

Visual impairment



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Participants

Try to remember whether you ever were in contact with visually impaired people. Share your own experiences, focusing on the aspects of communication which you found challenging. Share with the group how you felt in that situation, as well as your general impressions about contacts with visually impaired people.



Sight



Sight is a sense we use to perceive the different features of objects located in the environment (light, colours, shapes, distance, size, position, movement) and interpret their meaning.

Light rays pass through the transparent parts of the eye (cornea, lens, aqueous humour, vitreous body), as a result of which an (inverted) image of the observed objects is formed on the retina. Electrical potential is formed and transmitted to the cerebral cortex by the optic nerves (primary and secondary visual areas), thus resulting in the sense of sight.

Primary visual areas process formal aspects of sight (depth, distances, colours...), while secondary visual areas analyse the sense and meaning of what is seen.

Loss of the primary visual cortex causes blindness, while the lack of secondary visual areas causes the inability to understand what is being seen, even though it is being seen clearly.

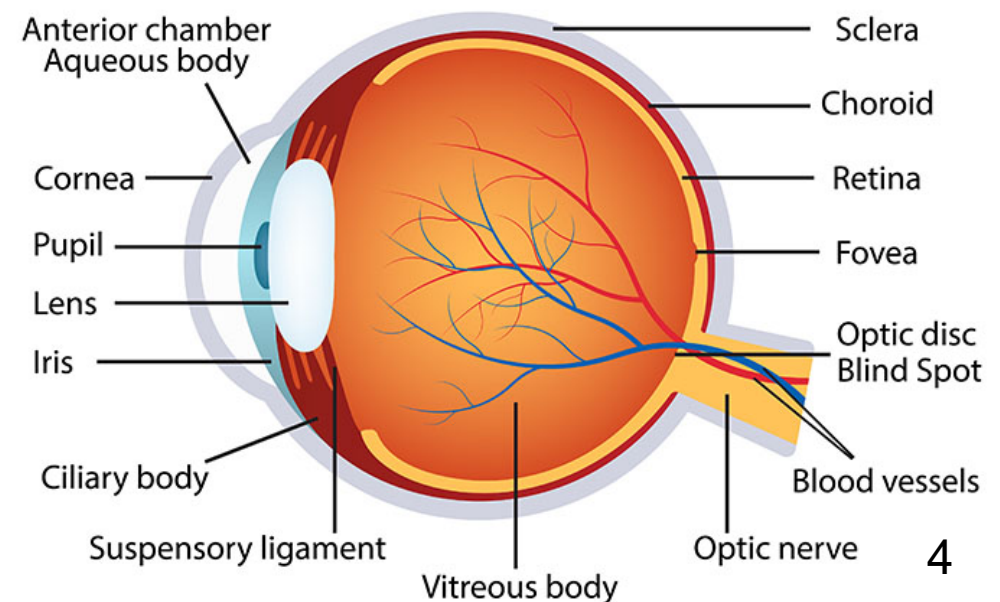
Sense of sight and its anatomy

Sense of sight and its anatomical elements:

- Eyes
- Ophthalmic nerves
- Centres for vision in the cerebral cortex

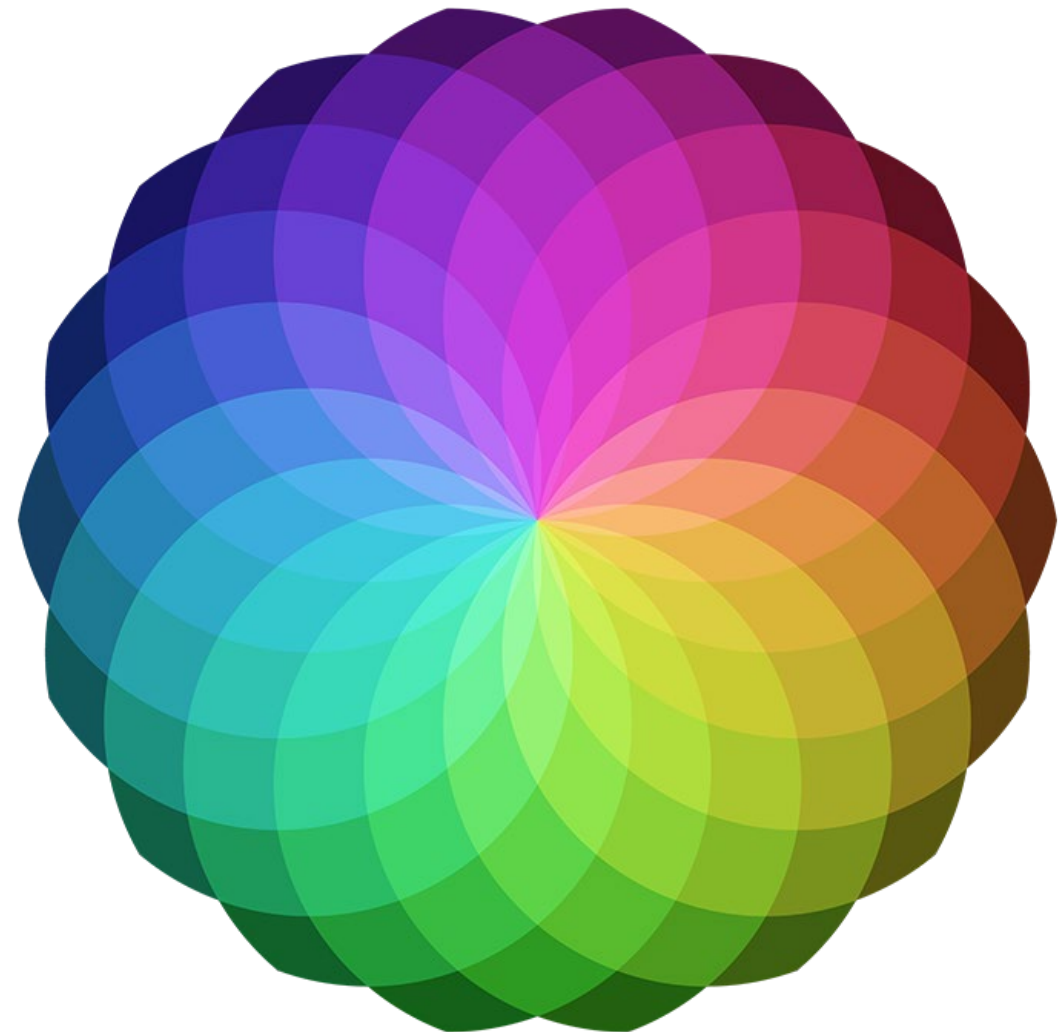
The image depicts parts of the eye.

HUMAN EYE ANATOMY



Visual stimulus

The stimulus which the sense of sight reacts to is light, i.e., visible electromagnetic radiation.



Visual impairment



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Visual impairment is any sight-related condition that makes it difficult to perform everyday activities closely related to visual perception. Visual perception is the ability to interpret things located in our environment on the basis of visual information. It is defined by the sharpness and the width of the visual field.

Visual acuity is the ability of the eye to discern fine details and to see two separate points clearly. Visual field is the area we see when looking straight ahead, without moving our head or eyes.

Classification

With regard to their intensity, visual impairments are divided into partial sightedness and blindness.

This division is just for orientation purposes, as visual impairment is extremely heterogeneous. There is also one often used category called legal blindness. Which denotes people who have some visual perception under the 5%.



Partial sightedness

Partial sightedness (or amblyopia) involves visual acuity between 10 and 40% of normal visual acuity in the better eye, with the aid of corrective lenses - glasses or contact lenses.

Likewise, partial sightedness involves visual acuity greater than 40% if the disease is progressive, as well as less than 10% if the person can successfully employ this degree of vision.

