

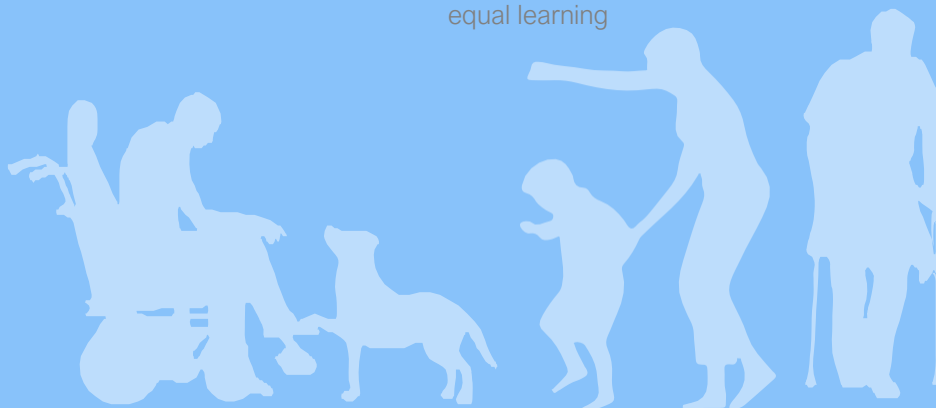
# GUIDE TO UNIVERSAL DESIGN

EQUALITY IN DIVERSITY:  
BROADENING HORIZONS



EQUALLING 2.0

equal learning



Co-funded by  
the European Union

*If you can dream it, you can do it*

*Diversity: the art of thinking independently together*

**Universal design is a good design**

Design creates culture. Culture shapes values.  
Values determine the future

**YOU HAVE A RESPONSIBILITY TO MAKE INCLUSION DAILY THOUGHT,  
SO WE CAN GET RID OF THE WORD „INCLUSION“**

**A lot of different flowers make a bouquet**

*The greater the diversity, the greater the perfection*

Diversity doesn't look like anyone, it looks like everyone

Diversity is a fact, but inclusion is a choice we make every day

*Recognize yourself in she and he, who are not like you and me*

*When everyone is included everyone wins*

Some people think design means how it looks, but it's really how it works

*Be the change you wish to see in the world*

*You have to stand outside the box to see how the box can be re-designed*

# TABLE OF CONTENTS

## 1. WHY UNIVERSAL DESIGN?

- 1.1. ABOUT UNIVERSAL DESIGN
- 1.2. UNIVERSAL DESIGN FOR LEARNING
  - 1. 2. 1. Guidelines - Principles in practice

## 2. MENTAL AND BEHAVIOURAL DISORDERS

- 2.1. WHAT ARE MENTAL DISORDERS?
  - 2.2.1. What can you notice in people with mental disorders?
- 2.3. ACCOMMODATIONS FOR PEOPLE WITH MENTAL DISORDERS
- 2. 4. UNIVERSALITY OF APPLICATION

## 3. INTELLECTUAL DIFFICULTIES

- 3.1. WHAT ARE INTELLECTUAL DIFFICULTIES?
  - 3. 1. 1. What can you notice in people with intellectual difficulties?
- 3. 2. ACCOMMODATIONS FOR PEOPLE WITH INTELLECTUAL DIFFICULTIES
- 3. 3. UNIVERSALITY OF APPLICATION

## 4. VISUAL IMPAIRMENT

- 4.1. WHAT IS VISUAL IMPAIRMENT?
- 4.2. PEOPLE WITH VISUAL IMPAIRMENT IN ADULT EDUCATION
- 4.3. UNIVERSALITY OF APPLICATION

## 5. HEARING IMPAIRMENT

- 5.1. WHAT IS HEARING IMPAIRMENT?
- 5.2. PEOPLE WITH HEARING IMPAIRMENT IN ADULT EDUCATION
- 5.3. UNIVERSALITY OF APPLICATION

## 6. MOTOR DISORDERS

- 6.1. WHAT ARE MOTOR DISORDERS?
- 6.2. PEOPLE WITH MOTOR DISORDERS IN ADULT EDUCATION
- 6.3. UNIVERSALITY OF APPLICATION



## WHY UNIVERSAL DESIGN?

Universal Design (UD) is a term that is often used in relation to those who are different from the average in some way. It is the design of a service, product and/or environment that enables use by as many people as possible, average and those who are not so average. The idea behind this type of design is the reduction of production costs and greater availability of products to all people. Namely, if a single product or service is created in a way that can serve a wide range of people at the start, then there is no need for an additional steps in order to customize it for a specific group of people. Furthermore, if that same product is intended for a massive use of all people (regardless of their specificities or even taking into account their particularities), then it's implementation in everyday life is simple, and therefore cheaper. And, most importantly, immediately accessible to specific groups of people. The key word in the background is accessibility. Make a product, service or environment available to all people. A modern view of diversity focuses on commonality without emphasizing specificity on the one hand and on independence without additional requirements or accommodations on the other hand. This is why the accessibility of products from everyday life is important in order for a person to feel equal in society and as one whose fundamental rights are respected. The term accessibility was originally coined in the context of people with disabilities (PWD). PWD's encounter many obstacles due to their functional difficulties in a world designed for the average/majority, and the accepted opinion is that the majority does not have functional difficulties. If we take into account all the life stages of an average person, we will realize that the idea of functionality of most people is actually an illusion. When we are little, we are driven in strollers and all the places that our wheels can't



go are an obstacle for us. When we get a little older, we are unsteady on our feet and would love to hold on to the handrail or use the ramps. When we get old, our hearing weakens, we lose our sight already in our forties, we are unsteady on our feet again... As we can see, a person is rarely fully functional. If we also take into account various life accidents such as fracturing arms and legs, there are truly many factors that destroy the illusion of a functional average. Our functionality is not only affected by aging and accidents. Just imagine yourself traveling in a foreign country where absolutely nothing is in a language you understand. These and similar situations are every day for PWD's, but for most people they also happen occasionally throughout their lives. This is precisely why it is important that we embrace the concept of UD and create a world in which everyone is comfortable to live.

## **ABOUT UNIVERSAL DESIGN**

The Disability Act 2005 defines Universal Design, or UD, as:

1. "The design and composition of an environment so that it may be accessed, understood and used:
  - I. To the greatest possible extent
  - II. In the most independent and natural manner possible
  - III. In the widest possible range of situations
  - IV. Without the need for adaptation, modification, assistive devices or specialised solutions, by any persons of any age or size or having any particular physical, sensory, mental health or intellectual ability or disability, and
2. Means, in relation to electronic systems, any electronics-based process of creating products, services or systems so that they may be used by any person."

UD should incorporate a two level approach:

1. User - Aware Design: pushing the boundaries of ‘mainstream’ products, services and environments to include as many people as possible.
2. Customisable Design: design to minimise the difficulties of adaptation to particular users.

UD aims at improving the original design concept by making it more inclusive. It is a frequent misconception that UD results in a ‘diluted’ product that meets the needs of many people, but only to some extent. UD does not involve a series of compromises to the original design concept. It promotes as inclusive a design as possible.

However, features that enhance access or use by some people, should not hinder or diminish the user experience for others. What is very important is that universally designed products must have a high aesthetic value. UD is not only based on functionality alone. Designer must also have in mind that the usability of a product can be influenced by its appearance. People tend to find designs easier to use if they look easy to use. Furthermore, UD is not a trend or a style. Some designers are supporters of UD, and others are not. The UD can be applied to any style or trend. Every designer who starts from potential users and thinks very broadly about the needs of their users is on the way to UD. Also, UD is not a design intended for any specific group of people, nor is it intended to replace such designs that specifically target a specific group of users (pregnant, teenagers etc.). This design targets all people as potential users, in such a way that at the start it takes into account all possible needs and requirements that users may have from the product being designed. In addition, UD is not a synonym for compliance with accessible design standards.

