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## **„Inclusive university – a set of tools dedicated to HEI for better respond to disable student’s needs”**



**Intellectual Output №1**

**Publication dedicated to academics on how to teach  
disabled students with different disabilities**

This output was carried out as part of the Erasmus+ KA2: Strategic Partnership

This publication is the outcome of work undertaken by international consortium consisting of the following institutions:



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## Introduction

***Publication dedicated to academics on how to teach disabled students with different disabilities*** is an intellectual output no 1, developed within the project „***Inclusive university – a set of tools dedicated to HEI for better respond to disable student’s needs***” – the project is implemented within Erasmus+ programme, Key Action 2: Cooperation for innovation and the exchange of good practices – Strategic Partnerships for higher education (Agreement no: 2019-1-PL01-KA203-065243).

The publication was developed by an international consortium consisting of 3 higher education institutions and 1 non-governmental organization from 3 countries:

- **University College of Enterprise and Administration, Lublin, Poland** – Project Leader
- **International School for Social and Business Studies, Celje, Slovenia**
- **Frederick University, Nicosia, Cyprus**
- **Likejon Foundation, Lublin, Poland**

The development of the publication was preceded by two international research conducted by partner HEI. First research, dedicated to students with disabilities, started on the 6th and finished on 24th of April 2020, 47 students with special needs from 3 partner countries and universities participated. Aim of that research was to get to know needs and expectations of students with disabilities, concerning functioning at university and participating in lectures. Second research, dedicated to academic teachers, started on the 1st and finished on 23rd of April 2020, 71 academic teachers from three above mentioned countries participated. Aim of this research was to examine awareness of academic teachers on needs of students with disabilities and check to what extent they are able to tailor educational processes to needs of students with disabilities. Basing on researches results partners developed two reports which were a starting point for creation this publication.

The publication is dedicated to academic teachers in order to enable them to tailor better their teaching methods to needs of students with different disabilities.

The publication consists of following parts:

**Introduction** – developed by University College of Enterprise and Administration, which serves as a general prelude to the Publication

**Chapter 1 - Design of educational process dedicate to disabled Students** – developed by International School for Social and Business Studies, which: describes different types of disabilities, presents how to modernize didactical processes to tailor them to needs of

students with disabilities and give tips how to develop educational programs which respond to needs of students with disabilities.

**Chapter 2 - Modern technologies and preparation of educational materials for disabled students** – developed by University College of Enterprise and Administration, which: describes special equipment that is used by people with different types of disabilities, gives tips on using modern technologies to improve quality of teaching of students with disabilities as well as tips on preparing disabled-friendly teaching materials and effective cooperation and communication.

**Chapter 3 - Concentration, focus of students and knowledge verification** – developed by Frederick University, which contains useful tips on how to verify student’s knowledge in the most effective way and how to maintain concentration and focus of students while lectures/seminars that may be boring. The chapter also informs about how students with disabilities use modern tools.

**Chapter 4 - Students with different types of disabilities** – developed by University College of Enterprise and Administration, which gives useful and practical tips on how to approach different types of disabilities.

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## Chapter 1 - Design of educational process dedicate to disabled Students

### 1.1 Introduction

The number of students with disabilities within higher education continues to increase year after year, also due to better opportunities for study for disabled, better financial support in the area, and changes in legislations. But representation how students consider disabilities can differ among countries; for example results of Euro survey in 2015 (based on students’ self assessment of disabilities) show Russia, Malta, Montenegro, Romania and Bulgaria appear to have a relatively low proportion of disabled students (7% or less), whereas the Netherlands has a relatively high proportion (about 30%). According to Euro survey 2015 is proportion of students with disabilities in Slovenia 12%, and in Poland 17%. Generally are undergraduates with disabilities older than those without disabilities and are slightly more likely to attend a 2-year institution (NSF, 2020 and NCES, 2020, Riddell 2020). The Bologna Process is one of the main mechanisms for promoting participation in higher education by people from under-represented groups, including disabled people.

Teaching disabled students in compliance with the public policies while maintaining academic and professional standards has become a crucial academic and policy issue (Tinklin, Riddell, and Wilson, 2004). The Convention of the Rights of People with Disabilities (UN 2006) pointed out the obligation to ensure that people with disabilities have access – without discrimination and within the same conditions as the rest – to higher education, professional training, adult education and lifelong learning. Other important international conventions or strategies that stress the necessity to provide the disabled with appropriate educational opportunities are: Education Declaration for Everybody by UNESCO (Inter-Agency Commission, 1990), Standard Rules on the Equalization of Opportunities for Persons with Disabilities by the United Nations (United Nations Department of Public Information, 1994), Salamanca Declaration and Action Plan by UNESCO (UNESCO, 1994), Dakar Action Plan by UNESCO (UNESCO, 2000). A significant number of countries have launched actions to make universities more accessible for people with disabilities, becoming progressively more committed to the processes of inclusion. In response to these laws and policies, many universities have established offices to support the educational needs of students with disabilities, and have incorporated the use of new technologies and/or have implemented inclusive educational practices (Moriña A., 2016, p.12).

The European Union is committed to inclusive education within the framework of higher education. For this purpose, the creation of support plans and services that improve access and educational inclusion of non-traditional students was proposed in the European Disability Strategy 2010–2020 (European Commission 2010). The strategy included eight areas of actions: Accessibility, Participation, Equality, Employment, Education and training, Social protection, Health, External action.



In this chapter we speak about education, dedicated to disabled, with main focus on:

- types of disabilities,
- modernization of didactic process, in order to support social rehabilitation of disabled;
- adjustments in educational programmes, that respond to the needs of disabled. Some focus will also be devoted to dimension of COVID 19 on teaching, and learning.

## 1.2 Disabled people, types of disabled

### Disability – definition

Disability is a general term used for functional limitation that interferes with a person’s ability to walk, hear, or learn, for example. It may refer to a physical, mental, or sensory condition (Homeland Security, 2013). Definition of disability by UN Convention (UN 2006): *“people with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.”* Definition of disability given by the World Health Organization is very interesting: *“Disabilities is an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. Disability is thus not just a health problem. It is a complex phenomenon, reflecting the interaction between features of a person’s body and features of the society in which he or she lives. Overcoming the difficulties faced by people with disabilities requires interventions to remove environmental and social barriers.”*(WHO, 2020).

For universities is very interesting also explanation of disability, according to social model. Social model emphasizes that disability is caused by the way society is organised, rather than by a person’s impairment or difference and looks at ways of removing barriers that restrict life choices for disabled people. When barriers are removed, disabled people can be independent and equal in society, with choice and control over their own lives. According to the social model, disability is not a personal tragedy or an abnormality and there is no need to cure the ‘disease’. Barriers to success are a form of discrimination and oppression and universities should avoid the use of medical labels to identify students with disabilities and they should make efforts to establish inclusive teaching strategies to support student success (Moriña A., 2016 pp.3-5, and Disability Resource Centre, 2017, p.12).

### Who are persons with disabilities

In English, the term ‘persons with disabilities’ is generally considered respectful and is used in the Convention on the Rights of Persons with Disabilities 2006 (CRPD). However, what is considered to be respectful terminology varies across countries, regions and individuals.

UNHCR adopts the approach to disability enshrined in the UN CRPD. Accordingly, UNHCR understands persons with disabilities to include those who have long-term physical, mental, intellectual or sensory impairments, which, in interaction with various barriers, hinder their participation in society on an equal basis with others.

### **Types of disabled people**

The World Health Organization estimates that about 15% of the world’s population has a disability (UNHCR, 2019, p.5). Disabilities are not always visible, therefore it is not possible to assume whether a person has a disability or not. Further on we briefly present different types of disabilities (Homeland Security, 2013; Rebolj B., 2014, ANU, 2020, ESU, 2018):

#### **Deaf or hard of hearing.**

Hearing impairments can range from mild to profound. People who are hard of hearing may use a range of strategies and equipment including speech, lip-reading, writing notes, hearing aids or sign language interpreters.

