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Accessibility Guide

For Formal and Non-Formal Education Professionals

Co-funded by the Erasmus+ Programme of the European Union

ACCESSIBILITY GUIDE

OPEN UP: Engaging formal and non-formal education professionals in the inclusion of young people with sensory disorders

A project supported by the Erasmus + programme

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CREDITS

To the Erasmus+ Open up project partners.

To the multidisciplinary board members 'inclusive education and sensory disorders' for their reviews and contributions.

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Illustrations and tables of this Guide contain hypertext links leading to their sources. All the sources are referenced in the table of illustrations.
The other drawings in black and white starring characters were made by Sandra Krasnodenski (Croatia).

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FOREWORD

The European Agency for Special Needs and Inclusive Education states that the "*ultimate vision for inclusive education systems is that all learners of any age are provided with meaningful, high-quality educational opportunities in their local community, alongside their friends and peers*"[1] . This includes young people with special educational needs, a group which include young people with sensory disorders.

The partners of the Erasmus+ Open up project (2020-2023) are from four EU Member States, including:

- Four associations specializing in sensory disorders.
- A training organisation.
- An SME with expertise in the development of digital tools for training education professionals.

Their ambition is to pool their good practices in order to co-create, test, and evaluate innovative tools to help improve the quality of inclusive education for young people with sensory disorders in Europe. The choice to focus on visual and hearing impairments, which include many types of impairments, is motivated by the conviction that this project format allows us to produce new tools that cover these two fields of disability relatively well, without claiming to provide all the answers.

This **Accessibility Guide** aims to contribute to this goal. It is intended to formal education professionals (e.g. school teachers) and non-formal education professionals (e.g. youth workers). Developed from a bottom-up approach, the content of this guide was established through a consultation of inclusive education stakeholders from five different regions and conurbations: Hauts-de-France (France), Andalusia and the Balearic Islands (Spain), Zagreb (Croatia) and Nicosia (Cyprus). Local multidisciplinary boards of experts on inclusive education and sensory disorders were held there, mostly by videoconference due to the health crisis, to work on the following 3 aspects:

- Reporting on good practice in inclusive education in their respective regions.
- Identifying needs in their local contexts.
- Defining a new professional profile of "resource(s) person for sensory disorders" that would improve access to education for young people with sensory disorders in the mainstream environment.

This Accessibility Guide is therefore the result of these local expert committees. It is aimed at teachers working in mainstream schools as well as youth workers working in inclusive organisations. This guide is intended for professionals with a shared will to develop their capacity to better accommodate young people with visual and/or hearing impairment and to allow them to participate in their pedagogical and educational activities.

This guide is divided into two sections: the first covers visual impairments and the second covers hearing impairments. Each includes a brief theoretical section to help understand what sensory disorders are and what levels of hearing and sight are covered in this guide.

[1] See the website of *The European Agency for Special Needs and Inclusive Education*

A large part is given over to practical sheets allowing professionals to adapt their environment and their communication to better accommodate these groups and to make their pedagogical and educational content more accessible. These two sections are preceded by an introduction defining a new professional profile that can be added to the role of a teacher or youth worker who will be able to act within their organisation as a “resource(s) person for sensory disorders”.

Finally, the Open Up project partners offer other innovative tools to complement this Accessibility Guide:

- An Open Educational Resources (OER) platform allowing readers of this guide to have free access to e-learning content on sensory disorders.
- A short training programme enabling formal and non-formal education professionals who wish to do so to become “resource(s) person for sensory disorders”.
- A joint statement aimed at raising awareness and making recommendations to policy makers and other stakeholders in inclusive education, as well as representatives of youth organisations, to improve the quality of inclusive education in Europe.

All these tools are available in five languages and can be downloaded from our website: www.openupproject.eu

INTRODUCTION
Definition of the role of a “resource(s) person for sensory disorder”

Overview of the existing resources and needs in European mainstream institutions

In formal education institutions (in this case primary and secondary schools), there are 3 main approaches in Europe[2] to provide access to education for all within their country:

- **The inclusion of everybody within the mainstream** applies in countries like Norway, Italy, and part of the UK (Scotland) where more than 90% of students with special educational needs attend mainstream schools. But this choice does not necessarily mean that these young people have quality educational experiences. It obviously requires specific support and maintaining it consistently in the mainstream environment can be a challenge.
- **Segregated and specialized educatio**n is characteristic of countries with a tradition of selective education systems such as the Flemish Region (Belgium), the Netherlands and Germany. Most students with special educational needs are enrolled in special institutions. However, these countries tend to progressively include these students in mainstream education, leading to the 3rd model below.
- **Hybrid approaches** consist of different options ranging from setting up specialized or externalized classes, to time-share education, or partnerships that may take different forms depending on the country. There are partnerships between mainstream schools and healthcare and social institutions and services. In France, there are schemes which allow students with special educational needs in mainstream classes to benefit from specific individualized educational[3] support , but also support from medical and social professionals in schools[4].

In Spain, students with special educational needs are educated in special schools only if they cannot be included in the mainstream of the Spanish education system, considering the diversity of students. This requires specific coordination and teamwork between different education professionals from the mainstream and external disability specialists.

In Croatia, mainstream schools have in-house specialized educational staff. However, due to the lack of both economic and human resources, the number of schools with trained disability professionals remains limited. Thus, outpatient educational support services are often called upon to compensate.

It should be noted here that, except for Scotland, the United Kingdom, along with Denmark and Finland, has been advocating for this model for several years.

[2] European Commission, *Access to quality education for children with special educational needs*, produced for the European Platform for Investing in Children (EPIC). Researchers: Victoria Jordan and Rob Prideaux (RAND Europe), Luxembourg: Publications Office of the European Union, 2018

[3] In France, the Unités Localisées pour l'Inclusion Scolaire [Localised Units for School Inclusion] (ULIS) deploy strengthened teams with referent teachers for students with disabilities (ERSH) and assistants for students with disabilities (AESH) to support teachers in mainstream classes.

[4] We are referring here to the Equipes Mobiles d'Appui à la Scolarisation [Mobile Educational Support Teams] (EMAS) deployed in France.

In Europe, higher education institutions generally provide personal support to each student with sensory disorders and other types of disability. For example, French universities appoint teachers responsible for disability projects. Students who wish to be recognised as “a student with disability” can meet with a doctor to draw up a personal plan which will include any accommodation required to meet their specific educational needs. Different types of adjustment can be put in place for these students, including the following types of support:

- Human support with another student volunteer who will act as a note taker and help with daily tasks and activities.
- Technical support by providing assistive technology such as adapted computers, arranging learning sessions, etc.

In the case of participation in an international exchange programme such as the Erasmus+ Learning Mobility of Individuals programme (KA1)[5], the adjustments made at the home university are usually maintained at the host university. Inclusion and diversity in higher education mobility is considered a priority to “*make access to mobility for students and staff as easy as possible*”, through financial support for specific needs for beneficiaries with disabilities.

Regarding the organisations offering non-formal education (e.g., associations such as social centers or youth centers) represented in our local expert boards, we note that most of these youth organisations lack the means to be able to accommodate and include these groups in optimal conditions. However, EU countries are unanimous on the complementarity of these organisations with their formal education systems. In France, mainstream youth organisations can call upon professionals specialized in sensory disorders. As already mentioned for hybrid approaches to formal education, partnerships between youth organisations and health and social care institutions and services offering responses to special educational needs are possible but remain limited. In addition, some sports federations, such as the French Handisport Federation, publish good practice guides to promote the participation of people with disabilities in sports activities[6]and training[7]. In Spain, some organisations employ social workers who could be described as "communication mediators", specifically to help people who are blind, deaf, deaf-blind or have a speech impediment. Created in 2015, we have observed that this specific related position is still an exception in public educational institutions. For this reason, their services are still mainly provided by "social integrators", interpreters or educational therapists. There are also social integration professionals trained to support people with special educational needs, but they are not specialised in any particular type of disability.

The aim of the Open Up project is not to solve the problem of a lack of resources in each European country, but to offer more solutions to facilitate the inclusion of young people with sensory disorders. To this end, the Open Up partners are proposing a new professional profile: the “resource(s) person for sensory disorders”. This new profile is based on the needs expressed in our local expert boards and is intended to complement existing resources in this sector. It is accessible to any formal or non-formal education professional in the mainstream system.

[5] See European Commission, *Erasmus+ Programme Guide*, p.41-67, 2021

[6] Julien Michel and Sandra Mauduit, *Accueillir les sportifs déficients visuels [Welcoming blind or partially sighted athletes]*, French Handisport Federation (FFH), 2020 [in French]
Sandra Mauduit, *Multisports: le guidage du sportif déficients visuels [Multisports: guiding a blind or partially sighted athlete]*, French Handisport Federation (FFH), 2020 [in French]

[7] The French Handisport Federation (FFH) offers *training sessions* to train coaches and guides for blind or partially sighted athletes

The specific role of the ‘resource(s) person for sensory disorders’

The definition of a resource(s) person comes from Canada. This is an expert chosen for their speciality or specialities. They will be called on for their skills, training, and experience to solve a problem or to help us find solutions to a particular situation, assignment, or difficulty. They will raise awareness of the principles of inclusion among all members of the community. They will play a factual role in daily actions, in developing the inclusion of people with disabilities. They will be able to provide specific expertise in the field of inclusive practices and in the analysis of the special educational needs of beneficiaries and the responses to be developed.

The resource(s) person would therefore be mobilized within a formal or non-formal education institution, to share their skills and knowledge, to advise and listen in order to improve the quality of inclusive education. Their support must enable each person to question themselves in the face of a situation, by mobilizing and questioning their own resources. Thus, being a resource(s) person means providing tools for action, support to help analyse situations and specific needs observed in the field.

Any formal or non-formal education professional can become a resource(s) person(s), acquiring knowledge and attitudes that they can apply and share with their colleagues to ensure quality inclusive education. This new role is therefore not limited to the function of a specialist teacher.

A “resource(s) person for sensory disorders”, as defined by the Open Up partners, specifically supports young people with sensory disorders, both in a formal education context and in a non-formal environment. This is a hybrid profile that can be accessed by either a teacher or a youth worker who wants to contribute to improving access to education for children and young people with sensory disorders.

Working as “resource(s) person for sensory disorders” in a variety of situations involves:

- Understanding the concept and guiding principles of inclusive education.
- Responding in their professional context to requests for advice on the development of appropriate responses to the special educational needs of beneficiaries (e.g., adapted learning methods, technologies, and other compensatory tools).
- Understanding legislative and regulatory framework of disability to adapt its services.
- Knowing and cooperating with various stakeholders in inclusion in education (all formal and non-formal education professionals).
- Mastering the knowledge of pedagogical and educational methods and compensatory tools that favour the participation of young people with sensory disorders (e.g., through digital means, games, arts, and other cultural activities, etc.).
- Creating and facilitating actions to raise awareness with all stakeholders (including other professionals working in different educational structures, families, and civil society).
- Paying attention to the emergence of difficulties in some children (identification of special educational needs).

Working with other specialist professionals

The professional profile of the resource(s) person is part of an "inter-professional space of linking the school to its environment". French education researcher Serge Thomazet[8] advocates a collective approach to working on inclusive education.

The sensory disorder resource(s) person leads a partnership and works in a network. They are part of a logic of co-construction, cooperation, collaboration, coordination, co-design, and co-teaching. They promote a principle of horizontality between all stakeholders in inclusive education. They facilitate the construction of a common culture of educational and social inclusion for young people with sensory disorders and their families. This collaboration is built up in stages and the resource(s) person is an essential link in the chain as they act as a link between teachers, youth workers, health professionals, the parents, and the young person.

[8] Serge Thomazet and Corinne Mérini, *Le travail collectif, outils d'une école inclusive? [Collective work: tools for an inclusive school?]*, 2014

Mission Statement: “resource(s) person for sensory disorders”

“Resource(s) person for sensory disorders”

Purpose

As a facilitator of a local inclusive education network, the sensory disorder resource(s) person shares their skills and knowledge, advises, and listens in order to improve access to education for young people with sensory disorders. They provide tools for action, support to help analyse situations and special educational needs observed in the field.
This is an assignment open to any professional attached to a formal or non-formal education institution. This assignment corresponds to a short training programme developed, tested, and validated within the framework of the Erasmus+ Open Up project (see the resource(s) person training programme).

Hierarchical position

- Under the authority of the headteacher of the institution
- The assignment does not confer any particular status, authority, or hierarchical link

Functional position

They work in collaboration with various stakeholders in inclusive education. They act as a link between teachers (formal education), youth workers (non-formal education), health professionals, parents, and young people with sensory disorders (the final beneficiaries).

Communication

- Management of the institution
- All professionals and volunteers involved in inclusive education
- The final beneficiaries and their families

Activities

In close cooperation with the headteacher and the different stakeholders in inclusive education mentioned above:

- **Identification and assessment of special educational needs:**
  - Identify signs and possible learning disabilities associated with visual and hearing impairments and refer, if necessary, to the appropriate health professionals.
  - Analyse particular situations and develop projects that meet the special educational needs of each beneficiary.
- **Communication:**
  - Strengthen communication between young people with sensory disorders and other children, teachers, education professionals and society.
  - Select and use support systems, techniques, and tools appropriate to their needs and characteristics.
- **Support structures:**
  - Advise and collaborate with other education professionals in the development of individualised adjustment and intervention programmes.
  - Plan, implement and evaluate educational interventions and adjustment programmes.
  - Monitor the learning process of the final beneficiaries, in coordination with other education professionals.

