

MANPOWER AND EQUIPMENT AVAILABLE IN THE SCHOOLS FOR THE DEAF  
IN INDIA

Reg.No.M9009

AN INDEPENDENT PROJECT WORK SUBMITTED IN PART FULFILMENT FOR  
FIRST YEAR M.Sc, (SPEECH AND HEARING) TO THE UNIVERSITY OF  
MYSORE

ALL INDIA INSTITUTE OF SPEECH AND HEARING: MYSORE - 570 006  
1991

MY TEACHERS (My source of knowledge)

and

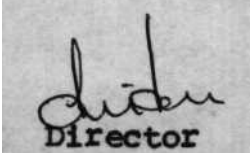
THE EDUCATORS OF THE DEAF

**CERTIFICATE**

This is to certify that the Independent Project entitled: "Manpower and Equipment Available in the schools for the Deaf in India" is the bonafide work on part fulfilment for the Degree of Master of Science (Speech and Hearing) of the student with Reg.No.M9009.

Mysore

1991



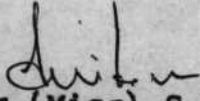
Director

All India Institute of  
Speech and Hearing  
Mysore.

**CERTIFICATE**

This is to certify that the  
Independent Project entitled:  
"Manpower and Equipment Available  
in the Schools for the Deaf in India"  
has been prepared under my supervision  
and guidance.

Mysore  
1991



**Dr. (Miss) S. Nikam,**  
GUIDE

## DECLARATION

This Independent Project entitled:  
"Man power and Equipment Available in the  
Schools for the Deaf in India" is the result  
of my own study undertaken under the guidance  
of Dr.(Miss) S.Nikam, Prof, and Head of the  
Department of Audiology, All India Institute  
of Speech and Hearing, Mysore and has not been  
submitted earlier at any University for any  
other Diploma or Degree.

Mysore  
1991

Reg.No.M9009

## ACKNOWLEDGEMENT

I express my sincere thanks to Dr.(Miss) S.Nikam, Prof, and Head of the Department of Audiology, and Director, All India Institute of Speech and Hearing, Mysore for her kind help and guidance throughout the project work, without which this work would not have been completed.

I thank Mrs. Asha Yathiraj, Lecturer in Audiology, and Mrs.Roopa Nagarajan, Lecturer in Audiology for their timely help.

My heartfelt acknowledgement to Mr.M.V.Govindarajan, Mr.Ramesh Babu and other members of the Library and Information Centre staff for their ever ready helping hand.

I wish to express my thanks to Dr.M.N.Nagaraja Mrs.Jyotsna Kansara and Mr.Sanjay Pradhan for their kind help and guidance during the initial stages of the project.

I thank Mr.Jayaram and Mr.Itagi, CIIL, Mysore for their help rendered in the analysis of the results of the data.

Thanks to my seniors Mythra, Sucha, Priya, Khirod, Appu and Raji for their help, support, suggestions and criticisms.

I thank my dear classmates for making this year a memorable and enjoyable one, with my special thanks to Nandu, Neelu, Satya, Sowmya and Sai.

In the dictionary of our friendship a word "Thank you" does not exist and so I leave it here....

I sincerely express my gratitude to the authorities of the deaf schools who took time from their busy schedule to reply promptly to the questionnaire.

Thank you dear brothers and Bhabhis, without your support this project was not possible.

Dear Mummy - my source of inspiration, your love and understanding has made me what I am. No words can express my feelings.

Akka-thank a lot.

## TABLE OF CONTENTS

<u>Chapter</u>	<u>Page No.</u>
I. Introduction	- 1 - 8
II. Review of Literature	- 1 - 30
III. Methodology	- 31 - 32
IV. Results	- 33 - 48
V. Discussion	- 49 - 59
VI. Summary and Conclusions	- 60 - 62
VII. Bibliography	- i - iv.
Appendix	

## INTRODUCTION

" I am just as deaf as I am blind. The problems of deafness are deeper and more complex, if not more important, than those of blindness. Deafness is a much worse misfortune, for it means the loss of the most vital stimulus -the sound of the voice that brings language, sets thoughts astir, and keeps us in the intellectual company of man".

Hellen Keller.

Unable to recognize the sounds around him or to learn speech by the normal processes of listening and imitating a deaf infant usually babbles incoherently for a time and then becomes mute, an intellectual cripple in a world of words. Teaching the young deaf to speak and to use language as a vehicle of thought and communication are the primary tasks of oral education centers. Here the slight remnants of hearing that is present in even profoundly deaf people are fortified and combined with sight and touch in a multisensory approach to sound and speech. This is what special education for the deaf does. Special education deals with the children who are exceptions to the rule for whom uniform educational procedures applied for most children are clearly unsuitable.

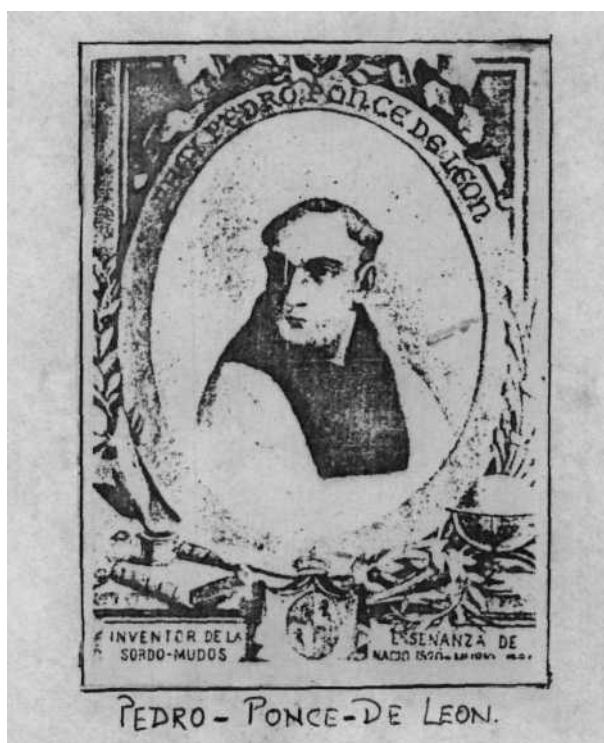
Since the present project is concerned about special schools for the deaf, a brief history of the same is discussed.



Prehistoric societies, whose survival could depend on the fitness of the each member did not protect children who were born with defects, generally allowing them to die at birth or in infancy. The ancient Greek and Roman Societies gave the first recorded attempts at the scientific understanding and treatment of the disability in children.

In the middle ages, church began to foster human care for the handicapped people and provide asyloms for them. Interest in educating the handicapped children then grew with a belief in the worth of every individual and associated struggle for freedom for common man.

History of education of hearing impaired lies in the work of a Spanish monk-Pedro-Bonce de Leon (1520-1584). He taught a small number of deaf children to master the academic subjects.



Another Spaniard Juan Pablo Bonet (1579-1629) wrote the first book on the education of the deaf describing his methods and setting forth one handed manual alphabet system that provided the basis for the alphabet system in use today.

George Dolgarno (1628-1687) in his book deaf and dumb Man's Tutor, made the starting assertion that deaf people have as much capacity for learning as those who could hear and outlined instructional methods that came to be widely used by subsequent educators.

The first permanent school for the deaf in Great Britain was established in 1767 in Edinburg by Thomas Braidwood (1715-1806).



His method combined the manual and the oral elements in those early days too.

Organized education for deaf children in the United States began with the training of Thomas Hopkins Gallaudet (1787-1851) by Sicard in the French method of teaching of deaf. Gallaudet than established the first school for the deaf in United states now known as the American school for the Deaf.



Gallaudet College, the only liberal art of college for the deaf in the world was established in 1864. The other prominent advocates in the field of special education of deaf were A.G.Bell (1847-1922) and Hellen Keller (1880-1957).



Special school for the Deaf has had a long history in India too. The first school for the hearing impaired started in Bombay in 1885 followed by one in Calcutta (1893) and Madras (1897), By 1947, the number of such schools was 35 in the whole country and it went upto 70 by 1966. (Report of the Education Commission (1964-1966), Education and National

Development, Government of India, Ministry of Education, New Delhi). In 1981, the number of such schools was estimated to be 140. Now there are about 350 such schools in India.

As is known, 80% of the Indian population is residing in rural areas and 20% in urban areas. But most of the schools for the deaf are located in the metropolitan cities and urban centers, so the rural areas where about 80% of these children are residing remain practically unserved by these educational facilities. Thus ideal distribution of schools as per population needs is not achieved.

Apart from the quantitative gaps, there is a qualitative deficit too. We thus need to look into what would be the factors which would distinguish an ideal school. These are:

- a proper management by coordinated and directed positive leadership.
- adequate accommodation.
- adequate funds.
- availability of trained staff .
- an ideal teacher to student ratio

The recommended ratio is 1:8 by Ministry of Education, 1980 (Sharma in her paper "status paper in Special Education with Special Reference to hearing impairment").

- Equipment available (group hearing aids, earmolds, audiometer, speech trainers and other special equipment).
- Availability of rehabilitation team
- Children related factors such as
  - age of admission
  - classificatory system used
  - hearing aid usage etc.

Invariably, it has still been very difficult in India to achieve these ideals and hence no school seems to be complete.

There is limited published literature on these factors and hence this project has been undertaken to highlight present condition of schools in terms of these factors.

**Objectives:**

1. To give a ratio of schools in rural and urban areas of India.
2. To collect information regarding the highest level of schooling available.
3. To collect information regarding criteria of admitting children to school.
4. To collect information regarding mode of teaching

5. To ascertain if the manpower resources are properly chanelised ie to study -
  - a) Total number of teachers in a school
  - b) Availability of services of an audiologist and/or a speech pathologist
  - c) Frequency of his visit and nature of his work.
6. To obtain statistics regarding details of auditory training and speech therapy sessions.
  - a) Frequency of auditory training and speech therapy
  - b) Number of children per session.
7. To know about the equipment available in the schools and their maintenance
  - a) Availability of audiometers
  - b) The number of audiometers
  - c) The most common model
  - d) Availability of sound treated room
  - e) Availability of other equipment for speech training
  - f) Availability of group hearing aids
  - g) Maintenance facilities
8. To collect information regarding the additional requirements of the schools and if they have adequate funds to meet these requirements.

## REVIEW OF LITERATURE

"Education prevents the disability of deafness from becoming a handicap" (Rita Mary, 1987).

No single form of educational provision can possibly meet the individual requirements of all children with impaired hearing. Different educational programs have thus been adopted.

In India, there has been a tremendous growth in the educational opportunities open to the hearing impaired children since the attainment of independence, but only less than 2% of hearing impaired population are receiving education in the existing schools. Provision of special education for all the hearing impaired is not possible in developing country because education in special schools is highly expensive owing to its low teacher:pupil ratio and increased use of amplification. This problem is widespread in rural areas while the facilities are concentrated in towns and cities. Also there is lack of awareness about the facilities and many have difficulty in gaining admission to existing schools (Rita Mary, 1987).

Systematic research is needed in the field of education of the deaf (Rathna, 1970).

Meyerson (1955) complained that little research has been done to test the merits of various and often conflicting

\*Meyerson (1955) in Rathna (1970) "The Battle of methods".



approaches and says farther that the meaning of the findings of a great many psychological investigations of the deaf and hard of hearing (HOH) is uncertain. Most workers believe in theories which seem to have based on clinical experience and observations of small groups of children instead of real systematic research. We have a long way to go (Rathna, 1970). This lack of research has left the field crowded with several controversies about integration or segregation of the aurally handicapped with the hearing children, about formal or informal methods of teaching, structural or natural methods of teaching language, about the age at which the education should begin, about the modes of communication to be employed with the deaf and HOH and even about the classification of hearing loss (Rathna, 1970).

Vast literature is available on schooling facilities, criteria used for admission and its use, modes of communication, manpower and equipment facilities.

### **I. Schooling facilities:**

Schooling facilities available for the deaf can be divided into two main categories ie special education and integrated education. Under special education we may have a day school and a residential school. Integration may be

achieved by any of the following ways: (i) placing separate schools for the deaf and the hearing in the same campus (ii) by placing a class or classes of deaf in a school for the hearing (iii) by placing an individual deaf child in a class with normally hearing students (iv) by putting a normal hearing student in a programme for the hearing impaired reverse integration. In spite of these facilities, the educational achievements of the deaf are limited.

\*

Williams and Vernon (1970) on an extensive study on deaf children reported that only 5% of the children achieved tenth grade or better (most being HOH or post lingually deafened), 60% were at grade level 5.3 or below and 30% were functionally illiterate.

The various major forms of special education currently provided in India are ranging from clinical services to higher secondary education (Rita Mary, 1987).

Educational programs in Jamaica are available from preschool multihandicapped children (Dolman, 1987). The parallel development of special schools and integrated education should form a part of planned effort and bring education within the reach of every hearing impaired child. One

\* Williams and Vernon (1970) in Rathna (1970) "The Battle of methods".

should not be prejudiced and proliferate low quality institutions for want of special schools (Rita Mary, 1987).

## **II. Criteria for admissions:**

Usually the schools for deaf adopt certain criteria such as age of the child, hearing loss, intelligence, hearing aid usage etc. This is necessary so as to decide on many things such as mode of teaching, rate at which children can grasp etc. Rita Mary in a paper presented at National Conference for the Educators of Deaf (1987) has commented that "Without good classification in our schools deaf children will not reach higher language attainment levels. It seems that too much is expected of teachers and pupils where there is disparity in age, hearing loss and intellectual functioning among the pupils". She adds that these children would do better if they were grouped as per these criteria. She suggests having a separate classroom for multiply handicapped children. Placement of children in any particular setting must be made on the basis of needs that are periodically and objectively determined and not merely for administrative convenience (Rita Mary, 1987).

Jones (1984) stated that "Any attempt to plan services for multiply handicapped hearing impaired students is hindered

by a lack of general understanding of the characteristics and needs of the students involved. Heterogeneity is perhaps the most difficult aspect of dealing with these children".

\*  
Criffing (1981) presented five parameters to be considered for educational planning of multiply handicapped hearing-impaired students. He listed them as follows:

- academic and other objectives
- environment required
- methods required
- staff required
- rate of teaching.

He added that these should be modified as per needs of the children.

Ray (1990) has stated that, in India, children from different socio-cultural background and varied economic strata of different age group are admitted. This makes the target group extremely heterogeneous. She also adds that parameters of classification for various classes are not rational based.

Rathna (1970) reported that in India, HOH children seek admission in to schools when they are rather old sometimes

\*Griffing (1981) in Jones (1984)" A framework of identification classification and placement of multihandicapped hearing impaired students".

as late as 14 years of age. Even the official age of admission in some schools is 8-12 years. Thus the use of oral communication with these children becomes highly impossible as early intervention is a prerequisite to learning speech.

### **III. Modes of communication:**

Different methods of teaching deaf are well known to us. They are oral-aural, manual and total communication approach. Rathna (1970) discussed the 'battle of methods' in terms of manual, oral, and multisensory approach. These arguments may be considered both logically and emotionally. However, the truth of the matter still lies hidden in the future, for only further basic research can clarify the problem and resolve the controversy. A hundred and fifty years has not provided us with enough basic research.