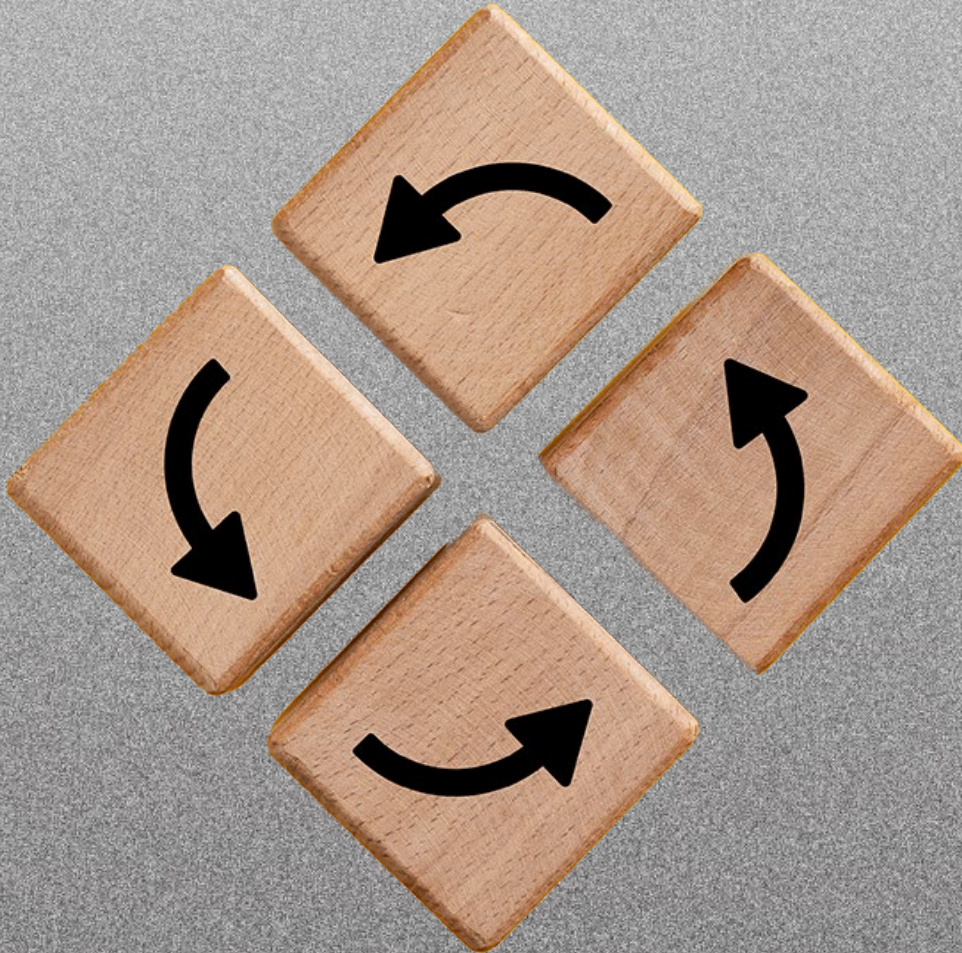
Blindness

Blindness denotes visual acuity amounting to less than 5% of normal visual acuity in the better eye, with the aid of corrective lenses—glasses or contact lenses.

Blindness also includes circumstances in which central vision amounts to less than 25% of normal visual acuity, with the narrowing of the visual field to < 20 degrees.

Some classifications include legal blindness, which refers to people with less than 5% functional residual vision.

Causes



The causes of visual impairment are classified into congenital and acquired.

Congenital impairments include various hereditary impairments and visual impairments resulting from various causes during pregnancy (optic nerve damage and cerebral visual impairments).

Acquired visual impairments refer to impairments caused during or after childbirth (visual impairments caused by eye or head trauma and eye infection).

The most common causes of impairment and vision loss: refractive errors, cataract, trachoma, glaucoma, macular degeneration, corneal haze, and diabetic retinopathy.

- **Refractive error is an optical imperfection that prevents the eye from focusing light correctly, causing blurred vision. The most common refractive errors are near-sightedness, farsightedness and astigmatism.**

- **Cataract is the leading cause of blindness worldwide. In simplest terms, it can be described as clouding of the eye lens.**
- **Glaucoma is a disease that causes optic nerve and retinal nerve fibre degeneration, and is most often associated with ocular hypertension. After the cataract, it is the most common cause of blindness worldwide.**
- **Trachoma is a bacterial infection with following symptoms: itching of the eye, purulent or mucous discharge from the eyes, irritation of the eyelashes and the eyelids.**

- **The macula, or yellow spot, is the central part of the retina which enables central vision, as well as the ability to read and distinguish fine details. Macular degeneration is a disease that results in loss of vision in the visual field centre, making reading and facial recognition difficult and impossible, although the remaining peripheral vision helps in the performance of other everyday activities. Some people with macular degeneration are considered legally blind.**

- **Corneal haze most often occurs after an injury (mechanical or chemical) or inflammation of the cornea.**
- **Diabetic retinopathy is the most common eye disease in people who have had diabetes for a long time. The risk of blindness in diabetics is 10–20 times higher than in people who do not suffer from diabetes.**