UD is often confused with the term “accessibility”. UD is not only useful for PWD’s, but for everyone, regardless of age, size, ability or disability. Secondly, UD is not a list of specifications; it is an approach to design that considers the varied abilities of users. Accordingly, UD benefits more people than older people and PWD’s. When we look around or inside ourselves it is evident that no person operates with full capability for every activity all the way through their lifetime. A medical injury or condition (temporary, long-term or permanent), an unfamiliarity with a product or environment, a lack of understanding (e.g. in a foreign country), a physical attribute ect.(e.g. height, size), can affect

how we function in our environment or use products.

A UD aims to provide a design that takes into account these physical, behavioral, and other factors. It appreciates that at some point, during some activity, every person experiences some form of limitation in ability. However, a person who does not experience a disability will also benefit, from the positive user experience of simple and intuitive design.

It is important to know that being a UD designer is not some kind of specialization. UD can be done by any designer. The first step is to adopt a user- or person-centered approach. This requires an awareness and appreciation of the diverse abilities of people. After that, such an approach must be maintained throughout the content creation process. UD is not an add-on design approach. It cannot be effectively or efficiently applied at the end of the design process. It should be integrated into the design process from the very beginning. What many people think when they see the name UD is that it is a compromise solution that more or less answers everyone, but that is not the case. UD is not just about 'one size fits all'.

UD encourages designers to consider the wide-ranging abilities of their users and a more universal solution can also incorporate, for example, customizable features that can be adapted from user to user.

The aim is to provide the same (or equivalent) experiences, activities and services to all, but it is accepted that these may have to be provided through slightly different routes or interfaces. Designers should strive to create a design that does not exclude or segregate.

## **UNIVERSAL DESIGN FOR LEARNING**

UD for learning consists of adaptive teaching methods (materials, techniques, strategies), which enable the effective acquisition of learning outcomes for as many learners with different educational needs as possible.

## Guidelines - Principles in practice

### 1. Principle: Enable multiple display modes

#### *Guideline 1: Provide opportunities for perception*

- Enable customization of information display, e.g. provide PPT slides in advance, provide accessible digital documents that learners can customize (color, font, size)
- Offer alternatives for key auditory and visual information, e.g. ensure videos have subtitles, make sure images are described with alternative text, etc.

#### *Guideline 2: Provide options for language, mathematical expressions, and symbols*

- Clarify vocabulary and symbols, e.g. include glossaries, definitions of symbols and keys to graphics / maps
- Explain unfamiliar syntax (in language or mathematical formulas) or basic structure (in diagrams, graphs, illustrations, longer presentations or narratives)
- Facilitate the decoding of text, mathematical notations and symbols, provide important documents in accessible digital form (allowing text to be read aloud, adapted and words defined/translated into other languages)
- Illustrate using different media, e.g. present key concepts in one form of symbolic representation (such as a lecture text or mathematical equation) with an alternative form (such as an illustration, diagram, table, model, video, comic, story board, photos, animations)

#### *Guideline 3: Provide options for understanding*

- Stimulate or provide background knowledge, e.g. establish material by making connections and activating relevant prior knowledge (e.g. using pictures, identifying concepts or using common mastery)

- Highlight patterns, salient features, big ideas and interconnections – emphasize key elements of text, images, diagrams and formulas
- Assist with data processing, presentation and manipulation, e.g. give direct instructions for each step in a sequence, link information into smaller units and remove unnecessary distractions if they do not serve the learning objective

## 2. Principle: Provide more ways of activity and expression

### *Guideline 4: Provide options for physical activity*

- Set different demands on the amount, time, speed and range of motor activities required to interact with learning materials, physical objects and technologies
- Enable manual handling of materials if possible

### *Guideline 5: Provide options for expression and communication*

- Use different media to communicate e.g. encourage ‘composition’ in media such as text, speech, drawing, illustration, design, film, music, visual arts, sculpture or video
- Use social media and interactive web tools to communicate and receive feedback (e.g. for group work during lectures)
- Develop literacy by gradually helping with exercises and performances – learners need to acquire literacy in different areas (e.g. visual, auditory, mathematical, reading, etc.).

### *Guideline 6: Provide options for executive functions*

- The highest level of human abilities for skillful action are the so-called “executive functions”, which enable people to curb impulsive, short-term reactions to their environment and instead set long-term goals, plan effective strategies for reaching these goals, and change them as needed. Executive ability is extremely reduced: 1) when executive ability needs to be devoted to skills at lower levels and non-automated or difficult responses, so there is a lack of capacity

to manage functions at higher levels; and 2) when the executive ability itself is reduced due to a certain disability at higher levels or due to underdeveloped executive strategies

- Guide proper goal setting, e.g. provide manuals and checklists for better goal setting and post goals, tasks and schedules in a visible place
  - Support the planning and development of strategies, e.g. provide guidance on presenting and interpreting their own work (such as portfolio reviews, art critiques) and provide project planning checklists and templates that help learners understand the problem, prioritize, design a sequence and plan of steps
  - Facilitate information and resource management, e.g. provide templates / tools for data collection and information organization
  - Improve the ability to monitor your own progress, e.g. guide self-monitoring and reflection with questions, show progress (e.g. show progress over time with 'before and after' pictures, graphs and diagrams, show growth and development with portfolios)
3. Principle: Provide multiple ways of participation

*Guideline 7: Provide options to spark interest*

- In a teaching environment, it is often inappropriate to offer a choice of learning outcomes, but it is appropriate to offer a choice of how they will be achieved
- Allow learners as much discretion and autonomy as possible by providing choices in matters such as tools for collecting or producing information, format/media for submission of work, color, design or graphic layout, etc.
- Increase relevance, value and authenticity, e.g. adapt different activities and information sources to be socially/culturally relevant and appropriate for different racial, cultural, ethnic and gender groups

- Include activities that encourage the use of imagination to solve new and relevant problems or approach complex ideas in creative ways

*Guideline 8: Provide options to sustain effort and persistence*

- Emphasize the importance of goals and tasks, e.g. instruct or ask learners to explicitly formulate or revise their goals and encourage the division of long-term goals into short-term tasks
- Encourage collaboration and communication, e.g. form collaborative learning groups with clear goals, roles and responsibilities
- Include more mastery-focused feedback – assessment is most successful in maintaining engagement when feedback is relevant, constructive, accessible, consistent and timely

*Guideline 9: Provide options for self-regulation*

- Encourage expectations and beliefs that increase motivation, e.g. bring in coaches, mentors or agents who can demonstrate appropriate personal goal setting and help with activities that encourage self-reflection and personal goal setting
- Improve coping skills and strategies, e.g. provide different models, reinforcement and feedback aimed at developing coping mechanisms based on real-life situations or simulations
- Develop self-assessment and reflection, e.g. provide tools/templates for learning about collecting, recording and presenting data about your performance to track progress

In the following, an overview of disabilities and associated unique methods and techniques will be presented, the goal of which is to eliminate or reduce possible difficulties of a person during the educational process. Our goal is not to teach you about people with disabilities. Through different disabilities, our goal is to make you aware that functional difficulties resulting from disabilities can also arise from many other life circumstances. We want you to think universally and inclusively so that everything you offer and produce is widely available and does not discriminate against anyone.

# MENTAL AND BEHAVIOURAL DISORDERS

## WHAT ARE MENTAL DISORDERS?

According to the World Health Organization (WHO), mental health is a state of well-being in which an individual realizes their potential, can cope with normal life stress, can work productively and fruitfully, and is able to contribute to society.