- **Educational and social interventions:**
  - Implement intervention programmes using educational methods adapted to young people with sensory disorders.
  - Develop, select, and adapt learning materials and resources, including technology-enhanced learning.
- **Commitment to and awareness of inclusive education:**
  - Raise awareness among individuals, groups, and institutions about inclusive education, for young people with sensory disorders.
  - Support the creation and development of a local community for inclusive education.
  - Advise and guide young people with sensory disorders and their families.
  - Plan social and socio-educational activities that promote inclusion.

Skills and knowledge	• Sensory disabilities and compensation techniques • Pedagogy • Ability to be proactive • Listening skills, written and oral communication skills • Discipline and organisation • Ability to adapt • Ability to develop and unite around a project • Intellectual curiosity

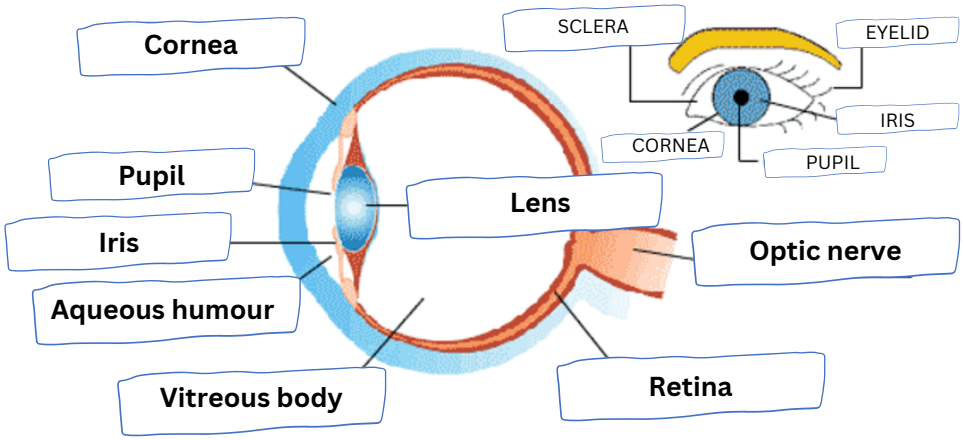
SECTION 1

VISUAL IMPAIRMENTS: HOW TO SUPPORT A BLIND OR PARTIALLY SIGHTED YOUNG PERSON?

THEORY

a) Introduction to visual impairments

Illustration 1: Cross-section of the eye



The eye and sight

The eye is the organ of sight. It is composed of several elements:

- The cornea: a transparent membrane that directs light rays towards the centre of the eye.
- The aqueous humour: a transparent liquid that nourishes and regulates ocular pressure.
- The iris: a pigmented membrane, with a centre (pupil) that gives the eye its colour.
- The pupil: the black part of the eye in the centre of the iris, it is an orifice that regulates the entry of light.
- The lens: a structure that focuses light rays on the retina. It is responsible for focusing to obtain a sharp image.
- The vitreous body: a transparent gel that gives the eye its shape and consistency. It ensures the rigidity of the eyeball and holds the retina against the eye wall.
- The retina: a multi-layered membrane containing nerve fibres and photoreceptors (cones and rods).

The different organs of the eye are at the origin of a set of mechanisms that perceive light rays in our environment. Thus, when light enters the eye through the pupil and reaches the retina, it is captured by the photoreceptors, which then transmit a signal to the brain in the form of an impulse via the optic nerve. The image is then interpreted.

The eye therefore provides complex information about the environment in which we live.

The analysis of the visual organ by an ophthalmologist is based on the following characteristics, among others:

- Distance vision, measured in 10ths (/10) from the Monoyer scale.
- Near vision measured from P2 to P40 (according to the Parinaud or Cadet scale).
- Colour vision (which is the role of the cones).
- Night vision (which is the role of the rods).
- Depth perception (which results from the brain's comparison of right eye, left eye information).
- The visual field which is the peripheral visual space seen by the eye (60° above, 70° below and 90° laterally).

Visual impairments and their consequences

Visual defects or ametropias are visual impairments resulting from a geometric imperfection in the anatomy of the eye, either from birth or due to ageing. They lead to difficulties in seeing at a distance or close up. These defects can be corrected by wearing suitable glasses.

There are four of them:

- Myopia: the eye is too long or too convergent. The image is formed in front of the retina, which makes it blurred. Myopia leads to blurred distance vision.
- Hyperopia: the eye is too short or not convergent enough. The image is formed behind the retina. The constant effort of focusing leads to visual fatigue. Vision becomes poor both near and far.
- Astigmatism: the curvature of the cornea is slightly oval, resulting in the formation of images at two different points. The image is distorted from near and far.
- Presbyopia: often related to the natural ageing of the lens. It loses its flexibility. The power of accommodation decreases. It results in blurred near vision and a need to move backwards from nearby texts.

Eye diseases should be separated from visual defects. Eye diseases can impair one or more of the eye's functions and cannot be corrected by optical equipment. They are a source of danger and anxiety. These diseases lead to sight loss:

- **Reduced distance vision** is the inability to distinguish details at a distance greater than 50 cm. It causes significant inconvenience when travelling.
- **Reduced near vision** is the inability to distinguish details within 20 cm. It causes significant discomfort in all acts of daily life and leisure (reading, writing, finding keys, cooking, identifying food, reading expiry dates, etc.).
- **Colour-blindness** is the partial or total inability to distinguish colours (achromatopsia) or to differentiate between shades (dyschromatopsia). It is often associated with severe loss of visual acuity that can be caused by absence of functioning cone photoreceptors in the retina. It leads to significant difficulty in everyday activities (reading map legends, dressing in matching clothes, recognising food on a plate, pouring water into a clear glass, etc.).

Illustration 2: Blurred vision

Illustration 3: Achromatopsia

- **Reduced night vision**, or night blindness, is the inability to see details in the dark or at night This leads to difficulties in moving around in a dark environment and discomfort when moving from light to dark areas. Conversely, photophobia is a difficulty in perceiving in a place that is too bright or too sunny.
- **Reduced depth perception** (related to the absence of vision in one eye) is the inability to perceive in three dimensions. It increases the risk of falling when travelling, particularly because of the lack of perception of the end of the stairs, the kerb or poorly contrasted obstacles.
- **Blind spots**, or scotoma, is the inability to perceive certain areas of the visual field. It leads to difficulties in moving in space, difficulties in perceiving and catching objects, disturbances in reading or precision activities.

Illustration 4:
Peripheral vision with central scotoma

Definition and measurement of blindness

Blindness is defined by the World Health Organisation according to its 2020 World Report on Vision[9] as detailed in the table below.

Table 1: World Health Organisation categories of visual impairment

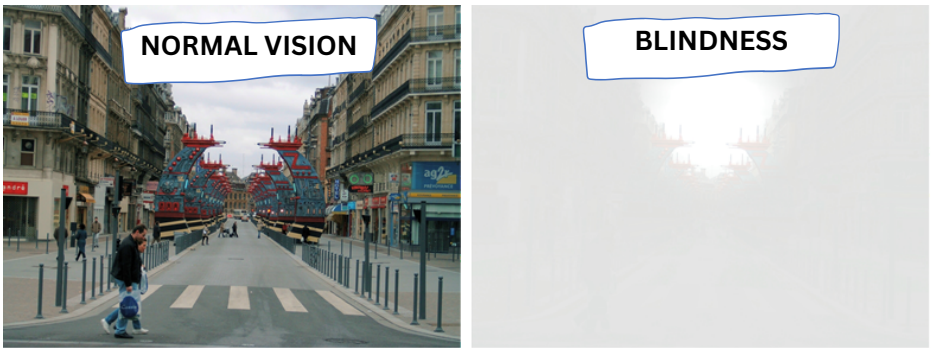
Category	Visual acuity of the better eye	
	Less than	Greater than or equal to
Mild visual impairment	**5/10**	**3/10**
Moderate visual impairment	**3/10**	**1/10**
Severe visual impairment	**1/10**	**1/20**
Blindness	**1/20**	
Impaired near vision	**N6 or 0.8 M at 40 cm**	

It should be noted that the definition of the categories of visual "impairment" differs from country to country. The debate on this classification remains open at international level, even among EU Member States. In France, for example, one is recognized as visually impaired with a visual acuity of less than 4/10 in the better eye after correction, while blindness is defined as a vision of less than 1/20 in the better eye after correction. Whereas in Spain, blindness is recognized as a visual acuity of 1/10 or less or a visual field reduced to 10 degrees or less.

A blind person is not necessarily a person who cannot see. Their vision may also not be functional enough to allow them to be independent in everyday life (daily activities, work, leisure). This does not mean total disability. Personal assistance and technological aids can support independent living.

[9] World Health Organisation (WHO), *World Report on Vision*, 2020

Illustration 5: Simulated blindness



The concept of visual efficiency

An ophthalmologist's vision assessment does not presuppose visual abilities. People with the same condition do not see the same things. The term visual efficiency is used to clarify that vision is a complex information-taking process that depends on input from the other senses and mainly on the subject's experience. Vision is the result of learning, whether one has a good or poor visual system.

b) Barriers to education and the needs of young people with these types of sight loss

Barriers to education for young people with sensory disorders can be summarised as a combination of:

- Inadequacies in terms of accessibility of mainstream institutions, whether for school or for "leisure"
- Lack of training for professionals in inclusive practices and in meeting special educational needs
- All forms of discrimination

These three categories of barriers can translate into a host of everyday inconveniences that hinder their ability to participate in activities like other young people their age.

This Accessibility Guide contains a series of practical sheets to help improve the accessibility of facilities for young people with sensory disorders. The Open Up project also offers tools in different formats (some of the sheets in this guide, but especially a face-to-face training programme and e-learning to raise awareness and train professionals). Thus, we will focus here on some forms of discrimination that may occur and be anticipated by the "resource(s) person for sensory disorders".

Blindness and partial sight are invisible disabilities that are difficult to understand, especially for people in the immediate environment. Therefore, the professional acting as "resource(s) persons" must be very vigilant in ensuring that other young people who are fortunate enough to have full visual faculties understand the situation and show respect and empathy.

For a blind or partially sighted young person, difficulties may arise inside, but especially outside the home. Everyday travel in the street, using public transport, may require the use of personal guidance aids such as a white cane, which identifies its user as a blind or partially sighted person. But people staring can sometimes be burdensome, especially during childhood and adolescence, when we are primarily concerned with fitting in and blending in. Blind and partially sighted young people tend to misplace objects or make mistakes when choosing a meal in the dining hall. They may also have difficulty adapting to certain lighting conditions, which can lead to bumps, falls or simply situations where they are unfairly perceived as clumsy and subject to ridicule.

In class, these students may be placed near the teacher, the blackboard and use bulky equipment that their classmates do not have. Often, simply wearing glasses is not enough to compensate for the needs of a student with sight loss. In ignorance, some peers may see them as privileged because of the adjustments made to help them.

There are many compensatory tools presented in this guide (e.g., computers with adjusted keyboards as shown in sheet no. 5). Young people are not necessarily lucky enough to have the latest tablet or smartphone. They may be provided with a large screen and a camera that allow them to enlarge or magnify documents or to read from a distance what the teacher has carefully prepared for them beforehand or what they have written on the board. The teacher may also provide the blind or partially sighted student with typewritten materials with enlarged type that can quickly clutter the student's desk. If they are recognized as being essential to promote access to education for young people with blindness or partial sight, these adaptations become visible signs of disability, which is often useful (e.g., the white cane already mentioned), but it can also have a stigmatizing effect, creating forms of discrimination, particularly among young people and adolescents.

For example, to take part in learning, games or sports, the young person may need assistance which, even if it is discreet and attentive, cannot generally prevent other participants from noticing and misinterpreting its presence. In other cases, the opposite effect may occur, as barriers to participation in socio-cultural activities may arise wherever the disability becomes invisible. The activity leader acting as a “resource(s) person” can then invite the young person to express what they can or cannot see and facilitate dialogue with the other participants, thus preventing a possible form of exclusion.

c) What types of sight loss are covered in this guide?

There are many different diseases (e.g., Sclerocornea, Glaucoma, Cataract, Retinitis pigmentosa, Stargardt's disease, Leber's amaurosis, Achromatopsia, Dyschromatopsia, Retinal detachment, Retinoblastoma, Albinism, Leber's hereditary optic neuropathy, Nystagmus, etc.) that lead to various difficulties which can be totally or partially compensated for by the accommodations proposed by the following practical sheets.

PRACTICAL SHEETS

a) Adapting the environment for better accommodation in the mainstream environment

- Sheet #1: How to accommodate a person with a visual impairment?
- Sheet #2: How to ensure the accessibility of your venue?
- Sheet #3: How to assist in the movement of a blind or partially sighted person?
- Sheet #4: How to design the living space?

b) Adapting communication to make pedagogical and educational content more accessible

- Sheet #5: The principles of Braille
- Sheet #6: What digital tools are available?
- Sheet #7: What are the other compensation tools?
- Sheet #8: How to make a paper document accessible?
- Sheet #9: How to make cultural activities accessible?
- Sheet #10: How to make sports activities accessible?

How to accommodate a person with a visual impairment?

Objective

Accommodating a person with a visual impairment requires adjustments and adaptations within the physical environment in which they will develop. Simple behaviours will make it easier to accommodate them.