#### **Blind or Low Vision.**

Vision impairment refers to people who are blind or who have partial vision. Some people who are blind read and write using Braille as their primary form of written language. People with low vision have a range of visual acuity, with some individuals being able to read large print material. Many people who are blind or who have low vision use assistive technology such as screen readers and screen magnification software to interact with computers and other electronic device.

#### **Speech and language disorders.**

Such disorders can affect the way a person is communicating with others, the ability of someone to speak or to understand written or spoken words. They include voice disorders (pitch, loudness), stuttering, etc.

#### **Physical disability.**

The common characteristic in physical disability is that some aspect of a person's physical functioning, usually either their mobility, dexterity, or stamina, is affected. People with physical disability are usually experts in their own needs, and will understand the impact of their disability.

#### **Intellectual disability.**



A person with an intellectual disability may have significant limitations in the skills needed to live and work in the community, including difficulties with communication, self-care, social skills, safety and self-direction.

### **Mental health conditions.**

Mental illness is a general term for a group of illnesses that affect the mind or brain. These illnesses, which include bipolar disorder, depression, schizophrenia, anxiety and personality disorders, affect the way a person thinks, feels and acts. A person with a mental health condition may experience difficulty concentrating, which can sometimes be a result of medication.

### **Acquired brain injury.**

Acquired brain injury (ABI) refers to any type of brain damage that occurs after birth. The injury may occur because of infection, disease, lack of oxygen or a trauma to the head.

### **Autism spectrum disorder.**

Autism is an umbrella description which includes Autistic disorder, Asperger's syndrome and atypical autism. Autism affects the way information is taken in and stored in the brain. People with autism typically have difficulties in verbal and non-verbal communication, social interactions and other activities. Impairments usually exist across three main areas of functioning:

- social interaction
- communication, and
- behaviour (restricted interests and repetitive behaviours).

Many people with an autism spectrum disorder also have sensory sensitivities, i.e. over or under sensitivity to sight, touch, taste, smell, sound, temperature or pain.

### **Learning disabilities.**

They include the various kind of conditions (dyslexia, dyscalculia, dysgraphia...) “that interfere with an individual’s ability to learn and so result in impaired functioning in language, reasoning, or academic skills”. People with learning disabilities can have difficulty reading, writing, and reasoning, especially when taught in a conventional way.

### **About non-Apparent Disability.**

A person’s disability may not be readily apparent. For example, people with brain injury, epilepsy, mental illness, autism, or developmental disability are often misunderstood because their behaviours or ways of communicating may appear “unusual.” Some research studies (Houck, Asselin, Troutman, and Arrington, 1992, Dowrick, Anderson, Heyer, and Acosta, 2005, Jensen, McCrary, Krampe and Cooper, 2004) also show that in general pedagogical staff are especially sceptical toward and distrustful of students with invisible special needs since the

signs are often undetectable, and can easily be mistaken for unwillingness and disorganization.

### **Other disabilities, combination of different disabilities.**

Many other kinds of disabilities may exist, and it is important to keep in mind that even among one specific kind, a wide range of different situations can take place. For example, a person can have different types of impairments at the same time.

### **1.3 How to modernize didactical processes in order to support social rehabilitation of disabled students?**

Inclusive higher education is a path to protect the educational rights of university students with disabilities. Students with disabilities are at greater risk of prematurely dropping out of universities in comparison to students without disabilities. Therefore, it is necessary to design policies and strategies that encourage students to remain in the university and complete their degree courses successfully.

Further on we will focus on didactic approach, according to different stakeholders:

- **higher education institution,**
- **students and**
- **teachers,**

key points are based on findings from Moriña 2016, p.13; Rebolj, B., 2014; Colon, Montoro and Ruiz, 2018:

#### **Didactical process and role of HE institutions, some relevant points**

- Importance of inclusive culture (that consolidates a common language among the teaching staff, which considers differences among students as an opportunity to enrich knowledge)
- Create a welcoming environment that promotes communication between students and faculty and among students.
- University spaces should be fully accessible, with no physical barriers of any type. In this context, it is crucial that spaces are based on the universal design principle so that environments are accessible to all users. Institutional adjustments include beside architectonic adjustments of the building, also:
  - the possibility of converting materials into alternative forms
  - adjustments to the use of libraries (e.g. extended time for borrowing materials)
  - adjustments to the procedures for admission and enrolment into the higher education institution,
  - adjustments to the administrative procedures,
- Universities should consider the especially sensitive transition of students with disabilities during their first year and even the first weeks of attendance. The university should be

proactive action in transition planning to avoid early leaving and to foster academic success for students with disabilities. Strategies might include special orientation sessions, tutorials (e.g. assigning a student in a higher year or an instructor as a counsellor) or having reference persons or groups related to the disability among the faculty.

- Higher education should support training the faculty, not only in the discipline they teach and investigate, but also in how to teach. Instructional and methodological trainings on disability awareness and related issues, as well as on accommodations and the accommodation process, particularly for hidden disabilities, would help decrease attitudinal barriers that impede education.
- **General emphasis:** It is not enough for the university to guarantee access to students with disabilities. Its policies and practices must be revised to ensure that education is inclusive – guaranteeing that all the students can participate fully and that all can benefit from a process of quality teaching and learning.

#### **Modernisation of Didactical process with focus on students, can include**

- **Assertive communication by students with academics as to the requirements to be met for course assignments and examinations is critical for academic success**
- **Adjustments shall be clearly defined** (to which adjustments is student eligible)
- **Modernization in adjustments to studying:**
  - Regular work of students (not studying at the end of school year), and regular assessment of students work (not only exam at the end)
  - Dynamic methods of work, including work in groups, class discussion, and interactive activities
  - Presentation of information in a range of modes where possible (e.g. making in-class materials available online, filming practical tasks for students to review, adapted material)
  - Allow students to express their knowledge through several means of assessment to encompass different learning styles (e.g., papers, presentations, or exams);
  - Alternative forms of fulfilling obligations,
  - provide feedback to students;
- **Modernizations regarding supportive adjustments:**
  - Support tutorials on topics known to be challenging in particular courses;
  - Extra teacher in some classes
  - Tutors, note-takers, interpreters

#### **Didactical process and role of teachers**

- University teachers’ attitudes toward students with disabilities, and towards their inclusion in universities, are a key factor that will affect the development of inclusive higher education.

- HE institution shall provide lecturers with info about disability of their students
- Pedagogical staff have the autonomy to define their standards for a specific course, whereas students are entitled to be provided with reasonable adjustments. If communication between academic staff- students has not been established, it is very likely that it will result in an unproductive or even uncomfortable relationship. Teachers need to have clear expectations (e.g., following syllabi closely and excluding confusing language);
- Teachers need to be sufficiently prepared to provide an educational response to special needs– they need to adapt teaching process to the student’s characteristics, interests, and characteristics (the teaching staff has to introduce adaptations in exams and in teaching strategies, and modifications in infrastructure, as well as in advice on services and university support)
- University teachers should attend training activities related to methods of work with students with special needs (eg. training in the design and adaptation of materials and training in the use of specific means and resources), and gain some theoretical trainings about students with special needs

#### **1.4 How to diagnose and develop educational programmes responding to needs of disabled**

##### **Some terms/definitions**

Curriculum Adaptation. Although the concept of curriculum adaptation is fairly straightforward, it can take many different forms. In essence, teachers and curriculum specialists adjust and modify curricula according to student needs and the goals set forth by that student’s Individualized Education Program (IEP). Educators and theorists use many different terms for varying types and degrees of curriculum adaptation, often with overlapping meanings. But most terms and definitions represent a similar spectrum of the magnitude of necessary adaptation.

