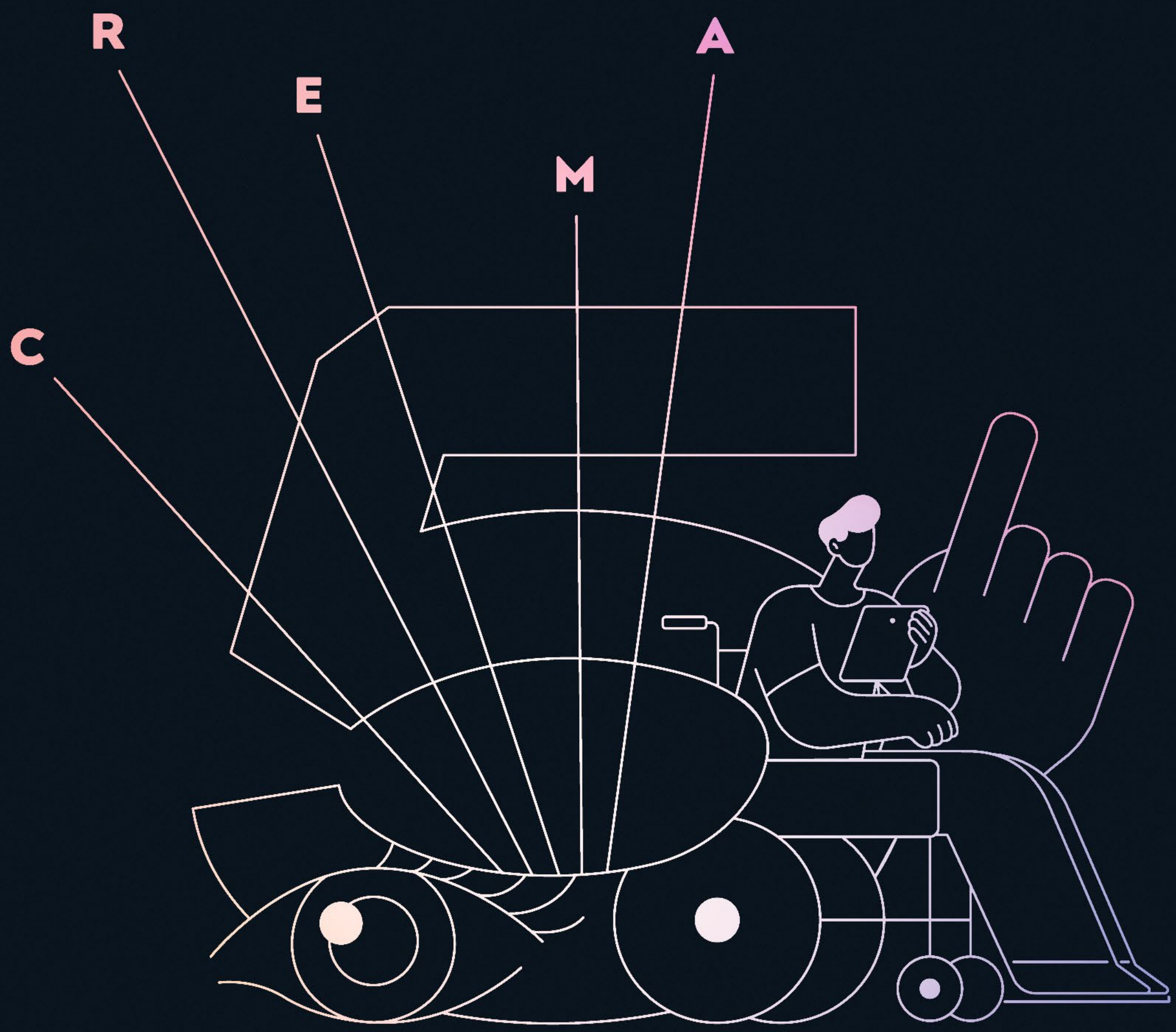

Chapter 5

Accessibility and makerspace = MakeAbility

cremaproject.eu

About

CREative MAking in Lifelong Learning (CREMA) is a three year project (2019-2022) funded by the Erasmus+ Programme of the European Union.