Impact

These simple adjustments will give confidence to the blind or partially sighted person in your facility. This will develop their independence and they will feel more confident the next time they visit.

Adjustments to be made

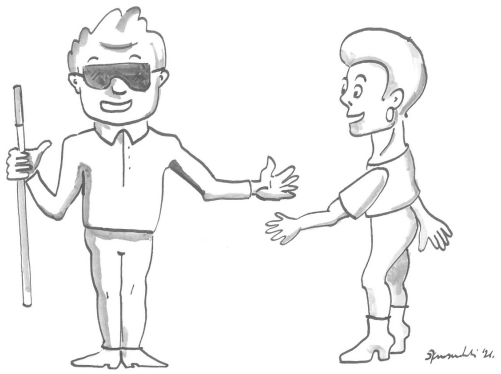
Communication and behaviour:

As visual communication is no longer possible, **feel free to speak and speak normally as usual**. There is no need to speak loudly as blind and partially sighted people usually hear very well.

Say hello and in order to be understood, **verbalize your actions**: If you reach out, let the person you are talking to know: "Shall we shake hands?" or "I'll hold your hand".

Introduce yourself and say who you are and what your job is. For a collective welcome, each person should introduce themselves to identify their voices. If possible, go around the table to announce who is present and their position in the room. When the same group gets together regularly, **keep the same configuration** as much as possible, sit in the same place.

Illustration 6:
Saying "hello", "welcome" and holding your hand out



To ensure good understanding, **promote a quiet environment** (avoid speaking all at once) and **seat the blind or partially sighted person close to the main speaker**. Noisy environments can be a source of stress and anxiety for those who cannot see well or who cannot see at all.

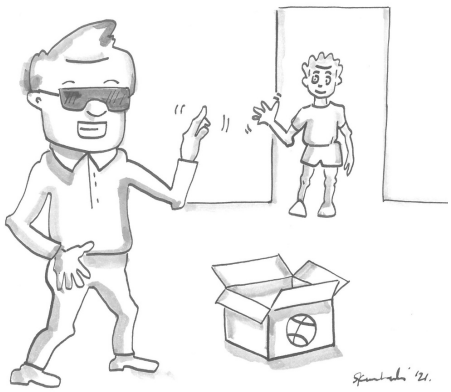
A blind or partially sighted person cannot see that you are addressing them. To **get their attention**, call their name! **Tell them** when you or someone else leaves the room so that they are not talking to themselves.
Vision loss does not mean banishing the lexical field of vision from one's vocabulary. **All words are still allowed**. You can use "see", "look" or expressions such as "you see what I mean", "see it in all its glory".

Presentation of the physical environment:

A blind or partially sighted person cannot perceive the environment visually, so take the time to **show them around** and **describe their surroundings** (Toilets, changing rooms, kitchen, restaurant, dining hall, etc.). Describe the furniture in the activity rooms. Help them **organize their work or activity space and leave things where they are** (or put them back in the same place after cleaning). Provide **easy access to electrical connections and free up space for movement**.

Illustration 7: Organizing your workspace

Illustration 8:
Clear doorways and do not leave doors ajar



Safety

A blind or partially sighted person can move around quite well without help, so **prevent falls**, bumps, or sudden encounters by **clearing passageways and doorways** and by not leaving **any doors ajar**. **Discuss the safety instructions and specify the emergency exits and evacuation and the evacuation** protocol through simulation exercises.

How to ensure the accessibility of your venue?

Objective

Accessibility means making the environment safe for people with reduced vision. It is about making daily life more respectful for everybody, whatever their difficulties, temporary or permanent.
Solutions exist for their homes, but also for the large and small facilities they visit. It is important to remain informed and to look for the most appropriate solutions for the situation.

Impact

Showing things by using visual possibilities or providing an alternative with another sense promotes people's independence and encourages them to develop their participation in the community.
Using current technological possibilities can also promote inclusion in a changing society.

Adjustments to be made

The urban environment is subject to accessibility rules for roadways, pavements, and signage.

Illustration 9: Guide strip

You can **advocate for better accessibility with local authorities** to make the needs of blind and partially sighted people known. You will need to think about the accessibility of the spaces between the street and the entrance to your building by proposing the installation of appropriate signage: visible or tactile symbols, guide strips, tactile floor strip to inform people about protected passages, or the presence of stairs.

Some simple adjustments can make your structure more accessible. Some accommodations will make the area safer.

Illustration 10: Safe staircase

Stair railings must be visible and should allow for anticipation of the first and last steps. They may include **directional signs** in Braille or with adapted signage. The steps have a **contrasting stair nosing**. The **first and last steps are contrasted** with the landing. The **landing has a tactile floor strip at the top of the stairs**.

Be aware that open staircases can cause anxiety among users.

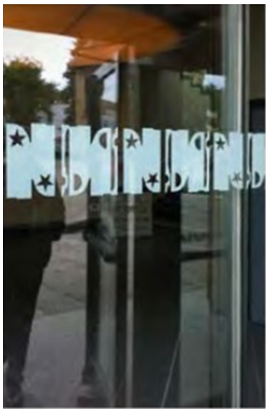
The **different areas of** the entrance hall **should be contrasted and well lit**. Lighting should be indirect with additional automated lighting to identify letterboxes, stairs, lift, etc.

Informational elements should be highlighted (e.g., intercom) with tactile and visual cues that can be perceived.

Automatic and non-automatic **doors** must be **clearly visible and contrasted** with the walls, floor, and ceiling. The **glass doors will be marked with coloured stripes** and guide floor strips to alert users.

Illustration 12: Door marking

Illustration 11: Signage on glass wall



Establishments open to the public can also be equipped with **electronic information systems** that offer a map of the premises and personalized guidance via a smartphone application, a sort of indoor GPS. For example, *EVELITY*, an accessibility solution developed by *Okeenea*, allows people to move around indoors.

Digital solutions using artificial intelligence help to ensure the safety of the person's movement. These include *SEEING AI*, an iPhone application that describes the surrounding space and helps you find your way. A long cane, either ordinary or electronic, which allows you to detect obstacles and move around in relative safety. For example, *RANGO* is an electronic add-on for a white cane that accurately detects obstacles up and down the body width, can show your position, public transport timetables and much more. The universal remote control that triggers the audible lights outdoors can be used in buildings to activate audible information and guidance signals.

Companies specializing in accessibility can offer many solutions. **Do not hesitate to ask for information about the design possibilities that meet your needs and expectations.**

Find out more

EVELITY *www.okeenea.com/*

RANGO *www.gosense.com/rango-smart-white-cane/*

SEEING AI *www.microsoft.com/en-gb/ai/seeing-ai*

How to help a person with a visual impairment to move around?

Objective

The main consequence of blindness or partial sight is the difficulty or inability to move around safely and independently. How can we then help blind and partially sighted people to move around while ensuring their physical integrity?

Impact

When moving through an unfamiliar space for the first time, blind and partially sighted people need guidance on what route to take. Support is needed. Gradually, the reference points for movement will be established and they will be able to go from one point to another without difficulty.

Adjustments to be made

Safe autonomous orientation and mobility is a technique that can be learned with an **Orientation and Mobility (O&M) specialist** who teaches people how to use the compensatory senses (kinaesthesia, hearing, touch with the long cane). It will also convey the ways of moving in the different environments in which we move every day. Most blind or partially sighted people have attended orientation and mobility courses.

When welcoming a blind or partially sighted person, your role will be to **introduce the premises** in which you will be working. Make sure that you **precisely describe the spaces of movement**, first without a user and then with a flow of people, in order to analyse and overcome possible difficulties or to implement possible adaptations.

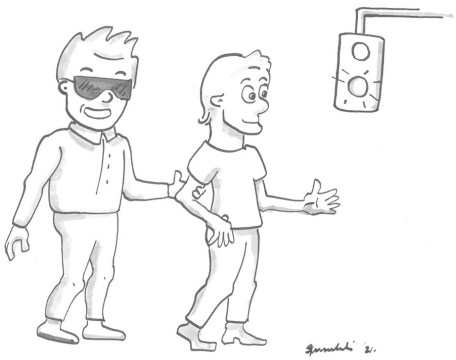
Exploring with the fingers, hands and body can help people to discover the environment and to have a more precise mental representation of it.

Blind and partially sighted people all have their own way of being guided, so talk to them about this to adapt to this.

One method is the so-called **guiding technique**: a sighted guide can offer to guide the blind or partially sighted person without coercion. Above all, blind or partially sighted persons know how to move around and know where they want to go.

As a reference, a few codified gestures will allow you to move around without difficulty:

Illustration 13: Guiding technique



- Stand in front and slightly to the side and **offer them your arm**. This will allow the blind or partially sighted person to stand behind you so that they can anticipate your body movement.
- **Stop at an obstacle and describe it**.
- **Stop in front of** the first step of **a staircase, specify whether you should go up or down** and stop after the last step.
- In a narrow passageway or crowded space, place the guiding arm behind your back; the blind or partially sighted person will know that they should move behind your body.
- **Be aware of** obstacles at height (vegetation, road signs, vehicle mirrors, construction work) and variations in the ground (holes, pavements).
- Think about the space you both occupy, be mindful for both of you.

Blind and partially sighted persons can also use a **white cane** to get around. Short or long, it can be used to warn others of the wearer's blindness. Its use is codified and regulated by law. The long version detects obstacles on the ground by scanning. It is foldable and light. The tip can rotate since it has a spring that absorbs shocks in case of obstacles, such as holes in the road, pavements.

There are various electronic versions equipped with sensors that provide information on distant or high obstacles. *TOM POUCE*, *ULTRACANE*, *RANGO* and other new models using image recognition and artificial intelligence are under development.

Finally, some people with disabilities need **guide dogs or assistance dogs**. They are indispensable to their owners. In France, for more than 30 years, guide/assistance dogs gained a special status recognized by law. In 2005 it was reinforced in the framework of the law for equal rights and opportunities. It stipulates that "guide dogs have free access without additional charge to public transport, public places, and premises that allow professional, training or educational activity". In Croatia a similar law is in force since 1998, the law on the movement of a blind person with the help of a guide dog. The law regulates the right of a blind person to access public transportation and all public places with their dog.

Find out more

Three examples of complementary electronic boxes for white canes:

ULTRACANE *www.ultracane.com/*
TOM POUCE *www.imdv.org/*
RANGO *www.gosense.com/fr/rango/*
https://narodne-novine.nn.hr/clanci/sluzbeni/1998_10_131_1591.html

How to adapt the space to accommodate a blind or partially sighted person?

Objective

The space where the person is accommodated must be designed to ensure safe movement and to promote greater independence in terms of movement, daily routines, and activities.

Impact

The aim is to enable blind and partially sighted person to move around in a pleasant, safe, and functional space, guaranteeing them maximum independence.

Adjustments to be made

The consequences of blindness and partial sight are varied. No vision or blurred vision, altered visual field, intolerance to strong light or, on the contrary, need for additional lighting, difficulties in distinguishing colours, etc. However, some simple adjustments can make daily life easier for them.

Make sure that **everything is in its usual place or notify blind and partially sighted persons of any changes**. Make sure the **space is organised and uncluttered**. Put chairs back under the table. Keep doors and windows open or closed (no doors ajar). Avoid changes in the organisation of a room's space.

Pay attention to contrasts between walls, doors, windows (white walls / dark grey door), highlight door handles (contrasting colouring).

Differentiate the floor coverings (type of floor, colours, materials) according to the function of the room (kitchen, living room, library, meeting room, activity room, etc.)

Provide indirect lighting with dimmers, additional portable lighting, special lighting for worktops, lighting with motion detectors to guide movement. **Provide blinds, shades, or curtains** to better regulate illumination.

Illustration 14:
Open space and contrasting design

Differentiate furnishings to highlight seating and storage units. **Make tools stand out** and suggest colourful utensils to be placed on contrasting surfaces.
For example, **you should rather use flat, colourful and with contrasted edge plates**.

Illustration 15: Colourful plates

Illustration 16: Plates with contrasted edge

The principles of Braille

Objective

Braille is used by blind and persons with profound vision loss who can no longer read so-called BLACK writing, i.e., writing that can be read by sighted persons, in a fluent way. Only 10-15 % of blind and partially sighted persons read Braille. It can be useful to know the basic principles and to transcribe the documents addressed to your audiences.

Impact

All Braille readers can access adapted documents in Braille.
It allows you to transcribe text, mathematics or music and gives access to all previously transcribed documents.

What you need to know

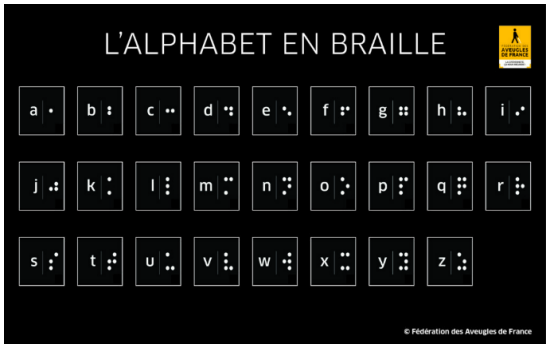
Braille is a writing and reading system used by blind and partially sighted persons, invented by Louis Braille (1809-1852) in the 1830s. It consists of six raised dots that can be read with the fingertips. The points, numbered from 1 to 6, are organised in two columns: Left column 1,2,3; right column 4,5,6.