Main difficulties

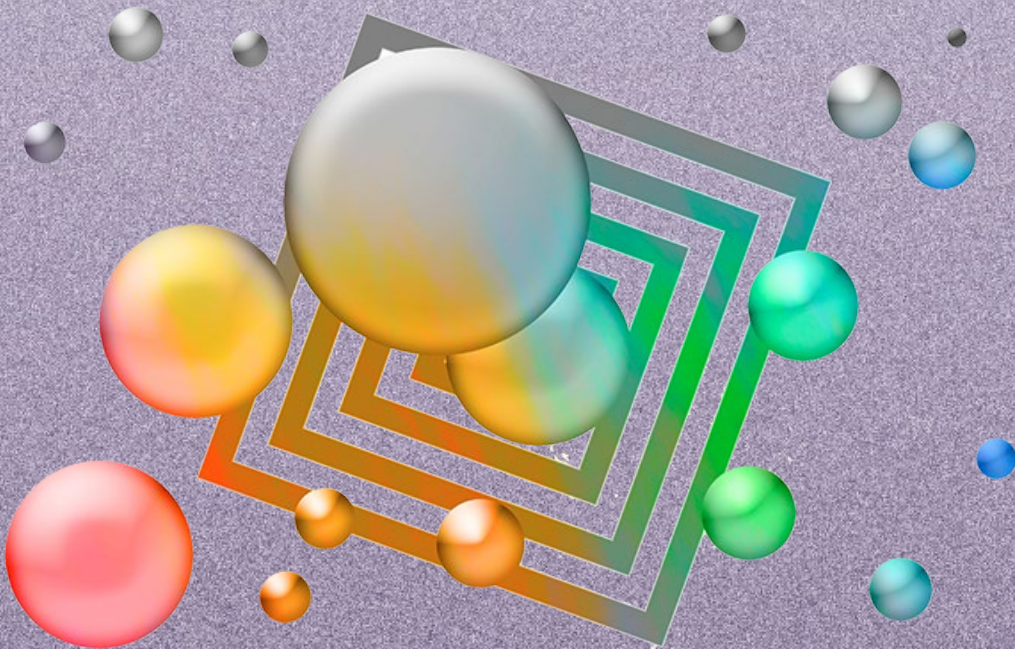


The most severe consequences of visual impairment are made manifest in independent navigation through space, especially if the environment is new and unfamiliar.

Ninety percent of the information obtained from sense organs (sight, hearing, smell, taste, skin sensations—touch, warmth, cold, pain, and kinaesthetic sensations—the position and movements of the extremities and the head in relation to the body) is obtained through sight.

Greater impairment combined with earlier onset of impairment results in greater difficulties.

Main difficulties: Cognitive development



Children who are visually impaired from birth or early childhood suffer from limitations in terms of visual observation and tracking, resulting in visual learning inability or limitations.

Lack of visual information may lead to delays in cognitive development. They can have difficulties in learning behavioural models, dealing with other people, mastering everyday skills and forming a realistic impression of the world.

A child born blind constructs concepts on the basis other sensory modalities.

Therefore, obtained information differs in structure, and the conceptions are different as well.

Partially sighted people supplement the lack of information through other sources and, usually, have a more accurate perception of reality than people suffering from blindness.

In visually impaired children, especially blind children, auditory memory is often excellently developed. It helps them in their education and they rely on it.

However, they may have a tendency towards verbalism, which denotes apparently skilful verbal expression and reproduction of content, but without any real understanding and proficiency. For blind people, tactile perception plays the most important role in their familiarization with objects in the environment; however, it takes much longer than visual perception.

Main difficulties: Emotional development



Visual impairment does not also necessarily lead to divergence in emotional and social development; however, obstacles do actually exist.

For people with visual impairments, especially children, satisfying basic living needs is a much more demanding process, and it is often inevitable that they require assistance from the people in their social environment.

As a result of this, they may experience frustration (and a number of other emotions) every day, which can lead to more profound disorders and diseases.

We would like to point out the importance of supportive attitude to be exhibited by the social environment of early childhood and practicing compensatory mechanisms.

The way in which we express emotions using our body is, for the most part, learned through model observation. Given that for people with visual impairments are having difficulties to learn in this manner, this may cause deviations in non-verbal expression of the emotional states they find themselves in.



Main difficulties: Reading



The partially sighted can read black print that is enlarged according to individual needs.

Their effectiveness depends on the degree of visual impairment and realised reading conditions. Optimum reading conditions involve the typeface, spacing and sizing of letters, quality of the paper, lighting conditions, bench tilt and more.

Official writing of blind people is braille, although not all blind people know or use braille in their everyday functioning.