CREMA explores the concept of creative spaces for adults in museums. Through mapping of best practices, developing and testing innovative working methods, this project aims at learning how to make better use of museum collections for creative making as part of the overall Erasmus+ lifelong learning vision. The far-reaching aim of the project is improved museum services that deliver new skills and competences, which can assist adults to stay creative throughout their lifetime. Encouraging creative and entrepreneurial spirit across generations and developing guidelines for creative making in connection to museum collections are among the objectives of the CREMA project.

The project is carried out by seven different European organisations: The Regional Museum of Skåne (Sweden), the Finnish Museum Association (Finland), History & Art (Denmark), the Hungarian Open Air Museum (Hungary), Creative Museum (Latvia), Radiona Zagreb Makerspace (Croatia) and BAM! Strategie Culturali (Italy).

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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

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Abstract

This guideline was written to encourage museum professionals to make their makerspace and their creative activities accessible for everyone, including people living with disabilities.

Museums and makerspaces both desire to welcome every member of their community. How to be inclusive? Where to start? The first step is of course to get to know your target group - what their needs are, and what works for them.

This guideline gives you information about what it means to be a person with special needs. It also provides communication tips on how to reach out, design, and deliver creative activities for people living with diverse disabilities.

How to bring your collections closer through creative making to the visually-, hearing-, mentally, or physically impaired people? Don't worry, this guideline is going to help you with lots of useful information and tips that are easy to adapt. Read about making your communication simple, find out more about how to set up your space and get inspired by the pilot test cases.

g People with special needs

Back round

As the World Health Organization (WHO) states: “Disability is part of being human. Almost everyone will temporarily or permanently experience disability at some point in their life. A person’s environment has a huge effect on the experience and extent of disability. Inaccessible environments create barriers that often hinder the full and effective participation of persons with disabilities in society on an equal basis with others. Progress on improving social participation can be made by addressing these barriers and facilitating persons with disabilities in their day to day lives.”

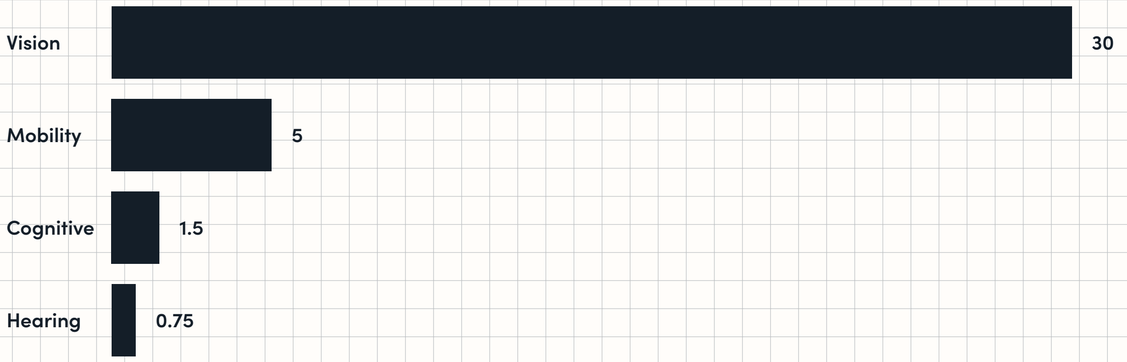
When talking about makerspaces and museums we should declare that both of them are for everyone in the community. Therefore, these places should be accessible for every member of the community, including people living with disabilities. How can a museum be accessible for people living with disabilities? And how can a makerspace be accessible for people living with disabilities? What factors should be taken into consideration? That is the focus of this output.