**Oral mode of teaching:** The advocates of oral education state that, "a young deaf child is precious and deserves the best teaching possible, the continued support of his parents and the motivation to achieve his potential in the hearing world" (Lane, 1976).

**Manual mode of teaching:** "Most educators agree on the value of oralism for all children who benefit by it. However, it is

also realised by most educators of the deaf that there are a number of deaf children who cannot benefit to any appreciable extent by oral instruction and then it is advisable to instruct these children by manual method. If a child cannot benefit by oral instruction, and his speech is unintelligible, we must ask, should he be denied learning and communication through the manual method?" (McKeon,<sup>\*1</sup>1961).

Total communication: Helcomb and Denton (1972) state that, "two most important things to remember in total communication are (a) it is a combination of aural oral and manual modes according to the communicative needs and the expressive receptive threshold of the individual and (b) it is the moral right of the hearing impaired as with normally hearing bilinguals to maximal input in order to attain optimal comprehension and total understanding in the communication situation.

This controversy is still going on but in India, it is not as vocal as it is elsewhere. Ironically while everybody pays lip service to the oral method, most schools are basically manual. Even in schools where a great deal of stress is laid on speech and speech reading, often the mode of communication outside the classroom and under the tables is the

\*1 McKeon (1961) in Rathna (1970) "Battle of methods".

\*2 Helcomb and Denton (1972) in Garretson (1976) "Total communication"

sign language. Quite often the speech of a deaf child acquired in oral schools for the deaf and appreciated enthusiastically seems to be no more than a string of isolated sounds spoken monotonously with improper stress. However, to the credit of some children and teachers, there are several instances of children with acceptable speech. However, these seem to be outnumbered by a large margin. Actually very few schools in India are equipped for the oral methods of deaf and there are no special facilities for the HOH (Rathna, 1970).

\*

Herrick and Kapur (1960) report that fewer than 10% of the population in schools for the deaf have been fitted with hearing aids.

Some requirements for an oral communication program: The American organization for the Education of the Hearing Impaired (AOEHI) (1976) has listed characteristics of an adequate auditory oral program. They are : (1) routine and frequent examination of the acoustic characteristics of hearing aids worn daily by hearing impaired children, has been recommended to insure that children are always receiving

\* Herrick and Kapur (1968) in Rathna (1970): The Battle of methods".

the amplification that is intended (2) Furthermore, when a hearing aid has gone for repair, a temporary replacement with the same acoustic characteristics should be immediately available (3) Routine and frequent examinations of ear canals and middle ear (ME) function should be made as well as routine tests of hearing threshold be carried out - (Calvert, 1976).

When school programs consider themselves auditory but are unwilling or unable to (a) provide a budget for supporting services needed for systematized monitoring of auditory stimulation, (b) take time to see that the monitoring system works, and (c) arrange for appropriate training or retraining of teachers - the stage is set for failure and disappointment.

The auditory approach is worth making these commitments but it may be several years before the majority of the programs realize that such commitments are necessary (Calvert, 1976).

However, in Indian situation these criteria are not met and the lack of adequate facilities explain the manualism



of many of these schools. Added to these the problems of inadequate facilities, untrained or ill-trained teachers and sometimes unimaginative administration make the situation harder.

However, this was not the reason for several people believing in the manual method in the west. Whether one believed in the manual system or the oral system was more a matter of how one thought about the deaf and what the goals were. If one believed that the deaf individuals had to be one with the hearing world and had to contribute to the community by being an integral part of it, one would insist on speech and speech reading as the means of communication. On the other hand, if one believed that the goal for the deaf individual was to become an efficient individual and to be able to contribute his utmost even if his social contacts remained within small groups, then the manual method was chosen. Later, however the manualists went on to be defensive and their argument was basically built around the possibilities of oral failures (Rathna, 1970).

Some of the studies concerning the modes of communication and their benefit are reviewed here.

Garretson (1976) mailed questionnaires to 145 educational programs; 122 responses were obtained and it was found that 107 programs had adopted total communication, 12 were strictly oral aural only 3 schools used Rochester method.

\*  
Vaughn (1967) found that the manual or non-oral students had depressed achievement levels and varying degrees of emotional immaturity. They were the least aware of the diversity of opportunities and expectations of the normally hearing community. He added that the greatest problem for these children was not their profound hearing losses, not their lack of oral skills but their deficient language development. This is because sign language is not formally taught in any schools.

Ross (1976) stated that graphic communication is recommended for better language development. Moores (1971) reported better reception of verbal information by students when this information was presented graphically (ie print and/or video captions) than when information was presented manually or orally.

Gallois and Jones (1978) studied 25 hearing impaired children from two educational centers. Their oral comprehension

\*Vaughn (1967) in Rathna(1970): "The Battle of methods".

and word recognition performance was studied. They concluded that compared to the oral method aided by manual supplement, the total communication leads to better performance by hearing impaired children on language comprehension tasks.

Lane studied 731 orally educated students between 1914-1969 and indicated that oral success cannot be attributed to (i) age of onset of deafness (as 82% were deaf before acquisition of speech, (ii) amount of residual hearing (as only 0.7% had mild losses and 83% had profound or severe loss in the better ear) and (iii) superior intelligence (as the averages of the medians of the performance quotient (PQ) was 108).

Silverman et al. (1966) concluded that the oral manual controversy is not yet settled. There are no completely convincing scientific data on which to base conclusion and no useful purpose is served by labouring the arguments.

#### **IV. Manpower resources:**

Communication skills and language development in education of the deaf are crucial issues. Trained manpower in the field of education of the hearing impaired is vital as an access (Roy, 1990). To day there are 10 teachers

training institute in India, training about 300 teachers a year. To meet backlog as well as the growing needs, our present requirement is 30,000 trained teachers just to extend basic education to the target group. The teachers in many existing schools are trained, semitrained and other untrained. Many of them are with absolute information (Ray, 1990) practicum knowledge of the teachers is limited. Many trainees do not get the opportunity to observe a successful speech lesson, development and mastery of a language principle or effective scheduling of a heterogeneous classroom. For teachers to become sophisticated in aural management, meaningful dialogue with audiologist is essential. They should be able to deal with dual handicap also (Bruce, 1976).

Teacher to student ratio is far from ideal (Roy, 1990). In Jamaica, most schools for the hearing impaired have a ratio of one teacher to about ten students (Delmen, 1987).

The educational rehabilitation of the deaf needs a multi-disciplinary approach. Today in India there are very few special schools with facilities for periodic speech and hearing evaluation of the students and for monitoring the effective and continuous use of hearing aids both at home and at school. There are hardly any speech and hearing professionals, psychologists and allied medical professionals

attached to schools for this purpose (Roy, 1990). Also, in India, the number of schools having the facility of a earmold laboratory are few repair facilities also rare (Roy, 1990).

A special report by ASHA (1975) suggested that in addition to basic requirements, the schools need to have the following personnel.

1. An audiologist for approximately 75 children who would
  - a) conduct periodic audiological assessment for every child.
  - b) Administer specific audiometric measures.
  - c) assess and monitor classroom acoustics and proper use of amplifying equipment with consideration of the possible effects upon speech understanding.
  - d) conduct auditory training for individual students or groups, using or developing appropriate material for the children involved.
  - e) participate in and/or conduct speech and language development program based on an auditory approach.
  - f) conduct inservice workshop for teachers electronics technician etc.
  - g) make impressions for earmolds and teach earmold care to all staff members and students.

- h) participate in the admission procedures and placement procedures. Help develop criteria for early decision regarding educational methodology to be employed with each child.
- i) participate in parent guidance and counselling programs.
- j) conduct audiological research and discuss its significance with staff and community teachers.

2. Electronics technician who would

- a) assess the status hearing aids and classroom auditory training equipment at least 3 times during each academic year.
- b) repair and maintain all auditory amplification and the speech or language training devices, being used with the hearing impaired children.
- c) conduct or assist in the calibration and repair of audiometers.
- d) develop instrumentation required for research projects and programs of auditory training.

3. Secretary or clerk who would

- a) maintain the records of the auditory program.
- b) answer telephone, make appointments and maintain a schedule for each staff member.
- c) other duties to maintain the development under direction of members.

4. One or more consulting otolaryngologists for periodic evaluations.

Lynch and Tobin (1973) stated that the role of an audiologist/speech pathologist is important in assessment, ongoing evaluation -

- selection of objectives
- auditory verbal objectives in the classroom.

Ross (1976) expressed his concern by stating that, if teachers are given the job of auditory training and speech correction, it is an unjustifiable burden on them by asking them to take primary responsibility for the development of the child's oral as well as academic skills. If a teacher devotes a few minutes to each hearing impaired child, the other children are penalized by her absence. If she spends too much time during class activities for speech correction, most children must wait while one child recites. In the presence of so many curricular demand, only specific attempt can be made regarding speech, even if the teachers have training and skills to do more.

Ross (1976) recommended employing a full time audiologist and speech pathologist in the school for the hearing impaired. They should take up the responsibility of implementing verbal communication program on daily basis.

## **5. Equipment facilities:**

One of the most important influences on the education of deaf children in the 20th century is the use of amplification. Beginning in the late 1800 in both Europe and the United States many ingenious mechanical devices were constructed and used to channel sound into the ears of deaf children.

The real breakthrough in the hearing aid design came in 1900 when Ferdinald Alt produced the first electrical amplification device. Technical developments coupled with concurrent research on the properties of speech as well as on the residual hearing of children, opened up great possibilities for the construction and use of more powerful hearing aids (Markides, 1986).

Around 1930s, Littler and Ewings at Manchester designed and produced powerful group hearing aids. These devices were used experimentally in twelve English schools for the Deaf. The reports from these schools were unanimous in stating that substantial benefit in speech and language development has occurred from regular use of the aids (Ewing and Ewing, 1938).



For more than two decades audiologists and educators have debated the advantages and disadvantages of using group type amplification vs personal hearing aids with hearing impaired children in the educational setting (Bess and Gravel, 1981).

Many audiologists recommended the use of group amplification because of its low distortion, broad frequency response etc. However, many others felt it unnecessarily confusing for a child to cope with auditory information that was processed through amplification systems having different electroacoustic characteristics.

In a special report of ASHA (1975) recommended equipment facilities in a special school for deaf are:

- i) One sound treated room
- ii) one two channel clinical audiometer
- iii) A stock of loaner hearing aids in good working conditions along with extra cords, batteries and receivers,
- iv) Equipment for analysing the electroacoustic characteristics of hearing aids and auditory training systems.
- v) Instrumentation for impedance audiometry.
- vi) A sound level meter and appropriate equipment for calibration of pure tone and speech audiometers,
- vii) Ear impression material kit, instamold kit, stock molds.

Very few studies give comparison of the performances of children with different types of systems available such as hardwire system, infra-red system, induction loop system, individual hearing aids etc.

Sung et al. (1976) indicated that speech reproduced via FM system is significantly better than that of the conventional audio induction loop irregular high frequency response of induction loop amplification may be responsible for this difference. Thus the authors emphasize the importance of routine measurement of output of amplification system in classroom to insure good speech reproduction through the system.

Flexer et al. (1987) studied word and sentence recognition scores of ten moderately hearing impaired students via personal hearing aid, hard wire system and FM system. Their findings indicated that the FM unit performed significantly better than both the hard wire unit and personal hearing aids. They also suggested that despite its poor performance relative to the FM unit, the hard wire system which is no less affective than the personal amplifiers can be used to substitute temporarily in the classroom for defective hearing aids. The hard wire units can also be

used in individual speech language therapy to enhance students ability to hear and monitor their own speech production (Sudler and Flexer, 1986).

Freeman et al.(1981) suggested some considerations to be kept in mind before selecting the amplification systems,

(i) School factors

- a) Identifying acoustic environmental conditions of the classroom.
- b) Identifying the educational needs of the school program.
- c) Providing for inservice training.
- d) Development of equipment monitoring programs.
- e) Identifying the personnel involved in the selection of auditory equipment.

**(ii) Equipment factors:**

- a) Type of system required.
- b) Service record of the manufacturer.
- c) Ease of equipment operation.
- d) Flexibility of the equipment.
- e) Budgetary considerations.

**(iii) Listener factors:**

- a) Coupling requirements of the unit to the child.
- b) Frequency gain considerations.
- c) Monaural vs binaural amplification.

- d) Potential over amplification and trauma to residual hearing and auditory discomfort.
- e) Age of the listener.

Waynes (1986) gave the following factors to be considered before recommending amplification systems.

- a) Degree of hearing loss
- b) Compatibility of the existing system and proposed aids.
- c) Consideration of the life style and communication needs.
- d) Availability
- e) Acceptability
- f) Affordability
- g) Accessibility
- h) Feasibility
- i) Flexibility

Rita Mary (1987) stated that, "several classrooms in Indian schools are without the latest design of high power group hearing aids and other equipment. Not many schools have adequate and speedy servicing arrangements to maintain their equipment in good working order. According to her, an inappropriate amplification system is an indispensable component of a united educational approach. Group hearing aids avoid external disturbances to children using them, and hence

are more beneficial. However resources for the same are very limited. Thus a balanced use of information and technology is not experienced by Indian deaf in the educable age group (Roy, 1990).

No doubt there has been enormous progress in the use of hearing and the aids in the education of hearing impaired children, from the days when Itard first suggested his uni-sensory approach with personal hearing aids to the highly sophisticated wireless FM radio and infra-red systems that today battle a considerable number of people including teachers of the hearing impaired. Improvement in hearing aid technology will certainly continue but the biggest improvement will come when both children and teachers learn to use existing amplifying equipment more efficiently (Markides, 1986).

## METHODOLOGY

The aim of the study was to investigate manpower and equipment available in the schools for the Deaf in India, which in turn would indicate the present status of deaf education.

**Design of the study:** Of the three primary methods of data collection ie. observation, interview and questionnaire methods, the third one was selected. The reason for selecting questionnaire method was, it was impractical in the present study to use personal interview or observation methods. A copy of the questionnaire sent is given in Appendix. It included a letter requesting the respondent to duly fill the questionnaire and send it back at the earliest. Confidentiality of the responses was assured to the respondents.

**Preparation of the questionnaire:** The questionnaire was addressed to the Principal but it could be filled by any other teacher or an audiologist and/or a speech pathologist. It consisted of both open ended and closed ended questions, with the latter variety of questions exceeding the number. One of the advantages of this type of questions is that it facilitates quick completion of the questionnaire. It included questions regarding highest level of schooling, mode

of teaching, teacher to student ratio, teacher training, availability of audiologist and/or speech pathologist, information on availability of group amplification systems, audiometers, other equipment any additional requirements, etc.

The questionnaire was mailed to 340 schools in different parts of India. Confidentiality of the responses was assured.

**Mailing procedure:** A total number of three hundred and forty (340) questionnaires were mailed to the schools of deaf in different parts of the country. A self addressed stamped envelope was enclosed with the questionnaire, mated to each respondent for an early return. After 15-20 days of the despatch of the questionnaire, a reminder was sent to those schools which did not return the questionnaires.