Illustration 17: Braille cell

The Braille cell is standardized, measuring 6 to 7 mm in height and 3 to 4 mm in width. The 64 possibilities of the Braille cell allow the transcription of letters, punctuation marks and numbers.

There is a six-dot literary Braille and an eight-dot computer Braille. Points 7 and 8 provide a 256-character code corresponding to the ANSI code for reading computer characters. In practice, points 7 and 8 avoid diacritical marks.

Illustration 19: Braille alphabet



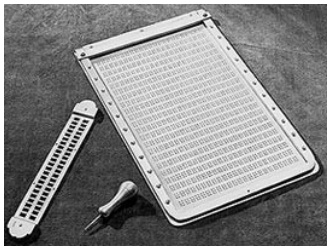
Reading and writing Braille requires learning.

Illustration 18: Reading Braille on paper

Sheet #5

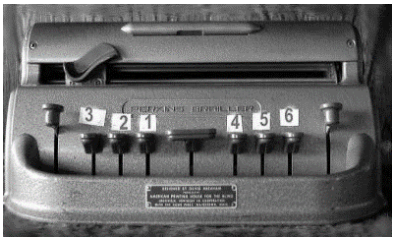
To write Braille we use:

Illustration 20: Slate, rule and stylus



The slate: a stylus is used to make holes with the guide rule using the perforated plate. Disadvantages of the slate: We write from right to left, so the letters are reversed. The sheet must then be removed from the slate to read the text.

Illustration 21: Perkins machine



The Braille typewriter, Perkins or Eurotype: the letters are embossed from below, which allows immediate reading of the typed text. Checking and correcting the text is easier. Disadvantages: the weight and noise of the machine.

Illustration 22: The Eurobraille ESYTIME Braille computer

The computer with a writing component: a Braille keyboard consists of 10 keys, numbered from 1 to 9 and with an A.

The computer with a screen reader: the refreshable Braille display or Braille terminal consists of dots that display the line being read. Braille computers have automatic transcription software, black/braille, braille/black.

Illustration 23: The Braille display, keyboard and terminal

There are also devices that consist of a Braille input device, the keyboard and a refreshable Braille reading area. This device is designed to control an ordinary computer and you can easily find them on the internet.

The Braille computer and the **Braille display** allow you to control devices like a computer or a smartphone via Bluetooth or with a USB cable.

To have **your documents transcribed into Braille**, contact a **transcription center**. There are many centers listed on the internet that will offer to prepare and transcribe various document formats (programme, leaflet, brochure, etc.).

Every county in the world has their own respective Braille alphabet which is in accordance to the alphabet the country uses, for example letters č, ć, đ, dž, lj, nj š and ž which exist in Croatian alphabet do not exist in French alphabet. By agreement, for example, the sign (16) for letter ”č” in Croatian alphabet is the same as the letter “â” in French.

Find out more

ESYTIME *www.eurobraille.fr/produit/esytime-evolution/*

Croatian Braille: *https://savez-slijepih.hr/campaign/hrvatska-brajica/*

Digital tools accessible to blind and partially sighted people

Objective

Computers, tablets, and smartphones have become everyday tools. These tactile interfaces are visual and therefore may appear inaccessible to blind or partially sighted people. However, developers are proposing solutions to make these tools more accessible.
So, it is important to be aware of what is out there to use it.

Impact

People who use these digital tools can actively participate in activities offered in the mainstream environment. These are real advances for inclusion.

What you need to know

Adaptations of digital tools are necessary insofar as schools, but also more and more extracurricular activities whether face-to-face or at a distance, use digital documents. The administration increasingly requires the use of online forms, the number of museum visits that use tablets or guides on smartphones is growing as well. Reading a book, listening to music, watching a video is becoming common with tablets or smartphones.

In order to include blind and partially sighted persons in cultural and daily life, one must be aware of the adaptive possibilities of these tools. They are accessible to blind and partially sighted persons thanks to special settings or specific applications.

For the most part, **computers** use the WINDOWS operating system. This allows for several settings available in the "ergonomics options" section of the "settings".

- Changing system fonts, size, colours, background colours.
- Changing the size of the graphical interfaces, mouse pointer (arrow) or input cursor (flashing vertical bar).
- Using a magnifier and customising settings.
- Improved contrast and display colours (white on black, black on yellow, etc.).
- Vocalisation of documents displayed by the NARRATOR or NVDA.
- Voice control with CORTANA.
- Voice dictation in some applications (email, word processing, etc.).
- Using a Braille terminal.

Apple computers use the MAC-OS operating system. Accessibility options are similar to the WINDOWS system with the addition of voice control of the device via SIRI and the VOICE OVER screen reader. They are accessed with specific keyboard shortcuts.

Tablets and smartphones work with ANDROID or IOS (Apple). They are controlled via the touch screen. Some gestures allow the screen to be enlarged.

Sheet #6

In the "accessibility" menu, the user can configure adaptations, contrast enhancement, system font size, background colours, contrast, accessibility shortcuts. It can activate TALKBACK (Android) or VOICE OVER (IOS) to get a screen reader that will describe the available applications by scanning the screen. It can also voice control certain applications: search the web, dictate text messages or emails.

The ROTOR is an accessibility application that allows you to control movements in an application with specific gestures, such as selecting text, adjusting the speech rate, changing the language, jumping from link to link. It is an effective complement to voice dictation.

There are also specific smartphones for blind and partially sighted persons that can be controlled by voice and that provide simplified access to many pre-installed utility applications: the SMARTVISION2 and the VOXIONE, for example.

However, for blind and partially sighted persons to take full advantage of the possibilities offered by these new technologies, you need to take a few precautions when creating your documents, emails or web pages. In this way, following a few simple rules will improve what is called "digital accessibility".

Illustration 24: VoxiOne

- **Choose the .doc or .docx format** produced using Word (or a similar word processor) instead of the .pdf format which is less accessible and difficult to check. Note that .pdf files obtained by scanning a paper document with a scanner provide an image that is completely inaccessible (as if it were a picture).
- **Structure documents properly**; use headings and styles, use real bulleted or numbered lists and add an automatic table of contents and table of illustrations.
- **Think about alternative text** for pictures, graphs, diagrams, which will give the reader a textual alternative to a non-textual element.
- **Give links explicit headings**. Avoid using: “Read more”, “Learn more” or “Click here”; instead, replace these with “view [document title]” or “view [document title]”.
- **Use tables only when necessary** and **check the accessibility of your document**. Software usually has features to check accessibility of documents.

Find out more

Two examples of smartphones adapted for blind and partially sighted people:
SMARTVISION2 *www.kapsys.com/fr/produits/smartvision2/*
VOXIONE *www.eurobraille.fr/produit/voxione/*

Specific accessibility needs to be addressed by document type (text, Excel, PowerPoint, ...):
https://www.avh.asso.fr/fr/favoriser-laccessibilite/accessibilite-numerique/accessibilite-des-documents-et-des-courriels

https://www.euroblind.org/publications-and-resources/making-information-accessible-all

Other compensation tools for blind and partially sighted persons

Objective

It is essential that blind and partially sighted persons and their carers are informed about the development of technology. This access to technological culture will improve accessibility (impact on well-being and adaptability to new social and professional life conditions).
Two obstacles to the appropriation of these new technologies by blind or partially sighted persons must be overcome: **information** because people need to know that these tools exist and **learning** as using these tools can be long and tedious.

Impact

Knowledge of the compensation tools is likely to favour social and professional integration, self-esteem and access to knowledge and culture throughout the lives of blind and partially sighted persons.
However, the cost of the equipment, despite financial aid, is often prohibitive. Its use is conditional on an often-complex learning process. There are also only a handful of organisations that allow people to learn how to use these technological tools, and websites are not always accessible.

What you need to know

Every day technology is evolving and impacting our daily lives. In addition to the computers, tablets and smartphones already mentioned in Sheet No. 6, here we will discuss other digital aids such as adapted GPS, bone conduction headphones and specific applications for the blind or partially sighted.

GPS (in stand-alone tools or as a smartphone application) is becoming increasingly accurate and can guide the pedestrian by providing very precise details of the environment, building numbers and even details of the interior of the premises.

Bone conduction headphones transmit sound by vibration. They can inform users of a phone call or provide GPS directions while leaving the ears free to warn of any dangers while the user is on the move. There are many different models you can easily find on the internet.

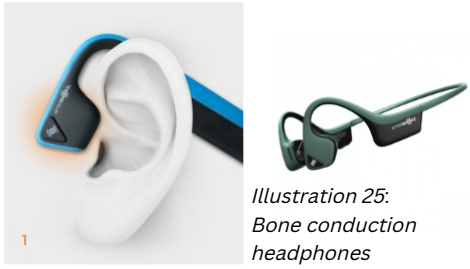


Illustration 25: Bone conduction headphones

Websites are improving their accessibility, especially administrative sites, as the law is acting in this direction. If your organisation, facility, or service has a website, make sure that it is accessible according to the regulations that are in force.

Computers for the visually impaired are becoming more and more powerful and like "regular" computers; they are equipped with screen review and text-to-speech software. The voices sound like the human voice and the playback is good.

Telephones are diversifying. Ordinary smartphones have screen capture and speech applications that allow people with blindness or partial sight to access the most advanced functions (see Sheet No. 6).

Applications are being developed with accessibility in mind. Every day, new apps are created. Some of them significantly improve the daily lives of blind and partially sighted persons:

- BE MY EYES allows users to be in direct contact with a sighted person who can describe the environment.
- PRIZMO GO photographs a text (magazine, invoice, handout, book page) for immediate reading.
- VOICE DREAM SCANNER scans a text that can then be read by VOICE DREAM READER.
- VOICE DREAM READER is a playback application that recognizes most file formats. It can also be used to store scanned pages.
- SEEING AI offers colour detection, banknote recognition, facial recognition, text recognition and reading.
- DAILY BY VIAOPTA offers the same functions.
- EASY READER reads e-books and other documents.

Illustration 26: Orcam reader

Complex tools become portable, such as the ORCAM READER, a light and handy reading machine. It can detect on demand a telephone number, an address, and can recognize speakers in a meeting. It can be held in the hand or clipped onto the temple of your glasses.

Research is progressing and in the not-too-distant future, voice-controlled self-driving cars may allow autonomous travel without a driver.

Find out more

Some examples of apps created for blind and partially sighted persons:

BE MY EYES *www.bemyeyes.com/language/english*
PRIZMO GO *https://apps.apple.com/us/app/prizmo-go-grab-text-share/id1183367390*
VOICE DREAM *www.voicedream.com/*
SEEING AI *www.microsoft.com/en-gb/ai/seeing-ai*
DAILY BY VIAOPTA *https://apps.apple.com/us/app/viaopta-daily/id908408072*
DOLPHIN EASYREADER *https://apps.apple.com/gb/app/dolphin-easyreader/id1161662515*
ORCAM READER *www.orcam.com/en/read/*

Find the European directives on website accessibility at the following link *https://digital-strategy.ec.europa.eu/en/policies/web-accessibility*

How to make a paper document accessible to blind and partially sighted persons?

Objective

As presented in Sheet No. 6, there are many digital tools that can facilitate the accessibility of documents. However, not everyone has access to a digital interface.
Paper documents (handouts, leaflets, instructions, etc.) can always be adapted for blind and partially sighted persons.

Impact

Providing an adapted document promotes the inclusion and independence of a blind or partially sighted person in a group.

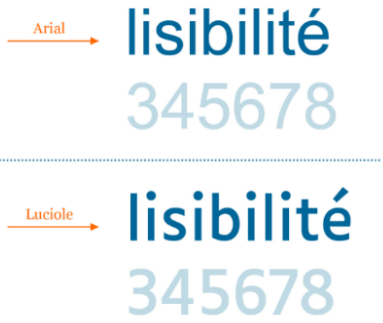
Adjustments to be made

Some blind or partially sighted persons can see well enough to read a paper document, provided that certain accommodations are made. These can be **optical; hand-held magnifiers, table-top magnifiers with additional lighting, video magnifiers with or without voice activation, various brightness's**, but they also depend on the document offered. **The person should be asked about their preferences**, in terms of font size, line spacing, background colour and shape, etc., if they can express them.

In general:

Offer a **larger, sans serif version** with size 18 or 20 fonts. A serif is a line added to each end of the characters, as in the Times New Roman font. Non-serif fonts, such as Arial or Verdana, do not have this feature. There are also fonts that make reading easier; Open Dyslexic for dyslexics or Luciole, a font adapted for persons with visual impairments.

Illustration 27: Example of the Luciole font



Make sure that long documents have a **good contrast** (black on white paper), avoid recycled or coloured paper, and **align the text on the left**, as this makes it easier to return to the line.

Create **margins** of at least **2 cm**, and **line spacing greater than 1**. **Mark paragraphs** with a space before and after. **Differentiate headings and sub-headings** by using a different size and font to make them easier to find in the document.

For long documents, **provide a table of contents and a table of illustrations** to make them easier to find in the document.

Present maps and diagrams in **easily identifiable colours**. Avoid gradations and tones, as the different shades cannot usually be perceived.

The key will always be to **ask the person what is most comfortable for them**.

Finally, in a socialization situation, it is important to **explain to all the participants** why you are offering this type of document. Alternatively, each participant can be offered the alternative of a regular document or an enlarged document, which makes it easier for other participants to read. Indeed, a large part of the population cannot see well, but does not know it!