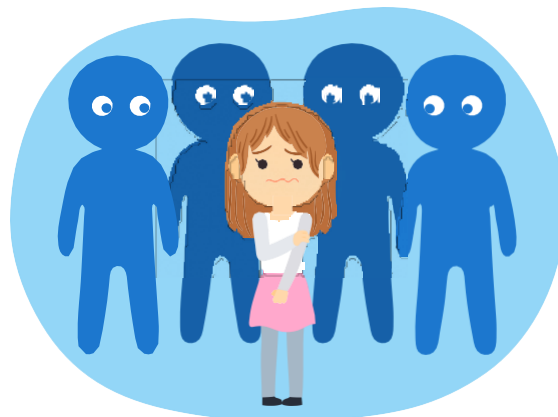
It is certain that in some period of our life we will have some mental difficulty, just as it is certain that we will also have a physical difficulty. Imbalances in mental health happen. They can be (and most often are) transient. Every fourth person, according to WHO, will suffer from a mental or behavioral disorder during their lifetime. We define mental disorders as patterns of behavior or experience that are accompanied by noticeable suffering or disability. This means that part of what a person repeatedly does and/or the way they see the world around them (or themselves) is altered/distorted or inadequate. The key in this definition is the long-term suffering or disability experienced by the suffering person, which we are often not aware of when thinking about people with mental disabilities, and which represent the core of the disease itself. It is important to emphasize that such behaviors or experiences, suffering or disability, can sometimes occur as a reaction to an event (trauma) and then are not considered a mental disorder. For example, after the loss of a loved one, it is expected that a person feels a deep overwhelming sadness. It's not a disorder. However, if it lasts for an extremely long time, other symptoms are added, and if it significantly disrupts a person's daily functioning for a long time, then a mental disorder is suspected. The most common mental disorders are those from the mood disorders category (depression and bipolar disorder), followed by schizophrenia and other psychotic disorders, and then dementia and developmental disorders.



Behavioral disorders are characterized by onset during early development, childhood and adolescence.

### **What can you notice in people with mental disorders?**

People who have a mental disorder are no different physically from any other person. The difficulties they deal with are internal, but some of the signs that indicate the existence of mental health disorders can also be noticed externally. The most severe consequences of mental disorders and behavioral disorders are manifested in the area of experiencing and communicating with the environment. The greater the distortion of the view of the world, other people and oneself, the more the relations with the environment (and oneself) are damaged. The earlier the age at which the first symptoms appeared, the greater the damage. The more often the characteristic condition is repeated, the greater the damage. Because of all of the above, there is distrust towards the environment or the individual, as well as doubts about one's own abilities and the possibility of adaptiveness.



Pronounced self-doubt, own actions, thoughts and decisions, and frequent questioning of all of the above is one of the significant characteristics of people who have a mental disorder.

### **ACCOMMODATIONS FOR PEOPLE WITH MENTAL DISORDERS**

People with mental disorders, if there are no other difficulties, probably won't need any special accommodations to the learning process and your explanation, but be sure to check with them. Be open to feedback.

What is important to point out is that the basic setting of all successful relationships is a positive communication view of oneself and the person we are talking to. We should be guided by the principle “I’m OK - You’re OK.”, that is, start from the fact that the person I am talking to and myself are equally important, equally valuable, respect and accept each other as living beings. During the conversation, we should always take a position of equality, and not put ourselves in a superior position.

Empathic listening is a skill that is always applicable and useful. Really listening and hearing what the person wants to tell us and thinking about how they feel about the situation they are in is all that is needed to establish a relationship of trust.

Sometimes people with a behavioral disorder or some type of mental disorder have difficulties in directing attention, reading, understanding and pronouncing what is written. To make your written material readable and understandable to people with specific learning difficulties, such as dysgraphia, dyslexia and dyscalculia, make sure you adapt the text according to the guidelines you can also find online. In this way, you will facilitate the understanding of written content, and people will be more satisfied with their own success and independent performance. Some of the basic guidelines for such accommodations of the text are: a larger font with a simple design, underlined key information, larger spaces between words and lines, etc. An additional recommendation is that the materials you use are also available online, if possible, and not only in printed form.

### **UNIVERSALITY OF APPLICATION**

The use of the described methods and techniques is not only recommended in working with people with impaired mental health, but also finds its application in working with all other groups of people. A technique like empathic listening is useful in any communication relationship, because it helps us to hear and understand what the person is saying to us, while at the same time showing the person that we are listening and accepting. Methods of adapting the material, such as clear and bold text, larger spacing in the text, and simple sentences, will help all readers in easier under-

standing of what is written, from children to the elderly. In this way, we will be more sure that the person will understand our message. Asking open questions, checking the person's emotional state and providing clear feedback contributes to the quality of every communication. By trying to talk in the described way, there is less likelihood of noise in communication and misunderstanding of the person you are talking to.

## INTELLECTUAL DIFFICULTIES

### WHAT ARE INTELLECTUAL DIFFICULTIES?

Intellectual difficulties are defined as a condition that arises during the early period of a child's development and which is characterized by significantly below-average intellectual functioning and adaptive behavior. Three important points stand out in this description of intellectual disabilities: onset during early development, intellectual functioning, and adaptive functioning.

The beginning of the condition i.e. the first manifested difficulties, refers to the period of the child's development i.e. childhood and adolescence. The American classification manual strictly determines that the first difficulties must develop by the age of 18. Intellectual functioning is the ability to think that enables person to navigate new situations. Intelligence is primarily a genetically determined potential, tends towards stability, is resistant to training, and is not something that can be learned. It is measured by intelligence tests. The unit for marking the level of intelligence expressed on tests is called the intelligence quotient (IQ). The average value of IQ is 100, and if it



is lower than 70, then a difficulty is suspected.

Adaptive functioning refers to how effectively a person meets the demands of everyday life and how well it meets the standards of personal independence for a particular age group, socio-cultural background and community conditions. Adaptive functioning is primarily a learned behavior and it can be learned and improved. It includes: communication skills, social skills, school/work skills and personal independence skills.

The name for this type of difficulty has changed very often. The longest used term (in recent history) is “mental retardation”. The name mental retardation is still used in medicine, however, new disease classifications have replaced it with the term “intellectual disabilities”. The correct name for the person who has intellectual disability is “person with intellectual disability”.

### **What can you notice in people with intellectual difficulties?**

In the following text is a short description of the difficulties that are mostly recognizable if a person with intellectual disability is a learner in an educational program.

It is important that you keep in mind that the mentioned difficulties are not the property of only people with intellectual disabilities and that they can also be the result of some other conditions, injuries and life circumstances.

- Weaker memory - the memory is significantly weaker, both in memorizing new content and in recalling what has already been learned.
- Problems with attention - within the framework of attention, difficulties in focusing it on an activity are expected, as well as difficulties in staying on the activity.
- Thinking difficulties - thinking is very literal, it is extremely difficult for them to understand abstract concepts and imaginary situations. Adults use and understand language worse overall.

- Difficulties with motor skills - early motor skills show a delay in development, and later general clumsiness is most often present.
- Poorly developed social skills - they have difficulty understanding social relationships and do not have a clear and realistic vision of their own role in the community.
- Impoverished emotional experience – emotional experience is simplified and linked to specific events. They have difficulty talking about emotions in general and are unable to interpret the emotional states of others.
- Simpler personality structure - behavior, thinking and emotions rely more on basic instincts and are often related to existential needs.
- Existence of additional difficulties – ¼ of people with intellectual disabilities suffer from some form of mental health problem, and other health difficulties are also common.

## **ACCOMMODATIONS FOR PEOPLE WITH INTELLECTUAL DIFFICULTIES**

Adapting to people who manifest the difficulties described above can be quite challenging, primarily because the main tool for accommodations is ourselves. Most of the accommodations relate to the way of communication.