Let the numbers talk

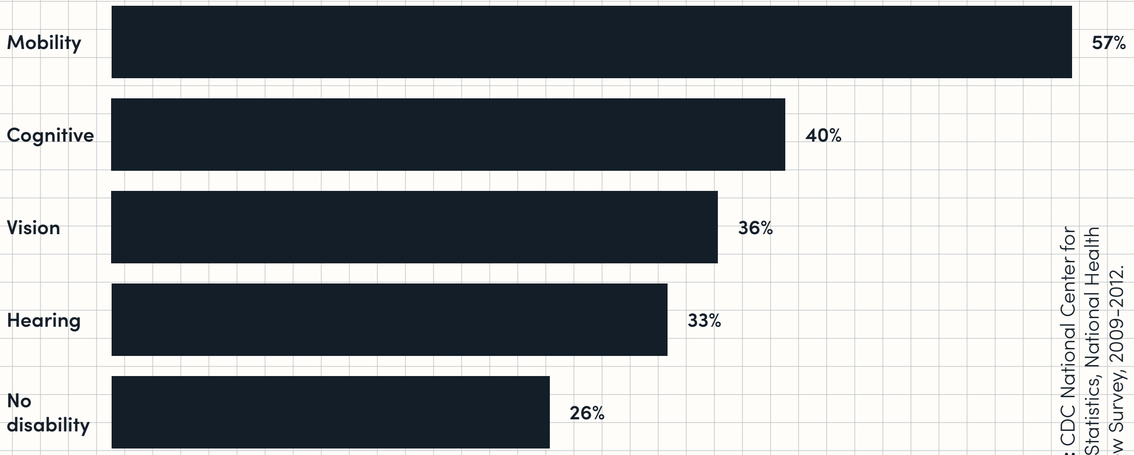
Over 15% of the global population, which is more than 1 billion people, currently experience some kind of disability.

According to the latest survey of the European Commission approximately 80 million people across the EU are affected by disability to some degree. Eurostat (the EU's statistical office) reports, that "one in seven people between the ages of 15 and 64 has difficulties with basic activities, such as walking (4.2 % of women, 3.4 % of men), seeing (2.1 % of women, 1.8 % of men) or hearing (1 % of women, 1.3 % of men)". Statistics show that within the EU countries there are an estimated 30 million blind and partially sighted people, 5 million wheelchair users, 750000 of sign-language users and around 1,5 million people who have severe intellectual disabilities. As the population is ageing, more and more people are expected to have some form of disability.

Millions of people by disability in the EU



Percentage of adults ages 18-64 who get no aerobic physical activity, by disability type



Mobility: Serious difficulty walking or climbing stairs
Cognitive: Serious difficulty concentrating, remembering or making decisions
Vision: Serious difficulty seeing, even wearing glasses
Hearing: Serious difficulty hearing
No disability: Does not have any of the above dissability types

Source: CDC National Center for Health Statistics, National Health Interview Survey, 2009-2012.

Legal background

The United Nations Convention on the Rights of People with Disabilities was adopted in 2006 and entered into force in January 2011.

Article 30 enshrines the right of people with disabilities to participate in cultural life: including access to cultural materials in accessible formats, television programmes, films, theatre and other cultural activities in accessible formats; cultural performances or services, such as theatres, museums, cinemas, libraries and tourism services, and, as far as possible, monuments and sites of national cultural importance. It also establishes the right of people with disabilities to develop and utilise their creative, artistic and intellectual potential, as both amateur and professional artists, and to have their linguistic and cultural identities recognised and supported – sign language for instance.

The Marrakesh Treaty, administered by the World Intellectual Property Organization was also ratified in October 2018. The European Union joined the treaty in January 2019 – so to those who are blind, visually impaired or in any other way print disabled, this treaty facilitates access to published works.

Definitions: What does it mean to be a person with special needs?

Although we can define what different types of disabilities mean, we must acknowledge that every individual is different with different abilities and needs. However, it can be helpful when planning your programmes to have general knowledge about groups with special needs.