Table 2: Text in "classic" format. Below text in adapted format

Union of Equality: Strategy for the Rights of Persons with Disabilities 2021-2030
"Persons with disabilities have the right to have good conditions in the workplace, to live independently, to equal opportunities, to participate fully in the life of their community. All have a right to a life without barriers. And it is our obligation, as a community, to ensure their full participation in society, on an equal basis with others. "

Union of Equality: Strategy for the Rights of Persons with Disabilities 2021-2030

"Persons with disabilities have the right to have good conditions in the workplace, to live independently, to equal opportunities, to participate fully in the life of their community. All have a right to a life without barriers. And it is our obligation, as a community, to ensure their full participation in society, on an equal basis with others. "

Find out more

Luciole font: www.luciole-vision.com/

How to make cultural activities accessible to blind and partially sighted persons?

Objective

Ensuring the participation of persons with blindness or partial sight is a way of ensuring equal opportunities, equal access to culture and to education.

Impact

Access to a shared culture is a source of personal development, it promotes inclusion and group cohesion through shared activities.
Finally, it allows the individual to be recognized as a member of a group, whether it be a class, a club, an association, etc.

Adjustments to be made

Access to culture means access to knowledge, to what is happening in the world both near and far.

Radio has always fulfilled this function for the blind or partially sighted persons. The development of information and communication technologies allows access to podcasts to replay programmes later. They can be accessed via streaming or saved on a device (mp3 player, smartphone, computer, etc.).

Specialized publishers offer **adapted books**, in Braille (see Sheet No. 5), large print, audio and electronic formats. The optical industry offers a wide range of solutions for reading for persons who are blind or partially sighted: hand-held magnifiers, table-top magnifiers, and magnifiers with additional lighting. The remote magnifier helps with reading by enlarging the text. Some even include multiple features including text-to-speech. For a blind person, a computer equipped with screen capture software (e.g., JAWS, NVDA, VOICEOVER, see Sheet No. 6) will read aloud everything on the screen. Finally, there is a Braille terminal for reading with fingers.

Illustration 28: Remote enlarger

Books and journals may be available in digital format. Copyright exception laws allow for the development of free libraries adapted for persons who are unable to read because of a sensory disorder.

Sheet #9

Blind and partially sighted persons can also access artwork: **graphic arts, sculptures, and paintings**, with certain accommodations. Museum websites offer access to virtual galleries. Many museums in Europe provide accessible tours, so contact them in advance. Artwork that uses relief, made with different techniques, such as thermo-engraving, thermoforming, thermo-inflating, and embossed paper, facilitate access to the artworks. With guidance and after proper training, they are a useful medium.

Illustration 30: Production of a thermo-inflated drawing

Illustration 29: Embossed edition of The Little Prince, published by Arrimages

Television, cinema, and live performances are increasingly using audio description solutions that provide an audio interface to complement images. Voice-overs describes the spaces, the settings, the characters' costumes, when the rhythm of the film allows it. In the theatre, headphones allow blind and partially sighted persons to be in contact with a describer, usually live.

Sporting events, in large football stadiums the events are audio described in the same way as a commentator describes the action of the match on the radio.

Smartphones remain the key tool for accessing culture: access to the near or distant environment (magnifying glass, camera, e.g., the BE MY EYES application and GPS, see Sheet No. 7), audio or video communication with other people, access to shows, live or recorded, access to virtual museum visits, films, magazines, books by adjusting visual preferences (changing the font, enlarging the characters), access to books in audio. "Listening to a book" is becoming a common expression. Access to information for blind and partially sighted persons has never been as good, even some obstacles still remain: the cost of the equipment, despite financial aid, is often prohibitive; its use is conditional on an often-complex learning process; there are also only a handful of organisations that allow people to learn how to use these technological tools, and websites are not always accessible.

The key to preparing a cultural outing will always be to find out about the existing adaptations in the place you are visiting.

Finally, **if you wish to set up a cultural activity in your organisation, be sure to consider the various adjustments detailed in the other sheets as well** (tabletop activities, sports activities, reading or writing workshops, theater workshops, expression workshops, creative workshops, etc.)

Find out more

Here is the link [in French] to the French-Speaking Accessible Digital Library, *www.bnfa.fr/*

Éole/AVH is a French website that gathers together audiobooks *www.eole.avh.asso.fr/*

The following link [in French] lists some French museums that offer services accessible to visitors with sensory disorders *www.louvrepourtous.fr/Visites-de-musees-pour-aveugles-et,211.html*

Croatian library for the blind: *https://www.hkzasl.hr/*

How to make sports activities accessible to blind and partially sighted persons?

Objective

Sport, or physical activity in general, has a proven influence on health and well-being. Its importance in social relationships is also paramount.
Ensuring equal access to sport is now a priority, including for blind and partially sighted persons.

Impact

Sport helps to combat sedentary lifestyles and social isolation. Its multiple benefits are obvious. Sport has an impact on person's independence and is fundamental in preserving self-esteem and self-fulfillment. It also creates social connections, particularly in sports associations.

Adjustments to be made

First of all, you should **find out about any medical contraindications for certain sporting activities** (e.g., eye fragility or associated pathologies). Sports educators need to be aware of the type of vision and motor experience that blind and partially sighted persons can have. They can help to overcome obstacles to sporting activities such as: difficulties in moving around, the need for constant accompaniment, difficulties in understanding instructions, lack of knowledge and understanding of basic movements of persons who are blind from birth.

In any case, it is important to take time before the session to **clearly explain the purpose of the proposed activity, the space in which the blind or partially sighted person will be working, and the equipment used**. The group should be informed when someone with a disability is participating.

The following accommodations allow for most games and physical activities: **voice guidance, contact or proximity guidance, use of visible clothing if the athlete's acuity allows them to identify it**.

When setting up **circuit exercises, make sure you use coloured equipment and above all describe** the sequence to be performed precisely before the activity so that the person can have a mental representation of the route.

For activities based on complex movements or postures (dance, yoga, combat sports at a distance, soft gymnastics), a **simple and clear description of the sequences of** body figures and therefore an enlightened human accompaniment is indispensable.

Taking part in an activity has motor repercussions on flexibility and ease of movement. It develops the abilities of the compensatory senses: hearing, touch, visual potential.

The needs of blind and partially sighted young persons have led educators to create specific sports for the blind: Torball, Goalball, Blind football, Showdown. It can be interesting to introduce sighted persons to these sports by having them wear blindfolds.

Torball and **goalball** were invented for the activity requirements of persons blinded in the war. These games take place on the floor, with sound balls. The aim is to score more goals than the opponent. The goal occupies the entire width of the field.

Illustration 31: Torball

Illustration 32: Blind football

1 - blind players wearing blindfolds
2 - voice guide
3 - sighted goalkeeper

Blind football is played with 5 against 5 on a small field. The goalkeeper is sighted and all the other players wear an opaque mask. They are guided by voice by a guide behind the goal.

Showdown is a sport that is played on a table similar to a foosball table. Players compete one-on-one, propelling a small, hard ball with a racket to score a goal in a 35 cm by 14 cm net located in the middle of the table.

Illustration 33: Showdown

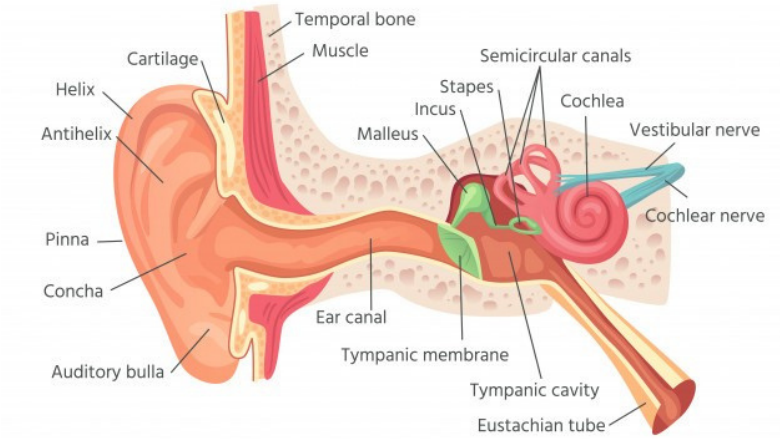
SECTION 2

HEARING IMPAIRMENTS: HOW TO SUPPORT A DEAF OR HARD OF HEARING YOUNG PERSON?

THEORY

a) Introduction to hearing impairments

Illustration 34: Anatomy of the ear



Sound waves enter the outer ear through a narrow passageway called the ear canal, which leads to the eardrum. The eardrum vibrates as a result of incoming sound waves and transmits these vibrations to the ossicles (three tiny bones called the malleus/hammer, the incus/anvil, and the stapes/ stirrup) in the middle ear. The bones of the middle ear amplify sound vibrations and send them to the cochlea (a snail-shaped structure of the inner ear covered with receptive cells called hair cells and filled with fluid). When vibrations cause the fluid inside the cochlea to ripple, they stimulate the cilia, which then convert the signal into an impulse that is transmitted to the brain via the auditory nerve. Sound is then heard.

The causes of hearing impairments:

Many factors influence the ears and can lead to or protect against hearing loss. Some of these factors are genetic, biological, environmental, or psychosocial in nature and can occur at different stages of an individual's life, before birth or during the early years of life, as well as in adulthood.

In the prenatal period, genetic factors for hearing loss may include hereditary and non-hereditary hearing loss, and may also be the consequence of intrauterine infections, such as rubella and cytomegalovirus infection. In the perinatal period, birth asphyxia (lack of oxygen at the time of birth), hyper bilirubinaemia (severe jaundice in the neonatal period), low birth weight and other perinatal morbidities and their management, may also influence hearing loss.

During an individual's childhood and adolescence, chronic ear infections (chronic suppurative otitis media), fluid build-up in the ear (chronic non-suppurative otitis media), diseases such as meningitis and other infections are some of the factors that influence hearing loss.

In adulthood and later in life, chronic diseases, smoking, otosclerosis and age-related neurosensory degeneration influence hearing loss.

Factors that most often influence hearing loss throughout life include nutritional deficiencies, viral infections and other ear conditions, earwax build-up, trauma to the ear or head, exposure to loud noises or sounds, and working with ototoxic chemicals.

Definition and measurement of deafness

There are two types of deafness, depending on the part of the ear affected and the mechanism of onset: conductive deafness and perceptive deafness.

Conductive deafness *is caused by damage to the outer and/or middle ear. It does not cause hearing loss above 60 decibels (dB), nor does it distort the sound message, as the inner ear is normal. Bone conduction is normal. The person does not experience discomfort in a noisy atmosphere. Conductive deafness can be treated with appropriate medical or surgical treatment and is by far the most common type of deafness.*

Perceptive deafness *is caused by damage to the neurosensory auditory pathways (inner ear, auditory nerve, central pathways). It results in hearing losses that can exceed 60 dB. Bone conduction is always affected in parallel with air conduction. The person experiences discomfort around noise. There are distortions in auditory perception that interfere with speech intelligibility. Perceptive deafness is only improved by hearing aids.*

Mixed hearing loss *combines conductive and perceptive deafness, with one predominating over the other.*

(Association Mieux S'entendre.
http://www.assomieuxsentendre.fr/arch_site/classification-et-etiologie-des-surdites.html)

A person is deemed to have **hearing loss** if their hearing is impaired, and they are not able to hear as well as a person with "normal" hearing. Hearing generally refers to **hearing thresholds** - that is, the level of sound below which the ear does not perceive any sound. People with a hearing threshold of more than 20 decibels (dB) may be considered "hard of hearing" or "deaf", depending on the severity of their hearing loss. The term "hard of hearing" is used to describe the condition of people with mild to severe hearing loss, as they cannot hear as well as people with normal hearing. The term "deaf" is used to describe the situation of people with severe or profound hearing loss in both ears who can only hear very loud sounds or nothing at all.

The World Health Organisation[10] defines hearing loss according to the following categories: unilateral, mild, moderate, moderately severe, severe, profound, and complete.

[10] World Health Organization (WHO), World Report on Hearing, 2021

Illustration 35: Degree of hearing loss [11]

Grades of hearing loss and related hearing experience

Grade	Hearing threshold in better hearing ear in decibels (dB)	Hearing experience in a quiet environment for most adults	Hearing experience in a noisy environment for most adults
Normal hearing	Less than 20 dB	No problem hearing sounds	No or minimal problem hearing sounds
Mild hearing loss	20 to < 35 dB	Does not have problems hearing conversational speech	May have difficulty hearing conversational speech
Moderate hearing loss	35 to < 50 dB	May have difficulty hearing conversational speech	Difficulty hearing and taking part in conversation
Moderately severe hearing loss	50 to < 65 dB	Difficulty hearing conversational speech; can hear raised voices without difficulty	Difficulty hearing most speech and taking part in conversation
Severe hearing loss	65 to < 80 dB	Does not hear most conversation speech; may have difficulty hearing and understanding raised voices	Extreme difficulty hearing speech and taking part in conversation
Profound hearing loss	80 to < 95 dB	Extreme difficulty hearing raised voices	Conversational speech cannot be heard
Complete or total hearing loss/deafness	95 dB or greater	Cannot hear speech and most environmental sounds	Cannot hear speech and most environmental sounds
Unilateral	< 20 dB in the better ear, 35 dB or greater in the worse ear	May not have problem unless sound is near the poorer hearing ear. May have difficulty in locating sounds.	May have difficulty hearing speech and taking part in conversation, and in locating sounds.