In communication with people with intellectual disabilities, there is a common feeling of frustration due to the frequent need to repeat content that has already been said several times before. It is extremely important to be patient in contact, to repeat as many times as necessary and show acceptance of the person in full along with its difficulties.

In order to make the process of imparting knowledge more pleasant for both the lecturer and the learner who manifests difficulties such as intellectual ones, we can rely on three main groups of teaching methods (explanation, demonstration, guidance).

## Method of explanation

Be prepared to adapt the content you teach. Sometimes it will be necessary to reduce the scope, sometimes the terminology and complexity of expression, sometimes the dynamics of the lecture.

Which of these techniques you need will most often have to be discovered on your own, since people with intellectual disabilities very often do not see themselves as intellectually disabled nor can they clearly verbalize what form of accommodations they need. What you can definitely do is prepare a simple written presentation of the content to share with the learner with intellectual disabilities. Set aside time during the lecture when you will discuss the most important concepts and settings with the learner with intellectual disabilities. If it is acceptable to you, you can do this about 15 minutes after the lecture. Use simple language, but be sure to maintain a + / + position in which you respect the learner as an adult, equal to yourself, and do not place yourself in a higher position. Also, it is important that the educational process takes place in some space with a lack of disturbing factors as much as possible.

When explaining, it is advisable to use common words and simple, short sentences. It is good to avoid abstract terms and professional terminology. In communication, try to focus on the specific, ask clear questions and use longer pauses in expression.

When giving work instructions, more complex tasks need to be broken down into smaller operations. For each operation, it is necessary to give a separate instruction, and after each instruction, check understanding. Then, enable realistic application of the instructions, which should be followed closely and continuous feedback on what has been done.

When checking understanding, it is important to ask the person to repeat the given instruction as they understood it. We are then able to supplement the omitted parts and correct inaccuracies. Afterwards, it is a good idea to re-check understanding by verbally reproducing the procedures ("Please repeat the instruction to me to see if you understood me correctly!"). Avoid the question: "Did you understand me?". It will usually only be followed by a "yes" or "no" answer that will tell

little about the actual understanding of the task. Finally, it is a good idea to check again if there are any questions, encourage the instruction to be written down on paper, and monitor the performance of the assigned task again.

### **Demonstration method**

Do the demonstration only for that person, following it with a simple and precise explanation. Be sure to be prepared to demonstrate multiple times and at a slower pace than usual. Demonstration is a method that you will use many times. Since their ability to remember is impaired, do not expect them to adopt the process even though you have repeated it many times. You may need to demonstrate whenever you ask a person to perform a task.

### **Guidance method**

You can enable the learner to try itself, but with supervision and guidance. There is a possibility that several attempts will be needed in order for the learner to successfully master a procedure. Also, it is possible that learner will not master it successfully, but it is important that you still allow the learner to practice and try it out. Don't let guidance get into the game, if that wasn't your original goal.

This method enables learners to reproduce newly acquired knowledge in a safe environment. It is important that you are focused on creating a stimulating atmosphere and that you supervise the entire process. It is always good to check understanding, the need for additional clarifications and monitor the application of the instructions. It is important to monitor the person's overall behavior in order to identify what may indicate confusion, ambiguity or the need for additional support. During the entire process, it is necessary to pay attention to motivation and encourage and maintain it with different creative methods. There can often be a drop in motivation due to failure, so it is important to remember that sometimes success is accomplished just by participating in the process and making an effort, just as much as successfully mastering the task.

## Giving feedback

It is important to do this immediately after the procedure, without delay. Feedback must always be true, without distortion, either in the direction of praise or condemnation. It is necessary to clearly state what is wrong and give (repeat) concrete instructions on how to improve the procedure.

Feedback is given in the form of a “feedback sandwich”: bread = praise, mayonnaise = personal experience, meat = what needs to be improved, salad = way to improve, bread = praise and support.

### Suggestion of how you can work with the sandwich technique:



Start with the positive

“What I like is...”



Personal experience

“I, on the other hand, think, feel...”

avoid: “BUT” ... because it cancels what was said previously



What needs to be improved

Point out the specific error, explain why it is wrong



State a specific proposal/solution, call to action - demonstrate how what has been done can be improved



Praise and support



← Positive Feedback

← Constructive Feedback

← Positive Feedback

“I believe in you...”

“I’m sure next time you will...”

Avoid the words:

“But ... no ... it’s not good ... you don’t know ... you’re bad ... you’re wrong ... desperate ... bad ... disaster ...someone else would do it better etc.”

If you praise, you can do it in front of others, if you criticize - only in private!

Consider the following:

- Keep a positive attitude and tone
- Be realistic
- Point out the behavior, not the person
- Be honest, specific and descriptive, not general and judgmental
- Avoid ‘must’, ‘should’, etc.
- Listen to what people are telling you

## **UNIVERSALITY OF APPLICATION**

The described teaching methods and techniques that help in working with people with intellectual disabilities are not only useful for working with this population. Their application in daily work contributes to better communication in general, and especially with people who have difficulties with memory, concentration and attention. In addition, all of the above helps in working with elderly people, as well as with children and people of foreign origin. Rules such as the use of simple sentences, without abstract concepts, as well as checking the understanding of what was said and an individual approach to work contribute to better cooperation and better communication.

# VISUAL IMPAIRMENT

## WHAT IS VISUAL IMPAIRMENT?

When we talk about visual impairment, we must remember that it is a group of very heterogeneous impairments. Visually impaired people are not just the people we see with white canes, cute dogs and thick glasses. They do not necessarily have visible or recognizable features of their impairment.

The official division implies two categories: blindness and low vision. Each of these two occurrences of impairment can be caused by a whole series of different reasons and diseases with also very different times of occurrence.

Blindness usually means complete loss of sight. Even if it is not always the complete absence of visual perception, it is not sufficient for adequate daily functioning using the information obtained through the eye.

Blind people supplement the lack of visual information from the environment by using other senses. In the detection of the properties of the material environment, the most important role is played by the sense of touch, that is, exploring the environment tactilely, either with fingers, feet or a white cane, and often the entire body of a blind person is a tactile sensor. In addition, blind people also use tactile braille. Along with the fingers, the main organ used to collect information from the environment is the ear, the sense of hearing. Blind people's hearing is not only for receiving directed information, but with the help of hearing they can collect and read meanings from all auditory stimuli. Sense of smell is also very important in creating an image of the world. If they become aware of the smells in the environment, they can orient themselves in space more easily. In the early morning, the nose can unfailingly lead to a cafe with the best coffee or get you to the nearest bakery. For safe orientation and movement, it is



not enough for blind people to just rely on their own senses, and very often they use a white cane, a guide dog or the help of a sighted assistant to navigate the space. Considering the general technologization of the modern era, assistive technologies make a significant contribution to the independence of blind people, and they are indispensable in the everyday life of these people. Despite all of the above, we are aware that we live in a very visual world that changes very quickly, and that neither our senses nor the technology we possess can fully adapt to the pace of change, therefore interaction and help from people from their community is very important for blind people.