Curriculum Modification and Curriculum Enhancement. Enhancement is when teachers use existing curriculum in the general education classroom but adjust the methods and media of input and output to suit the student’s needs and IEP goals. Implementing differentiated instruction techniques, using adaptive technologies, changing the student’s physical environment, and integrating culturally responsive language and content into curriculum content are all examples of curriculum enhancement. Curriculum modification implies a greater level of adjustment to the existing curriculum. In general, teachers often accomplish this by adjusting the depth or type of content within the existing curriculum. Perhaps a student whose learning disability prevents them from reading at the same rate or depth as other students needs more time to read the materials, a shorter piece to read, or an alternative piece covering the same content in simpler language. If a student has more severe cognitive disabilities, the teacher might further modify that student’s curriculum by changing their course material at a conceptual level. This is similar to altering reading materials to be simpler,

but can also include changing the actual conceptual content of those materials towards different subjects more appropriate to that student’s cognitive abilities and goals.

Parallel Curriculum Outcomes. Implementing parallel curriculum outcomes implies a greater modification of conceptual difficulty than adaptation. However, similar to adaptation, the content subject is the same, allowing that student to participate in classroom activities alongside other students. A teacher must address each student’s needs and IEP goals with adjusted learning outcomes and conceptual depth levels for each lesson.

Overlapping Curricula. Students who require heavily modified learning outcomes and goals may need integration into general classroom activities through overlapping curricula. In this situation, a student participates in classroom activities with individualized learning outcomes for each activity, including social/behavioural development goals, cognitive learning goals, language skills or even physical ability development (University of Wisconsin, 2017).

### **Types of adaptations/adjustments**

- 1<sup>st</sup> type of adjustment: the format of the curriculum presented to the student. It could be in a paper text format, signed language format, audio format, script format, or electronic format depending on the preferred ‘learning modality’ of a particular student
- 2<sup>nd</sup> type of adjustments: concerned with the format of the response made by the student. It could be in a similar format as the presentation adjustments and could be termed as ‘response adjustments’
- 3<sup>rd</sup> type of adjustments: concerns the timing of access to the curriculum and is much more related to the examination and course work adjustments and could be termed ‘timing adjustments’. The most known adjustment under this heading is the ‘extended time’ adjustment for examination. Since some of the exams are very long, such extensions generally require multiple sessions and or frequent breaks.
- 4<sup>th</sup> type of adjustments: concerns the settings of the exams, lectures or work placements. As in the case of examinations, it would not be practical to undertake examinations in the normal examination room as the adjustments often require the use of readers, scribes and text to speech computer programs, which would distract other non-disabled examinees. Such exams are delivered at separate exam rooms and they could be termed as ‘setting adjustments’ (Disability Resource Centre, 2017).

### **Adaptations/adjustments – focusing on perspective of promising student, focusing on student’s needs**

Academic adjustments should provide students with special needs with the same possibilities for achieving success as other students they should denote a different treatment for attaining justice, in line with the principles of the theory of social justice (positive discrimination and affirmative action).

**Higher education institutions are entitled both to decide on how to grant the status of the student with special needs and to decide on which adjustments are reasonable.** But pedagogical staff have the autonomy to define their standards for a specific course, whereas students are entitled to be provided with reasonable adjustments.

The majority of the pedagogical staff has shown considerable concern and fear on questions regarding adjustments, also because there are very few definitions and guidelines on how to plan and implement adjustments. Some weaknesses about adjustments:

- the same adjustment can be very useful and efficient in one situation, but is completely useless in another context
- no two students with similar needs are alike - what is suitable for one student might not be the best choice for another

The reason for that is that adjustments are planned based on the category of inability (disability), and not on the basis of a specific context and the student’s functional needs.

How pedagogical staff perceive providing adjustments greatly depends on their belief in the efficiency of the adjustments, and on simple implementation, and, of course, on the type of adjustment involved. The actions of the member of the pedagogical staff about adjustments are dictated by his or her own notions of adjustments, and by expectations and attitudes toward students with special needs (Rebolj, 2014).

Reasonable adjustments should not alter or reduce standards; they are mostly focused on the planning and adjusting of knowledge-testing methods in order to provide students with special needs with the same opportunities to demonstrate their knowledge and achievements under the same standards as other students have. When reflecting on adjustments, the pedagogical staff must examine each course that they teach and specify the essential contents and methods of knowledge testing. By proactively specifying what is essential in the contents and work methods of a specific course or study program, and by adjusting the non-essential elements, we protect academic freedom without jeopardizing the basic rights of students with special needs.

Higher education institutions or the pedagogical staff shall answer the following questions:

- What is the objective of a specific course/study?
- Which teaching methods are necessary? (The existing or current methods must be carefully examined to see if they are connected to the learning objectives.)
- Which learning outcomes are expected from students and why?

- Which methods of testing learning outcomes are necessary and why?
- Which performance level must a student reach in order to attain the planned learning objectives? (ibidem).

Based on this, adjustments can be planned more flexibly and without fear of lowering requirements.

As far as adjustments are concerned, they must be based primarily on the student’s need. When a student shares his or her concerns and needs with a member of the pedagogical staff, it is important that this revelation should trigger an interactive process with feedback between the student and teacher. The role of the pedagogical staff in a debate on adjustments is mostly a careful review and definition of the basic (essential) requirements of a specific course or study program.

Many students with special needs do not approach the pedagogical staff mostly because they are unsure of the attitudes that the pedagogical staff will have toward them or because they are not convinced that the pedagogical staff will possess the required knowledge and experience of adjustments.

When reflecting on acceptable, useful, and at the same time, efficient adjustments, we should proceed primarily from the perspective of the promising student, which should serve as a paradigmatic starting point for the concept of sensible adjustments. This concept defines the perception of adjustments as something positive—both by the pedagogical staff and the student—as a precondition for establishing a dialogue on adjustments, as well as an active role being played by the student when entering into the dialogue, and the openness of the pedagogical staff toward issues connected with adjustments (ibidem).

It is important that the dialogue touches upon the following issues:

- Expectations by the pedagogical staff toward the student
- Expectations by the student toward the course and potential adjustments
- Objectives to be reached with adjustments—defining the basic requirements
- Methods of testing the efficiency of adjustments (assessing their usefulness and the efficiency of the student and the pedagogical staff) and a potential reflection on various adjustments (ibidem).

### **Responding to needs of disabled students in light of COVID 19**

The COVID-19 pandemic triggered various changes in life as we know it. One of the sectors which was highly affected was Higher Education. Pandemic affected several dimensions in HE: student exchange, ways of teaching, way of examinations, ways of communication faculty-



academics-students (Dermol, Marušič, Trunk Širca, Trunk, 2020; IAU & ESN 2020). The vast majority of European universities closed their campuses in March 2020, and moved to distance learning, in many HE institutions distance learning is continuing in academic year 2020/21 (IAU, 2020).

The COVID-19 pandemic is having a disproportionate impact on learners with disabilities who were already experiencing social and educational disadvantage. Some challenges of Covid 19 in relation to didactic process for disabled students are:

- When students return physically to campus, what happens to the student who experienced violent trauma when confronted by a masked person?
- What happens to the person with hearing loss who depends on lip-reading at a time when everyone’s mouths are covered by masks?
- This is also connected with technological support, particularly in case, when studies are running on-line, which means that many learners with disabilities are left behind
  - students who are sight-impaired may need voice activation for audio access or larger onscreen images for better viewing,
  - hearing-impaired students may require captioning,
  - students with physical limitations may need special accessible technology to navigate their learning and connections, others may need minimally distracting image

## Conclusion

University represents opportunity for students for empowerment, social and occupational inclusion. This experience can increase their opportunities to get and keep a job, to obtain higher revenues and achieve an independent life. In some cases, the university experience is seen as an opportunity that strengthens them personally in the face of the difficulties derived from their disability, which they encounter every day in their lives. In the case of disabilities that are due to external events, the importance granted to the university is even greater, because the fact of studying university courses motivates and encourages them and also serves as an escape to overcome the difficulties associated with their disability.

Not only students with disabilities benefit from the experience in higher education, but also the teaching and learning processes are enriched by having diverse students in the classrooms. In this sense, the presence of students with disabilities helps build a better university (Moriña, 2016).

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## **Chapter 2: Modern technologies and preparation of educational materials for disabled students**

### **2.1 How to improve quality of teaching by using modern technologies? How to use special equipment?**

Modern technologies, including information and communication technologies (ICT), are an integral part of the everyday life of many people. They affect various areas of society, including education, training and employment, but in particular they are a valuable tool for people with disabilities or with other special educational needs.