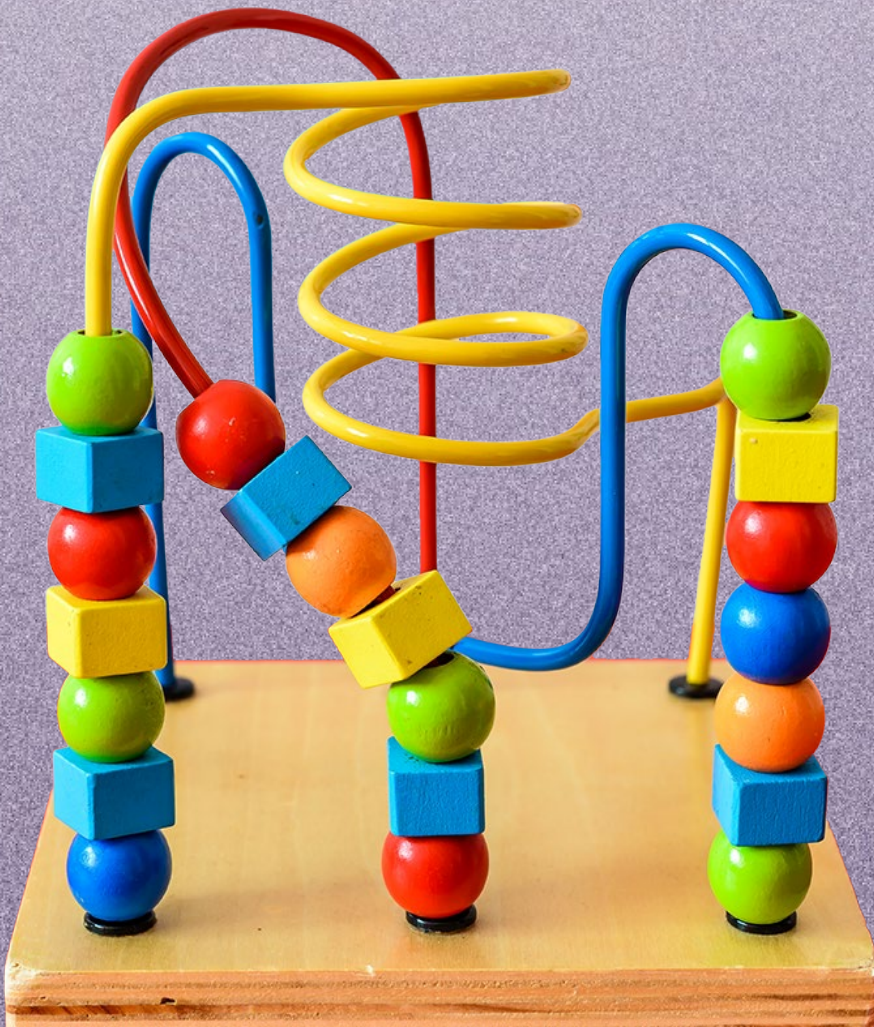
Effectiveness depends on the degree of intellectual development, finger pad sensitivity, motor dexterity, teaching methods, skill level, etc. Some studies show that reading braille takes twice as long (as compared to reading done by a sighted person).



Main difficulties: Motor skills

Motor skills development is affected not so much due to visual impairment itself, but rather more due to the inability to practice and visually imitate the movements and actions of people from the social environment.

Blind people do not coordinate their movements according to visual information. Instead, they utilize other sensory modalities for coordination, mostly auditory ones.



Given that they are not continuously exposed to all the available information from the immediate environment, it has less influence on them (the environment is not as stimulating for them as it is for sighted people). The consequences of this may manifest in delayed motor skills development.



Main difficulties:

Speech

For visually impaired children, speech is extremely meaningful. More precisely, these children learn about the world around them through speech and are dependent on verbal descriptions of objects and events.

In their research, some authors concluded that the loss of vision forces blind children to form their relationships only through speech, so they learn how to successfully use speech faster than their sighted peers.

Visually impaired people use meanings of words which have visual connotations as adequately as people who have normal vision. They use the names for colours normally, even though they have no sensory experience with colours, just as they normally use words like “see”, “look”, and the like.



Main difficulties: Communication with the social environment/ socialization



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Communication with the social environment/socialization may be difficult.

Spatial navigation ability and the ability to identify those who could be of interest to a visually impaired person is reduced. Help from others is required to obtain more information about the events in the surroundings.

The ability to refer to events in the surroundings is lower, thus reducing the ability of participating in similar conversational topics.

Reading and writing difficulties also narrow the communication channel. Particularities in non-verbal communication, emotional expression, blindisms and other deviations from usual behaviour can be off-putting to other people.

All of the above can lead to fewer opportunities to establish social contacts.