Questionnaires which were received were then reviewed and analysed. Incomplete questionnaires were not included in the analysis.

## RESULTS

The questionnaires which were received back were analysed for each of the objectives and sub-objectives and the data is tabulated and also represented graphically.

### Distribution of questionnaires:

A total of 340 questionnaires were sent to the schools for the deaf all over India. Out of that 112 questionnaires were received back.

**The distribution is represented as follows:**

Total no.of questionnaires sent.	No.of questionnaires received back	Percentage
340	112	32.9%

I. Before the questionnaires were received these schools were analyzed in terms of their rural or urban location:

Total No. of school	No.of schools in urban areas.	No.of schools in rural areas	Percentage urban	Percentage rural
340	312	28	91%	9%

Thus it shows that a majority of special schooling facilities are available in the cosmopolitan cities.



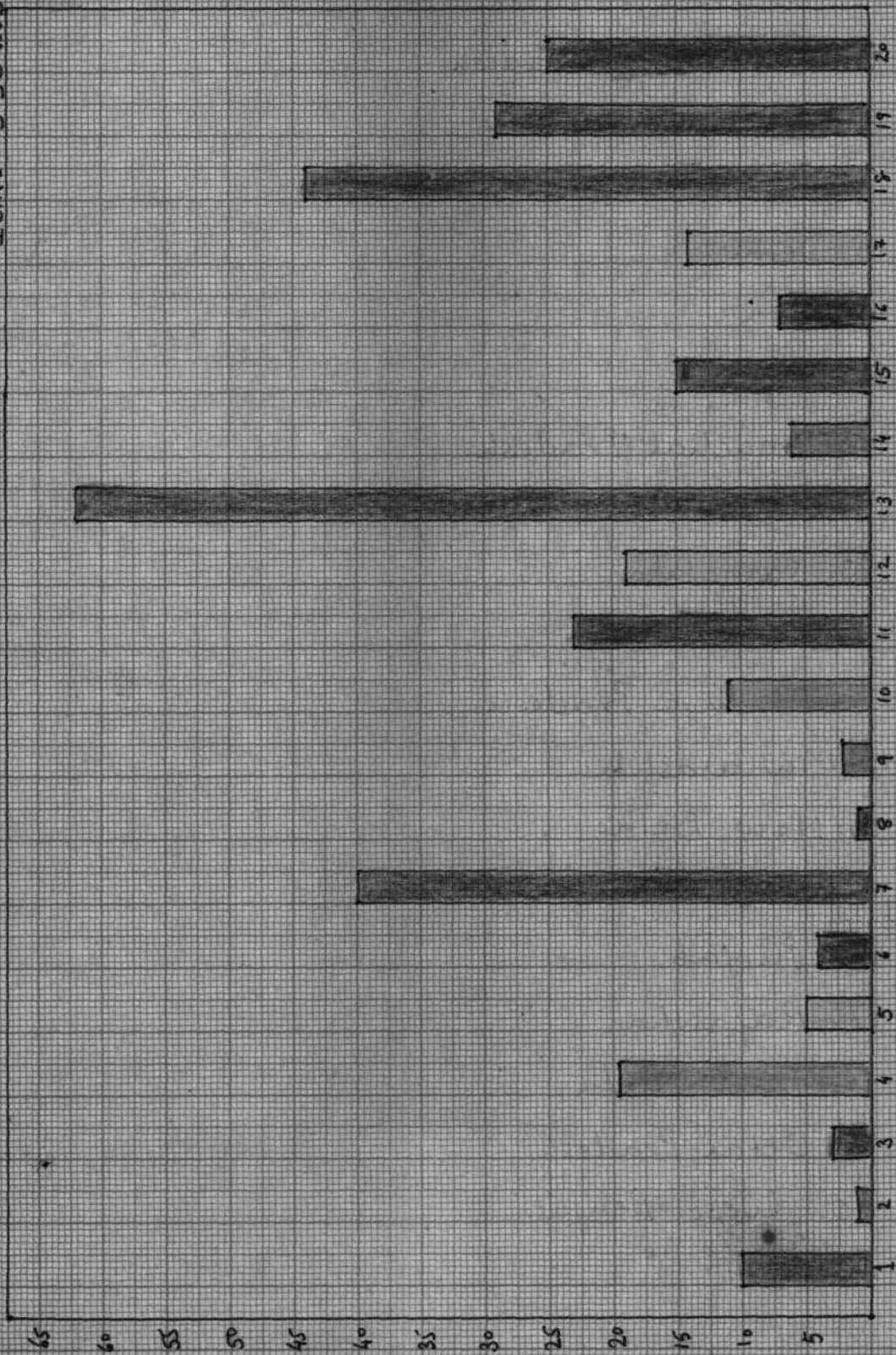
The state-wise distribution of schools in terms of rural/urban placement is as shown below:

State	Total no.of schools	No.of schools in urban areas	NO.Of schools in rural areas	Percent-age urban	Percent-age rural
Andhra Pradesh	15	13	2	86%	14%
Arunachal Pradesh	1	1	0	100%	0%
Assam	3	0	3	0%	100%
Bihar	17	16	1	94%	6%
Delhi	5	5	0	100%	0%
Goa	4	4	0	100%	0%
Gujarat	40	38	2	95%	5%
Haryana	0	0	0	-	-
Himachal Pradesh	1	1	0	100%	0%
Jammu & Kashmir	2	2	0	100%	0%
Karnataka	11	11	0	100%	0%
Kerala	23	15	8	65%	35%
Madhya Pradesh	19	19	0	100%	0%
Maharashtra	62	59	3	95%	5%
New Delhi	3	3	0	100%	0%
Orissa	15	14	0	93%	7%
Punjab	7	7	0	100%	0%
Rajasthan	14	14	0	100%	0%
Tamil Nadu	44	38	6	86%	14%
Uttar Pradesh	28	28	0	100%	0%
West Bengal	26	24	2	85%	15%

Thus it can be seen in the table that out of the 20 States which have the special schooling facilities. 10 States have them only in urban areas. The other 10 states have very limited facilities in the rural areas.

Fig 1: STATEWISE DISTRIBUTION OF THE SCHOOLS FOR THE DEAF

Y axis: 1 cm = 5 Schools.



(P.T.O)

## II. Highest level of schooling:

The following table summarizes the distribution of the schools on the basis of the highest level of schooling they provide.

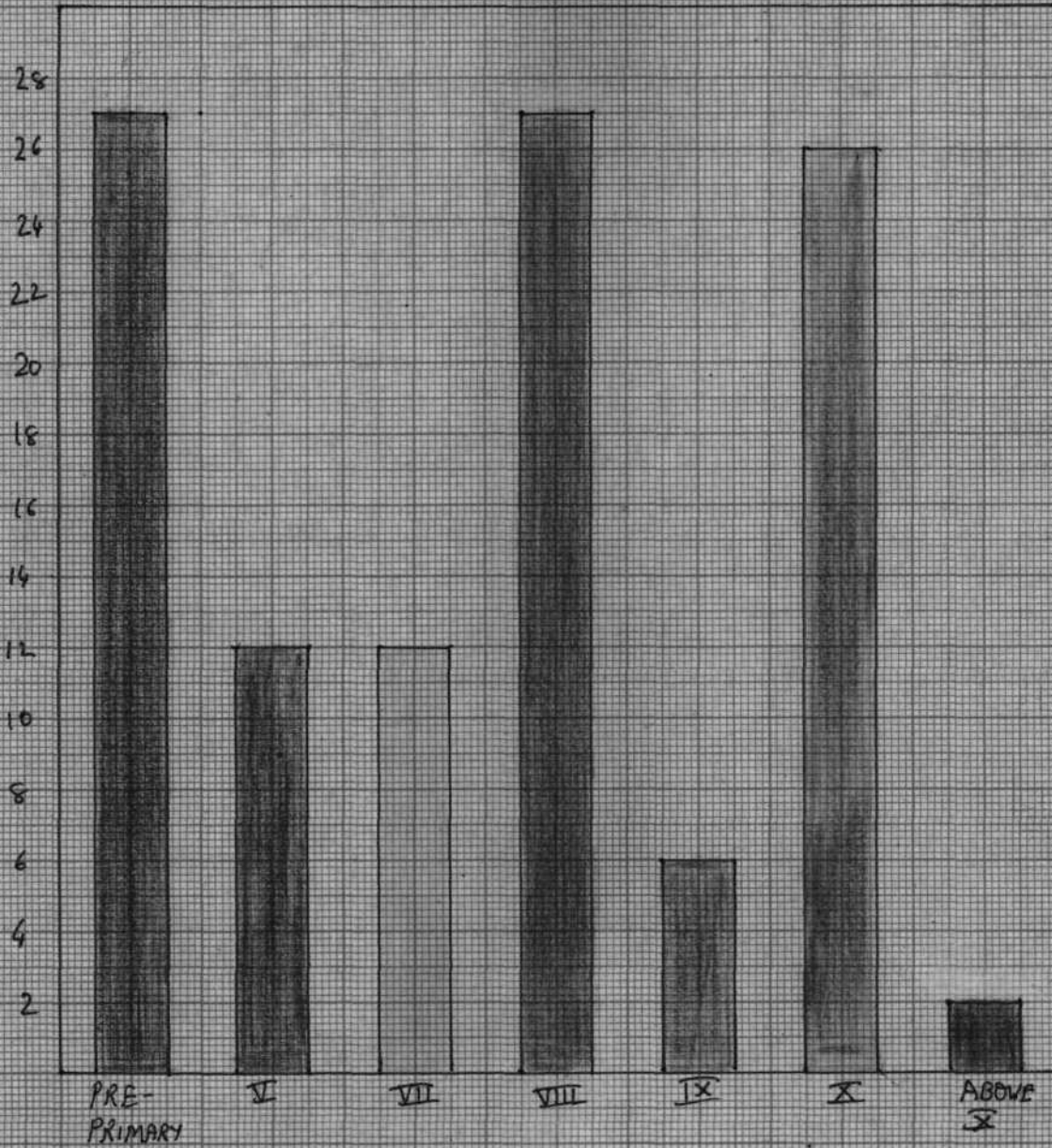
Level of schooling	No.of schools	Percentage
Primary	27	24.10%
V Std.	12	10.7%
VII Std.	12	10.7%
VIII Std.	27	24.10%
IX Std.	6	5.35%
X Std.	26	23.21%
Above X	2	1.78%
Total	112	

Thus the data indicates that only 1.78% of schools have higher secondary schooling facility. Most commonly schooling is provided upto preprimary level (24.10%) or upto VIII Std. (24.10%) level followed by schools providing complete secondary education ie upto X std.(23.21%).

III. Now some tables follow in which the data is analysed in terms of the criteria adopted by the schools for admitting the children to school. These are in terms of (a) age of admission, (b) hearing loss (c) intelligence (d) associated handicap and (e) hearing aid usage.

Fig 2 : DISTRIBUTION OF THE SCHOOLS  
ON THE BASIS OF HIGHEST LEVEL OF  
SCHOOLING

y axis: 1cm = 2 schools.



**a) Age of admission:**

Age	No.of schools	Percentage
Below 3	4	3.57%
Between 3 and 5	55	49.10%
5+	44	39.28%
No age bar	9	8.03%

This data clearly indicates that the commonest criteria of age of admission adopted is between 3-5 years (49.10%) followed by 5 years and above (39.28%). However, only 3.57% of schools have adopted the criteria of below 3 years of age. 8.03% of schools have no age bar for admitting the children.

**b) Hearing loss.**

Degree of hearing loss	No.of schools	Percentage
Moderate to Severe	7	6.25%
Severe	16	14.28%
Profound	21	18.75%
Severe for profound	43	38.39%
Any degree of loss	25	22.32%