## **PEOPLE WITH VISUAL IMPAIRMENT IN ADULT EDUCATION**

As we have already said, the population of visually impaired people is extremely heterogeneous and it is very difficult to find a technique, method or universal advice for working with visually impaired people. However, there is one rule, and that is clear and open communication. Yes, now you could say that this is a prerequisite for any cooperation and you would be right, but for people with visual impairment it is also the most effective way to overcome the difficulties resulting from the impairment. People with visual impairments, although it is difficult to generalize, are usually verbally strong and words, whether written or spoken, are their main means of describing and defining reality. Usually, if you set out to learn about teaching blind and partially sighted people, you will get tangled up in braille, screen readers, speech units, braille notebooks, electronic magnifiers, etc... But don't be discouraged, the only important thing for you is to know that there are possibilities and that are open to their application. It is not necessary that you own all of them or that you know how to use them. Through a conversation with a visually impaired person, you will find out what assistive technologies they use and how you can adapt to them. What you have to think about before contacting people with visual impairments, and especially blind people, is how comfortable you are with physical contact with the person you just met. These people have difficulty finding their way in new spaces and when moving in the unknown, regardless of whether they use a cane, a dog or some other aid. Therefore, it will also need your help, which means that it will receive your upper

arm. Also, when explaining, locating or finding objects, there is a possibility that you will have to directly accept the person's hand and direct it towards what should be tactile revived. Sometimes a person will ask to experience your appearance tactilely, or other people will offer to have a blind or partially sighted person do it themselves. This form of physical contact is not common and it is perfectly fine for either party to reject it.

However, if everyone involved is comfortable with it, it can be a legitimate way to get to know each other. Regarding the physical appearance of blind or partially sighted people, you may sometimes notice an odd body position, motor stiffness, or slight clumsiness. It is important to keep in mind that most often it is not a physiological deficiency, but a lack of visual stimulation due to growing up and mastering new movements or knowledge. In visually impaired people, the shape and position of the body can be determined by the way in which they make the best use of their sight or compensate for it's lack. For example, a person can be slouched because he carefully observes the ground he is walking on, or he can have a long, uncertain walk because he first tests the safety of the ground with his foot before taking a stable stance.

There are some accommodations you can make to allow a visually impaired person to participate in your educational program.

### **Organizational accommodations**

In order to attract people with visual impairments to participate in your education program in the first place, it is important that your marketing is also inclusive. Make sure your website complies with digital accessibility guidelines. Also, visually impaired people will appreciate text posts in electronic media and social networks, while picture posts, even though they contain typed text in the picture, will make it difficult, if not impossible, for them to be informed about your program.

If you have people with visual impairment among the learners, make sure to describe all visual content in detail. Describe graphic representations, schemes... Also, describe humorous memes

and gifs and other illustrations that do not have a purely didactic role, but rather an animator role. Don't let a good visual forum bypass the learners with visual impairments (it's very strange to be the only one who doesn't laugh).

Pay attention to the use of demonstrative pronouns. "Here", "there", "there", "that", "this" and "that" and the like will not mean much to a visually impaired person without further explanation. When you address anyone from your group of learners, use personal names, so there will never be confusion about who you are addressing, and you will make it easier for people with visual impairments to match their voice and name and thus get to know their colleagues better.

If you use some form of teaching material, agree with the person with visual impairment on how that person can consume it.

Ensure the possibility of printing written content on a large format, written material available in electronic form, a sighted assistant who can act as an escort or support in written expression. Working and didactic materials should be in accessible formats: visually impaired people use them in Braille or in plain text format (for accommodations, you can contact any organization that supports visually impaired people). With a little effort, you can make them yourself. Make your program available online, if possible. If you have not done this in advance, be ready to share all the content that you will present, and you have it in electronic form, with a visually impaired person on the spot with a USB stick or by e-mail.

Visually impaired people are very tactile. Allow them to tactilely study the schemes, mock-ups or the very procedures that are the subject of learning. Tactile perception without seeing can be a slightly longer process, so it would be good to ensure that the learner with visual impairment has some extended time for tactile study that can take place in parallel while you demonstrate to the rest of the group.

## Spatial accommodations

People with visual impairments do not need any special accommodations in the space, but there are some tricks that will make their stay in your spaces more comfortable.

When a visually impaired person comes to your premises for the first time, don't be shy to ask them about the condition and the rest of their vision. Based on that, offer her help in getting to know your space. You will agree on the way of helping and getting to know the space with a specific person, since the ways and methods are individual for each person. Don't expect the person to create a mental map of the space after the first stay in it, so you can go through the process of getting to know each other over a few first meetings. Be prepared to make small interventions in your space to make the movement of learners with visual impairment easier. It would be ideal if you could provide guide lines or a tactile map of the space. But even if you can't, it is possible to use different tools such as 3d printing, plasticine and the like in order to present a space to a visually impaired person. The objects serve as guideposts for these people, and it is very important that they do not change their place, if they are on the well-established route of visually impaired learners. If they want to, let them always sit in the same place in the room, since this is an important point of reference when moving thinner in your space. Ensure sufficient lighting of the space, especially in situations of movement or in activities where significant use of vision is required. Sometimes it may seem to you that visually impaired people are a bit clumsy when moving or handling objects, but that doesn't mean you have to help and facilitate them in every situation. Make yourself available, but help only when you are directly asked.

## Technical accommodations

Visually impaired people will be happy to use your magnifier, or your computer to install an open source screen reader or magnification software. They may use their smartphones to take a photo of the work material, quickly convert it from image to text, listen to the content through a screen

reader, and then solve the task. They might use their phone to type notes with one earpiece in their ear. Don't feel like he's not listening. Today, there are numerous assistive technologies that facilitate the learning process for people with visual impairments. Talk to your learner and allow him to use any technologies he owns that can contribute to mastering the learning outcomes.

## UNIVERSALITY OF APPLICATION

The fact is that most of us will lose our vision after 40, so we will benefit from the dictation function on phones, voice messages, the option to read aloud in the Internet browser, the ability to adjust the size, shape and color of the letters and background. But there is one accommodations that is universally effective for all people, and it stands out especially with visual impairments - that is communication.

It is extremely important in the teaching process to think about how we present the content, and what people with visual impairments teach us is to be as clear, descriptive and specific as possible when we convey content or instructions. Additionally, it's important to be aware of how you offer help. You are not a savior who does something for someone, you are a support, a learning catalyst and that is a big role. In situations where you help without being informed that your help is needed or wanted, you deprive the person of their resources and the right to deal with the situation in the way they want or is acceptable. With that, it is important to offer help, to ask in what way it is acceptable for the person to help them, to consider whether you are able to do it, and then to help.

# HEARING IMPAIRMENT

## WHAT IS HEARING IMPAIRMENT?

Listening is one of the things that many of us take for granted. Only a few of us, probably those who have deaf parents, brothers, sisters, friends or acquaintances, will try to “close” their ears for a moment to see what it’s like to be on the “other side”, what it’s like to live in silence. They would then see birds that fly but do not sing, leaves that they tread on, but do not rustle, people who speak, but do not speak.

And how important is communication? We can’t even imagine how does it feels when you don’t laugh at jokes when everyone around you is laughing... you feel isolated, frustrated, rejected, lost, unfulfilled and you can react inappropriately, because you are left to yourself.

Hearing impairment is usually said to be a hidden disability, because the problems associated with it are not easily visible to hearing people and most people have never met a deaf person.

In order to understand deaf people and their specific reactions, it is important to have in mind what was the way they used to receive information from their environment in their early childhood. Children who do not have hearing impairments passively absorb information from the environment and constantly gather pieces of information. This is called incidental learning or ambient communication. It is the most powerful means of learning and socialization that a child can have. This kind of communication occurs naturally in children with normal hearing, which they use as an opportune, accidental learning to shape their language and their perception of what surrounds them. They “eavesdrop” on their social environment and learn millions of useful tidbits from the invaluable treasury of cultural and social information. A hearing person hears an



average of 30,000 words a day and spontaneously acquires new words and their meaning.

A child with a hearing impairment cannot learn spoken language through incidental learning.

It cannot casually eavesdrop on what the environment is saying and since the large amount of information that the child learns is not directed at it, it misses a large part of the information every day. By incidental learning, children learn by proper hearing as much as 90% and by direct teaching only 10% of information. Because of this, children with hearing loss miss out on practical knowledge for progress in school and the community and consequently have a limited pool of information, so a greater effort is needed to reach greater information. They need to be taught directly many of the skills that hearing children learn along the way.