In modern world, the ability to use modern technologies has become necessary to search for and perform professional work, search for information effectively, establish and maintain contacts, develop your interests or spend your free time in an interesting way. The use of modern technologies has a positive impact on the quality of life, social inclusion; limiting access to them increases inequalities in all spheres of life, especially in education.

More and more people with disabilities study at universities in Poland. The number of students with disabilities in education increases every year. The data of the Central Statistical Office show that in 2018 the number of students with disabilities was 23 828, including 1 758 deaf and hard of hearing students, 2 010 blind and visually impaired students, 6 668 students with walking disabilities and 595 non-walking students and 12 797 students with a disability other than those mentioned.

People with disabilities belong to the groups particularly at risk of exclusion. One of the reasons is the failure to comply with the accessibility criterion when creating new technologies, which prevents people with disabilities from using them. In the provisions of the United Nations Convention on the Rights of Persons with Disabilities, in article 9, States Parties are required to "promote the access of persons with disabilities to new technologies and information and communication systems, including the Internet". The rapid development of civilization, the development of technology and science, shape a new type of society called the Global Information Society, the Knowledge Society. The education of people with disabilities cannot remain divorced from reality. The use of modern technologies will

significantly improve the situation, among others educational and occupational disabilities and significantly shift the boundaries of the impossible.

Below we present selected devices that enable normal functioning of people with various disabilities in some aspects of life, in particular, they help in learning.

#### Screen readers

Screen readers for the blind are among the most popular and probably used assistive technologies. Thanks to these applications, blind and partially sighted users can move freely in Windows, IOS and Android. Free readers and other accessibility features allow users with disabilities to work freely in the most popular operating systems.

For Windows, NVDA is the most popular screen reader. It is free software that is easy to install. The software can be downloaded from the website [www.nvda.pl](http://www.nvda.pl).

VoiceOver is the screen reader for the IOS system and Talk Back for the Android system. Here, the assistive software does not require additional installation, because in the "accessibility" tabs, screen readers are applications automatically installed on the system. It is enough to start them and configure them to specific user needs. This has the additional advantage that the same device can be used by a blind and sighted user almost after leaving the store.

#### Braille ruler

Or in another words the monitor, Braille terminal is a device that displays text from a computer in the form of Braille. They are used by blind users who are unable to use traditional monitors. Some also use a speech-synthesized computer interchangeably or simultaneously. The devices dynamically display (underline) Braille dots that correspond to characters (letters, numbers and other characters), allowing blind people to read by touch. Terminals (also known as Braille displays) usually connect (wired or wireless) to a smartphone or computer equipped with the appropriate software and display the content available on the monitor of that device. Braille notebooks are beyond the functionality of Braille lines also own memory: they are mini-computers, allowing you to store important information, keep a calendar, and often connection with the Internet.

#### Braille printer

Braille printers are used to conveniently prepare printouts in Braille. With the help of special software, the text file is converted into Braille form and then it can be printed on such a printer. The printers differ in the embossing speed, the paper used (continuous or sheet paper, sheet size) and the print resolution. Some models allow colour printing of the image on the background of Braille tactile graphics, creating prints that are also friendly to the visually impaired.

#### Enlargement program

These types of programs help blind and visually impaired people to use the computer. Visually impaired users can, depending on their needs and visual impairments, choose a program that

only magnifies the image on the computer or, usually recommended, one that magnifies the image and makes the computer sound. Such programs can enlarge the image (even several dozen times), increase the brightness or show the image in artificial contrasting colors, and also read the screen content.

For blind people, a screen reader is recommended, which not only reads the entire screen content, but also enables the display of text in Braille on a Braille line connected to the computer.

The most extensive packages combine all the above-mentioned features. They are recommended not only to users, but also to institutions (libraries, universities) - they will be used wherever different people can use one position.

### Electronic magnifier

It is a portable device for magnifying text or images. The size of the magnifier allows it to be carried in a pocket or a purse. Equipped with a camera (the best of them even have two cameras) and a monitor displays the image seen by the camera on it. Usually, it is enough to place the magnifying glass on any text to see the image even at high magnification. Some models also allow you to view an image from a distance (e.g. a blackboard at school).

Magnifiers differ in terms of their properties: screen size, image quality, the ability to adjust image parameters (contrast, brightness, the ability to display in artificial, contrasting colors). Some of them have additional functionalities, the ability to save photos or connect to a computer or TV.

### Voice-over devices

Voice-over devices read printed materials (books, newspapers, letters, printouts, etc.) using a synthetic voice. They also often display the text you are reading in a greatly enlarged version, which helps the visually impaired. Some of them can also be connected to the Internet network and e-mail. There are also devices that, apart from reading aloud what is written, also display the text in Braille, which allows, for example, to precise text correction. The more expensive ones are available in the mobile version, so their functionality increases significantly.

### Audio book and other file player

It is a device that enables reading books, friendly to people with various dysfunctions: the blind, but also dyslexics, or people with limited motor abilities. Such a player can accompany a disabled person not only at home, but also at school or during holidays.

In libraries, digital books are available in formats that will be convenient for people with disabilities. In addition, there is software available that allows you to create such publications or play previously prepared files on any computer.

### Screenplay and magnifier programs

These types of programs help blind and visually impaired people to use the computer. Visually impaired users can, depending on their needs and visual impairments, choose a program that only magnifies the image on the computer or, usually recommended, one that magnifies the image and makes the computer sound.

Such programs can enlarge the image (up to several dozen times), increase the brightness or show the image in artificial contrasting colours, and also read the screen content.

Blind people recommended to the software screen readers that not only reads the entire contents of the screen but also allows you to display text in Braille and the computer connected to the Braille display. The most extensive packages combine all the above-mentioned features. They are recommended not only to users, but also to institutions (libraries, universities) - they will be used wherever different people can use one position.

#### Telephone for the hearing impaired

People from the so-called Conductive hearing loss - with damage to those parts of the ear that are involved in the mechanical processing of the sound wave, can use a phone that uses bone conduction. Instead of the ear, the person with hearing loss puts the receiver to the skull bone. Thanks to vibrations, the signal is transmitted through the bones of the skull directly to the inner ear, bypassing the outer and middle ear. There are also adapters that can be connected to a normal telephone. Their task is to strengthen and improve the quality of the voice. Extremely useful for anyone who works.

#### Specialist keyboards

Specialist keyboards are intended for people for whom the use of traditional keyboards is difficult due to movement limitations.

There are many types of alternative keyboards, from keyboards with special removable pads, with enlarged keys and characters, through specially profiled keyboards designed for people using one hand or writing with their feet, mouths, to keyboards designed for children with different coloured keys, clearly arranged keys that friendly for children and encouraging them to work and play with the computer.

Special security frames are also available for keyboards, which allow you to rest your hand on the frame and press individual keys without worrying about accidentally pressing the button next to it. Alternate keyboards allow people with disabilities to write using their hands, one hand, feet or special pointers. Various types of them have been designed to improve and facilitate the use of computers by disabled people.

#### Devices replacing a computer mouse

The computer mouse is the basic tool for working with the computer. For many people with motor disabilities with paralysis, spinal cord injury, neurodegenerative diseases, muscle atrophy, this basic tool of working with a computer is often unavailable. Specialized mice and alternative devices replacing a computer mouse are intended for these users.



Every person with a disability, regardless of the type of motor limitations, can choose the right solution for themselves from a wide range of alternative devices, ranging from enlarged mice, specialized joysticks, to mice operated by moving the head, mouth or eyes.

## **2.2 How to prepare educational materials (presentations, scripts, flyers, brochures) that will be disabled-friendly?**

Disabled-friendly materials should be prepared in such a way that the information conveyed in them is easy to read and understandable. This should be followed in particular while developing materials for an open group of various recipients, materials dedicated to people with disabilities as well as information, promotion and recruitment materials regarding the project / activities financed from European funds. The preparation of disabled-friendly educational, promotional and informational materials is based on the common principles, set out below.

