BIAP Recommendation 06/10 - 09/5 Rev 1: Complementary Hearing Assistive Technologies (HATs) in classrooms

Foreword

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Introduction

This recommendation primarily seeks to inform parents, teachers and subsidising agencies about the conditions necessary for the efficient use of complementary electro-acoustic aids in classrooms.

The classroom is a learning situation requiring sustained attention. Acoustic qualities must therefore be optimal.

In addition to quantitative loss, deafness causes qualitative disturbances in the field of loudness (e.g. recruitment), masking effects, temporal analysis and central auditory processes.

In a classroom children are usually subject to poor acoustic conditions, which are mainly due to the distance between the listener and speaker (teacher-children-audio sources), ambient noise and reverberation.

The intelligibility of the teacher's speech and other peers depends, among other factors, on the class's reverberation time, as reverberations mask the signal's essential characteristics. Furthermore, the level of the speech signal decreases with distance whereas the level of background noise remains constant.

All of these elements cause in hearing children:

- A loss of information, especially in terms of new acquisitions.
- A decrease in the level of attention during oral explanations.
- Increased irritability and fatigue.
- Increased reaction time due to the cognitive effort of deciphering poorly received verbal information.

For a child with a hearing impairment, the consequences of poor acoustic conditions are far more crucial and potentially incapacitating. Speaking under such conditions affects the quality of the child's voice in the short term, and his language development in the long-term.

This will have negative academic (a decrease in academic performance) and relational (exhaustion, tension, arguments, etc.) consequences.

In a noisy environment, hearing aids or cochlear implants, even with modern algorithms, are not enough to improve the intelligibility of speech. Their effect is to increase the S/N ratio. For a child with a hearing impairment, a S/N ratio of 15 to 20 dB is recommended. The child's age and the degree of hearing impairment are contributing factors.

Indeed, the regular use of the HAT-systems promotes the possibility of inclusion of the hearing-impaired child in an ordinary school environment.

Complementary HAT devices also help children with normal hearing who experience difficulties in concentration, focusing, attention span, … for example:

- Attention deficit disorder.
- Central auditory disorders.
- Learning disabilities.
- Language disorders, etc.

These children are further negatively affected by noise.

Solutions:

Improve acoustic conditions in the classroom (BIAP Rec 09-4).

In fact, the regular use of the HAT-system can help maintain hearing-impaired children in mainstream schools.

Recommendation

1. Indication:

A multidisciplinary analysis is essential for recommending the use of complementary electro-acoustic aids in a learning situation. The degree of impairment, the classroom's operating mode, the communication means used, the age, the presence of an interpreter or speech cues must all be considered. An auditory and visual sensory evaluation of the child must be conducted before offering further assistance.

The use of complementary material must be preceded by a specific adaptation assessment with pure tone and speech audiometry testing in schools.

The indication criterion must also help specify when they should be used (all the time, on demand, reserved for school, etc.) and who will determine when they are used.

2. Information:

Dual information must be provided to teachers. First, we must make them aware of the listening difficulties in the classroom and describe the hearing aids' limitations. Second, teachers need to be informed about operating procedures and equipment maintenance. They must be provided with written documentation.

The same information must also be given to parents. The parent and teacher motivation will play a fundamental role in the child's acceptance of the equipment.

3. Acceptance:

Depending on age, some children will perhaps need more time to accept equipment that "connects them" to their teacher in a privileged way. Specific work must be done with children to help them understand the advantages of their equipment. The other children in the class should also receive information that will enable them to accept better a child with this equipment.

4. Maintenance:

Procedures must be implemented to help perform preventive maintenance.

These procedures will also assess the child's ability to wear, adjust and operate the system. This equipment requires regular maintenance, particularly for connection issues. Participants must regularly receive proper use and proper functioning control protocols.

5. Reimbursement:

The child's parents and the various participants should be informed of possible reimbursements.

BIAP recommends the use of the HAT-systems as discussed and the financial coverage.

BIAP Recommendation 06/16 - 07/17 provides additional information on the management of current systems (2016) as well as the relevance of this support to adults.

Changing history

Initial version: BIAP recommendation n° 06/10 - 09/5: in German "Elektro-akustische Hilfen im Klassenzimmer", and in French „Aides électro-acoustiques complémentaires dans les classes", accepted in Rhodes (Greece) in May 2007.

Revision 1: BIAP Recommendation 06/10 - 09/5 Rev 1: "Complementary Hearing Assistive Technologies (HATs) in classrooms", translation into English and minor adaptations.

This recommendation was created and approved in multidisciplinary cooperation between professionals of all audiophonologic disciplines, which are medicine, pedagogy, speech therapy, psychology and hearing instrument audiology.

The original language of this document is English.

BIAP authorizes the publication of documents available on its website but forbids any modification of their contents.

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