Fig 3: DISTRIBUTION OF THE SCHOOLS AS PER AGE CRITERIA

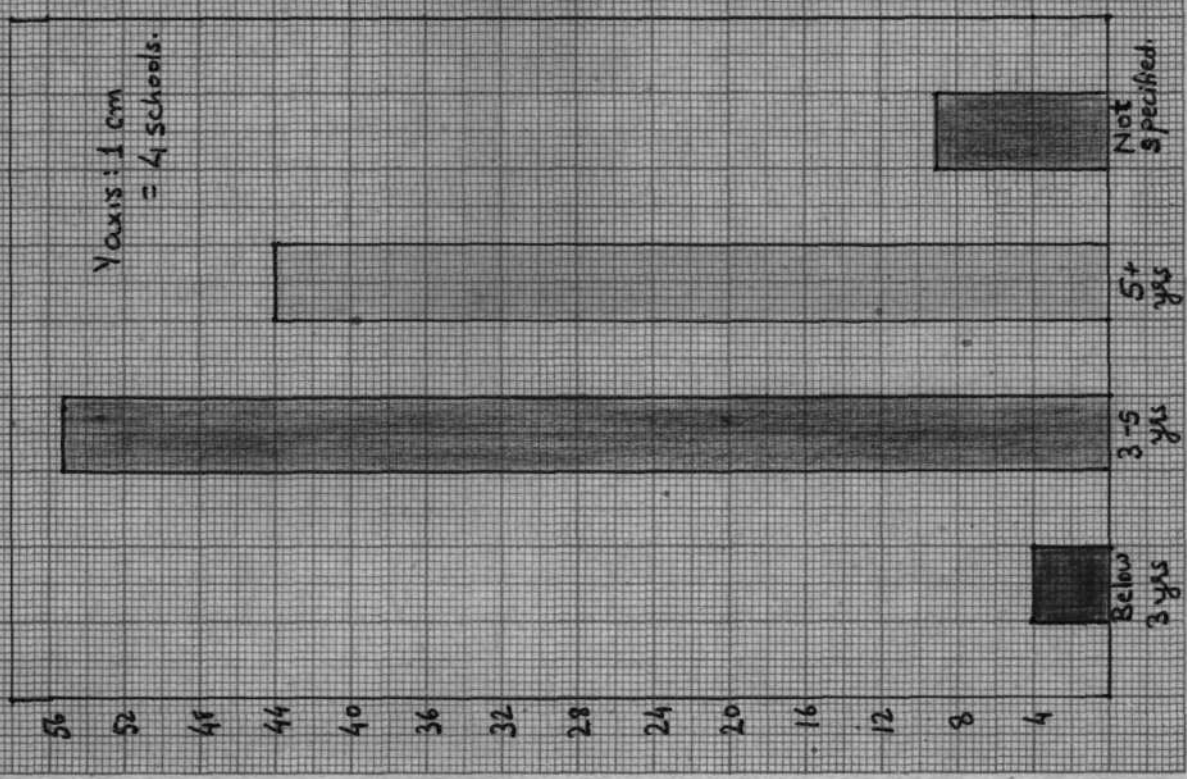
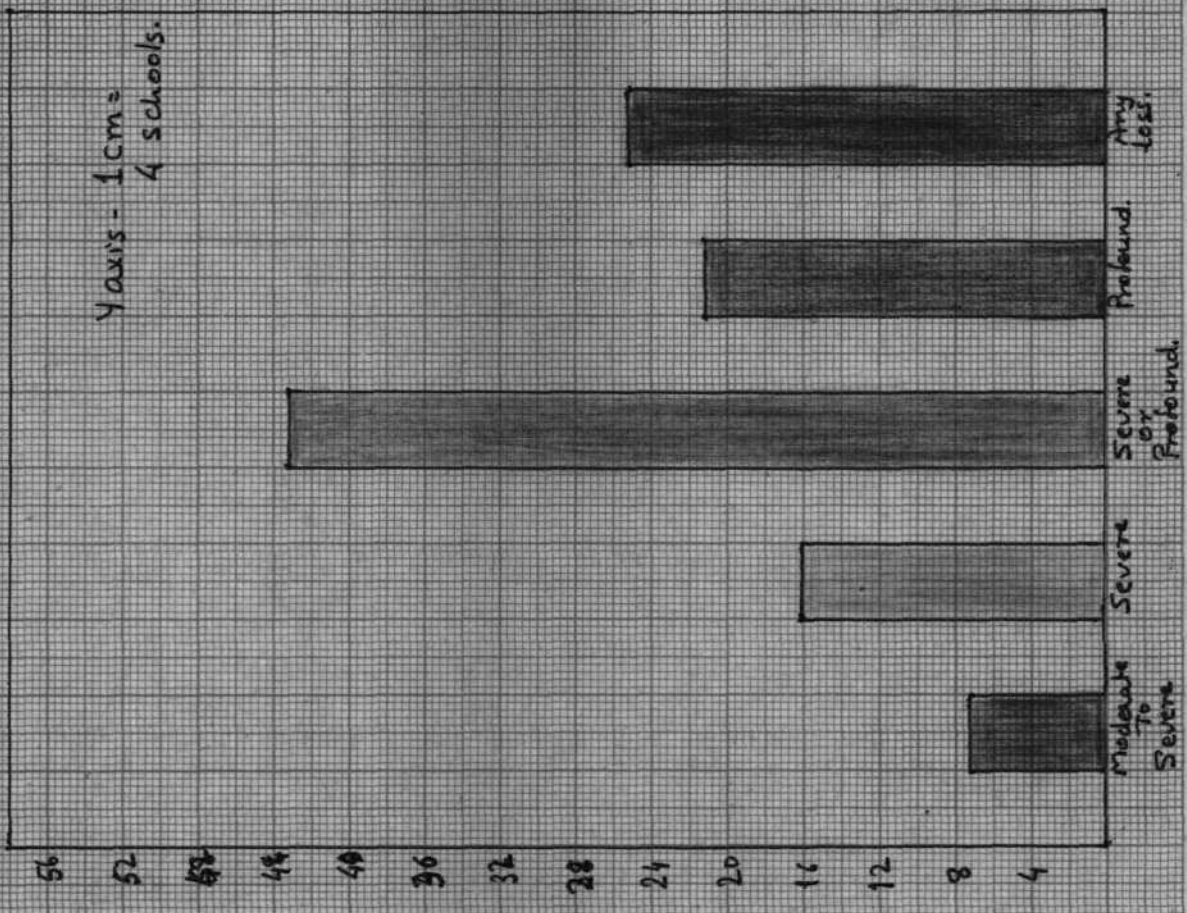


Fig 4: DISTRIBUTION OF THE SCHOOLS AS PER HEARING LOSS CRITERIA.



The table shows that most schools admit children having severe or profound hearing loss (38.39%). 22.32% of schools admit children having hearing loss. No strict criteria is used.

**c) Intelligence.**

Criteria	No.of schools	Percentage
Intelligence required to be average	70	62.5%
Mentally retarded children also admitted	10	8.9%
Not specified	32	28.5%

Thus it is seen that 28.5% of the schools did not specify whether they consider intelligence to be normal for admitting the children to school or not. However, 62.5% of schools have specified that intelligence of the child is required to be normal for seeking admission in their school.

**d) Associated handicap:**

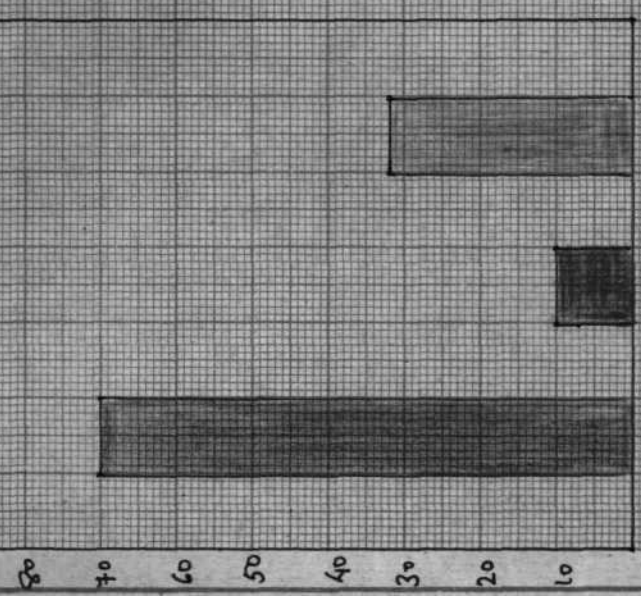
Criteria	No.of schools	Percentage
Admitted	12	10.7%
Not admitted	61	54.46%
Not specified	39	34.82%

Fig 5, 6, 7: CRITERIA FOR ADMITTING CHILDREN TO THE SCHOOL

(a) INTELLIGENCE

- Required to be normal
- M.R also admitted
- Not specified.

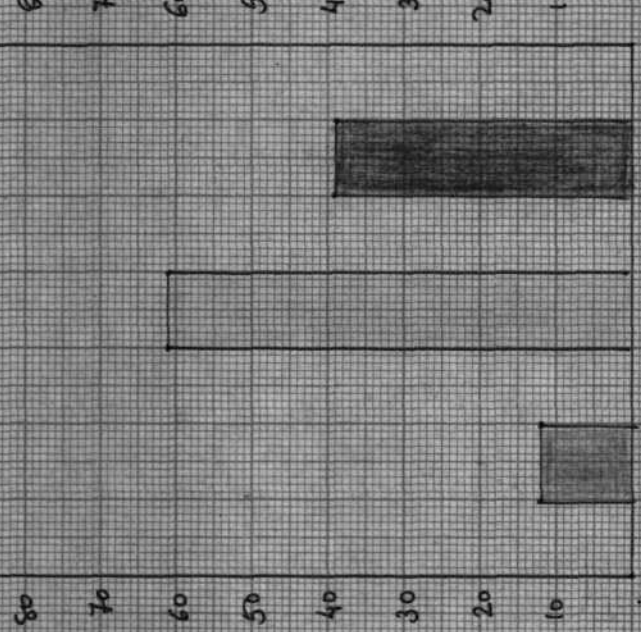
Y axis: 1 cm = 10 schools



(b) ASSOCIATED HANDICAP

- Admitted
- Not admitted
- Not specified.

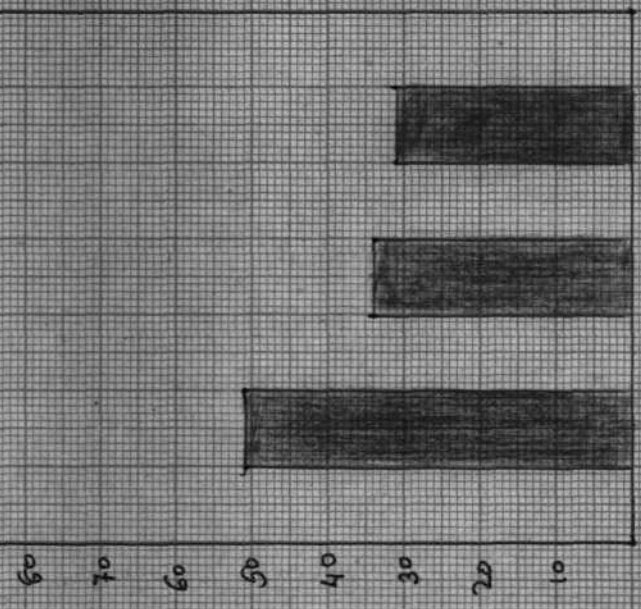
Y axis: 1 cm = 10 schools



(c) HEARING AID USAGE

- Compulsory
- Not compulsory
- Not specified.

Y axis: 1 cm = 10 schools





Again here, 34.82% schools have not specified whether they use this as one of the criterias 54.46% schools however are strict about not admitting deaf children with associated handicap.

**e) Hearing aid usage:**

Criteria	No.of schools	Percentage
Compulsory	51	45.53%
Not compulsory	25	22.32%
Not specified	36	32.14%

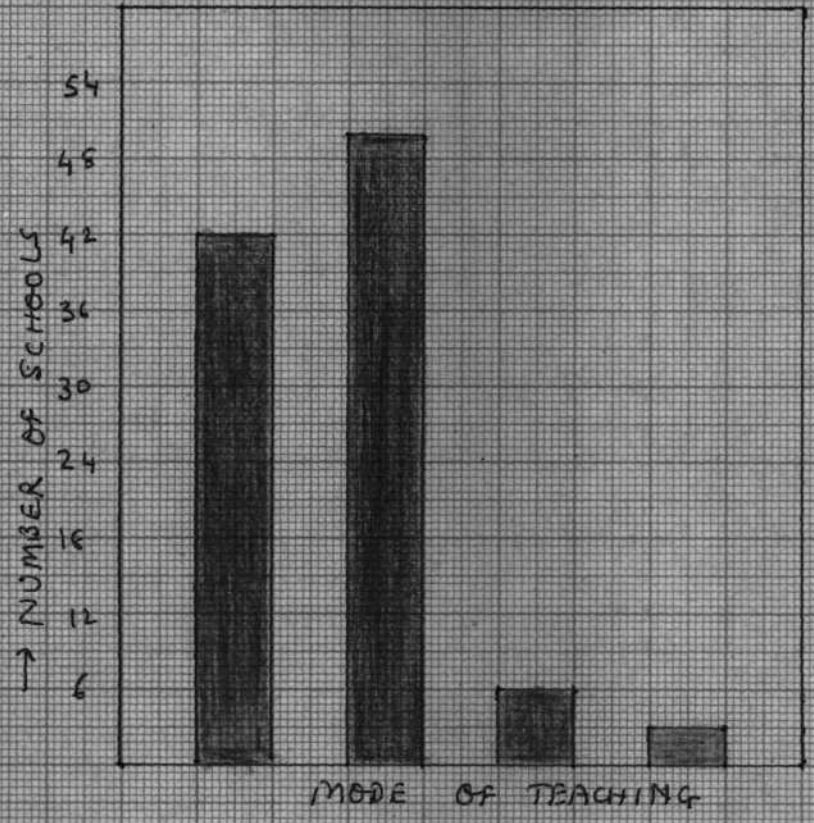
This data indicates that 45.53% schools make it compulsory for the children to wear hearing aids. 32.14% of schools have not specified and 22.32% schools do not make it compulsory for the children to use hearing aid.

**IV. Mode of teaching:**

Mode	No.of schools	Percentage
Oral-aural	48	42.85%
Manual	3	2.67%
Total communication	55	49.10%
Not specified	6	5.35%

Fig 8: DISTRIBUTION OF THE SCHOOLS BASED ON THE MODE OF TEACHING USED.

Y axis: 1 cm = 6 schools



- → Oral-aural
- → Total communication
- → Not specified
- → Manual mode.

Thus total communication is the most commonly adopted mode of teaching (49.10%) followed by ora-aural mode (42.85%). Only 2.67% schools use manual mode of teaching.

#### **V. Manpower resources:**

This data is analysed in terms of (a) total number of teachers in a school, (b) student to teacher ratio, (c) Availability of services of an audiologist and/or a speech pathologist, (d) Frequency of his/her visit, (e) Services provided by him/her.

Facilities for earmold making are not tabulated because only a negligible number of schools have these facilities,

#### **a) Total number of teachers:**

NO.of teachers	No.of schools	Percentage
0 - 5	35	31.25%
6 - 10	31	27.67%
11 - 15	22	19.64%
16 - 20	14	12.5%
20 and above	10	8.92%

Fig : 9. DISTRIBUTION OF THE SCHOOLS ON THE BASIS OF TOTAL NUMBER OF TEACHERS.