The hearing threshold of a person with unilateral hearing loss is less than 20 dB in the better ear and 35 dB or more in the worse ear. In quiet environments, a person may not have hearing problems unless the sound is close to the weaker ear. In noisy environments, a person may have difficulty locating sounds as well as difficulty hearing speech and participating in conversation.

In France, however, the classification differs slightly. Thus, the French Caisse Primaire d'Assurance Maladie defines[12]:

[11] World Health Organization (WHO), *Basic ear and hearing care resource*, 2020

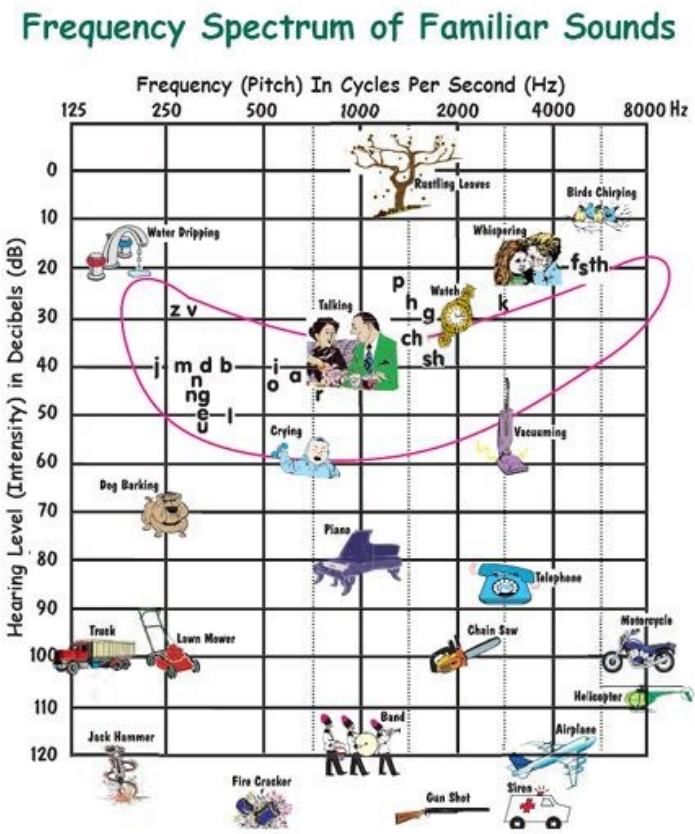
[12] Caisse Primaire d'Assurance Maladie (CPAM), *La surdité et les causes de la perte auditive [Deafness and the causes of hearing loss]*, 2021 [in French]

- **Mild deafness**: 20-39 dB hearing loss. The person has to have speech repeated at a loss of 30 dB on high-pitched sounds.
- **Moderate deafness**: 40-69 dB of hearing loss. The 40 dB level is the first major level of disability. The person only understands if the speaker raises their voice. They are "hard of hearing".
- **Severe deafness**: 70 to 89 dB of hearing loss. The daily inconvenience is major.
- **Profound deafness**: more than 90 dB of hearing loss. The person cannot hear speech at all.

The audiogram below shows common sounds in terms of their average pitch (frequency) and volume (hearing level)[13] . The softest sounds are at the top of the graph and the loudest sounds at the bottom. Low sounds are on the left of the graph and high-pitched tones on the right. The banana shape on the graph is called the "speech banana". This is the area of intensity and frequency into which all human speech sounds (also called phonemes) of all the world's languages fall.

When audiologists test a person's hearing ability, they are mainly interested in the frequencies located in the speech banana, because in children, hearing loss in these frequencies can affect their ability to learn language.

Illustration 36: Audiogram of familiar sounds



[13] Charlotte Cushman, *Informal Functional Hearing Evaluation* (IFHE), 2017

b) Barriers to education and the needs of deaf and hard of hearing young people

Young people with hearing impairments also face the three types of obstacles already mentioned for young people with sight loss: problems of accessibility of the establishments they attend, a lack of training for the professionals who welcome and support them, and forms of discrimination. Here again we will focus on the latter category of barriers that can jeopardize their education and active participation in society. The 'resource(s) person for sensory disorders' should pay particular attention to the following aspects:

- Hearing technology can be used in formal and non-formal education, as it allows young people who are deaf or hard of hearing to understand what is said to them and to participate in educational or leisure activities (the different types of hearing aids are presented in Sheet No. 13). A hearing aid is a visible sign of the disability, allowing informed professionals to quickly identify a young person with special educational needs and to put in place the necessary adjustments described in the following practical sheets. However, this visible sign of disability can also lead to forms of stigma and exclusion, often from other young people.
- Many deaf and hard of hearing people have not benefited from the language bath like everyone else. Even with a hearing aid, they may have difficulties with syntax and a poor lexical stock. They therefore have a very direct way of communicating, getting to the point without detours. Access to the second degree, to the most common figures of speech (e.g., comparison, metaphor), is difficult for them and can lead to difficulties in understanding or even misunderstandings. These situations can generate frustration and even irritability, which is often misunderstood by people who are not very aware or not at all aware of deafness.
- Finally, the pandemic has had an even more brutal impact on the education and daily life of people with disabilities, especially for the deaf and hard of hearing who generally read lips to compensate for their hearing loss. This part of the population has added to the public debate with the creation of "inclusive" transparent masks, which are not widely available and often too expensive for schools and youth facilities.

c) What types of hearing loss are covered in this guide?

This guide provides adjustments and advice to help young people with the different degrees of hearing loss described above.

PRACTICAL SHEETS

a) Adapting the environment for better accommodation in the mainstream education

- Sheet #11: How to accommodate a person with a hearing impairment?
- Sheet #12: How to create a suitable environment?
- Sheet #13: What should be considered regarding assistive listening devices?
- Sheet #14: How to encourage independence in organizing and planning?
- Sheet #15: How to manage the communication teacher – teaching assistant – pupils/students?

b) Adapting communication to make pedagogical and educational content more accessible

- Sheet #16: Aid for the deaf and hearing impaired
- Sheet #17: Sign language and cued speech
- Sheet #18: How to make my non-verbal communication effective?
- Sheet #19: How to make my verbal communication effective?
- Sheet #20: How to adapt materials to make them accessible?
- Sheet #21: How to implement online education?

How to accommodate a person with hearing impairment?

Objective

In order to adapt the accommodation for a person with a hearing impairment (deaf and hard of hearing), you need to start by adapting your communication. You will need to familiarize yourself with some of the communication systems used by deaf and hard of hearing persons and ensure that you adapt your behavior.

Impact

If you follow these simple rules, people with a hearing impairment will feel welcome, comfortable and at ease.

Adjustments to be made

Persons who are deaf and hard of hearing are visual persons. Some of them can communicate with oral language, others hear with their eyes and therefore use different modes of communication from hearing persons:

- **Sign language, a system of communication** using hand, facial and body gestures that has distinct characteristics from spoken language (a sign can correspond to a word). Words can also be spelled with signs corresponding to each letter. This is called finger spelling..
- **Lip-reading** is a technique for understanding speech by visually interpreting lip and tongue movements, using facial expressions and body language.
- **Cued speech, adapted to the national language** (French Cued Speech is known as the Langue française Parlée Complétée (LPC) in English Supplemented Spoken French, is a set of manual signs that help in learning and understanding oral and written expression.
- **Simultaneous sign-speech communication** – used in Croatia, colloquially called signed Croatian language (in Croatian origin “znakovani hrvatski”). It is not the language but a *form of communication in which the syntactic structures of the spoken language are simultaneously accompanied by the lexical units of the sign language and, if necessary, the signs of the manual alphabet. Simultaneous sign-speech communication is a visualized spoken language accompanied by signs borrowed from the original sign language and signs of the manual alphabet.*[14]

Not all deaf and hard of hearing persons are the same, so adapt your communication to their specific needs.

[14] Law on Croatian sign language and other systems of communication for deaf and deafblind persons in the Republic of Croatia, Article 7 (Zakon o hrvatskom znakovnom jeziku i ostalim sustavima komunikacije gluhih i gluhoslijepih osoba u Republici Hrvatskoj, NN 82/15, čl. 7), https://narodne-novine.nn.hr/clanci/sluzbeni/2015_07_82_1570.html

Sheet #11

In general, you will need to ensure that the room is **well-lit** and that the following conditions are met:

- The speaker's face should **face the light**.
- **Do not be too far from or too close to the person**, generally a distance of 1.5 m should be respected for optimal communication.
- **Do not turn your back to the person to whom you are talking**, make sure the person is looking at you and do not walk while talking.
- **Avoid distractions**, objects, or people, that could divert attention.
- **Do not put your hand in front of your mouth** and do not chew gum.
- **Use short sentences** and simple words.
- **Rephrase** instead of repeating a sentence that is not understood.
- When you speak, do not speak **too slowly or too quickly**. Speak clearly, **do not shout**.
- **Accompany your words with simple gestures** and facial expressions.
- Do not hesitate to **write** what you want to say.

Illustration 37: Facing the light

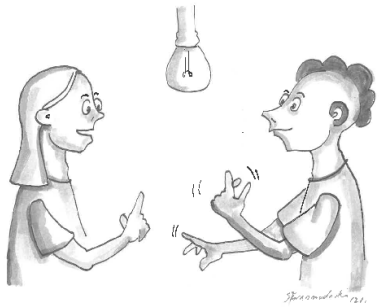
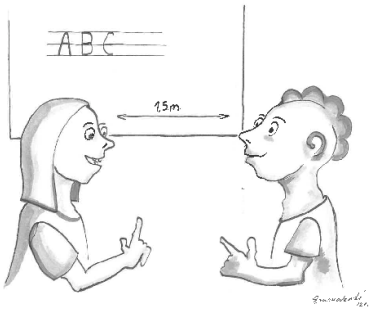


Illustration 38: Keeping a good distance



How to create a suitable environment for persons with hearing impairment?

Objective

In order to create an enabling environment for the development of persons with a hearing impairment, attention must be paid to the visual and auditory environment surrounding them.

Impact

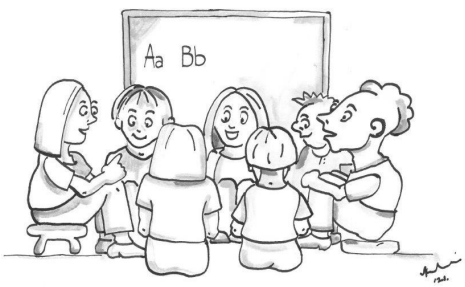
If you apply these simple rules, you can create an inclusive environment for persons with deafness or hearing loss.

Adjustments to be made

Any background noise that interferes with the speaker can affect the clarity of the speech heard, as well as the speaker's attention.

The living or reception area should be arranged in such a way that the deaf and hard of hearing person can **see the person to whom they are talking** as well as other people in the room. They must be able to communicate with others simply by making eye contact or seeing the faces of others.

Illustration 39: Placement in a circle



To facilitate the lip-reading used by people with a hearing impairment, the speaker should sit on a lower chair so that their **face is at the same level** as the speaker's. **Light should be optimal** in the living space, so avoid standing in front of a window.

For people with hearing aids or cochlear implants (see Sheet No. 16), you should ideally **reduce background noise** and **improve the acoustics** of the living space. Photos, drawings, tables are used to display important information to support communication.

For people with hearing aids or using assistive technology, it is important that the living space is equipped with an **induction loop and/or FM system**. These systems reduce background noise and provide clear, noise-free sound (details in Sheet No. 13).

What should be considered regarding assistive listening devices?

Objective

In noisy environments such as classrooms, shared areas, etc. background noise can distort the information that is received.

Impact

Better communication and understanding for Deaf and Hard of Hearing in accessible environments.

Adjustments to be made

Installing FM, Infrared, or the Audio Frequency Induction Loop (short Induction loop) systems in the areas where Deaf and/or Hard of Hearing are.

Illustration 40: Hearing Loop Telecoil Symbol

The FM systems have a transmitter that connects to the existing sound system. The program is broadcasted throughout the listening area and hearing device users use a personal receiver and earphone or telecoil coupler to pick up the broadcast. This allows them to hear the program directly from the sound system and bypasses background noise and distance from the sound source.

Infrared systems transmit sounds by invisible light beams. To be effective the receiver must be within direct line of sight of the light beam from the transmitter.

The Audio frequency loop system technology consists of *"a loop wire that is placed around a listening area. The primary speaker uses a special amplifier and microphone, and speech signals are amplified and circulated through the loop wire. Persons wearing telecoil-equipped hearing aids can pick up the resulting energy field and have it amplified by the telecoil."* (Vivason, boucle magnétique pour malentendants)

Those who do not have telecoil-equipped hearing aids can use special receivers with earphones to pick up the magnetic signal.

Using technology that is compatible with hearing aids

It is good to know that not all technological devices are compatible with all hearing aids. For example, not all hearing aids can be used as compatible with induction loop system. Some of them (older and cheaper versions of hearing aids) do not have the button “T” which compliances with induction loop system and puts background noise away from your hearing environment. Even though in most countries there are health insurance systems that cover expenses of hearing aids, they do not cover the whole expense, just the part of it. For example, in Croatia, deaf and hard of hearing users of hearing aids get maximum of about 266 EUR no matter the cost of hearing aid which can go to 2000 EUR.

But approximate price is about 1300 – 1500 EUR per piece. To live in an inclusive society, all persons should have the access to assistive technology. But we all know that this is not the case (yet) and that is a very painful truth!