### Creating documents in MS WORD

Texts should be written in plain language. This means avoiding jargons, abbreviations, and phrases. If industry abbreviations are used (for example, UN, UNHCR), then when they are used for the first time in the document, their amplification in brackets is indicated, the same applies to acronyms and foreign words. When building sentences, use the active voice instead of the passive voice, short sentences, if possible - positive instead of negative (for example: "Complete an available project" instead of "You should not implement an unavailable project").

The recommended font is sans-serif - with a typeface without ornaments in the form of dashes next to the letters. The character endings of sans-serif fonts are simple, such as Arial, Calibri, Helvetica, Tahoma, Verdana. Examples of serif fonts that should not be used include Times New Roman, Century. If possible, the font size of 14 points should be used for the basic text or even larger (the minimum font size is 12 points).

Line spacing should be used: 1.15 or 1.5. Hyphenation should be turned off by default. The "exploded text" function is used for character spacing, if you insert spaces between letters, the screen reader will treat each letter as a separate word. Vertical inscriptions should not be created, this disturbs the order of reading the text - screen readers read texts in accordance with the rule of writing and reading from left to right and from top to bottom.

The available text is left-aligned text. We avoid right and left copyediting - reading this aligned text will be difficult for people with dyslexia. For them, it will be visible as a text wall. Bearing in mind this type of inefficiency, in addition to correct copyediting, you should also remember

about creating short paragraphs and using headings in the text. Ending lines in various places on the right side of the text and spaces will allow people with dyslexia to read the text more efficiently.

Paragraphs should be logically correct. A paragraph as a unit superior to sentences should contain a certain thought. Sentences are not broken down into paragraphs. Use the <Enter> key to separate the paragraphs. Moving a fragment of a paragraph or a sentence to a new line is done by inserting a line break - this character can be inserted using the keys: <Shift + Enter>. A document fragment is transferred to a new page by inserting a page break: <Ctrl + Enter>. The <Enter> key is not used to move the content - blind users then receive incorrect information from the screen reader; it can also cause documents to be displayed incorrectly. Using the built-in styles "heading 1, 2", etc. allows keyboard and reader users to move the cursor directly to the selected heading. Correctly marked headers allow you to display the document outline, thanks to which you can quickly see its structure (tab "View" and select "Navigation Pane"). In addition, they also allow you to automatically create tables of contents.

When inserting hyperlinks into the text, when creating their alternative description, they should be given a proper name that will clearly define their purpose. Complete link names are not used.

It is important to use appropriate contrast between the background and the text, e.g. black text on white background, blue text on white background, blue text on yellow background, black text on yellow background, white text on blue background.

When exporting a file to pdf, before saving the file, it is necessary to select "Options" and check: "Document structure tags for accessibility" to increase the accessibility of the file. If you are scanning a text document into a PDF file, be sure to select the text searchable scan option. If the scanner does not have such a function, the created PDF file will be inaccessible to people with disabilities. In this case, use software for OCR, i.e. print recognition and (after correction) save it to a text file. When creating a PDF document, for example from MS Word or MS Excel documents, you should call the "Save as" command, then select the PDF option in the "Save as type" field and after pressing the Options button, select the "Structure tags for accessibility" checkbox and a checkbox "Document Properties".

### Multimedia presentations

When creating multimedia presentations, the above accessibility criteria should be taken into account: the use of a large font (here at least 18-20 points), sans-serif (see above) and maintaining the contrast between the font and the background.

Each slide should bear a unique title. There should be a limited amount of text on the slide - a maximum of 4 to 6 lines. Short sentence equivalents should be used in the text. Graphics requirements are: high quality, large photos with obligatory alternative text.

### Posters, flyers, announcements

They should be developed according to the principles of accessibility (see above) using text that is easy to read, which means: using simple syntax, avoiding jargon, abbreviations and phrases, using the passive voice instead of the active voice and avoiding contradictions. The website [funduszeuropejskie.gov.pl](http://funduszeuropejskie.gov.pl) has an infographic, which in a few steps helps to check whether the letter, text, leaflet is friendly and understandable to the recipient: [Check if your letter is simple](#).

Large-size sans-serif fonts are used when designing leaflets. A rule of thumb is to copyedit text to the left margin and avoid using small caps and colours. The rule of thumb is to avoid red, green, yellow and lighter grey colours.

With the visually impaired in mind, in order to provide the opportunity to read the materials and information prepared in the paper version, the electronic version is additionally prepared with the possibility of enlarging the print, changing the contrast and colours. The minimum text-to-background contrast value should be 4.5:1.

Blind people are a group of people with disabilities for whom it is important to properly prepare documents and digital materials. These people use special computer software that reads to them everything that is on the computer screen (screen readers). The information prepared for the screen reader must be text content, and all non-text messages - e.g. photos, illustrations, charts - must have a text alternative so that they can be used by blind people. Alternative text, a description containing the same information as the visual counterpart, should be provided for each non-text element.

### **2.3 How to interact effectively?**

As a rule, any interaction brings benefits, regardless of the scope, form and degree of intensity. One of the forms of collaboration is cooperation, action related to a cooperative attitude, accompanied by the expectation of reciprocity. In order to act effectively, it is necessary to get to know mutual expectations, establish relationships, build social ties, also constructively solve emerging problems and conflicts, and above all, communicate effectively. For this purpose, it will be necessary to diagnose the needs of the disabled students community and, inter alia, planning and implementing trainings for the academic community, making university space and infrastructure available for the needs of people with disabilities, adapting teaching materials and aids, using modern technologies and other forms

of support (e.g. assistant service for a person with disabilities), providing accessible electronic information.

What are the expectations of the community of students with disabilities? Above all, they want to be treated in the same way as other students and expect the same as everyone else: receiving an education, which is confirmed by a diploma. For them, studying is tantamount to the possibility of full participation in academic life. In order to cooperate effectively, it is necessary to learn about the needs of disabled students. The starting point should not be the nature of the disability, but what the person needs to fully develop their capabilities.

Higher education institutions undertake a number of activities aimed at adapting universities to the needs of disabled people and equalizing educational opportunities. One form of action is the establishment of organizational units entitled Offices for Persons with Disabilities and appointing Rector's Plenipotentiaries for Persons with Disabilities. Offices for People with Disabilities should be guided by enabling the student to access the full academic offer without any form of discrimination. Actively cooperate with students with disabilities, listening to their needs and consulting with them activities aimed at implementing rational improvements.

It will be important to establish rules of cooperation and to follow them consistently. You can consider introducing an individual approach to the problems of people with disabilities by establishing close contact with the student, getting to know his individual limitations and possibilities so as to be able to offer support for a specific person.

Another proposal may be a change from granting people with disabilities standardized reliefs and privileges in favour of seeking, developing individualized adaptation solutions that will allow the student to fulfil the obligations imposed. It is necessary to strive to develop the potential of a disabled person in connection with the education process they implement. Although it would seem acceptable to dismiss a student from some activity due to his limitations, it is worth taking such measures so that the task is completed in a modified form.

Raising the awareness of the academic community, both of employees and students, will allow to implement effectively various forms of support in the process of educating students with disabilities. The maintenance staff, assistants and volunteers should also be trained. Trainings should concern the basic principles of communication and appropriate behaviour towards a person with a disability. Helpful publications such as "Practical savoir-vivre guide for people with disabilities" will be useful.

Training in the basic principles of communication and proper behaviour towards people with disabilities should be carried out with a less thematic generalization in order to narrow down the form and specification of communication, taking into account the specific nature of

the disability. Different forms of communication will be in the case of contact with a person with reduced mobility, different in the case of visually impaired people, and it will be differently in the case of people with impaired hearing.

In the process of making the infrastructure available, it will be beneficial to prepare and share the university's situational plan, which should be legible and, if possible, present information in audio or "touch" format. Elements of the situational plan should include the designation of important elements, especially those that are accessible to students with disabilities at the university.