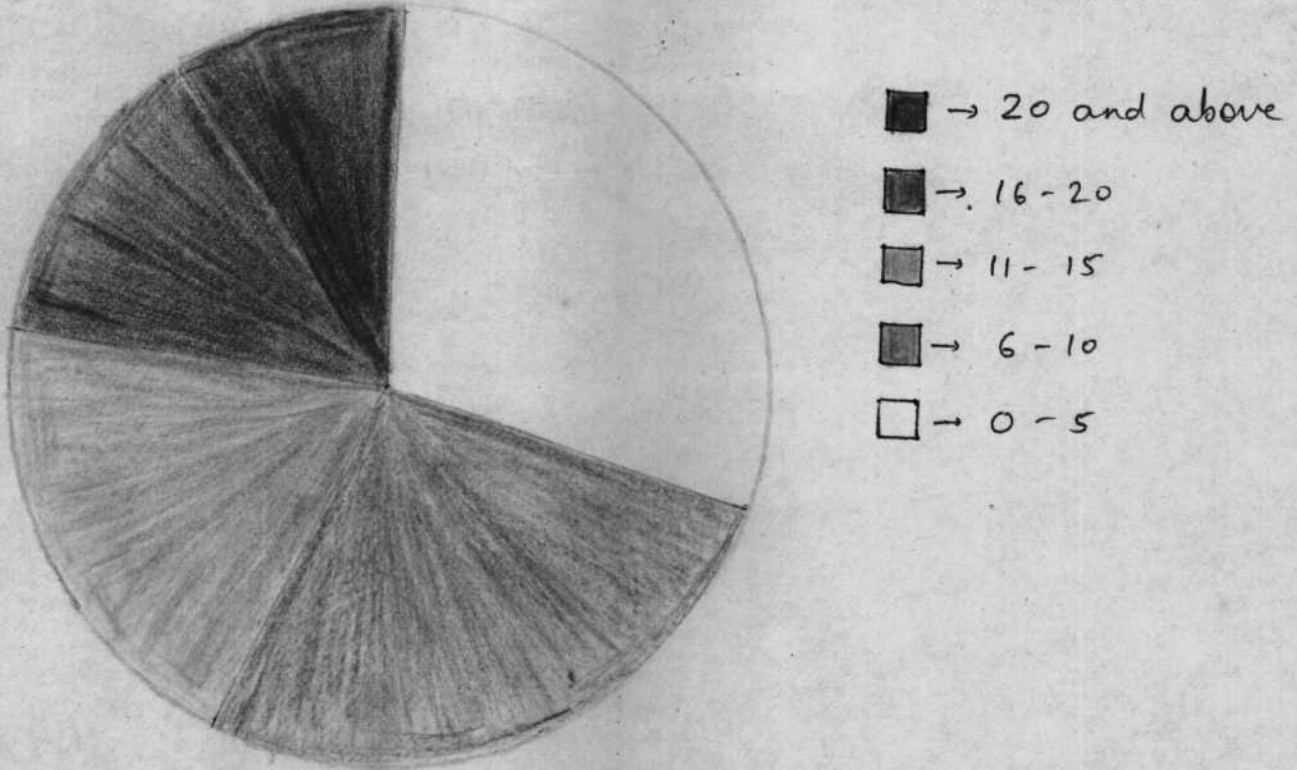
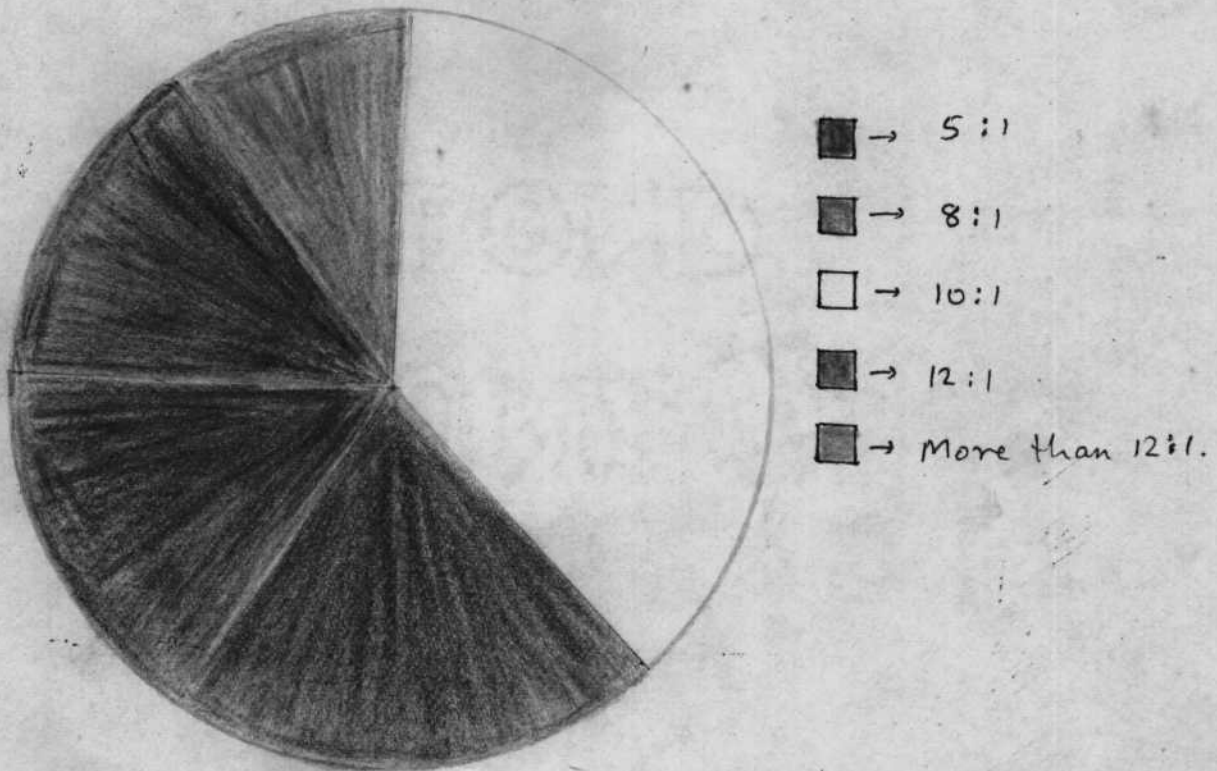


Fig : 10 : DISTRIBUTION OF THE SCHOOLS ON THE BASIS OF STUDENT TO TEACHER RATIO.



This table shows that the number of teachers in the schools for the deaf are limited. Only 8.92% schools have more than 20 teachers. Whereas 31.25% schools have number of teachers from 0-5.

**b) Student to teacher ratio:**

Ratio	No.of schools	Percentage
5 : 1	18	16.07%
8 : 1	24	21.42%
10 : 1	42	37.5%
12 : 1	16	14.28%
More	12	10.7%

This data clearly indicates that most common student to teacher ratio is 10:1 (37.5%) followed by 8:1 (21.42%) However 14.28% schools also have 12 students per teacher and 10.7% schools have more students per teacher. Both these conditions are not ideal.

**c) Audiologist and/or speech pathologist availability.**

	No.of schools	Percentage
Available	44	39.28%
Not available	68	60.7%

Fig: 11: DISTRIBUTION IN TERMS OF AVAILABILITY OF AUDIOLOGIST AND S.T

Y axis: 1 cm = 6 Schools.

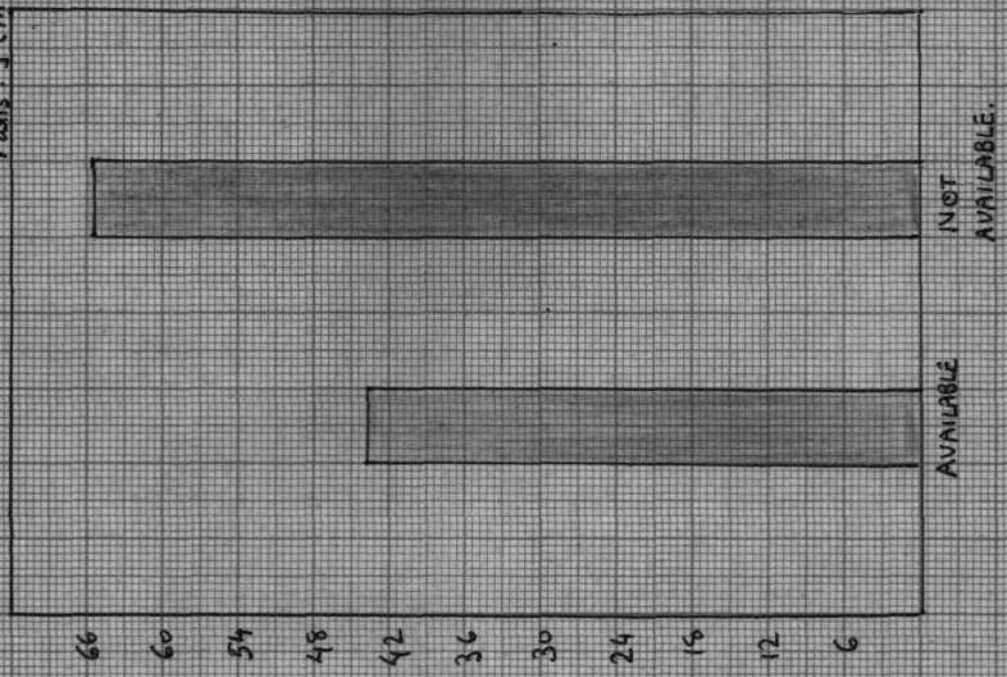
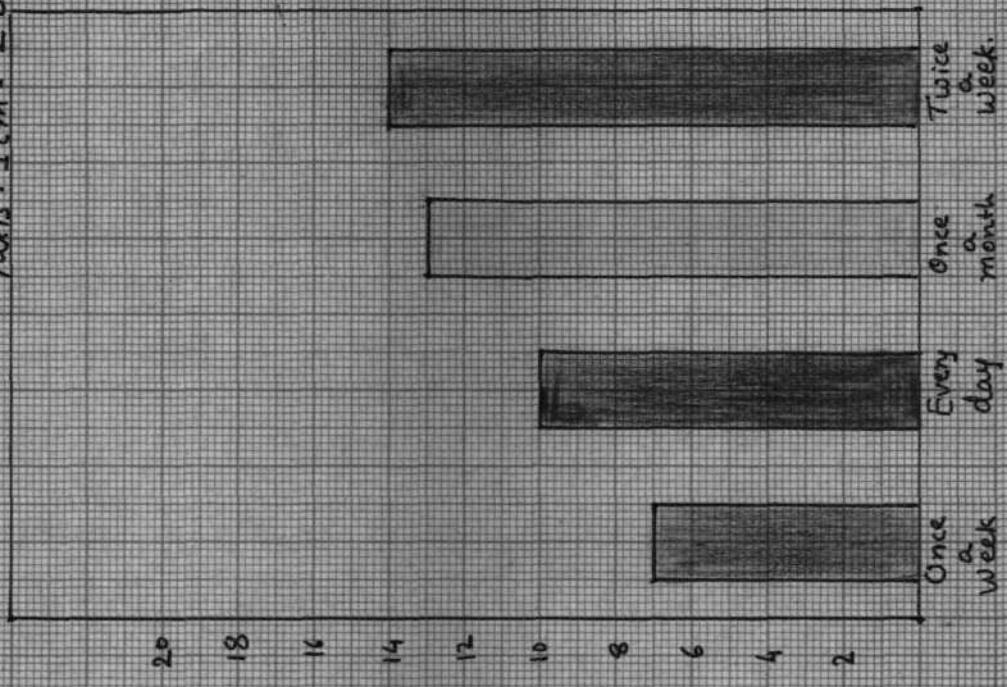


Fig: 12: FREQUENCY OF VISIT OF AUDIOLOGIST AND SPEECH THERAPIST

Y axis: 1 cm = 2 Schools.



Only 39.28% schools have an audiologist and/or speech pathologist either appointed or visiting their schools.

d) Frequency of visit where the facility is available.

Frequency	No.of schools	Percentage
Everyday	10	22.72%
Twice a week	14	31.81%
Once a week	7	15.90%
Once a month	13	29.54%

Out of the 44 schools having an audiologist and/or speech pathologists facility, 29.54% schools had the visit restricted to once a month followed by 22.72% having him/her visit the school everyday.

e) Services provided by an audiologist and/or a speech pathologist.

As is known an audiologist and/or a speech pathologist is involved in a variety of activities, such as audiometry, calibration, auditory training, speech therapy, research etc. Hence the data is tabulated in terms of the most prevalent combination of his work nature.

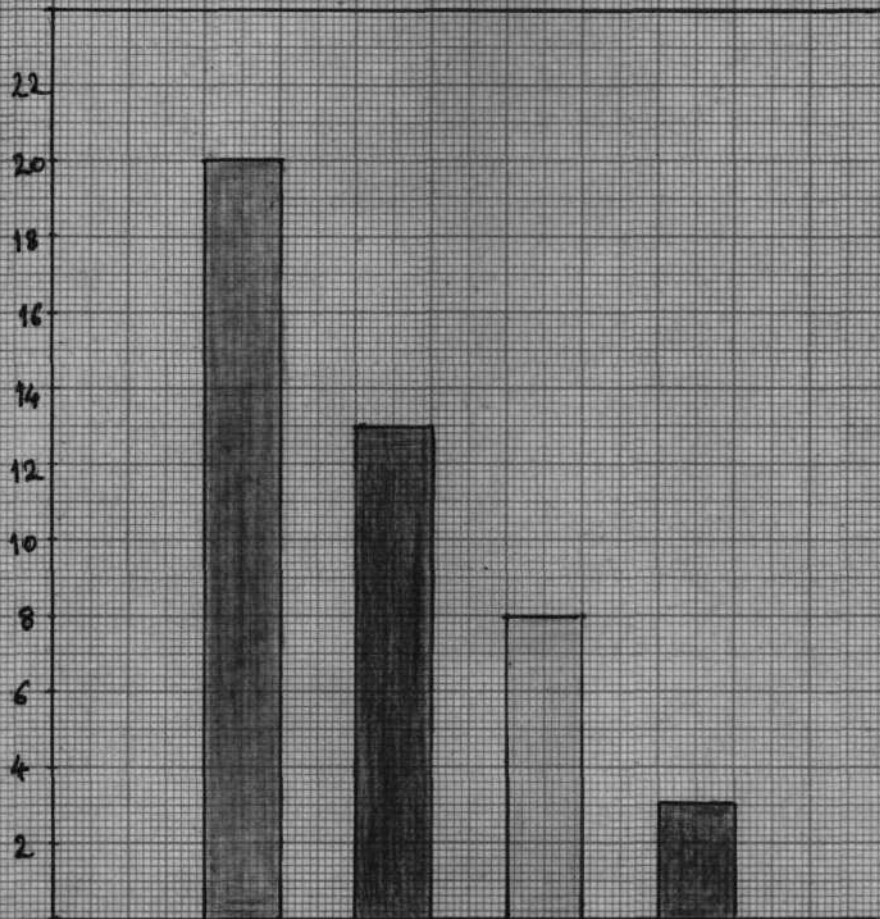
services	No.of schools	Percentage
Audiometry, audi- tory training(AT), and speech therapy (ST)	20	45.45%
auditory training and Speech therapy	13	29.54%
Audiometry, Calibra- tion, auditory training and speech therapy	8	18.18%
Research	3	6.8%

Thus the data clearly indicates that audiometry, auditory training and speech therapy is the most common (45.45%) as a combination, followed by only auditory training and speech therapy in 29.54% of schools. It was found that only 6.8% of these personnel were involved in research work.

VI. Statistics was also obtained regarding the details of auditory training and speech therapy. This is tabulated in the following three tables.



# NATURE OF THE WORK OF AN AUDIOLOGIST AND A SPEECH THERAPIST IN THE SCHOOLS



■ → AUDIOMETRY, A.T. AND S.T.

□ → AUDIOMETRY, CALIBRATION, A.T and S.T.

■ → A.T and S.T.

■ → RESEARCH.

