing is of course quite ungrammatical and heavily influenced by ISL structures, but it serves its communicative purpose and thus provides a strong incentive for making further progress, as well as providing opportunities for practice and fostering a group spirit among all staff in the ISL programme.

As a result of these experiences, the ISL Cell decided to increase work in the area of English language teaching. A partly developed course in basic English grammar that had been on hold for some time was finalised, and the first formal classes using the new teaching materials have started.

BILINGUAL TEACHING MATERIALS FOR DEAF EDUCATION

Background: bilingualism in deaf education

Bilingual education is generally defined as, "an approach to the education of deaf children that uses both the sign language of the deaf community and the written/spoken language of the hearing community." (23). During the last two decades, bilingualism in deaf education has spread rapidly in many countries, especially in Scandinavian countries and the United States.

Cummins (24) provided the rationale for bilingual education for both deaf and hearing children. He postulated that the underlying proficiency in one language leads to proficiency in the second language.

Sign languages until the 1960s were not viewed as bona fide languages, but just collections of gestures and mime. Dr. Stokoe's research on American Sign Language proved that it is a full-fledged language with its own grammar, syntax, and other linguistic attributes. These findings have since been replicated for many national sign languages around the world, including Indian Sign Language. Research on the achievement of deaf children in the 1950s and 60s, indicated that deaf children of deaf parents (DOD) performed much better in most subjects, especially in language development, than deaf children of hearing parents (DOH). This superiority in academic performance was attributed to DOD having access to a rich communication environment from birth. Their acquisition of fluency in sign language led to their mastery of one language in the early years. This mastery was later transferred to learning of the second language (spoken and written) in school.

The fact that sign languages are languages in their own right and that their acquisition catapults a deaf child's ability to learn the spoken language on a par with his/her hearing peers, makes a strong case for the bilingual approach in deaf education. Research has also indicated that parts of the brain used for learning language at birth atrophy if they are not effectively utilised during the crucial years for learning a language (25). Since DOH do not have access to any language at an early age, they have to learn the spoken/written language by rote memorisation and drill when they arrive in school. This is not the best approach to learn a language. Thus, these deaf children spend most of their school years trying to learn a language that they have never heard and without any linguistic base. No wonder that the average reading level of deaf children after 12 years of schooling is about 4.5 grade level in

the United States. This deficiency in linguistic ability leads to poor learning in other subject areas also.

In India, where most children are born in small villages and little or no early intervention is available and where auditory equipment is rare, the benefits of introducing ISL as the first language and then using it as a base for learning the region's spoken/written language are tremendous. Use of ISL will also help facilitate communication and socialisation of the deaf, which leads to better self-esteem. Higher self-esteem leads to better educational achievement and overall adjustment.

Bilingual education is being implemented very successfully in Scandinavian countries and to an extent in the United States (26, 27, 28, 29). India can learn from the successful strategies these countries have implemented. The ISL Cell has been developing educational materials designed to give impulses for the implementation of bilingual deaf education in India.

English through ISL for deaf adults: the "Basic course in English taught in Indian sign language"

The development of a video-based course teaching English to Indian deaf people in a sign language medium, already began before the inception of the ISL Cell, but was not completed until recently. As with the ISL course materials, the course contents in the form of a teaching video and an accompanying student workbook, were developed by a linguist, and the course contents were rendered in ISL on the video by a deaf assistant. This package is complemented by a reader with additional texts and exercises for practice, which is being developed by the ISL Cell co-ordinator. The following paragraph from the workbook introduces the aim and scope of the teaching materials:

> "The materials are recommended for use in classes 8-10, or, for use in vocational training institutes for the Deaf. Although these materials can be used for individual study at home, we recommend that they should be used in a classroom. We also recommend that the classes should be taught by a deaf teacher or by a deaf and a hearing teacher together. If this is not possible, hearing teachers should at least be fluent in Indian Sign Language.
>
> This English course is organised in units. Each unit presents aspects of English grammar together with grammatical exercises, vocabulary, texts for reading comprehension, and exercises for writing texts. On the video, we explain the grammar and the meaning of English words in sign language. The workbook includes vocabulary lists, grammar summaries, example texts and exercises. In a classroom setting, the teacher in the classroom will use the video, and each student should work with one workbook.
>
> The video and workbook materials focus on teaching basic grammatical structures rather than a broad range of vocabulary. This approach was taken because English grammar is the area that many deaf Indians struggle with and where they have the greatest deficits. Understanding

grammatical structures and the "logic" of English sentences is essential for being able to read and write English at an adequate level. However, true language competence is only achieved through extensive practice with authentic language in real-life situations. Therefore, the course materials also include a reader where students can encounter authentic English language in texts of many different kinds. The texts in the reader are graded to suit the levels of the individual units in the course and are intended to provide additional practice with written English as it is encountered in everyday life."

In order to understand what this course can and cannot achieve, a few important aspects need to be considered. First of all, the course is not suitable for young children below their mid-teens. This is because the ability to explicitly reflect on linguistic rules and structures is presupposed in the design of the course. Students following the course have to be able to understand the meta-linguistic explanations included in the units. Younger children, no matter whether deaf or hearing, generally do not have this capacity yet, and thus need a very different approach to second language learning.

The course is also not suitable for older deaf people who do not have sufficient competence in Indian Sign Language, at least not without special provisions being made. This is simply because they would not be able to easily understand the signed explanations on the videotape. This is problematic in particular, for self-study without access to a teacher or tutor. It is less of a problem if people have the opportunity to attend a course taught by a trained deaf teacher. In this case, the teacher's additional help and explanation may make it possible to follow the course successfully. At the same time, we can expect that such deaf people would also benefit from the teaching situation by acquiring more proficiency in Indian Sign Language.

The focus of the course on grammar, also warrants some explanation. A common practice in India, when teaching the same target group, is to focus on vocabulary, or to have people copy and memorise whole sentences. This is not a very successful way of learning a foreign language. However, it is a valid question to ask whether such a course should not preferably focus on communication in a more practical way, in the sense of teaching "what to say/write in a particular situation".

There are several answers concerning this issue. First of all, many schools for the deaf in India do teach English. The typical outcome of this learning process when students graduate from class 10 after several years of instruction in English, is that they have quite a sizeable vocabulary, but practically no grammar. That is, they know the meanings of a sizeable number of English words, but they cannot put the words together into even the simplest phrases and sentences because they have no or minimal command of the morphology and syntax of English. Therefore, our course aims primarily at bridging exactly this gap and focus on the aspects where deaf people typically have the most deficits. In nine units, the

course includes core structures of English grammar, such as personal pronouns, possessive pronouns, copula forms, modals, singular and plural in nouns, definite and indefinite articles, prepositions, the use of numbers and time expressions, negation, basic present, past and future tenses, do-support and S-V inversion in yes/no-questions, wh-questions, and object pronouns. Importantly, these structures are not arranged in an order of abstract logic. Rather, their order throughout the course is itself usage-oriented and includes considerations of frequency. For instance, only the first person possessive, 'my' is introduced in unit 3 because it is the most useful for face-to-face communication. Other possessive pronouns are introduced later. Similarly, negative and interrogative forms of 'have' and 'want' already appear in unit 5, whereas the complete negative and interrogative patterns of English are distributed over later units. And rather than teaching all prepositions at the same time, which would be structurally "logical", but hugely impractical from a communicative point of view, prepositions appear as part of various sub-topics throughout the course, for example in temporal expressions in unit 6.

A more communicative approach is also taken in the workbook and in particular in the reader, which is being developed with inputs from deaf learners of English themselves. In the workbook, topics and situations include talking about the family, about professions, visits to the doctor, buying something in a store, going out, getting a railway pass, doing a hearing test, etc. The reader includes all kinds of real-life English texts, ranging from posters and cooking instructions to advertisements, invitation cards, e-mail messages, and newspaper clippings. Moreover, phrases and exercises for basic communicative functions are also included, such as how to make suggestions, how to express opinions, how to make requests, and so forth.