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## Chapter 3 - Concentration, focus of students and knowledge verification

### 3.1 How to verify student’s knowledge in the most effective way?

To verify student’s knowledge for a material, we usually use the two basic types of assessments: The **Formative assessment** and the **Summative assessment**.

- **A Formative assessment** occurs within the duration of a course and is used to determine how well a student is learning the material of the course. Formative assessment is better to be implemented in an ongoing and consistent way, and to provide critical feedback to the learners.
- **A Summative assessment** refers to a final examination and measures what the student has learned after completing a course.

Apart from the conventional tests, assignments and exams, an academic or a teacher can use a number of practices to verify students’ knowledge. In a disability-free classroom, Saga Briggs (2014) proposes 21 tips to check students’ understanding and verify their knowledge. Some of them include to avoid Yes/No questions, ask students to reflect, use quizzes at the end of class, ask students to summarize important concepts and lessons, use hand signals to rate or indicate students’ understanding of a concept, use response cards, move to a corner of the classroom to indicate their response to a question or a statement by the academic, think-pair-share, perform choral reading, ask a single focused question, use a Socratic seminar, students to ask questions of one another about an essential question, topic, or selected text and other practices.

In addition, the last year and due to the Covid-19 pandemic, academics and teachers were forced to change many of their conventional practices. We turned to online quizzes, to open-ended/essay questions, to online drag-and-drop activities, to online interviews and presentations, we also used online polls and simulations with the help of contemporary tools, we used forum posts on platforms, synchronous and asynchronous discussions, and peer evaluation (Colman, 2020).

According to our survey addressed to students with disabilities coming from the three universities, WSPA University College of Enterprise and Administration, Frederick University and International School for Social and Business Studies, working in the project “Inclusive University—a set of tools dedicated to HEI for better respond to disabled student’s needs”, students with disabilities may have visual impairment, hearing impairment, mobility impairment, somatic and other health problems, learning difficulties such as dyslexia, lack of concentration and or mental illness. As a result, the two groups of actions mentioned above, that are usually used for assessment cannot be followed by all students in a classroom, whether the class is conventional or virtual-online, for the simple reason that some of the

students may face mobility difficulties, vision difficulties, hearing difficulties, and other learning difficulties.

The classroom and academic environment can have a huge impact on the concentration, focus and knowledge verification for students with disabilities and special needs. Examples of the possible negative impact of an academic environment include: a deaf student without a sign language interpreter, a wheelchair user in a university without an accessible bathroom or elevator, and a blind student using a computer without screen-reading software (WHO, 2011).

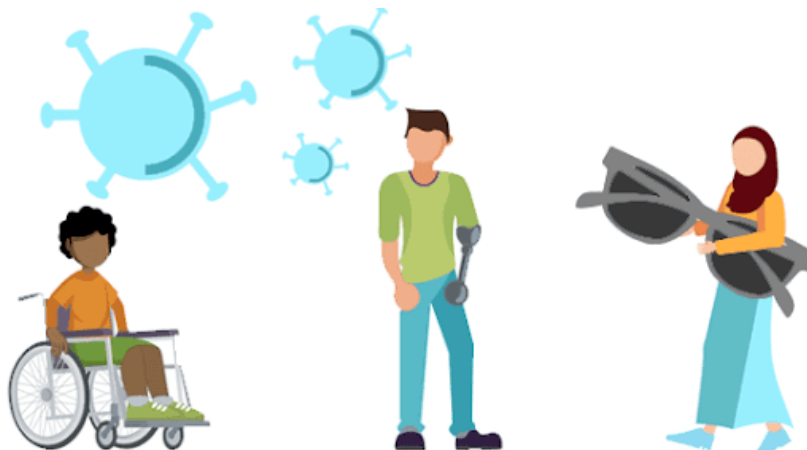


Photo: <http://www.emro.who.int/fr/violence-injuries-disabilities/violence-infocus/considerations-for-people-with-disability-during-covid-19.html>

To enhance the verification of student’s knowledge in the most effective way students need specific support that a university should provide. Assessment of students with disabilities should strive not only at verifying knowledge on the subject matter but also at evaluating learners’ strengths and weakness at different points in time so that faculty can make instructional and informed decisions and improve practices in order to meet the learning needs of all students.

Some of the following findings that are listed below are based on the survey of the project “Inclusive University – a set of tools dedicated to HEI for better respond to disabled student’s needs” and aim to enhance the concentration and focus of students with disabilities.

- **Adjust the time of exams to students’ specific needs.** The time for online or conventional quizzes or exams needs to be extended to provide the student in need the time to complete their tasks. In this way the academic will be able to verify the full knowledge of the student.
- **Adjust the exams to fit students’ specific needs.** When exams are adjusted to students needs their performance can be supported and assessed correctly. For example, the examiner can engage an oral exam for students with hearing problems, or use bigger letters and optimal fonts for students with sight problems or allow students to type instead of handwriting their answers.



- In extreme cases and given approval of a Review Committee, there may be instances that students can be given an option of **presenting coursework instead of doing examinations**.
- If students have a disability that seriously **impairs memory, adjusting the final exam to be open book** will limit the student’s stress related to memorizing facts and enhance their performance.
- The university should be able to **provide technical assistance, support and access to any tools** are requested for the completion of the task or work of the students in need.
- **Provide an Assistant** during the examination. In case this is possible, students should have the help of an assistant- interpreter to help them with sign language, or a reader scribe, or word processor or even the option of an oral exam.
- Provide any **type of Assistive Technology** that could be used to help students perform best.

While all of the above tools are pivotal to enabling students to perform well during their assessment, special attention should also be given to the **physical environment** that if not accessible can cause extra stress for students at the time of their assessment. Take for example a visually impaired student who is trying to find their classroom for their exam but the classrooms have in very small print the room numbers, buildings do not display names in an obvious place or manner for visually impaired students to be able to find their way around campus. Similarly, if students are allowed bathroom breaks during exams but bathrooms are not accessible to students with disabilities or in close proximity to the examination halls, this will add an additional emotional and physical stress to the students that may impact their performance during an assessment. So, in addition to the above and in relation to the physical environment where learning and assessments take place the following should also be taken into consideration when thinking of inclusive practices:

- **Planning.** While planning for final examination scheduling, the University Studies / Registrar Office must first know in which courses there are students with disabilities and those students’ special accommodations. Poor planning and not being adequately prepare to offer these accommodations during lectures or assessments indicates a lack of respect towards the needs of students with disabilities.
- **Location.** Classroom allocations should take into account the needs of students with disabilities. Preference should be given to classrooms or laboratories that are on the ground floor. If that is not possible then the presence and proximity to elevator should be considered.
- **Signs.** Buildings’ names, corridors’ directional signage and classroom numbers should be clearly displayed and in large print so that students with low vision or cognitive impairments can read. All signs should be also translated in braille.

- **Distractions.** Assessments should be taken in a room with reduced distractions and candidates seat arrangements should take into consideration the unique needs of students with disability in terms of physical space, such as positioning of a student on a wheelchair, quality of lighting for students with visual impairment, not sitting close to windows with excessive outside noise, having room on the table for any assistive equipment etc.

Finally, in addition to tools that enhance student with disabilities performance during assessment the following recommendations at the faculty level are proposed:

- A **course outline** with clearly defined learning outcomes, types of assessment and assessment deadlines must be given during the first week of classes so that students can plan ahead.
- Faculty must clearly **communicate** what is expected of each assessment and have clear grading criteria.
- Utilization of **diverse types of formative and summative assessments** i.e. open and closed book tests, lab exercises, reflective portfolios, peer assessments, self-evaluation etc, and incorporation, where possible, student choice in assessment (Plymouth University, 2014).
- Allow students with disabilities to **submit draft work for feedback prior** to the assessment deadline.
- Provide students with disabilities **access to past exams papers** for practice and provide feedback.
- Feedback provided should be personalised and reflective to ensure that individual developmental needs are identified and appropriate action recommended (University of Bedfordshire, Guidance Paper 4: Inclusivity of Assessment, p. 4).