## a) Frequency of auditory training (AT) and speech therapy (ST)

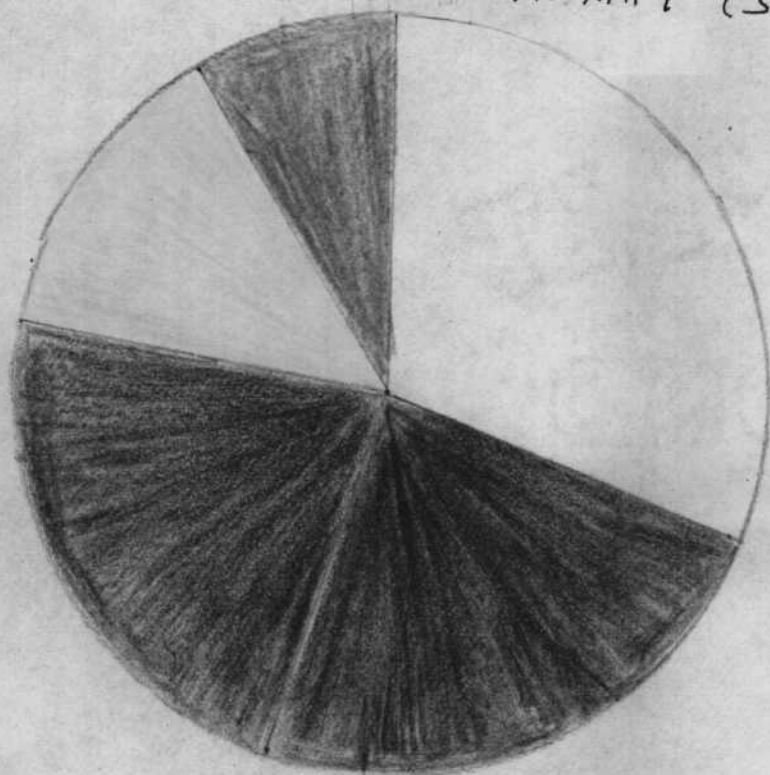
Frequency	No.of schools	Percentage
Everyday	35	31.25%
Once a week	27	24.10%
Twice a week	26	23.21%
Variable depending on age.	15	13.39%
Not given	9	8.03%

Thus 31.25% schools provide auditory training and speech therapy everyday to their children whereas in 8.03% schools do not provide auditory training and speech therapy at all

**b) No.of children per session:**

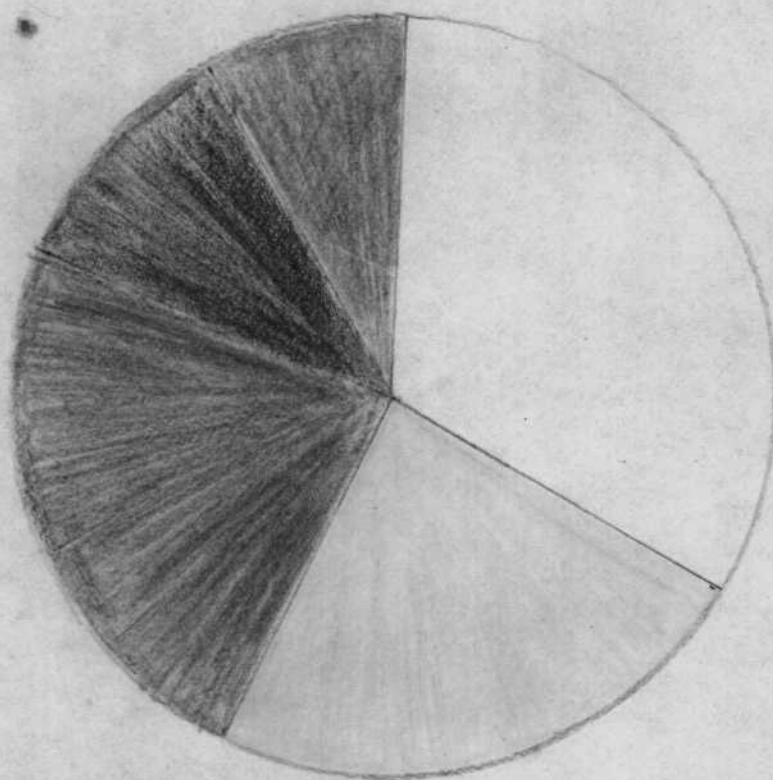
Usually it is an impression that in schools group auditory training is mostly followed. It is also shown in the following table, however, the following table shows that 24.10% of schools also give auditory training and speech therapy to individual child.

Fig: 14: DISTRIBUTION OF THE SCHOOLS IN TERMS OF FREQUENCY OF AUDITORY TRAINING (A.T) AND SPEECH THERAPY (S.T) SESSIONS.



- → Everyday
- → Once a week
- → Twice a week
- → Variable depending on age
- → A.T, S.T Not given

Fig: 15: DISTRIBUTION OF THE SCHOOLS IN TERMS OF NUMBER OF CHILDREN (SESSION OF A.T AND S.T).



- → A larger group
- → 2-3 in a group
- → Individual child
- → All the children in a class
- → A.T, S.T Not given.

Number of children	No.of schools	Percentage
Individual child	27	24.10%
2-3 in a group	27	24.10%
Larger group	37	33.03%
All the children in class	12	10.71%
Not given	9	8.03%

#### VII. Equipment facilities:

These are analysed in terms of

- a) availability of audiometer/s
- b) the number of audiometers
- c) most common model
- d) availability of sound treated room
- e) availability of other equipment for speech training
- f) availability of group hearing aids.

Maintenance facilities were seen to be provided only in a few schools and hence it was not analysed.

- a) Availability of audiometer/s

	No.of schools	Percentage
Available	62	55.35%
Not available	50	44.64%

**b) The number of audiometers available.**

	No.of schools	Percentage
One	29	46.77%
Two	21	33.87%
More	12	19.35%

Out of the 62 schools who responded yes for the availability, 46.77% schools reported of having only one audiometer, 33.87% schools reported of having two audiometers and only 19.35% schools reported of having more than two audiometers.

**c) Most common model;**

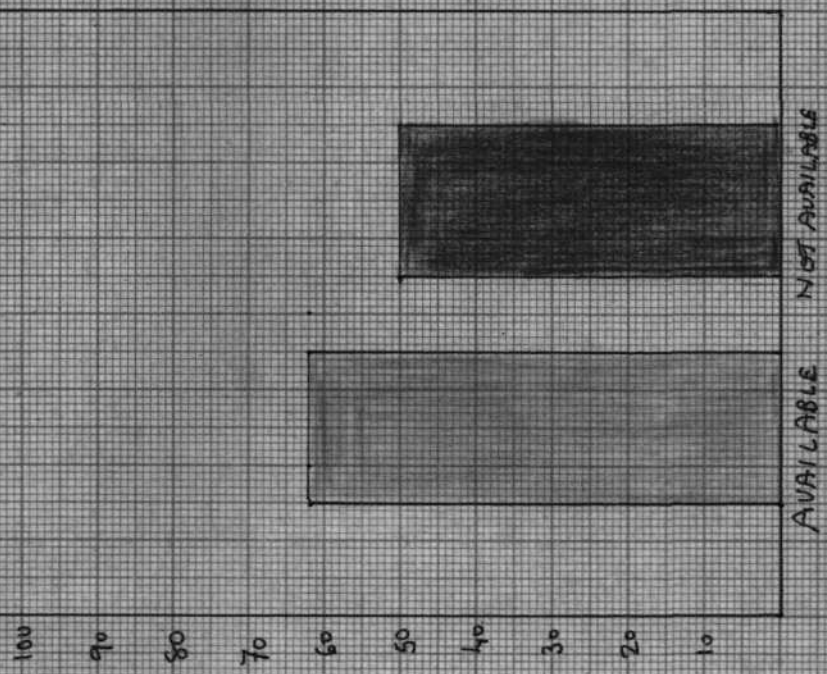
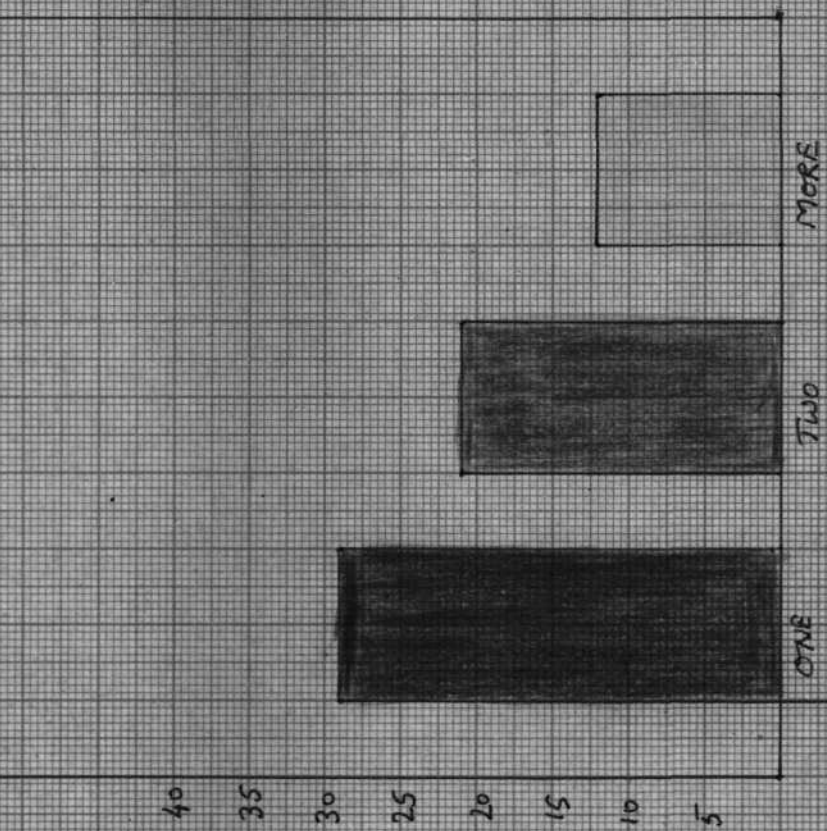
Model	No.of schools	Percentage
Arphi MK-I	15	24.19%
Arphi MK-IV	15	24.19%
Phillips	4	6.45%
Paediacometers	4	6.45%
Impedance audiometers	2	3.26%
Others	22	35.4%

This table shows that Arphi MK IV and Arphi MK-I are most commonly available models of audiometers. Only 3.26% of schools have impedance audiometers.

GRAPH: 16, 17 DISTRIBUTION OF THE SCHOOLS IN TERMS OF AVAILABILITY OF AUDIOMETERS

Y axis: 1cm = 5 schools

Y axis: 1cm = 10 schools



**d) Availability of sound treated room:**

Availability	No.of schools	Percentage
Yes	22	19.64%
No	90	80.35%

This data clearly shows inadequacy of the schools in terms of availability of sound treated room.

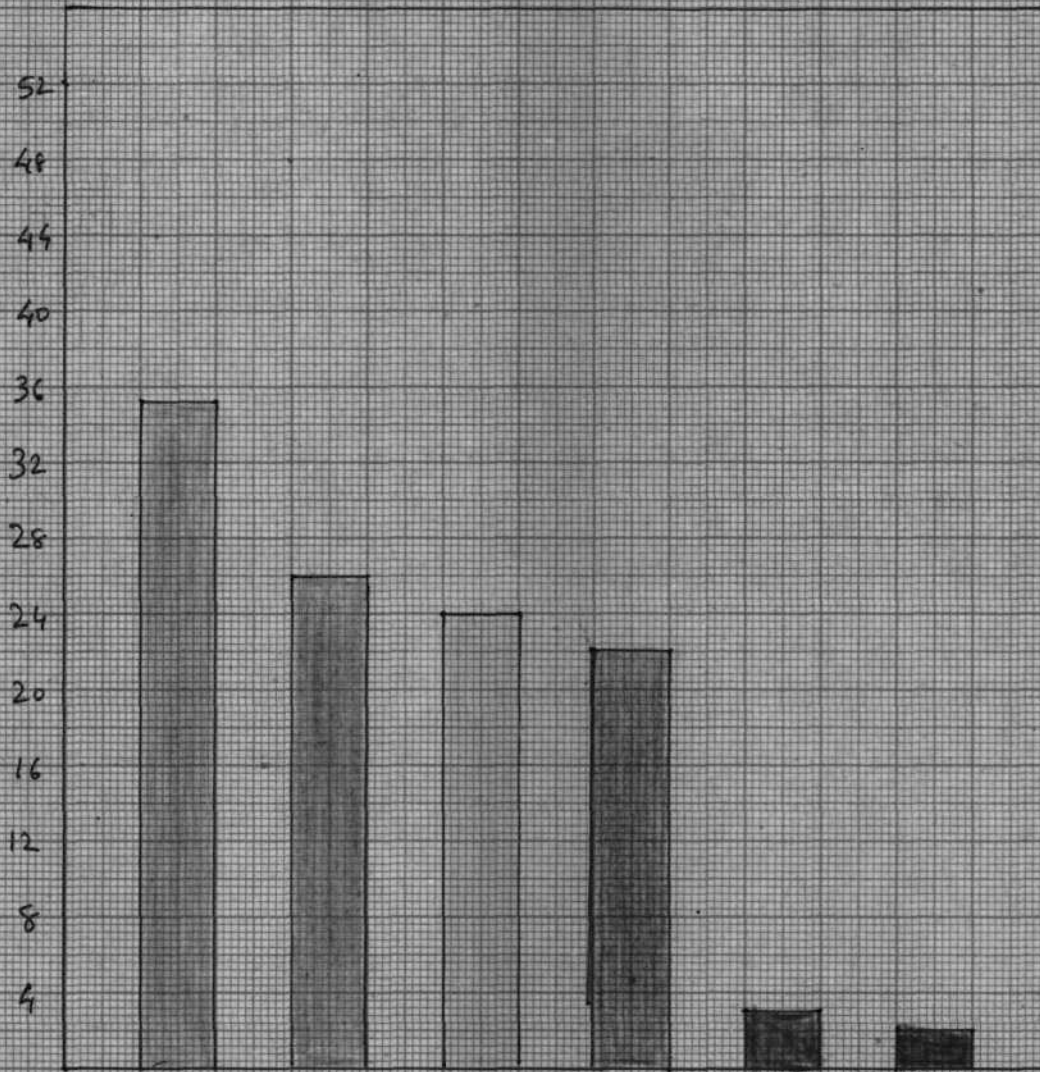
**e) Equipment available for speech training:**

With the advancement of science and technology, we now have many pieces of equipment available for speech training such as auditory trainer, tape recorder, Vocal II, speech spectrograph, etc. Apart from these individual hearing aids are used for speech training especially when the special equipment is not available. Most schools have not only one type of such equipment but a combination and hence these are analysed here.

Equipment	No.of schools	Percentage
Auditory trainer, tape recorder and individual hearing aids.	35	31.25%
Auditory trainers and individual hearing aids.	24	21.42%
Tape recorders and individual hearing aids	22	19.64%
Vocal II	3	2.67%
Speech spectrograph	2	1.78%
Individual hearing aids only	26	23.24%

Fig 18: DISTRIBUTION OF THE SCHOOLS IN TERMS OF EQUIPMENT AVAILABLE

Y axis: 1 cm = 4 schools.



☐ → AUDITORY TRAINER, TAPE RECORDER, HAS.

☐ → INDIVIDUAL HAS ONLY

☐ → AUDITORY TRAINERS AND HAS.

☐ → TAPE RECORDERS AND HAS.

☐ → VOCAL-II

☐ → SPEECH SPECTROGRAPH.



**f) Group hearing aids:**

Same way as with equipment of hearing aids, a different combinations of group amplification systems may be available in schools. These are analysed here.

Amplification systems	No.of schools	Percentage
Induction loop, hard wire and auditory trainers	30	26.78%
Hardwire + induction loop	19	16.96%
Hardwire + auditory hrainers	19	16.96%
Hardwire system only	17	15.17%
Induction loop system only	8	7.14%
FM system	2	1.78%
Group hearing aids not available.	17	15.17%

Thus the table indicates that 15.17% schools do not have the facility of group amplification systems. From amongst the rest 26.78% reported having a combination of induction loop system, hardwire system and auditory trainers which is the mat prevelant.

Fig. 19: DISTRIBUTION ON THE BASIS OF AVAILABILITY OF DIFFERENT AMPLIFICATION DEVICES.