Finally, a particularly salient aspect of the course, is that it focuses entirely on written language in the form of reading comprehension and written composition. Although the video does have voiceover, this is intended as a teaching aid for hearing people who may want to teach the course but do not have quite enough fluency in ISL, to understand all the contents of the video. Typically though, the course would be taught by a qualified deaf teacher in a classroom with deaf students, where the medium of instruction would be Indian Sign Language. No attempt is made in this course, to teach English articulation or lip-reading. In fact, as was mentioned earlier, deaf students learning English in this kind of setting, seem to make no connections between the written forms of English and the way these are pronounced, yet are able to understand and use the English words and structures productively. This aspect of language acquisition is very interesting and will be a topic for further investigation.

The English course, has been pilot tested with a group of deaf sign language teacher trainees, with promising results. The ISL Cells in Mumbai and Hyderabad, are now beginning to use the teaching materials in regular courses for deaf adults. The results from these first courses

will be carefully documented for research purposes, so that the degree of effectiveness of the teaching materials can be established. It will also be necessary at the next step to train teachers in the use of these materials, so that they can be used more widely in classrooms, with the appropriate target groups.

The overall aim of the course (and any advanced-level courses that will follow), is to enable deaf Indians to access written information in English and to use written English productively to communicate their ideas. Once this crucial linguistic access is established, opportunities for deaf people to access information and education are greatly increased. They can surf the internet and read about all kinds of subject matter independently, they can read newspapers and magazines, they can pursue university-level courses in distance education, they can broaden their horizons through world-wide e-mail communication, and they can access professions that are currently out of reach for most deaf Indians. The second language acquisition we envisage proceeds on the basis of sound knowledge of a first language, usually Indian Sign Language, thus realising the tenets of bilingual education as outlined earlier in this paper.

Early linguistic competence for young deaf children: The "First signed stories"

The "First signed stories" project, is the latest addition to the ISL Cell's activities, and is therefore at the least advanced stage. These materials will focus on a different target group of young deaf children, between about three and eight years of age. The aim of these materials is to stimulate overall linguistic and cognitive development in these children, in a bilingual environment.

In the first stage of this project, a group of fluent deaf signers under the direction of the project's first Master Trainer, collected children's stories and filmed signed versions of these stories. This included an initial experimentation phase, where various signing styles and settings were tried out, and has since resulted in a collection of a number of stories in Indian Sign Language. For one pilot story, colour illustrations were also created and experimented with, in ways to integrate these pictures and the signed story itself. Eventually, the project aims at producing a videotape with signed stories and their illustrations, a teacher's manual with directions and suggestions on how to use these materials in a classroom setting, and further teaching aids to expand classroom activities based on the stories, such as printed versions of the same stories in a written language (English, Hindi, and/or regional Indian languages). Currently, work focuses on finalising the video materials; the accompanying materials will be developed at the second stage.

When the materials are ready for use, it will again be essential to start with a few pilot studies and trial runs in appropriate groups of deaf children, and to carefully document the results of the learning process. For the pilot studies, the best option will be to work with a deaf teacher who is fluent in ISL and has participated in the development of the materials.

The results that can be expected from exposing young deaf children to sign language communication and a bilingual environment with a sign language-competent teacher, lie in the domains of overall linguistic and cognitive development. A major obstacle to educational success in deaf children, is a lack of what can be called "world knowledge". In bilingual classrooms where similar materials were used, storybooks and their signed equivalents served this purpose: "Storybook reading/signing was one such context that naturally lent itself to building world knowledge. During these readings, the teachers frequently offered asides to explain concepts essential to understand the stories." (26) Because of a lack of access to communication in any natural language, deaf children especially at younger ages, have severe gaps in the general cognitive and cultural foundations that are necessary preconditions to acquiring language. Stevens (28), discussing the situation in the United States, states the problem thus: "The most prevalent educational goal in schools and classes for deaf children is the acquisition of English. However, this goal is too narrow and the methods used to reach it are too limited, for the goal itself to be obtained. Much of the time and energy devoted toward reaching the goal are wasted, because the cultural aspects of education are ignored, and because the teachers, by and large, do not foster growth in general areas of language and thought development."