There are several systems for classifying people who have hearing difficulties. The most popular one is the system based on functional classification. According to this classification system, people who have hearing loss fall into three main subgroups: (1) those who are hard of hearing; (2) those who are deaf and became deaf in adulthood; (3) and those who were born deaf or became deaf early in life. Although these three subgroups share hearing impairment, they have a number of different characteristics, needs, desires and ways of communicating. True (clinical) deafness which does not imply residual hearing in any form is extremely rare.

Deaf people are people who practically cannot use their hearing in spoken communication, even with sound amplification by a hearing aid.

Deaf people are people who have completely lost their hearing, after learning to speak in a normal way, especially those who became deaf in adulthood, due to illness or accident.

Hard-of-hearing people are people who gradually lose their hearing due to age (senile deafness, presbycusis).

Hard-of-hearing people are people who, with the help of a hearing aid, perceive the speech of another person by listening. For them, the ability to hear depends on the specifics of the situation. A

person can communicate and understand very well if it is in a meeting, in a one-on-one situation in a quiet and well-lit room without glare, and when is rested. The same person may have great difficulty understanding during a group meeting or training when several people are talking, where there is background noise (e.g. air conditioning, ventilation systems that are noisy), when the speaker is standing or sitting at a distance, when the speaker is speaking quietly or quickly, or speaks with a foreign accent and where there is flash or low lighting and/or when it is tired or stressed.

The population of deaf people is quite diverse thanks to numerous factors that have the greatest impact on educational achievements, due to the specificity of receiving and giving information and understanding it: degree of hearing impairment, time and cause of hearing impairment, i.e. early diagnosis and early intervention; the hearing status of the parents, i.e. the modality of communication in the family, adequate support within the family, support at school and in the wider social environment, intellectual status, the presence of some additional impairments, personality, etc. That is why it is important to approach each person individually, without pre-set prejudices related to deafness.

High-frequency sounds are extremely important for speech understanding. They contain 10% of sound energy and 90% of meaning. These are consonants that are distributed along the high frequency range. Most people with hearing loss have difficulty hearing them.

Low-frequency voices are carriers of strength and energy, but they contribute little to speech understanding. These are vowels and most hearing impaired people hear them well.

A speaker trying to speak louder usually emphasizes the vowels (whose frequency is low), making the speech just that little bit clearer. The understanding what is spoken is achieved more by clarity than by loudness of speech.

Lip reading is a compensatory technique by which hearing-impaired people receive information about the content presented by the speaker. Only small percentage of the language sounds are visible on our lips, because all other sounds are formed inside the speech apparatus, so they are

visually unavailable, and many sounds on the lips look the same. So, reading lips is exhausting, especially when there is background noise. Also, a lipreader should be highly fluent in the language, and hearing impaired people rarely are. Ultimately, most of this process comes down to inference from context, which depends more on the characteristics of the speaker and the physical environment than on the person's ability. As a result, even if a person can follow what is said, they have fewer mental resources left to think about and recall what they heard.

Much of the information they use to interpret external stimuli comes from non-verbal cues and the context of the situation. The lower the hearing loss, the more a person relies on the auditory channel and uses compensatory sources of information to a lesser extent. People with a greater degree of hearing impairment interpret environmental stimuli to a greater extent under the influence of the inner world, interpret phenomena in their own way, project and make more mistakes. Hard of hearing people are more accurate in their perception of reality, have a better understanding of the message and send clearer messages to their environment.

Some deaf people are bilingual and have good written language skills, even though their mother tongue is a sign language, because they were provided with early intervention (strong reading support in the environment) and have good memory. Most people who are prelingually deaf have great difficulties with understanding the written text and written expression, although they have the same IQ as hearing people, and on non-verbal tests they have a higher IQ. It is a prejudice that all deaf people communicate in sign language.

People who acquired deafness after learning to speak (or became deaf in adulthood) often have sufficiently well-developed speech, which can lead to assumption that they hear well, which might not be true. This can lead to a false conclusion that reasonable accommodation in communication is not needed.

## PEOPLE WITH HEARING IMPAIRMENT IN ADULT EDUCATION

There are many ways in which you, as a hearing person, can improve the communication process or the educational process within educational setting. Here are some things to think about:

- First, put yourself in the shoes of the “other” person. If you think it doesn’t matter if you leave a deaf person out of a meeting or training, or just send it notes from the training, and don’t take time to include it in a social conversation or event, how would you feel if you were treated that way?
- Being very direct is a value in Deaf culture. Speak your mind to your deaf learner, and don’t be surprised when it is very honest in its response.

Some strategies in communication and monitoring of the educational process that can help in removing communication barriers with deaf or hard of hearing people, are:

### Organizational accommodations

Always face the person you are addressing so that the deaf person can see and read from your lips (in front of or next to the person). Your face should be at eye level of the deaf/hard of hearing person. The most important thing in this is establishing eye contact. So, look the person in the face and don’t start talking before the deaf person has fixed their gaze on you. Namely, deaf people “listen” with their sight. For a deaf persons, there is no conversation without looking and that’s why they will speak only while you are looking at them. If you are speaking to a deaf person using a sign language interpreter, look and speak directly to the deaf person, not the interpreter. You communicate with the learner, and the learner with the translator.

Your face should be well lit, facing the light source. Keep your head still. The further away you are from the deaf person and their hearing aid, the harder it is to understand speech, so maintain an optimal distance of 1 to 1.5 meters. Another obstacle to understanding speech is reverberation or echo. Using decorative styrofoam ceiling panels, carpeting small areas and placing rubber noise

protectors on chair and table legs will improve the acoustic conditions in the classroom. Hearing aids amplify all sounds (including background), so hearing and understanding speech is difficult in conditions of loud noise in the classroom, therefore place the deaf person as far as possible from the source of noise (e.g. from the air conditioner and other devices that produce noise, e.g. computers). Background noise can also be reduced by keeping plants in the room, turning off background music or the radio, closing windows and doors.

If you turn to the other side during the lecture to write on the board or to address someone from the other direction, stop speaking because the deaf person cannot follow you from behind. Avoid turning your back, bowing your head or covering your mouth, as well as chewing gum or food while explaining to them, because then the ability to collect visual information is weaker. Minimize walking around the classroom. Be careful not to stand in front of direct light (e.g. in front of a window), because your face will be in shadow. Lip reading is easier when the context of what is being said is known, so provide them with pre-written materials, instructions or information whenever possible. Provide a copy of the material to the sign language translator so that they can prepare in advance for all translation situations in terms of content and language - terminology, because they are not an experts in your educational subject, and some words cannot be represented in sign language, so they have to find a substitute word/sign.

In addition, the seating position is important for hearing impaired people. Allow them to choose a place that does not have their backs to the door so that they are able to visually perceive the whole group and the people approaching them. Organize a circular or semi-circular seating arrangement, to make it easier for the deaf learner to have a visual range of all faces (both the interpreter and you as the primary speaker). Have a deaf person sit next to you so they can understand you better. In the case of a classic classroom, place the deaf person in the first or second desk. If the person has one-sided hearing loss, they should sit in such a way so their hearing ear is facing the speaker, not the wall or window. Keep sight lines clear. Remove tall centerpieces and anything that blocks one's view, such as computers. Diffuse room lighting is very important for hearing impaired people, since they often read from the lips, and this is not possible in the dark.

It is important that you speak standard language and not a dialect, because language is deficient for a deaf person anyway. Speak clearly and in simple words, avoiding long sentences or numerous dependent clauses, as well as double negatives and words with double meanings, as this confuses them. Avoid passive constructions. The above also applies to tests. Write new technical terms or foreign names on the board. Speak at a moderate speed, without overemphasizing the words when pronouncing them. Do not make excessive grimaces, be natural and use simple gestures. Do not shout, because this emphasizes the vowels, and this does not allow for better understanding (and also distorts the movements of the lips), and the deaf person may think that you are angry, which can increase stress.