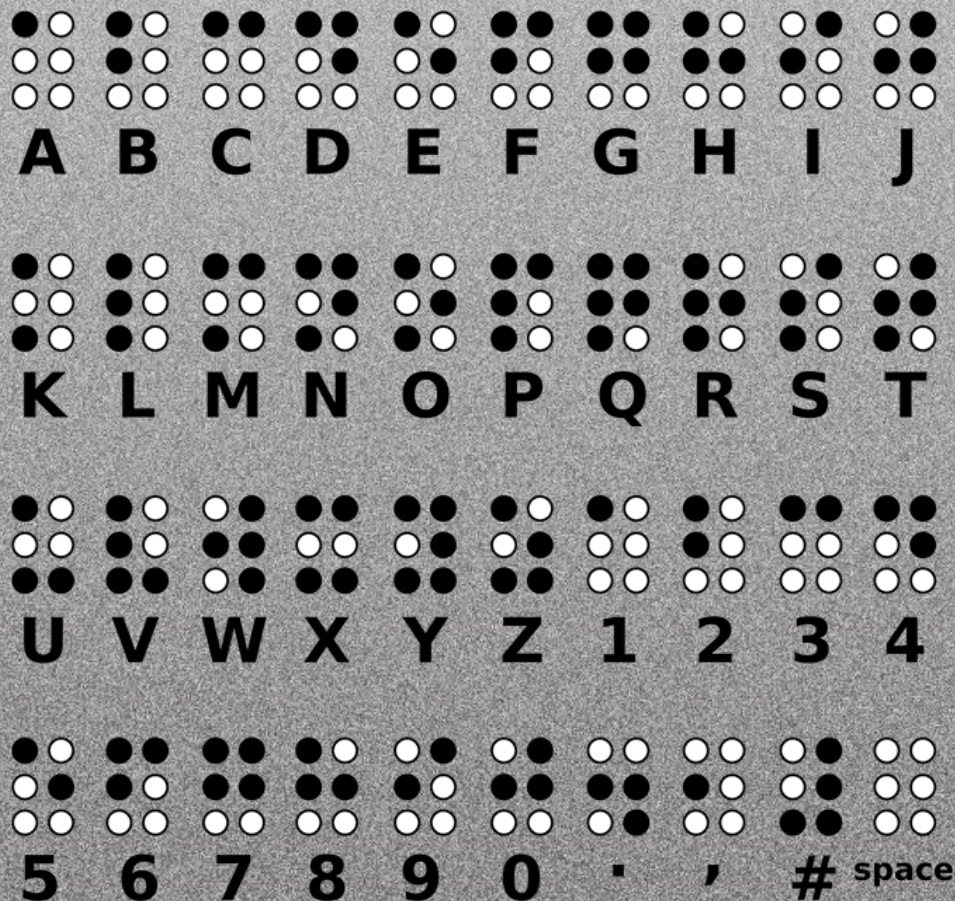
Main difficulties: Daily living skills

Daily living skills include skills such as self-care, maintaining personal hygiene, dressing and feeding, keeping the house tidy, sorting documents, recognizing and using money, leisure activities, communication, and the like.

Sighted children acquire daily living skills incidentally, while a child with visual impairment does not, i.e., effort must be invested in additional training and practice.

Braille

braille alphabet



Braille writing system is based on the sense of touch.

It was invented by Louis Braille, and he presented the final version to the public in 1825. Braille is based on a six-dot system (in two vertical rows of three each). Each character is represented using a unique combination of raised dots.

There are a total of 63 dot combinations available. Given the limited number of combinations, some characters are displayed using complex combinations that are made up from 2 systems consisting of 6 dots.

Suggestions



Suggestions for more successful communication: Educational context

- Instructions: short, precise and concrete;
- Announce the changes in spatial organization;
- Make sure that communication taking place through hearing is unhindered;
- Enable familiarization with the environment and materials through other modalities;
- Check for understanding

Accommodation



Accommodation in the context of
informal adult education:

- Organizational accommodations
- Spatial accommodations
- Technical accommodations

Organizational accommodation



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People with visual impairments will appreciate text posts in electronic media and on social networks, while image posts, even though they contain text typed within the image, will make it difficult, if not impossible, for them to be informed about your programme.

For people with visual impairments, provide the option of printing large-format written content, written material available in electronic form, and a sighted assistant who can act as an escort or help them with written expression.

Work and didactic materials should be in accessible formats: visually impaired people use them in braille or in plain text format (for adaptation, you can contact any organization which provides support to visually impaired people). With a little effort you can make them yourself. Make your programme available online as well, if possible.

Spatial accomodation



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People with visual impairments do not need any special spatial adjustments, but there are some tricks that will make their stay at your premises more comfortable for them.