Article 24 of the United Nations Convention on the Rights of the Persons with Disabilities (UNCRPD), refers to education: "*Ensuring that the education of persons, and in particular children, who are blind, deaf or deafblind, is delivered in the most appropriate languages and modes and means of communication for the individual, and in environments which maximize academic and social development.*" This means that every deaf and hard of hearing student has the right to choose their mean of communication and/or reasonable accommodation (assistive technologies) to have equal opportunities, and to be included in educational process in the same was as a hearing student.

How to ensure reasonable accommodation in schools/other premises intended for young deaf and hard of hearing persons?

When enrolling into school or other activities in youth organisations, first question is "*Are the premises accessible?*" from the side of you as a person with disability. If you are on the other side – the side of the schools and organisations that receive persons with disability, you must be well prepared. As UNCRPD indicates "To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas." It is not the person with disability that should take care of the accessibility of the premises but the organizer and provider of services, in this case schools and youth organizations.

It is needed to be prepared and get to know the child/young person at individual level. Every deaf and hard of hearing person is different so it needs individual approach. When you get information about the child/young, at the same time, contact your local/regional government if you need the accessibility assessments in technical nature but also sign language interpreters or other communication assistants.

Find out more

There are few policies and laws in Croatian legislation that you can lean on in making your premises and services accessible:

- *Policy on primary and secondary education of students with disabilities*
- *Croatian Sign Language and Other Means of Communications for Deaf and Deafblind Persons Act*

Also, there are some European laws and regulations, but you can also find policies available in your country. All legislation in your country is connected to the UNCRPD that is the base of all acts and policies regarding persons with disability.

- *Key Principles – Supporting policy development and implementation for inclusive education: Policy Brief*

You can find more guidelines at *European Agency for Special Needs and Inclusive Education website*, especially in the part of Publications where you can find all laws and policies in the EU listed.

How to encourage independence in organizing and planning?

Objective

Every individual has specific needs. Due to the communication challenges Deaf and Hard of Hearing face teaching materials should be adapted to the needs of a specific child/teenager.

Impact

The child/teenager will get individual approach according to his/hers needs and capabilities and will easily acquire the needed knowledge and participate in all activities equally.

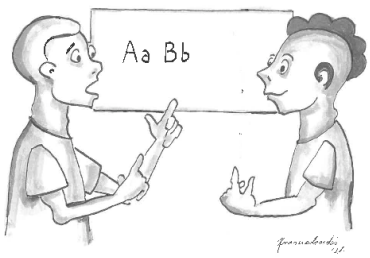
What you need to know

According to the individual needs and capabilities of the child/teenager the teacher/kindergarten teacher/youth worker should plan the learning curriculum/activities together with the rehabilitation team (speech therapists, educational rehabilitator, educationalist...).

The rehabilitation team should give the teacher/kindergarten teacher/youth worker inputs on how to adapt teaching materials and give support to the child/teenager. In planning and organizing the tasks, the teacher should include the teaching assistant and/or educational interpreter (supporting staff) as well so they have enough time to prepare themselves.

The teacher/youth worker and supporting staff should be in constant communication so that child's/teenager's progress is monitored all the time. They should give each other advice and discuss areas in which the child/teenager could have problems and try to determine the best way to resolve them.

Illustration 41: Face-to-face communication with a deaf or hard of hearing person



Also, they should discuss the potential problems that could occur during activities and how to approach them. It is advised to set and define rules before so that during activities no misunderstanding and/or problems occur. The supporting staff should receive handouts (presentation, new vocabulary...) to better prepare for the class/activities.

If the lessons and activities include new and unfamiliar words i.e., vocabulary, the child/teenager should be provided with the list of new and unfamiliar words before the lesson. It is advised to accompany the list with pictures. This can also benefit all other children/teenagers.

It is also very important to include the family, to inform them about the child's/teenager's progress and eventual issues that occur, so the family can provide their support.

How to manage the communication teacher – teacher assistant - pupils/students?

Objective

Deaf and Hard of Hearing users of sign language use the service of professionals specialized in the field or disability and/or communication professionals. Teaching assistant/educational interpreters/sign language interpreters (in short "supporting staff") are experts specialized in working with Deaf and Hard of Hearing children to facilitate the communication between Deaf and Hard of Hearing users of sign language and other persons who do not use sign language. Their role is not only to facilitate the communication but also to support the child/teenager as well as the teachers. They act as their ears. Just don't forget – they are not your personal assistants, they are "just" the bridge.

Impact

The biggest impact is the inclusion of a Deaf/Hard of hearing child/teenager in mainstream education in which the quality education is provided with which equal opportunities are formed. Giving the child/teenager equal opportunity to learn and acquire knowledge his/her self-respect and self-awareness is built as well as independence.

What you need to know

As resource(s) person, you could be in a situation where you will have to interact with the following professionals:

- professionals specialized in the field of disability
- communication professionals including sign language interpreters or professionals who subtitle spoken contents (speech-top-text proffessionals)

In both cases, you should give them **all the necessary materials in advance** so they can prepare for the class. They should also **plan meetings together** to discuss the teaching materials and teaching methods. The main task of a teaching assistant/educational interpreters/sign language interpreters is to translate/interpret the spoken information into sign language. This shall be done not only during class but in all the activities during school/kindergarten time.

In youth organizations if there are meetings and/or other events planned, when hiring sign language interpreter, you should have all presentations in advance and send them or their summaries at least one day before to the sign language interpreter(s). Sign language interpreters should prepare themselves in manner of signs for some specific terms and words.

It would be great if sign language interpreters could meet deaf person before the event/class/meeting so the deaf person can get to know the way of signing of sign language interpreter and vice versa.

One of the important tips when communicating with a deaf person who uses a sign language interpreter is **to never forget to speak to the deaf person and not to sign language interpreter**. You are communicating with the deaf person and the sign language interpreter is just a medium that transfers the information from spoken language to sign language and vice versa.

Illustration 42: Three-way exchange with a sign language interpreter

There are lot of available live and online courses of sign language today. Sign language is something cool to learn, some would say. There is a common opinion that sign language is “waving with your hands” and doing pantomime. Deaf organizations fight that opinion and advocate sign languages as real live languages as any other spoken language in the world. But involving in sign language course or catching some signs online to get some basic knowledge is also appreciated because deaf students will sense you are willing to be closer to them and understanding them. So, bring it on!

Aids for the deaf and hard of hearing

Objective

Knowing about hearing aids and how they work allows you to have the right professional gestures: the attitude to adopt (e.g., not shouting) or how to react in case of malfunction (e.g., whistling of hearing aids).

Impact

Hearing recovery after fitting and adjustment allows deaf and hard of hearing persons to perceive auditory information more clearly (noises, verbal exchanges, etc.) and to communicate better. Please note hearing loss can vary from ear to ear (e.g., mild on the right, profound on the left).

What you need to know

The Ear Nose Throat (ENT) specialist or otorhinolaryngologist will prescribe a hearing aid as required. After assessing the hearing loss, the doctor determines which type of hearing aid is most suitable. This compensates (in part) for hearing loss, which can vary in intensity (mild or severe hearing loss) and frequency (low and/or high frequencies). However, the person will not regain total hearing.

Note: certain health conditions (colds, ear infections, etc.) may temporarily reduce the hearing of the person fitted with the hearing aid.

Each type of hearing loss has its own specific hearing aid.

Illustration 43: Behind-the-ear (BTE) hearing aid

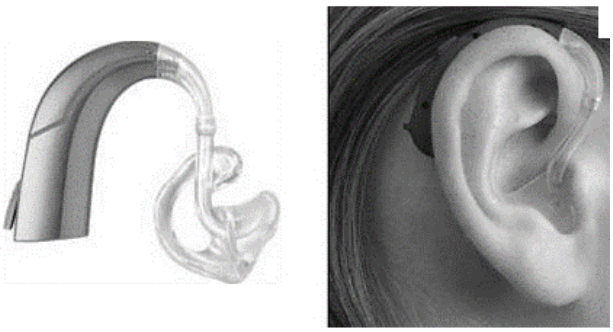


Illustration 44: In-the-ear (ITE) hearing aid

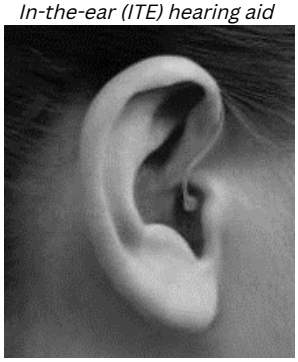
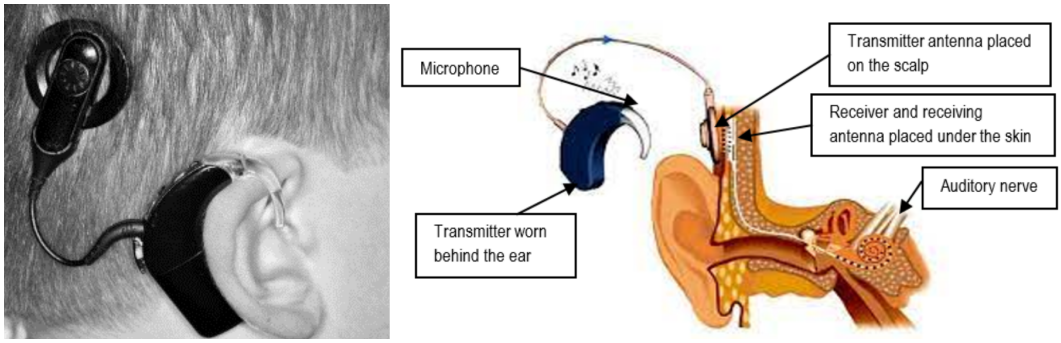


Illustration 45: The cochlear implant



This implant is prescribed by a deafness specialist according to specific needs. It requires surgery and appropriate rehabilitation. The transmitting antenna of the implant is magnetised. An electrode is connected directly to the auditory nerve. A battery indicator light on the ear contour indicates low battery power.

In case of malfunction, if the person complains of discomfort related to the device, they can remove the mobile part of their implant.

In addition, **a High Frequency (HF) system** can be prescribed by a health professional, depending on the deafness and the specific needs of the person to further improve the sound quality.

The microphone allows the deaf or hard of hearing person to focus their hearing more on the main speaker rather than on the environment shared with other (non-deaf or hard of hearing) people.

As the speaker, make sure you **do not strain your voice and speak normally**. Remember to **turn off the microphone when you leave the room** and move on to another activity. Also remember to **recharge the microphone regularly** (e.g., at night).

Sign language and cued speech

Objective

The main difficulty is in perceiving or distinguishing the sounds in spoken language. Lack of lexical stock (common or more specialized expressions) or knowledge of syntax makes communication more difficult, especially for young persons who are hard of hearing. Sign language and cued speech will help to overcome these difficulties.

Impact

Sign language and LPC are the tools that make communication easier, more effective, common, and based on the visual format. They improve the auditory reception of the message, the quality of social interaction and enable socialization.

What you need to know

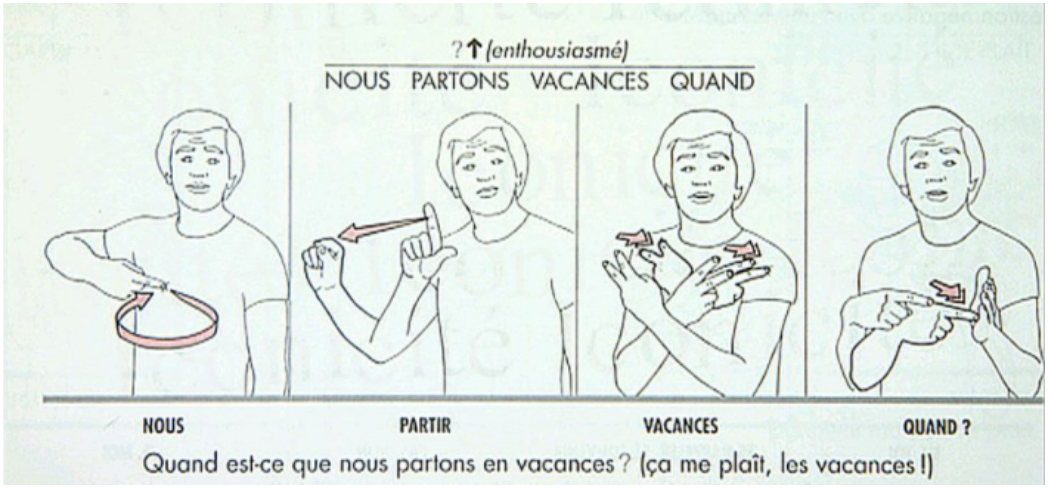
Sign language and LPC are two communication tools that require training and/or informal learning, most often within the family circle, or sometimes at school or at work. This sheet provides only a brief presentation of these two modes of communication (for more information see also Sheet No. 11).

French Cued Speech (*Langue française Parlée Complétée*, or LPC) or coded speech is a tool that can support lip reading. Gestures support the spoken language so that the speaker can identify the spoken word more easily. Each code (or gesture) of coded language is language specific. In this way, British Cued Speech and LPC are different. In both cases, the hand shapes encoding consonants and vowels can be found on different parts of the face of the speaker using the coded language.

Illustration 46: Example of LPC

Sign language differs between national languages. For example, British and French sign languages have their own syntactic structures but may have similar visual aspects. Sign language is accompanied by strong facial expressions. Each gesture represents a word or an action.