A hard of hearing person cannot listen and take notes at the same time, especially if they have a sign language interpreter with them. Remember that a deaf person is forced to constantly watch what is happening in the classroom, so they are not able to simultaneously follow what is happening and what is being said around them. They also cannot read lips or watch (e.g. video or demonstrations) or perform practical tasks at the same time. Therefore, during the demonstration, it is necessary to first show, and then give interpretation and advice. Be prepared to insert subtitles into the video so that even deaf learners can follow them if there is no interpreter. Deaf people's concentration drops during the last hours (due to increased fatigue during lip reading), so it is desirable to provide enough time for relaxation or occasional breaks.

When calling names during training, get the deaf person's attention by gently patting them on the shoulder - never do it suddenly or come from behind. Call the hard-of-hearing learner loudly. Make sure that the deaf person participates in everything that happens in the classroom, which they might not notice on their own. During a group discussion, give the deaf person a visual cue as to who is entering the conversation. Hearing-impaired people are not immediately aware of who is speaking, so they miss the initial parts of the speech. Warn the people in the discussion to speak in order, one after the other. If there is an interpreter in the room, slow down the pace of the conversation so that the interpreter can convey everything that is being said.

It is important to be sensitive to the self-esteem of the deaf learner and to ensure an inclusive environment, so avoid messages such as “I’ll talk later” (“later” rarely comes), “oh, it doesn’t matter” (it doesn’t matter to you), “it doesn’t matter” (which means “I won’t try to include you”), etc., because it affects the self-esteem of the deaf learner. A deaf person has the right to participate in the conversation just like anyone else. Explain to a deaf person if someone from the back benches cracks a joke and everyone bursts into laughter (if there is no interpreter). Develop strategies that promote fellowship among learners and that will help everyone feel that they are a valuable part of the educational community.

Check written and oral comprehension. Let the deaf learner know that it’s okay to ask for anything they don’t understand to be repeated or clarified, and more than once if necessary. Monitor the non-verbal communication of the deaf learner and do not hesitate to ask yourself occasionally if there is a need for clarification or repetition. The deaf learner will appreciate it, because you are showing concern for them. If a deaf learner asks for a second repetition, it is usually not helpful to repeat the exact same words or phrases, instead rephrase the question, comment or phrase in other words. For example instead of “The exam is scheduled tomorrow at three,” say “We have an exam tomorrow at three.” If the deaf person still did not understand you or it is complicated to explain, write to them. If necessary, during individual consultations, additionally clarify key/abstract terms, vocabulary, facts and book pages where information can be found in order for them to adopt them, or structure scripts or other written materials.

Due to various life and educational factors, an adult deaf person can have agrammatic and written and oral expression (dropping grammatical endings, incorrect use of verb forms, poor construction of sentences, etc.). Pay attention to the substitutions of similar words. Deaf people need association with similar items and categories. In many cases deaf people have learned words that they have nothing to associate with (showing vocabulary with a category and naming it will help them form concepts and vice versa). The benefit is the use of graphic organizers such as the semantic web and folders. Also, first-hand experiences and real objects or photos are a good way to learn concepts and can be easily integrated into any lesson.

Keep in mind that deaf and hard of hearing learners need more time to linguistically process what is said (they need time to “think” about what is said), i.e. to read, understand and absorb written information. They need 25% more time to plan and write papers and tests than other learners.

The speech of a deaf person has no modulations, so it can sound unusual, guttural and sometimes difficult to understand. If you do not understand, ask the person to repeat. All deaf people are not equal, so the way of communication should be adapted to the person you are talking to.

Deaf learners often comment that their lecturers start well, but then forget and need to be reminded. However, examples show that deaf people with accommodations, support and motivation can exceed the expectations of the social community. It is necessary that these strategies become a habit for you in the process of training.

### **Technical accommodations**

Assistive technology can be a key factor that enables deaf people to participate in the activities of everyday life and be included in society through the educational process.

For the hearing impaired, use different telecommunications channels to ensure that a sign language interpreter is present if needed.

If possible, provide a laptop for a fast typist who will sit next to the hearing impaired person and write down everything that is said during the training, if the deaf person does not know sign language.

During the educational process, enable the frequent use of visual elements such as a whiteboard, map, picture, diagram, PowerPoint, overhead projector, projector and brochure.

Enable the use of different technologies for wireless sound transmission that amplify the sound field in the classroom for hard-of-hearing people and at the same time limit the impact of noise and the

distance from the lecturer, if they use a hearing aid: frequency modulation system (FM - system), infrared system - IC (IR - Infrared System), an audio frequency induction loop system (AFILS - Audio Frequency Induction Loop System) that removes background noise. If the hearing-impaired learner uses the FM system, encourage other learners and guest speakers to use the FM microphone.

Enable platforms that enable the provision of subtitles, for example Zoom or Microsoft Times, while others translate the verbal record into writing in real time (for example Google Hangout Meet), so that even a person with hearing loss can participate in video meeting.

### **UNIVERSALITY OF APPLICATION**

The described teaching methods and techniques that help work with hearing-impaired people are not only useful for working with the mentioned population, but also for working with visually impaired people (diffuse room lighting - to facilitate lip-reading for hearing-impaired people, including elderly people who are weak hearing due to age and in the visually impaired - not creating a shadow). Using a second person (a fast typist) to sit and write to a deaf person or using a platform like Google Hangout Meet also helps other people, for example migrants who have a low level of language skills in the new host country, because they can later go back to the typed content if they missed something or did not understand some part of the lecture. Also, assessing knowledge of educational content, and not assessing knowledge of language and grammar, is the preferred way of examining learners, not only with deaf learners, but also with migrants. Demonstration and experiential learning will be much more effective than any explanation with such population groups.

On the other hand, in addition to reasonable accommodations, there is also universal accommodations, which is universal across regions of the world and across fields of education. Universal communication includes more thorough communication: with a lot of checking, that is, questioning the understanding of what is communicated on both sides, which also includes people with intellectual disabilities. Written messages, unaccompanied by non-verbal communication, often lead to misunderstandings between people. The same applies to non-verbal messages: lip-reading, as well as reading non-verbal messages, is subject to errors, as in written communication, the “gaps” are

“filled in” by the recipient. Everything should be taken into account when communicating between deaf learners and all learners in the educational process. It should be kept in mind that mistakes are common in everyday communication, let alone with hearing impaired people. Therefore, primarily universal accommodations in communication requires a certain form of sensitization and education. For some, directness and brevity of information will be more important, for some, naturalness and a human voice, and for some, thorough communication.

## MOTOR DISORDERS

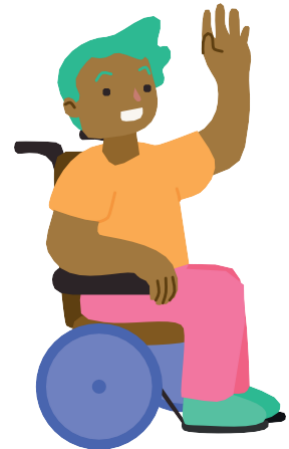
### WHAT ARE MOTOR DISORDERS?

Motor disorders refer to disorders of gross and fine motor skills and body balance that prevent daily functioning. In short, it is below average bodily functioning.

Motor disorders include a very wide and varied group of motor difficulties, from mild motor clumsiness to very severe disorders of movement and body position due to which a person needs constant help and care.