At the core of all of the above however are academics who invest time and energy on professional development – and institutions that offers such opportunities, academics that seek their students’ feedback in order to evaluate personal beliefs and attitudes towards students with differences, adopt a student participatory approach to teaching and learning and use formative assessment to inform and improve their teaching practices.

### **3.2 How to maintain concentration and focus of students while lectures/seminars that may be boring?**

Any student can lose interest, focus and concentration in a class from time to time. This phenomenon is deteriorated with students with special needs and disabilities. In particular students with learning difficulties may be unable to maintain attention during a class lesson or lecture. Academics expectations of their students’ with disabilities level of engagement and participation in classroom activities, will influence teaching and content delivery. For example, if we abide by the deficit model of disability where *“the target individual or group is*

*conceptualised primarily (or even solely) in terms of their perceived deficiencies, dysfunctions, problems, needs, and limitations”* (Dinishak, 2016), then the teacher will try to bring the student with disability up to the standards of the rest of the group, will maintain low expectations of students with disability, disregard their needs in curriculum design and classroom and assessment activities. On the contrary, using a strengths approach to disability, the teacher will understand that each student is unique, has internal and external strengths on which they can build on, is unbiased and believes in the capacity of the individual to grow, learn and change. So academics’ personal views, attitudes and beliefs in terms of disability will shape their expectations of students with disabilities which in turn will influence the student’s level of classroom engagement and ultimately their performance.

When discussing how to make the students’ experience in class more productive and exciting then we are talking about *inclusive curriculum delivery*. In the Guiding Paper series of University of Bedfordshire for inclusivity in higher learning inclusive teaching and learning gives rise to three key characteristics of curriculum delivery: **Collaborative – Responsive – Safe**.

So with this in mind we provide some **suggestions to the lecturer and teacher** that can support students with disabilities in order to actively participate in classroom activities and remain engaged throughout lectures:

- Create a **safe environment** for all students. Make sure that students respect their peers and that they are encouraged to express their opinions without fear of being ridiculed or bullied. If possible, during the first class, set up together with the group, a set of rules that address proper behaviour.
- Help **build communication** and a sense of teamwork from the very beginning. Use ice breakers and personal reflection activities to help students get to know each other and create a sense of belonging.
- Generally adults learn differently from children. Get acquainted with **active learning techniques** and move away from the traditional ‘lecture’ method. Active learning techniques include role plays, case studies, brainstorming, small group exercises, peer activities etc.
- **Minimize students stress**. Get feedback from students for what makes them feel anxiety and find strategies to tackle their stress.
- **Breakdown a long assignment into smaller tasks**. Give guidelines to students to make the assignment simple but not simplistic. Plan lessons with more breaks. It is very important that the teacher takes frequent and short breaks during the lesson in order to make the tasks more manageable and give students the chance to rest. Introduce an interactive activity every 20 minutes of lecture like for example a case study, a small group exercise, a role play etc.

- **Divide the questions** and tasks between pairs and groups and make sure that the students with disabilities are in a safe group.
- Ask the students to share their results with each other and encourage students with disabilities to **participate** and the rest of the students to collaborate. In other words, increase interaction.
- Students with disabilities may benefit from having **lecture notes beforehand**. Use Moodle-learning management platforms to post reading material ahead of classes and state clearly in the course outline what each lecture will cover.
- Use different ways of **presenting information** – videos, charts, discussions, lectures, seminars, online activities. Get acquainted with ‘multi-sensory techniques’ in teaching which integrates visual, auditory, tactile (touch) and kinesthetic (movement) learning elements (<https://blog.yorks.ac.uk/m.wray/design-for-multiple-means-of-delivery/>, <https://www.calvereducation.com/learning-motivation/an-introduction-to-multi-sensory-learning>)
- Make the lesson as **playful** as possible. For online courses use breakout rooms to make the audience smaller.
- **Consider the visual environment** of the classroom whether this is conventional or online. Get feedback from students what feels better for them.
- Arrange the classroom in a way to have **limited distractions** to increase attention.
- **Know which of your students have disabilities** and what their special requirements are. For example, if you have a student with a hearing impairment and uses lip speech as a way of following you, then you should not speak with your back turn to them while writing on the board.
- **Modify the lesson content** and improve teaching practices to accommodate the students’ needs.

### 3.3 How students with disabilities use modern tools

Integral to the inclusion of students with disabilities in higher education is the use of modern tools, technological tools or what is known as Assistive Technology. The COVID-19 pandemic has made the usage of modern tools a necessity, in addition to the progress in the Information Technology industry, more and more tools are available for students and Universities in order to facilitate the learning of students with disabilities.

**Assistive Technology** is any device, piece of software, equipment or tool – even phone apps - that helps people with disabilities communicate, learn and overall function at a higher level. Assistive technology ranges in options and costs. While some will cost money and Universities must allocate significant resources towards them, others are no-tech or low-tech and are free or cost very low. Some of these tools include:

- **Lecture capture tools** – lecture capture is the process of recording classroom lectures as videos, and making them available for students to review after the class. In fact, due to the COVID-19 pandemic and the need to transfer all educational activities online, online lecture recordings that were made available to students to review later had a positive impact on students’ understanding of concepts and was especially helpful for students with concentration issues. Mid-tech devices such as audio recorders, portable note takers can also be helpful and a less costly choice. Clear policy should be included in course outlines in terms of recording lectures and the use of the recording from students.
- **Moodle or Blackboard** - both are learning management tools that are not only helpful for organizing a course and posting lecture notes and materials before lectures, but also offer, especially Moodle, engagement tools for learners.
- **Software for helping students with disabilities with writing:** Text-to-speech, speech-to-text word prediction and graphic organizers are four useful software functions for students who struggle with language-based learning disabilities (Young & MacCormack, 2014)
- Assistive technology for **visually impaired students** include screen reading software, magnification software, dictation software, braille watches, and printers (MIUSA, 2018). Apart from high tech software for hearing impaired students, simple solutions like turning on the closed captioning in YouTube and GoNoodle exist but may have limitations in terms of the availability of captioning in certain languages.
- **Computer Flow Charts** that turns ideas into a picture or flow chart referred to as cognitive mapping – especially helpful for students with learning difficulties. Along those lines are also mind mapping software such as Popplet, MindMeister, Idea Sketch, Inspiration Maps, and Mindjet Maps (<https://sds.umbc.edu/assistive-technology/mind-mapping-brainstorming-support/>)

In order to facilitate the use of these tools by students with disabilities and faculty members alike, Universities must first dedicate time and resources to finding the best available options for their students with disabilities. Disability Services must inform students of available options and where cost is an issue staff must be able to use community and University resources in order to help students acquire them. Technical Services must also be able to offer to both students and faculty members training in the use of Assistive Technology through workshops and / or videos. And while technology might serve the inclusion of students with disabilities in higher education, special attention should be given to ways in which technology may hinder their participation and active engagement in the educational processes.

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## Chapter 4 - Students with different types of disabilities

### 4.1 Approaches to different types

#### Approaches to different types

Article 1 of the Convention on the Rights of Persons with Disabilities, ratified by Poland in 2012, defines disability in a different way than before: "Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairment, which may, in interaction with various barriers, hinder their full and effective participation in society, on an equal basis with other people ”.

Disability within the meaning of the Convention results not from the limitations of an individual, but the environment and the external environment. This approach allows us to look from a different perspective - the key issue becomes the need to make changes in the environment so that everyone can use it on an equal basis. Equality is about access to all goods, including education, for people with various disabilities. Accessibility for people with disabilities is a complex issue for many reasons. It should be remembered that the needs of people with disabilities are not the same, it is a diverse group of people with individual characteristics. While ensuring equal access to education for all pupils / students / learners, it is important to remember about the difficulties faced by people with various types of disability.

#### Deaf and hard of hearing people

The existing division according to the degree of hearing loss may not be useful in identifying the needs of this group. According to the authors of the "Expertise on good practices in supporting people with various types of disabilities - recipients of the activities of cultural institutions", the key aspect of the functioning of people with various levels of hearing impairment is linguistic functioning.