Illustration 47. Example of a sentence in French sign language



There are many tutorials on the web that allow you to quickly learn a stock of signs by lexical field.

How to make my non-verbal communication effective?

Objective

Verbal communication is not enough and must be supplemented by a good command of non-verbal communication. There are simple techniques and attitudes that can make it easier to interact and communicate with a person with hearing impairment. These can help the person to lip-read and/or learn sign language. In any case, these communication techniques and attitudes are effective if the speaker pays special attention to the persons with whom they are talking.

Impact

Non-verbal communication can improve the transmission of information, while reducing the fatigue caused by the compensatory tools used by persons with hearing impairment.

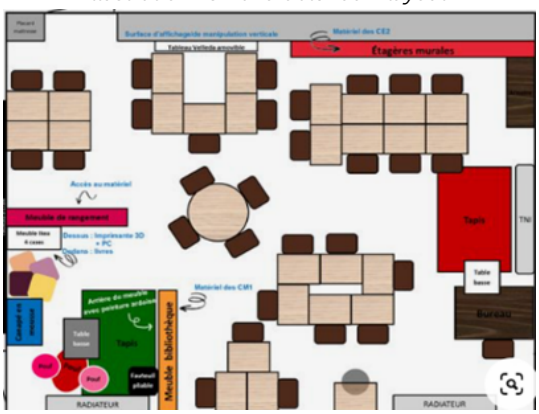
What you need to know

Visual appearance, non-verbal cues, such as body position, the position of the speaker and other speakers, the layout of the room, and "acting" (use of mime, physical gestures and facial expressions) are essential for communication and socialisation with persons with hearing loss.

Face the person you are talking to.

Arrange the room so that the tables and chairs are placed **in a circle or in a U-shape** (different configurations possible).

Illustration 48: Favorable room layout



Stay in the field of vision of the person with whom you are talking. Eye contact is essential when communicating with a person with hearing loss. Always keep your eyes level with his. Adjust your position accordingly (e.g., sit down when they are sitting and/or stand up when they are standing). Keep in mind that he should always be able to see your movements and talk to him from a reasonable distance (1.5 m).

Sheet #18

Get the other person's attention before you start talking to them: you can start the conversation with a visual or tactile signal (touching their shoulder, a simple smile, a wave, or a nod usually works). If the layout of the room allows it, you can vibrate the table where you are sitting together or flash a small light. Be aware that persons with hearing loss do not usually feel offended when they are addressed in this way.

Match your gestures to your speech: non-verbal communication is essential to be understood by a person with hearing loss. To facilitate dialogue, feel free to point out the things or people you are talking about or try to illustrate the action you are describing. For example, if you offer a glass of water, act out the action of drinking. If you are talking about numbers, show them with your fingers. Be aware that mime and acting are very important.

How to make my verbal communication effective?

Objective

To make your speech intelligible when communicating with a person with hearing impairment, it is important to follow a few simple rules.

Impact

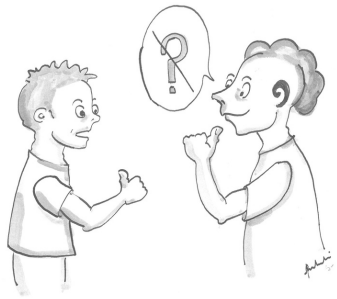
Good verbal communication will allow persons with hearing loss to be included in ordinary social interactions and will limit the fatigue generated by the consequences of deafness.

Adjustments to be made

When communicating verbally with a person with hearing loss, act as you normally would, just adapt your expression and the way you speak to ensure that they understand you:

- Do not raise your voice or change your tone. **Speak normally, clearly** and don't pressure yourself because you may not be understood. Speak softly. Shouting or exaggerating each syllable can interfere with lip reading.
- Only speak louder or slow down if you are asked to do so.
- Check that the person understands you by asking questions.

Illustration 49: Making sure the person understands you



It is important that the person you are talking to sees that you are focused on the conversation.

Introduce your speech briefly: make a summary of the subject you are going to develop so that the person to whom you are speaking understands you better. **Use simple, short sentences without ambiguity**.

Avoid changing the subject without transition. Don't be afraid to **take breaks and** ask the person if they need you to **repeat yourself.**

Point to the person of whom you are speaking so that the person with hearing loss can look in the right direction.

Illustration 50: Interruption by a ringing mobile phone

Explain the potential interruption: Your conversation may be interrupted by events that may occur but which the deaf and hard of hearing speaker is not able to notice. It may be your phone ringing, someone knocking on the door, etc. In this case, tell the person to whom you are talking about the interruption. If you don't, they may think the conversation is over or find you rude.

If you exchange written materials with someone who is hard of hearing, be aware that they may use different syntax and grammatical structures than you. You should also be aware that the deaf and hard of hearing person does not have the same lexical stock as you and may have difficulty accessing the meaning of your message. It is **important to place things in context**.

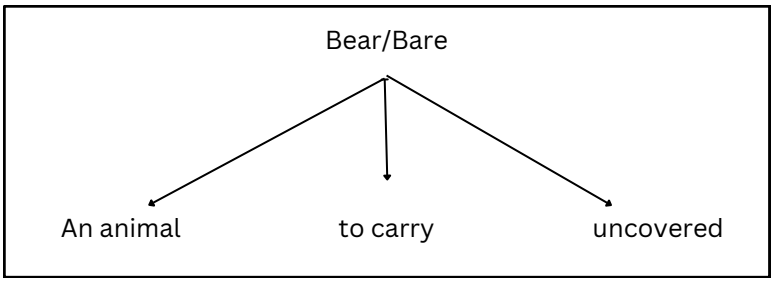


Illustration 51: For example, "bear/bare" is a homonym that can be confusing, especially for young people with hearing loss.

There are digital applications that allow you to **transcribe a live speech into written content**. You can download and use this type of application in meetings or in a classroom. There is number of apps such as Autocap (Android) or Subtitles & Stickers (IOS) Automatic video captioning.

If the person you are talking to seems too direct with you or others, don't take it personally, be patient and flexible. It is often easier for persons with hearing loss to get straight to the point without using the usual formulas or nuances of language.

Find out more

AUTOCAP *www.autocap.app*
Subtitles & Stickers

How to adapt materials to make them accessible?

Objective

Deaf and hard of hearing use vision as a primary source of receiving information. Because of the hearing loss and the severity of it, audio materials are mostly of no use to them. Written materials should be brief and uncomplicated.

Impact

The child/teenager will feel comfortable, confident, and successful in his educational setting, as well as safe and secure. Making materials accessible the child/teenager will feel accepted to the group which as a result has the build-up of child's/teenager's self-esteem and self-respect.

Adjustments to be made

It is advised to follow the Universal Design for Learning (UDL) which should provide equal opportunity in learning to all. UDL can be used in both formal and non-formal settings because barriers are removed, and child's/teenagers' strength and self-esteem are enhanced. There are 5 postulates of UDL which should be followed: lesson goals should be clear meaning that students know exactly what they are working to achieve; different assignment options should be available (there are different ways to complete an assignment); learning environment should be flexible (working in groups, working alone, lessons can be multi-sensory i.e. with music, video...); regular feedback is given which is crucial because it shows support; there is a variety of materials that can be used and those are student centred.

If following the postulates of UDL and the needs of Deaf and Hard of Hearing it is advised to use pictures, drawings, diagrams as teaching materials, with as much details as possible. Text-based descriptions of the same should be made. All the instructions should be in text form and given as handouts, PowerPoint slides and alike. Preferably all materials should be provided in advance to allow the child/teenager time to prepare. When preparing written materials try not to use to many technical terms. If such cannot be avoided, try to give an adequate explanation.

Audio materials should be transferred to video materials with both sign language interpretation and subtitles for easier understanding. Not only hard of hearing and deaf benefit from subtitles but hearing children as well.

Pre-recorded video materials must be accessible as well i.e., to be in sign language and to have subtitles.

If you are editing the audio/video materials sign language interpreter should help you record sign language interpretation of the material.

Some of the video editing programmes such as Windows Video Editor are free of charge, and some such as *Filmora* must be bought so are able to use all the features of the programme.

Find out more

Movavi Video Editor Plus *movavi.com*
Wondershare Filmora *filmora.wondershare.com*

How to implement online education?

Objective

Due to the development of technologies, but also as we face the ongoing COVID-19 pandemics, education may take place and has taken place without being in the same place, at the same time.

Impact

By following these recommendations, the child/teenager will better understand of teaching materials. His/her literacy, knowledge ... will improve as well as the self-respect and independence of the child/teenager.

Adjustments to be made

The most important requirement is to make sure that all technical requirements are satisfied (good internet connection, good camera, computer, etc.) and that child/teenager knows how to use it. It is also important to use a platform (for example MS Teams, Zoom, Google Classroom, Jitsi, BigBlueButton....) that has the best accessibility features as well as the quality of video and audio feed. Inclusive and accessible materials and hence the technologies used should have the options of the platform must offer different setting possibilities of the subtitles (such as colour, size, background, contrast ...). It is advised to use computers, notebook, tablets, and not mobile phones due to the small screen. Once connected, before the roundtable, inform all the participants that there a one or several of them who are deaf or hard of hearing. The platform used should have the option that all participants are visible on the screen so the deaf/hard of hearing could easily follow if the speaker is changed. During online education/activities try to be attentive of your speech speed and the clarity of your pronunciation. Make sure you check frequently that the child/teenager understands so he/she can participate in all activities equally. To do this, you can take advantage of the chat bar that is usually displayed at the right-hand side of the screen. Or the child/teenager can use the emojis to let the teacher know that he is facing a problem. Pre-recorded video materials that are shared during online activities must be accessible i.e., to be in sign language and to have subtitles. Again, not only Deaf and Hard of Hearing benefit form subtitles but all other as well.

Family members should also have the support so they can help their children learn/participate in digital environments (some families would need to acquire the basic computer skills, and such should be provided to them). It is important to include families in online learning so the family can help monitor that the child/teenager benefits from online learning/activities. It is also important to include the family because they can assist the child with the problems that can occur if the hearing aid the child is wearing in not working properly.

The child/teenager as well as a teaching assistant/educational sign language interpreter should receive written materials in advance. If there is no written material that can be given to the child/teenager in advance transcripts of the online education should be made available.

Both live and pre-recorded materials can be recorded, archived, and made available for later use. If recording the activity, be sure to get the informed consent of parents or the child's legal representatives..

Find out more

TEAMS meeting *Microsoft Teams*

ZOOM meeting *Basic In-Meeting Navigation*

ZOOM meeting *Pinning and Spotlighting Participants*

BigBlueButton *Open Source Virtual Classroom Software*

Google Classroom for teachers *Get started with Classroom for teachers*

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The Erasmus+ programme guide: Version 2022

The Fédération Française Handisport (FFH): www.handisport.org/

SECTION 1 – VISUAL IMPAIRMENTS: HOW TO SUPPORT A BLIND OR PARTIALLY SIGHTED YOUNG PERSON?

EVELITY *www.okeenea.com/*
SEEING AI *www.microsoft.com/fr-fr/ai/seeing-ai*
RANGO *www.gosense.com/fr/rango/*
TOM POUCE *www.imdv.org/*
ULTRACANE *www.ultracane.com/*
ESYTIME *www.eurobraille.fr/produit/esytime-evolution/*
SMARTVISION2 *www.kapsys.com/fr/produits/smartvision2/*
VOXIONE *www.eurobraille.fr/produit/voxione/*
Making documents (Word, Excel, PowerPoint,...) accessible: *https://www.avh.asso.fr/fr/favoriser-laccessibilite/accessibilite-numerique/accessibilite-des-documents-et-des-courriels*
BE MY EYES *www.bemyeyes.com/language/french*
PRIZMO GO *https://apps.apple.com/fr/app/prizmo-go-ocr-de-poche/id1183367390*
VOICE DREAM *www.voicedream.com/*
DAILY BY VIAOPTA *https://apps.apple.com/fr/app/viaopta-daily/id908408072*
DOLPHIN EASYREADER *https://apps.apple.com/fr/app/dolphin-easyreader/id1161662515*
ORCAM READER *www.orcam.com/fr/myreader2/*
Directives européennes sur l'accessibilité des sites internet *https://digital-strategy.ec.europa.eu/en/policies/web-accessibility*
LUCIOLE *www.luciole-vision.com/*
The Bibliothèque Numérique francophone Accessible *www.bnfa.fr/*
Éole/AVH *www.eole.avh.asso.fr/*
Website listing all the accessible museums in France *www.louvrepourtous.fr/Visites-de-musees-pour-aveugles-et,211.html*

SECTION 2 - HEARING IMPAIRMENTS: HOW TO SUPPORT A DEAF OR HARD OF HEARING YOUNG PERSON?

AUTOCAP *www.autocap.app*
United Nation's (UN) Convention on the Rights of Persons with Disabilities – Articles
Movavi Video Editor Plus *movavi.com*
Wondershare Filmora *filmora.wondershare.com*
TEAMS meeting *Microsoft Teams*
ZOOM meeting *Basic In-Meeting Navigation*
ZOOM meeting *Pinning and Spotlighting Participants*
BigBlueButton *Open Source Virtual Classroom Software*
Google Classroom for teacher *Get started with Classroom for teachers*

Notes

OPEN

www.openupproject.eu

La Vie Active - LVA

VerdiBlanca - VB

Innovation Training Center - ITC

Innovade

Hrvatski savez gluhih i nagluhih - HSGN

Ouvrir Les Yeux - OLY

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