We divide motor disorders into four categories, taking into account the cause of the disorder, i.e. which body system is damaged, resulting in one of the motor disorders:

1. Damage to the locomotor system;
2. Damage to the central nervous system;
3. Damage to the peripheral nervous system;
4. Damage caused as a result of chronic somatic damage or chronic diseases of other systems



## 1. Damage to the locomotor system

The locomotor system is a system of organs for body movement. It includes bones, muscles and joints.

Damage to the locomotor system depends on which of the component is damaged.

- Related to bones, it can be a bone disease, bone deformation or simply the absence of them.
- Furthermore, muscle dysfunction can lead to weakness on the one hand, and rigidity, spasm, cramp on the other.
- Finally, as a result of diseases or joint injuries, there may be limitations in the mobility of body parts and extremities.

## 2. Damage to the central nervous system

The central nervous system consists of the brain and the spinal cord. The brain consists of the cerebrum, cerebellum and medulla oblongata. Motor difficulties due to damage to the central nervous system are diseases or injuries to any of its parts. The degree and type of the difficulties themselves speak about the time of occurrence, the place of occurrence and the extent of the primary disease and injury.

## 3. Damage to the peripheral nervous system

The peripheral nervous system consists of nerves and ganglia located outside the CNS, and represents the connection between the brain and the spinal cord with the rest of the body.

Damage to the peripheral system is the result of various diseases, infections, poisoning, trauma or inheritance, and the difficulties that develop as a result of them depend on the place and time in which the damage occurred.

## 4. Damages occurring as a consequence of chronic somatic damage or chronic diseases of other systems

Motor difficulties can also arise as a result of chronic somatic damage or chronic diseases of other systems. These are more permanent diseases that require long-term treatment. They do not have a direct, but a collateral effect on the motor system.

The motor difficulties that develop as a result of them depend on the place and time in which the damage occurred. Some examples of diseases with chronic somatic damage or chronic diseases of other systems are: Parkinson's disease, schizophrenia, Tourette's syndrome, diabetes and diseases of the respiratory system.

The most severe consequences of motor difficulties are manifested in the area of movement in space. How much a specific motor disorder will affect a person's overall functioning depends on the type and severity of the impairment and the age at which the impairment occurred. The more severe and noticeable the damage from the environment, the greater the consequences for development. Depending on the age at which the damage occurred, earlier exposure has a greater impact on overall development. However, reporting later has greater accommodation difficulties because it represents a traumatic event.

Motor skills have significant implications for everyday life. Motor impairment has its most significant consequences in the independent mobility of a person. As the degree of impairment increases, independence decreases, which consequently increases feeling of frustration. With less mobility, a person has a limited social circle, which further has a harmful effect on mental health. If the disorder occurred at an early age, a better accommodations to life with motor difficulties is predicted. However, with the later development of impairment, a person perceives it as an extremely stressful or traumatic event that significantly impairs mental health and requires large adaptive resources. The greater the visibility of the damage, the greater the stigmatization. However, it is important to say that the presence of motor difficulties does not necessarily result in emotional disorders. If a person's basic life needs are met from the earliest days, then this represents a good foundation for further socio-emotional development.

## PEOPLE WITH MOTOR DISORDERS IN ADULT EDUCATION

Communication here does not require many accommodations. Below are suggestions for more successful communication:

- Make clearly available your desire for assistance;
- Directly ask for instructions about what and what kind of help the person wants;
- Freely express your lack of experience/knowledge;
- Ask for clarification about doubts;
- Ask for feedback if you are acting “ok”;
- Provide assistance to overcome obstacles resulting from the primary diagnosis;
- Avoid unnecessary helping just because the person has an impairment;
- If a person with motor disability does not get overly excited about the difficulties they persistently encounter, neither should you. Be careful not to focus on the difficulty with excessive worry and pity.

### Organizational accommodations

- For people who have difficulty moving, ensure that they can access the qualification procedure without too much physical effort (ground room, elevator, ramp, etc.).
- Materials in electronic form can be useful for people with motor impairments and all other learners who prefer to learn from a screen rather than from paper.
- General examples of adapting the teaching content to adults with motor disorders and chronic diseases are releasing or replacing the executor of a certain task.
- Give them more frequent breaks if they get tired or extend the time for them to solve a task.

- Adjust the expectations of the level of success achieved with regard to the person's capabilities and limitations, as well as other accommodations in relation to the specific needs of people with motor disorders and/or chronic diseases.

### **Spatial accommodations**

- If you have learners in your program who have difficulty moving, make sure that the rooms where the learning takes place are easily accessible (elevator, ground floor).
- Technical (ergonomic) accommodations - widening the door, securing a ramp, relocating a light switch, door handle, window or shelf for someone who has difficulty reaching (lower level).
- If your learner who has difficulty moving can climb the stairs on their own, make sure to support them in doing so. Agree with the learner how you can do this.
- If you are by no means able to ensure that learning takes place in ground floor rooms or in a building with an elevator, it does not mean that you have to stop working with a learner who has difficulty moving. Talk to them, show goodwill and explain what resources you can make available. Chances are you'll jointly devise a way to conquer the floors in front of you.
- People who use wheelchairs use a specially adapted toilet, and it would be good if the place where learning takes place has such a toilet. If you are unable to provide such a space, communicate with your learner and try to come up with a joint solution. This is certainly not a reason to terminate cooperation with the learner.
- Some people with chronic diseases have a need to use the toilet often or urgently, allow them to choose a place in the room from which they will have unhindered access to the toilet.
- Also, some chronic diseases require more frequent consumption of food or drink. In agreement with the learner, provide a place for storing food and drinks that will not interfere with

the use of work and didactic materials and the performance of practical exercises.

- In addition to the amount of light, the amount of air is also important, and in agreement with the learners, take care of regular ventilation of the space.
- People with motor disabilities and chronic illnesses probably won't need any special accommodations to your explanation, but be sure to check with them. Be open to feedback from your learners.
- The implementation of demonstration and guidance methods may require certain accommodations that you agree on in cooperation with the learners themselves.

### Technical support

The difficulties a person has or could have due to a motor disorder can generally be divided in two groups. These are fine motor difficulties (fine motorics refers to precise, fine movements such as writing, cutting, keyboarding, sewing, modelling, etc.) and gross motorics (gross motor refers to standing, walking, bending, climbing, transferring, lifting, etc.). Therefore, assistive technology can help overcome these difficulties during the educational process.

Assistive technology is divided into low AT («low-tech») - passive or simple, composed of only a few parts (book holders, writing aids, turning pages, etc.) and high AT («high tech»), which are a lot more complex, they may also have an electrical component (computers, powered wheelchairs, alternative keyboards and mice, environmental control units, robots and electronic spell checkers, electrical writing and feeding aids, etc.).

Examples of AT used by people with MP/KB are Communicator 5, Grud 3, Servus device, Integra mouse plus, Quha zone, Tracball optima and many others.

## UNIVERSALITY OF APPLICATION

The aforementioned spatial accommodations for people with motor disorders are also valid for elderly people who have difficulty moving due to their age. They can also help pregnant women and mothers who drive baby strollers. Also, guide dogs that accompany blind people must have their own place, which is helped by wider rooms. A specially designed chair and table can be used not only by people with motor disorders (difficulties with the spine, for example) but also by elderly people with physical disabilities, as well as by people who sit for a long time during working hours. A dust-free room is necessary not only for people with respiratory problems but also for people suffering from allergies.

The text you have read is the result of the experience, reflection, knowledge and joint work of experts from URIHO and other partner organizations in the Erasmus + KA220-ADU project Equality in diversity: broadening horizons.

The part of the creative team were also the experts with disabilities who, apart from the professional knowledge, also contributed with authentic experience of living with disability.


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A bright blue sky with scattered white clouds. The clouds are of various sizes and shapes, some fluffy and some wispy, scattered across the clear blue background.

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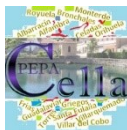
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