When a visually impaired person comes to your premises for the first time, don't be shy and ask them information about the condition and remaining level of their vision. Based on that, offer them help in getting acquainted with your premises.

You will agree on the way of helping them and getting acquainted with the premises with the person in question, since the manner and methods are specific to each person.

Don't expect the person to create a mental map of the premises after the first time they stay in it. You can go through the process of getting acquainted with the premises over the first few meetings.

Be prepared to make small interventions at your premises to make moving around as easy as possible for participants with visual impairment.

Objects serve as guideposts for these people, so it is very important that they do not change location if they are located on a well-established route of visually impaired participants.

Should they so desire, allow participants with visual impairments to always sit in the same place at the premises, as this is an important point of reference for them when moving around your premises.

Ensure sufficient lighting at your premises. This is especially relevant for situations involving movement or during activities for which significant use of vision is required.

If you are able, you can set up guide lines that will direct the movement of a visually impaired person. Also, in agreement with your student, you can also agree on the placement of other tactile markings in the space. Talk to your student about this and agree on a way to make your space accessible.

Technical accommodation

Visually impaired people will be happy to use your magnifying glass, or your computer to install an open-source screen reader or magnification software.

They may use their smartphones to take a photo of work materials, quickly convert them from image to text, listen to the content using a screen reader, and then solve the task. They might use their phone to type notes while wearing an earpiece, but don't feel like they're not listening to you.

Teaching methods and techniques

Teaching methods and techniques
in the context of informal adult
education:

- Explanation method
- Demonstration method



Explanation method



If you have people with visual impairment among your participants, make sure to describe all visual content in detail.

Describe graphical representations and schematics. Likewise, describe funny memes, gifs and other illustrations that do not have a purely didactic role, but rather serve for entertainment.

Don't let participants with visual impairments skip over a good visually-based joke (it's very strange to be the only one who is not laughing).

Pay attention to the use of demonstrative pronouns if you are teaching a visually impaired person. “Here”, “there”, “over there”, “this”, “that”, “that one” and the like will not mean much to a visually impaired person without further explanation.

When you address anyone from your group of participants, use personal names, so there is never any confusion about who you are addressing.

This way, you will also make it easier for people with visual impairments to pair someone’s voice to their name and thus get to know their colleagues better. If you plan to use some form of teaching materials, make arrangements with the visually impaired person regarding the way they can avail themselves of the materials.

If you have not done this in advance, be ready to share all the content that you will be presenting, which you have available in electronic form, with a visually impaired person via a USB stick or e-mail on the spot.

Demonstration method

Visually impaired people have a very heightened tactile acuity. Allow them to use touch to study schematics, models or the very procedures they are studying about.

The process of tactile perception without being able to see can take slightly longer, so it would be a good idea to ensure that the visually impaired participant is given a longer period of time for tactile observation, which can take place simultaneously as you are performing demonstration to the rest of the group.



Participants

Split into 4 smaller groups. Each group will be assigned one of the following 4 situations:

- 1.Luka (newborn): blindness due to prenatal retinopathy;**
- 2.Anna (aged 4) – lower-level partial sightedness due to a refractive error;**
- 3.Eva (aged 35) – blindness due to head trauma;**
- 4.Mihael (aged 62): high-level partial sightedness due to diabetic retinopathy.**



The task of each group is to develop a unique scenario in which you will describe the life of the person whose situation you were assigned.

Pay attention to the age at which the impairment occurred, the type of impairment and how it affected the further unfolding of life events.



For example, what impact did it have on the kindergarten, elementary school, high school, and college environment, informal non-vocational education, professional development, establishing social contacts, forming relationships, etc.

Present your scenario to the whole group.



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Addendum: Workshop exercises

Sighted Assistant

Required materials: 1 blindfold,
2 people



Instructions: One person is blindfolded and has to grasp the upper arm of the other person. The other person navigates the blindfolded person through the area and gives them instructions by moving the arm the blindfolded person is holding on to.

Additional options: place obstacles in the room.

Purpose of the exercise: A visually impaired person almost always requires assistance in new surroundings, so one of the most useful skills for a sighted person to have is to know how to

properly guide a visually impaired person along a new and unfamiliar path.

When you see a person with a white cane, offer your upper arm to them even if they don't require assistance. A visually impaired person will appreciate you noticing them!