A successful way of building up this missing world knowledge and focusing on the development of cognitive concepts, is through stories that are directly accessible to deaf children in sign language. It is through stories that they can learn. For instance, that people communicate for various purposes, that it is possible to take different viewpoints on the same situation, that conflicts exist between people and can be resolved, that the possibilities of imaginary worlds are different from those of the real world, that one person can imagine what another person feels, and so on. Without a sound foundation of information about the world, making sense of printed texts in any language, is impossible.

However, using materials such as the "First signed stories", in a classroom, can also facilitate the initial stages of acquisition of a written language at the same time as providing opportunities for general cognitive development. In contrast with the basic English course for teenagers and adults, young children need a different approach because it is difficult to use explicit awareness of linguistic structures for second language teaching purposes at this age. Instead of formal second language instruction, which is possible only at a later age, motivation and communicative intent is of prime importance for younger age groups. Here, the initial acquisition of a written language will primarily be in the form of reading comprehension. On the relationship between motivation, sign language communication, and the point of departure for second language learning in deaf children, Svartholm (27) explains the situation in Swedish bilingual school settings: "Making a Swedish text intelligible to a deaf child at the beginner's level implies rendering it into Swedish Sign Language. Such renderings, abundantly offered

by the teacher in the classroom, can be said to form the main point of departure for second language teaching to the deaf. The main purpose of these renderings is to awaken the child's interest in the content of Swedish texts, to show that the printed lines on the page contain something and that this something is interesting or exciting or funny."

Besides their role as 'translators' between signed and written language, sign language-competent teachers also serve as important role models for their deaf students. Neese Bailes (26) observed this factor in a bilingual classroom using American Sign Language and written English: `The teachers frequently read and signed stories to their students in ASL. The students observed them in the process of reading English text and subsequently signing the story to them in ASL. Immersed in the literacy activities of their teachers, observing how these ready role models negotiated their way between ASL and English, and indeed observing how they used these languages in purposeful and even playful ways, the children learned by example what it meant to live literate lives as bilinguals."

For the Indian context, where there are few precedents of bilingual classroom settings, the "First signed stories", are expected to provide a structured example of how such a situation is created and what kinds of teaching aids might be used to benefit from the advantages of such a communicative classroom setting. A large number of options are possible, but have not been planned in detail. For example, teachers can use written and signed forms or the stories in parallel, as in the examples from Sweden and the US quoted above; they can focus on the relationship between individual signs and words that occur in the stories; they can discuss the stories with their students and thus foster their "thought development"; they can ask students to retell the stories in ISL, to build up expressive abilities and enhance memory; and they can later add further reading and writing activities, drawing on the interest that has been generated by the signed stories.

These materials are of course only a beginning, and it will be necessary to produce many more ISL materials in the years to come. This first pilot project and the conclusions drawn from documenting its effectiveness, will provide useful clues to developing further such materials that are particularly suitable in an Indian context and tailored to the needs of both teachers and students, at schools for the Deaf in India.

CONCLUSION

The ISL programme so far, has been very productive over a very short period of time. Within two-and-a-half years, more than 250 hearing people received training in ISL at the basic and/or advanced level. There are now 20 trained ISL teachers, and the project has been expanded to four regional centres in addition to the NIHH headquarters in Mumbai. The expanded ISL project will run for a period of five years, and substantial funds have been made available to run this programme and employ its staff.

By way of a forecast of the future, one goes back once more to the evaluation report of the first year of the ISL Cell in Mumbai: "The administration of NIHH has expressed some very positive views and plans for future developments in the use of ISL. There appears to be a clear vision. Some of their goals are:

- Recognise ISL as one of the modes of communication that the majority of the deaf use.
- Recognise ISL as one of the government approved languages in India.
- Prepare curriculum material in ISL that could be used for subject teaching in schools.
- Plan and implement strategies to increase ISL usage by the deaf and teachers of the hearing impaired.
- Update and perfect to the extent possible the ISL interpreter-training programme.
- Provide choices to the hearing impaired with ISL being one of the choices.
- Work towards making ISL a medium of instruction in schools and develop strategies to reduce resistance against it.

These are lofty but achievable goals. Since AYJNIHH is the primary organisation working for the deaf in India, these goals can be achieved within the next few years."

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