Therefore, the authors propose a division into:

1. deaf people - for whom the first natural language is Polish Sign Language
2. hearing impaired people - for whom the first natural language is Polish.

Therefore, with such a division, attention must be paid to the availability of information in completely different channels. For deaf people, it will be crucial to provide translations of phonic and written information in Polish into Polish Sign Language (PSL). The transmission of information in Polish (foreign) is therefore insufficient. In order to understand this issue well, you should understand that Polish Sign Language and Polish are two separate languages. Knowing one doesn't translate to knowing the other. These languages are not only distinct, but also very different from each other.



Deaf people may know the Polish language, but it is not a rule. Due to this, translations of texts, exercises and lectures at PSL should be provided. Conducting PSL classes with the use of an interpreter is no different than teaching them in another foreign language. Remember the pace of speaking and follow the rule that only one person speaks at a time. Interpreting into PSL usually takes place simultaneously, the interpreter should have time to rest.

People with hearing impairments use Polish in communication (reading or listening). In the latter case, they are supported by hearing aids or cochlear implants that improve hearing. Usually they know the written form of the Polish language, absorbed by auditory (as opposed to deaf people). An important assurance of accessibility for them will be the replacement of written audio messages. Wherever there is sound with a message in Polish, it should be supplemented with subtitles.

Difficulties, which may be experienced by teachers during work with this group of people with disabilities are (for the hearing impaired) choosing the right room. The room with the windows facing the street is not recommended because the noise will make it difficult to receive information. Reception problems will also be caused by a room with inadequate acoustics.

In 2015, a new Polish standard PN-B-02151-4 "Building acoustics - Protection against noise in buildings" was published. In the introduction to the standard "Part 4: Requirements for reverberation conditions and speech intelligibility in rooms and guidelines for conducting tests", it can be read that the application of the standard's requirements to specific rooms aims to "reduce noise in the room by reducing its component, which is noise reverberation, ensuring speech intelligibility enabling proper use of rooms intended for verbal communication ". The given assumptions fully correspond to the acoustic issues related to classrooms.

People conducting classes with D (deaf) people often find it difficult to maintain eye contact with participants and not to walk around the room while speaking. It is difficult for them to avoid writing down on the board while discussing and using professional vocabulary, and they often do not know how to attract the attention of more people, how to ask the selected person for an answer. It is also necessary to slow down the lecture due to the fact that a deaf person cannot absorb the message and write at the same time, because both activities engage their eyesight. "Savoir vivre guides for disabled people", implemented and made available in both paper and electronic versions, are very helpful in such cases.

It is important to break stereotypes. A deaf person, like any other, should be treated with respect. It must not be assumed in advance that the deaf cannot, do not want or are not able to do something. Deafness stereotypes are very damaging. Deaf people are not a homogeneous group. You should bear this in mind and never assume that everyone is flashing the same, speaking the same and writing the same in Polish. The default channel of

communication with deaf people is Polish Sign Language, but it is worth asking deaf people about their communication preferences. How deaf people speak and write does not in any way prove their intellectual, cognitive and communicative abilities. It also does not mean that deaf people have no right not to understand, not know or be able to do something. All materials intended for the deaf must be prepared in such a way that they are accessible and understandable to them.

### **Blind and visually impaired people**

Visually impaired people are the broadest group of people with visual problems. It includes both those who have only a sense of light and those who use, for example, the remnants of vision in their visual functioning, experience colour vision disorders or nystagmus. These people have some visual abilities, but their level of vision prevents them from carrying out everyday activities. Their functioning can be improved by the use of optical and non-optical aids or the adaptation of the environment in which they function on a daily basis. Providing good lighting of the room and the student's workplace will favourably improve his perception. It may be necessary to illuminate with an additional lamp.

Students with vision problems should be encouraged to sit close to the lecturer. Enabling the student to record a lecture on a voice recorder, after receiving a statement that the recordings will be used for teaching purposes only, may prove invaluable. The same applies to the use of electronic optical aids, such as enlargers, magnifiers, or other technological solutions during classes.

The content of lectures, scientific materials and multimedia presentations made available to the student should be provided in an accessible form, which means choosing the right font, using contrasts, but also (which is especially important for blind students) a form that will be ready to be read using specialized software.

During the lectures, the visual reality (e.g. information contained in charts) should be precisely described to a blind student using specific words so that he can easily imagine the content conveyed.

During the exams and tests, the student should be allowed to take an alternative form, e.g. oral exam instead of a written exam, extension of the exam time or use of an assistant or specialist equipment.

### **People with reduced mobility**

This is a wide group of people, it includes both people on wheelchairs (manual or electric), as well as people using crutches or a walker. This group also includes the elderly, injured and not fully motorized. For this group of people, the key is to eliminate the differences in levels (all

kinds of thresholds, steps, etc.) and to allow them to bypass stairs (elevators, ramps, stair platforms).

It is equally important to ensure that the surface on which they are moving is neither too slippery nor too porous. An important issue is the proper organization of space in such a way as to allow free access from the level of the trolley to all kinds of switches, used equipment and necessary items such as textbooks, library counter, etc.

When talking to a student in a wheelchair, it is good to adopt a posture that will allow you to maintain eye contact without forcing him to tilt his head upwards. It is tactless to conduct a conversation in a close standing position, looking at the student from above. Students who have difficulty writing quickly and clearly should be given adequate time or be able to write the exam using a computer or assistant. The assistant's help will also be necessary for a person who is not able to independently perform exercises in laboratories due to hand disabilities. Assistant's assistance should be purely technical, in no case may it extend to the interpretation of test results.

### **Chronically ill people**

This group includes people with various diseases, e.g. allergies, asthma, epilepsy, diabetes, haemophilia, which impede functioning to a greater or lesser extent, so it is best to learn how to act in an emergency, e.g. attacks of dyspnoea, epilepsy. If the student can work only for a short time, the deadline for submitting the work should be extended. Cooperation is important here: the student's systematic work and the lecturer's consistency so as not to allow the accumulation of arrears.

People with allergies must be allowed to leave the room in order to apply a desensitizing substance. It is important to know that some medications can cause drowsiness and slow down your reaction. It is extremely important for people with diabetes to maintain their sugar levels. These people need to check their blood glucose regularly, and they can leave the room to administer insulin or eat a meal.

The increased absenteeism of people with haemophilia may be due to the consequences of injuries. You should know that in the event of sudden haemorrhage, especially internal haemorrhage, it may be necessary to administer a coagulation factor promptly.

### **People with ADHD / ADD**

For this group of pupils / students / learners, it will be helpful to apply practical solutions. Lecture rooms should be arranged to minimize potential distractions. It is a good idea to notify students of parts of the class where they should be particularly focused.

The methods of conducting the classes should be varied, discussions and practical classes should be introduced whenever possible. The perception of the content will be improved by

the use of large fonts in presentations, materials, notes provided to students, but you have to remember to include a maximum of two main points on the website, and avoid topics, illustrations of tasks not related to the class.

### **People with autism**

Persons conducting didactic classes with students belonging to this social group should set the same requirements for them as for the rest of the academic community. However, it should not be forgotten that there is a possibility of conflicts arising from difficulties in reading non-verbal messages (tone of voice, body language) by them. A person with autism has problems with reading the intentions, well-being, mood of another person, he treats our statements literally, so these statements should be precise and literal.

Students may need more time to become familiar with the new institution and help with orientation in the field. All maps with marked routes, passages, lecture rooms, etc. will work here.

The learning process will be facilitated by highlighting the most important information, presenting the material in various ways: in the form of presentations, diagrams, diagrams, additional brief descriptions. Short breaks during classes will be helpful, as well as parallel electronic communication.

It is very important to stick to the established order of classes that a student with autism is used to. If this happens, let him express his emotions freely.

Autistic students may show unusual interests in which they are experts, therefore, if possible, initiate a situation in which the student could share his knowledge, and thus build a positive image in the peer group. Any help for a student with autism should be tailored to their individual needs, so if in doubt, talk to them about it.

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