Addendum: Workshop exercises

Martian



Required materials: a

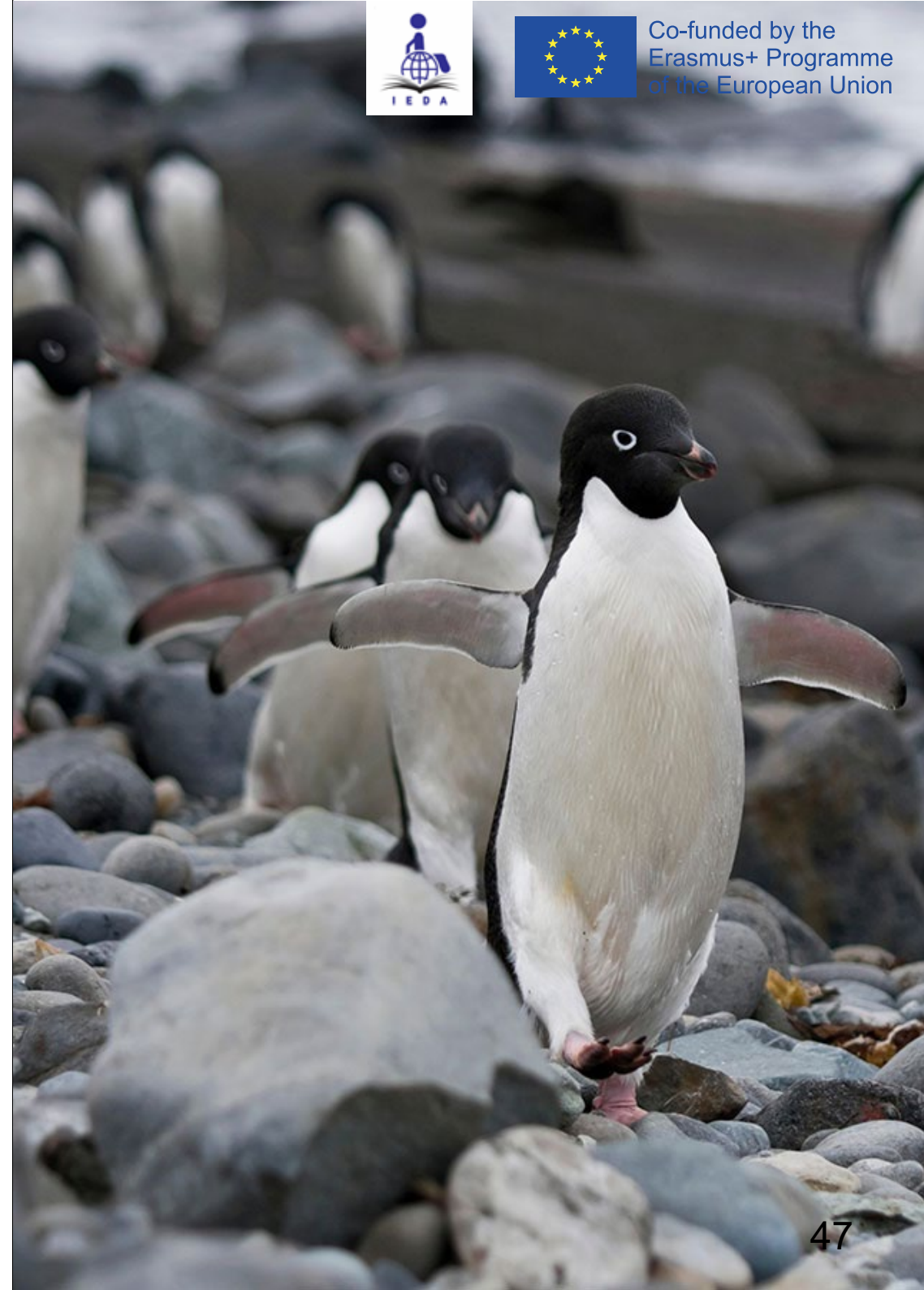
disassembled object that needs to be assembled (Kinder Surprise), a blindfold, 2 people

Instructions: One person from the pair is blindfolded. The second gives them instructions on how to assemble an object from the parts lying on the table.

Disassembled objects can be

anything: a toy, a tool, household items...

Purpose of the exercise: visually impaired people cannot learn by imitating other people's movements. Most often, in order to perform some motor activity, they rely on instructions and descriptions. Therefore, it is important to know how to give instructions clearly, precisely, without any redundant information, and by being focused on the desired goal. In these situations, you can try to imagine that you are giving instructions to a person who does not understand your language very well.



Dig In: Visual impairment



Euroblind: Publications and
resources



Ray
(2004)