Y axis:  
2 cms = 5 schools

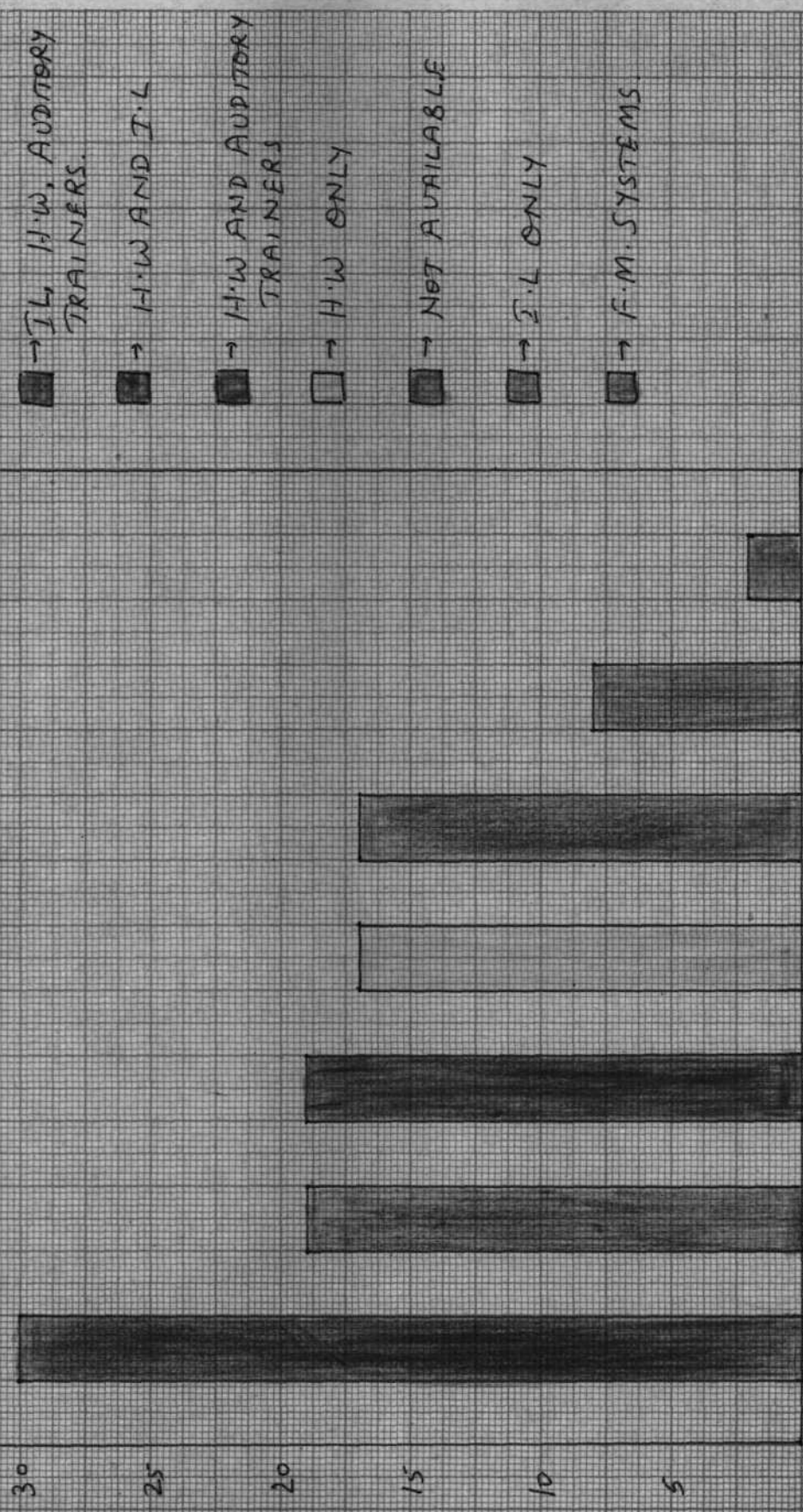
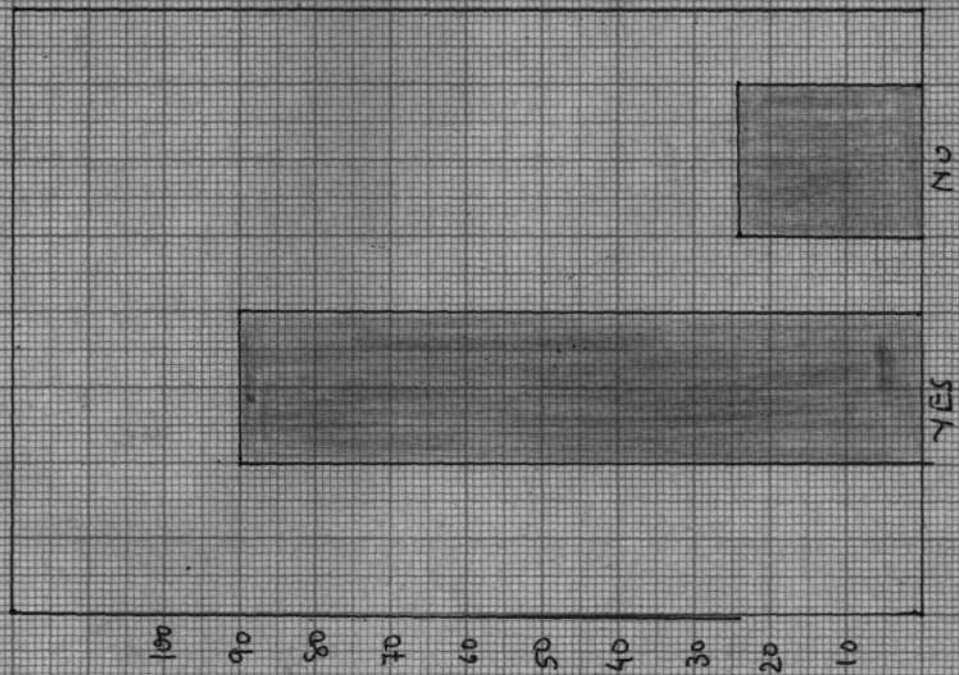


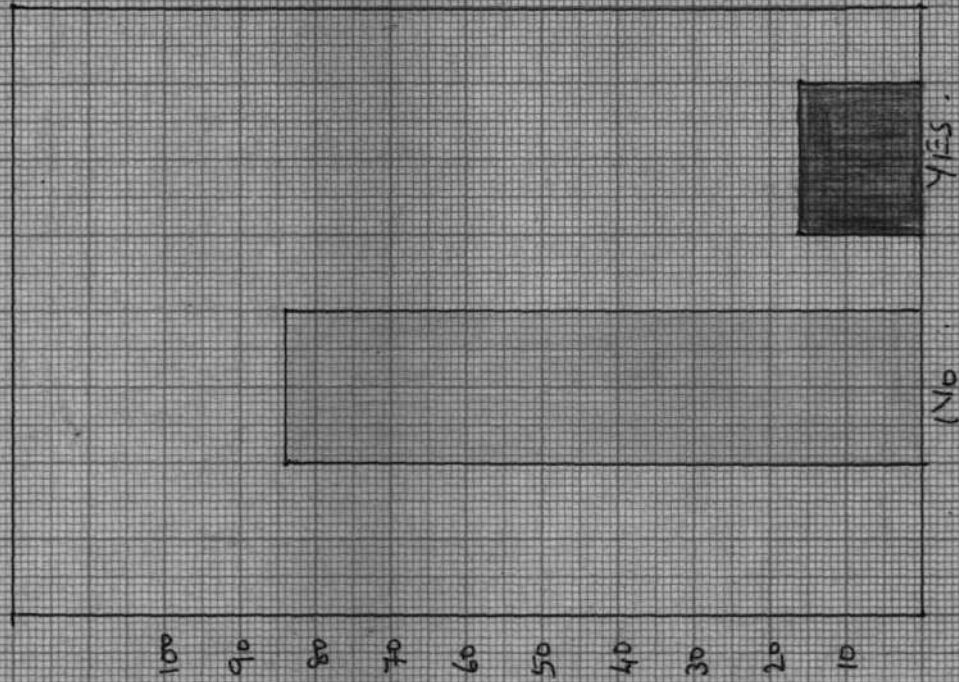
Fig 20, 21: DISTRIBUTION OF THE SCHOOLS IN TERMS OF  
ADDITIONAL REQUIREMENTS AND AVAILABILITY OF FUNDS

Yaxis: 1cm = 10 schools

Yaxis: 1cm = 10 schools.



ADDITIONAL REQUIREMENTS



FUNDS AVAILABLE

**VIII.a) Additional requirements of the schoola**

Response	No.of schools	Percentage
Yes	90	80.35%
No	22	19.64%

**b) Funds available**

Response	No.of schoola	Percentage
Yes	18	20.00%
No	72	80.00%

The above two tables indicate that 90 schools have additional requirement but out of these 90 schools only 20% have funds available to meet their requirements where-as 80% schools lack these facilitiew.

## DISCUSSION

The data which was obtained through questionnaires has been tabulated and graphically presented in the previous chapter. The aim of this chapter is mainly to highlight the major points.

### **1. Ratio of schools in rural and urban areas of India:**

A state wise distribution of the schools and its classification is made. The data reveals that the majority of the schools are located in the cosmopolitan cities. Only 9% of the schools are situated in the rural areas.

A study of Crawford and Crawford (1980) revealed that most of the states and Union Territories did not have adequate schools for the deaf. In the present study, it is found that six states out of total 25 do not have any schools for the deaf and only 2 out of 7 Union Territories have such schools. This concern has also been expressed by educators of the deaf. The non-availability of services to the rural areas explains poor educational achievement by our deaf students.

### **2. Highest level of schooling:**

Williams and Vernon (1970) stated that on an average, a deaf person reaches adulthood grossly under-educated despite

his normal potential for language development and abstract thought only 5% of deaf attain 10th grade level and only few enter college. A study by Crawford and Crawford (1980) indicated that 55% of the schools which responded for their study provided services at the primary school level. Only a few infant programs were noted.

So it was attempted to find if the level of schooling offered by schools in an average could be one of the contributing factors for low levels of educational achievements. And it was found that yes, it is a contributing factors. The data revealed that only 1.78% of the schools offer higher secondary education to the deaf children, 23.21% offer schooling upto Xstd. where as 24.10% each lied in the category of preprimary and VIIIstd. as the highest level of schooling offered.

### **3. Criteria for admitting children to school:**

**a) Age:** A crucial factor for better speech and language in the deaf children is their early intervention and preschool training. But for this the existing schools should provide the facilities for the same. They should be accepting children below the age of 3 years. But the data obtained through this study revealed that only 3.57% of the schools

admit children below the age of 5 years. Amongst the rest 49.10% of the schools admit children between 3-5 years, 39.28% above the age of 5 years. This concern becomes more serious because 8.03% of the schools do not have any age bar for admitting the children. They may be admitting children as old as 12-14 years of age and thus the achievement is obviously limited. However, if we critically analyse, this shows that these 8.03% schools are trying their best to cater to all children irrespective of age, thus trying to increase overall literacy rate.

**b) Hearing loss:** This criteria is mainly important for classifying the children. Obviously a child with moderate to severe loss may benefit from an amplification which has low gain but the same may not be useful with a profoundly impaired child. Since group amplification systems are used, the gain received by each child is the same, so as far as possible, the children should be classified as per their hearing loss. The results obtained through the questionnaires indicated that a majority of schools admit children having severe and profound hearing loss (38.39%), 18.75% restrict themselves to taking only profound hearing impaired children and 14.28% to taking only severely hearing impaired children.

In the questionnaire, the schools were also asked for the reason for setting these criteria. However only a few

schools answered this column satisfactorily and hence it is not analysed here in detail. However, it is worth noting that only two schools mentioned that this criteria was necessary to provide differential amplification.

**c) Intelligence:** The data obtained revealed that 62.5% of the schools admit hearing impaired children with normal intelligence. 8.9% admit the hearing impaired children with mental handicap also. However unawareness of the importance of this criteria is shown by 28.5% of the schools who has not specified anything about this.

**d) Associated handicap:** The data obtained indicated that 54.46% of the schools admitted hearing impaired children without any associated handicap. Only 10.7% of the schools admit the hearing impaired children with associated handicap. However a negligible number of schools have specified if these children are placed in different classrooms. Again 34.82% of the schools have not mentioned anything about this criteria.

**e) Hearing aid use:** A continuous use of hearing aid is very important so as to facilitate speech and language development. Only 45.53% of the schools make it compulsory for the children



to use a hearing aid and 22.32% of the schools do not make it compulsory. 32.14% of the schools have not specified the same. The last two categories of response may not be considered very reliable. The response may be obtained due to an improper framework of the question. Were they asked if the hearing aid usage was compulsory during the school hours, may be many more positive replies would have been obtained.

#### **4. Mode of teaching:**

Crawford and Crawford (1980) had found that most of the schools which they surveyed used oral mode of teaching.

The findings of the present study indicate that a majority of the schools use total communication for teaching their children (49.10%) followed by 42.85% of the schools using oral aural mode of teaching. However, this response is highly questionable. As Rathna(1970) has rightly commented, "even in schools where a great deal of stress is laid on speech and speech reading, often the mode of communication outside the classroom and under the tables is the sign language". In this situation, can we really call these schools purely oral? Another factor casting doubt about this is the facilities available in these schools. Very few

schools have a fully equipped set up which may bring about a successful oral education. However our schools are lacking this, thus making over doubt about their use of oral aural mode much stronger.

#### **5. Manpower facilities:**

Rita Mary (1987) has commented that, "there is no confirmation that our schools have planned and balanced educational programme, which are coordinated and directed by positive leadership". A difficulty of shortage of personnel has always remained with us. Handa (1987) stated that, "one of the weakest links in the Whole system today is the lack of trained and dedicated teachers". Roy (1990) commented that student-to-teacher ratio is far from ideal in our schools. Hence some of these factors are studied here and the results are discussed as follows:

**a) Number of teachers:** The data obtained revealed that only 8.92% of schools have more than 20 teachers. The number of teachers range between 1-5 in 31.25% of the schools followed by 6-10 in 27.67% of the schools, 11-15 in 11.64% of the schools and 16-20 in only 12.5% of the schools. Thus the data clearly indicates our need for more number of teachers and the schools should be able to employ more trained teachers.

**b) Student-to-teacher ratio:** Ministry of Education has recommended a student-to-teacher ratio of 8:1 as an ideal ratio (Sharma, 1980). The data of Crawford and Crawford (1980) indicated an undesirable ratio sometimes as high as 20:1. However this seems to have improved as seen from the results of the present study. The data indicated 21.42% of the schools have this ideal ratio. 16.07% of the schools also have a better ratio ie. 5:1. Most common ratio found however is 10:1 in 37.5% of the schools. The rest 24.98% of the schools have so less number of teachers that the student to teacher ratio in these schools may be still considered far from ideal.

**c) Audiologist & speech pathologist and nature of work:** Surprisingly only 39.28% of the schools have a part time or a full time audiologist and/or speech pathologist visiting their school. The rest 60.71% of the schools are deprived of the services of these professionals.

The frequency of visit is also very less. Once in a month in 29.54% of the schools who have the services. Only 22.72% of the schools have this service provided everyday.

In the schools where an audiologist and/or a speech pathologist is available, the most commonly rendered services

by him/her are audiometry, auditory training and speech therapy (45.45%) followed by 29.54% of the schools in which, he/she provided the services of only auditory training and speech therapy. Only 6.8% of these professionals are involved in some sort of research work however, the nature of research was not required into.

Statistics about details of auditory training and speech therapy. It is fortunate that 91.95% of the schools provided auditory training and speech therapy to their children. Only 8.03% of the schools did not report positively. The frequency of these training sessions is found to vary in different schools, with 37.25% of the schools providing it on daily bases 24.10% providing it once a week and 23.21% twice a week. In 13.39% of the schools, the frequency of these sessions varies from primary to secondary level having more frequency for the primary children and less for the secondary.

It was found that in a majority of the schools these sessions are conducted by teachers (55.35%) followed by 36.60% of the schools having it conducted by a speech pathologist. The results obtained on a number of children taken up per session for this purpose indicated that 43.74% of the

schools give this training to more than three children at a time ie to a larger group or to full class at a time 24.10% of the schools took up 2-3 children in group for in a group for this purpose. Individual training was also given in 24.10% of the schools and this is mainly for speech therapy sessions.

#### **6. Equipment facilities:**

In India, no recommendations are made about the specifications of the equipment that should be available in the schools for the deaf. However, from the review of the literature. We may guess that a successful educational set-up of the deaf students should contain some basic and some advanced equipment such as audiometer/s, sound treated room, auditory trainers, tape recorders. Vocal II, speech spectrograph, PM 100 pitch analyser and different types of group amplification system.

The data obtained through the questionnaires in this study is analysed with these categories in mind and is discussed here.

- a) It was found that only 55.35% of the schools had one or more audiometers. Rest 44.66% of the schools are deprived

The results of the study indicated that a combination of induction loop system, hard wire system and auditory trainers is the most common ie in 26.78%. 15.17% of the schools have only hard wire system and 7.14% have only induction loop system. The FM system which is considered to be most beneficial is available only in 1.78% of the schools, In 15.17% of the schools group hearing aids are not available.

**7. Additional requirements and the availability of the funds:**

The schools were asked for their opinion about their additional requirements and the data indicated that 80.35% replied positively for the same. Only 19.64% of the schools stated that they had no additional requirements. The most commonly expressed need is the space, audiometers, group hearing aids and some schools also expressed that they required audio visuals, and other special equipment like Vocal II, EM 100 pitch analyser and speech spectrograph.

From the 80.35% schools who expressed that they needed additional equipment, only 22.50% of the schools have funds available to meet their needs. The rest 87.50% of the schools express their inability to meet their demands.

### SUMMARY AND CONCLUSION

This project was undertaken to review the present condition of the schools for the deaf in terms of manpower resources and equipment available.

A total of 340 questionnaires were sent to various schools for the deaf (the questionnaire is given in Appendix).

Out of 340, 112 schools returned the completed questionnaires. The information which was given by them was analysed, tabulated and represented in graphical form. Then the results were discussed.

This chapter gives a summary of the results:

1. There are very few schools of the deaf in rural areas, a majority of them being concentrated in the urban areas.
2. Only a limited number of schools offer secondary and higher secondary education to our deaf students.
3. Early educational intervention which is a pre-requisite for adequate speech and language development is not being offered by most schools.
4. Most schools do not seem to classify the children on the basis of their age, hearing loss, intelligence etc. Thus the students admitted to a classroom form a heterogeneous group thus reducing the overall achievement levels.

5. A majority of the schools claim to be using aural-oral mode of teaching their children. However, it is highly questionable since the very same schools are not fully equipped to meet the requirements of a successful oral-aural set up.
6. Manpower facilities - There is a limitation in terms of the number of teachers, number of audiologists and/or speech pathologist, earmold technician and the electronics technician.
7. A majority of the schools are providing auditory training and speech therapy to their children. Mainly this is provided by a teacher and to a group of children.
8. The schools lacked the equipment required with them and the maintenance of the available equipment.
9. Most of schools have expressed their need for additional equipment to improve the set up, however, a majority do not have funds to meet their needs.

The study was undertaken to objectively assess education for the deaf in India. It has progressed appreciably since its initiation nearly a century ago. However, a review of the situation showed that a lot more needs to be done for educating the deaf, sporadic and uncoordinated efforts of professionals concerned with hearing impairment



and rehabilitation of the deaf, are not the answer. It is important to consider the findings of similar studies and to arrive at a solution for the betterment of education for the deaf. Perhaps we can make a beginning by establishing the first college for the deaf in India.

## BIBLIOGRAPHY

- ASHA A Special report (1975): Guidelines for audiology programs in educational setting for hearing impaired children. American Speech and Hearing Association, 17, 17-20.
- Bess, F.H., Gravel, J.s. (1981): Recent trends in educational amplification. Hearing Instruments, 32, 24-29.
- Bruce, W.T. (1987): Trends in education. Volta Review, 78, 318-323.
- Calvert, D.R. (1976): Communication practices aural/oral and visual/oral. Volta Review, A bicentennial Monograph on hearing impairment Trends in USA, 76-81
- Crowferd, J., and Crowford, P.O. (1982): Deaf education in India: A 1980 survey of its instructional needs. Hearing Aid Journal (Indian), 7-10.
- Dolman, D. (1987): Programs in action education of the hearing impaired on the island of Jamaica. Volta Review, 89, 287-292.
- Ewing and Ewing (1938): Cited by A.Markides (1986): The use of residual hearing in the education of hearing impaired children: A historical perspective. Volta Review, 88, 57-66.
- Freeman, B.A. et al. (1981): Classroom amplification: Consideration for system selection. Hearing Instruments, 32, 18 and 23.
- Flexer, C. et al (1987): Amplification devices: Evaluating classroom effectiveness for moderately hearing college students. Volta Review, 89, 347-357.
- Garretson, M.D. (1976): Total communication. Volta Review, 78, A Bicentennial Monograph on Hearing Impairment Trends in USA, 88-95.
- Griffing (1981): Cited by Jones, T.W. (1984): A framework of identification, classification and placement of multihandicapped hearing impaired students. Volta Review, 86, 142-151.

- Handa, S.C. (1987): Needed changes for improving the system of education of the deaf in India. Paper presented at National Conference of Educators of the Deaf 1987 held at Ali Yavar Jung National Institute for the Hearing Handicapped, Bombay
- Helcomb, and Deonton (1972): Cited by Garretson, M.D. (1976): Total communication. Volta Review, 78, A Bicentennial Monograph on Hearing Impairment Trends in USA, 88-95.
- Herrick and Kapua (1968): Cited by Rathna, N. (1970): The battle of methods in education of the deaf. Journal of AIISH, 13, 33-49.
- Jones, K.L., Gallois, C. (1978): Effects of training with total communication or cued speech on language comprehension in hearing impaired children. Australian Journal of Communication Disorder, 6, 10-15.
- Jones, T.W. (1984): A framework of identification, classification and placement of multihandicapped hearing impaired students. Volta Review, 86, 142-151.
- Kaufman, J.M. (1982 ): Introduction: Historical trends and contemporary issues in special education in the United States Ed. by Hallahan, D.P., Kauffman, J.M., Handbook of special education. Prentice Hall Inc, Englewood Cliffs, New Jersey.
- King and Thompson (1973) Cited in Garrard, K.R. (1975): Considerations of the speech pathologists role in early childhood education for the handicapped. American Speech and Hearing Association 17, 90-91.
- Lane, H.s. (1976): The profoundly deaf: Has oral education succeeded. Volta Review, 78, 329-340.
- Lunch and Tobin (1973) Cited by Garrard, K.R. (1975): Considerations of the speech pathologist's role in early childhood education for the handicapped. American Speech and Hearing Association, 17, 90-92

(iii)

- Markides, A. (1986): The use of residual hearing in the education of hearing impaired children: A historical perspective. Volta Review, 88, 57-66.
- McKeon (1961): Cited by Rathna, N. (1970): The battle of methods in education of the deaf. Journal of AIISH, 13, 33-49.
- Meyerson (1955): Cited by Rathna, N. (1970): The battle of methods in education of the deaf. Journal of AIISH, 1, 33-49.
- Moore (1971): Cited by Stuckless, E.R. (1976): Manual and graphic communication. Volta Review. 78, A Bicentennial Monograph on hearing impairment. Trends in USA, 96-106.
- Rathna, N. (1970): The battle of methods in education of the deaf. Journal of AIISH, 13, 33-49.
- Reynolds, C.R., Lester, Mann (1982 ): Encyclopedic of special education, 2,
- Rita Mary (1987): Education of the hearing impaired. Indian Journal of Disability and Rehabilitation, 1, 55-57.
- Rita Mary (1987): Present conditions and needed changes in the education of the hearing impaired. Paper presented at National Conference for the Educators of the Deaf held at All Yavar Jung National Institute for the Hearing Handicapped, Bombay.
- Ross, M. (1976): Verbal communication: The state of the Art. Volta Review, 78, 324-328.
- Roy, R. (1990): Education of the Deaf in India. Journal of ISHA, 7, 7-12.
- Sharma, P.L. (1980 ): Status paper in special education with special reference to Hearing Impairment, NCERT, New Delhi.

- Silverman, et al (1966) Cited by Rathna, N. (1970): The battle of methods in education of the deaf. Journal of AIISH, 1, 33-49.
- Sudler and Flexer (1986) Cited by Flexer, C. et al (1982): Amplification devices: evaluating classroom effectiveness for moderately hearing impaired college students. Volta Review, 89, 347-357.
- Sung, G.s. et al (1976): Intelligibility of speech transduced via classroom installed FM and conventional audio induction loop amplification system. Audiology, 15, 257-262.
- Vaughn, (1967) Cited by Rathna, N. (1970): The battle of methods in education of the deaf. Journal of AIISH, 1, 33-49.
- Wayner, D.S. (1986): Assistive listening devices for improved communication and greater independence. Hearing Instruments, 37, 21-25.
- Williams and Vernan (1970) Cited by Rathna, N. (1970): The battle of methods in education of the deaf. Journal of AIISH, 1, 33-49.

APPENDIX

QUESTIONNAIRE.

Dear Sir/Madam,

Date:

The information sought through this questionnaire is required for a project undertaken as a part of fulfilment of Master's Degree program. Hence, we need your cooperation in giving us complete and accurate information. The information obtained will be kept strictly confidential except for use in studying trends.

Please return this completed questionnaire at your earliest to the following address:

Thanking you in anticipation.

Sincerely yours.

Address:

All India Institute  
of Speech and Hearing  
Manasagangothri  
Mysore - 570 006.

Q.1: Is it Government/semi Government/private charitable school? (Please cross-out whichever is not applicable)

A Government/ semi-government / Private / charitable school.

Q2. Upto which standard does it provide schooling?

A

Q.3: What is the criteria for admitting a child to school?

A. Criteria	Specify the criteria	Please mention the reason for setting it
1. Age		
2. Hearing loss		
3. Prior investigations		
4. Intelligence		
5. Other associated handicaps		
6. Hearing aid usage		
7. Any other		

Q.4a: What is the mode of teaching? (Strike-out whichever is not applicable)

A : Oral aural / Manual / Total communication

b : How many teachers do you have in School?

c : What is the average student to teacher ratio?

d: Have the teachers had formal training? Yes/No

If no, specify how many are not formally trained.

0.5a: Do you have audiologist and/or speech pathologist?  
Visiting/appointed at your school?

Yes/No

b: How often does the/she come? (Please strike-out whichever is not applicable)

Everyday / twice a week / once a Week / any other

c: What are the services he/she provides? (Please strikeout whichever is not applicable).

Audimetry/ calibration and servicing / auditory training / speech therapy / any other.

0.6: Do you have audiometer/s? Yes/No

If yes, how many....

Please specify the models and nos.

b: Where is audiometry carriedout? Please specify.  
A quiet room / class room / sound treated room  
any other.

c: Do you carry-out prior evaluation of children's hearing in your schools?

Yes/No

d: Do you carry out re-evaluation of children's hearing

Yes/No

If yes, please specify the interval

6.e: Is calibration/servicing facility available in the school premises? Yes/No

If no, please specify where it is carried-out.

f: Who does calibration/servicing? (Please strike out whichever is not applicable)

Electrician/audiologist/technician/any other.

g: Do you have facility for making custom earmolds?

Yes/No

If yes, please specify who makes it?

Q7a: How many children receive auditory training and speech therapy? (Please specify no.of children/class)

b: How frequent in a week? (Please strike-out whichever is not applicable)

Everyday/once a week/twice a week/any other.

c: Who gives auditory training and speech therapy? (Cross-out whichever is not applicable)

Class teacher/formally trained teacher/speech therapist/any other.

d: Is auditory training and speech therapy given for the following (please strike-out whichever is not applicable)

Individual child/a group of 2-3 children/  
A larger group/any other.

e: Do you use any special equipment for training the children?

Yes/No

If yes, which of the following (Please tick )  
Auditory trainers ( ) Vocal II ( )  
PM Pitch analyzer ( ) Speech spectrograph ( )  
Tape recorders ( ) Individual hearing aids ( )  
Any other (Please specify).



Q.7f: If your opinion how far are these equipment useful in a School set-up? (Please strik-out whichever is not applicable)

Very useful/quite useful/not useful

Please comment:

0.8a: What are the different amplification systems available in your school?

<u>System</u>	<u>How many</u>
1. Hard wire system	
2. Induction loop system	
3. Frequency modulated hearing aids.	
4. Infra red system	
5. Auditory trainers	
6. Any other.	

**Description:**

1. Hard wire system: Consists of a microphone, an amplifier and a set of earphones.
2. Induction loop system: Consists of a microphone and an amplifier and instead of earphone or a speaker, a coil or wire is placed around the room in any one geometric configuration. (The child uses his hearing aid on 'T' or 'MT' position).
3. Frequency modulated hearing aids: Operates like a miniature radio broad-casting station. It consists of a microphone-transmitter worn by the teacher. The receiving device is also just like a transistor radio.
4. Infra-red system: Similar to FM hearing aids. In this FM microphone transmitter worn by teacher and FM receiver is attached to the infra-red transmitter worn by the deaf child.

5. Auditory trainer; This has a microphone, earphones, and also a vibrator for giving tactile stimulation to the child.

8b: If you have more than one of these systems, which one of these do you find more useful for your set-up? (Please comments).

8c: Are the above equipment in working condition? Yes/No

d: If no, how many are out of order?

...Nos.

Why (Please strike-out whichever is not applicable)  
Due to non-availability of spare parts/servicing/  
Any other (Please specify?)

e: In your opinion, the amplification systems available at your school are:

Excellent/adequate/inadequate  
Please comment:

9. Do you require additional equipment or any other facilities to meet your needs?

Yes/No

If yes, list down the necessary equipment.

10. Do you have adequate funds for the same?

Yes/No.

NOTE: Please use extra sheet of paper wherever required.