Blind and partially sighted people:

More than ¾ of information reaches us through vision, so it is especially important for the visually impaired to involve other sensory channels for everyday life. Due to lack or impairment of visuality, the focus of experience is on hearing, touch, taste, smell, skin and muscle sensations. Thus, the form of knowledge acquisition also changes, it gets hearing and touch (acoustic-tactile) based.

Low vision:

people with low vision have a loss of visual acuity while retaining some vision. They are able to read non-tactile writing with the help of special tools and methods (e.g. extra lighting, enlarged prints).

Legally blind:

they may have some useful vision, they can sense the light, detect bigger objects. People who are legally blind have less than 20/200 vision in the better eye or a limited field of vision that is 20 degrees or less at its widest point.

Totally blind:

they are unable to percept their surroundings by vision. Totally blind individuals need Braille, raised-line drawings, audio recordings, and/or other non-visual media as an accommodation for accessing the content of visually presented materials.

Deaf and hearing impaired people:

A hearing person constantly gains information through acoustic stimuli, even when we are not paying direct attention or at sleep. Hearing is a constant mediator of information. Acoustic stimuli and speech control visual perception and attention. Speech controls behaviour, conveys mood, and is the main means of contact and communication. The consequence of a lack of hearing is a disturbance in speech and communication. Therefore, expressing themselves orally is challenging, it can be difficult to form and understand the words, to develop their vocabulary. Because the narrow vocabulary, speech comprehension and reading skills are also lower. Lack of hearing can make your thinking, behaviour, and personality stiff. Often relevant information is lost because it has only visual information and its value is different.

Hard of hearing:

they may hear only specific frequencies or sounds within a certain volume range. They may rely heavily upon hearing aids and lip reading.

Deaf:

depending on the severity of hearing loss and the age when it happened to the person, they may use little or no speech, rather communicate by sign-language.

People with physical disabilities:

The restriction of movement applies primarily to relocation. Depending on the degree of mobility impairment, we can define three groups:

Slightly restricted:

with difficulty, but able to walk, they can even move in a barrier-free environment. Their movement is usually slow and uncertain, they often use some sort of body support (e.g. walking cane). Long walks and climbing stairs can be challenging for them.

Physically disabled, but able to walk:

This group includes people with incomplete or diseased physical disabilities. They require a barrier-free environment in their transport. They can walk very slowly, with the help of one or two canes or walking frames. In the long term they often prefer to use wheelchairs. Their ability to orient themselves decreases due to concentration in movement and difficult turns.

Wheelchair users:

people with severe mobility impairments who have lost their ability to walk or move to such an extent that they can only use a hand-held or electric wheelchair are severely restricted in their mobility. Their speed of movement is much slower compared to those who walk. The wheelchair users' ability to orient themselves is significantly reduced due to their sitting position, and the space they can see is limited.

People with learning disabilities:

Intellectual disability results from damage to the central nervous system. These types of injuries can occur in the foetus, around childbirth, or in the early postpartum period. The damaged nervous system as a primary damage can result in secondary damage because no new function can be built on the damaged function. This creates an increasing guard around the underlying injury.

The leading manifestation of intellectual disability is difficult thinking, which is dominant in the learning, judgement, adaptation, attention, speech, communication and perception of those involved.

Their attention is short-lived, easily distracted, and their ability to concentrate is much weaker than that of their intact peers. Their judgement is limited and they can be easily influenced in their decisions. Their adaptability is less flexible. This is because they have a hard time breaking away from the constant, habitual order, which gives them security and a framework. They are frightened by unexpected situations because they cannot assess the essence (cause, effect, duration) of the change. The peculiarities of their thinking are also manifested in their speech. Regarding the formal element of speech, several of them are speech impaired. Their vocabulary is usually narrow, their concepts poor. Many of them do not speak, although some of the non-speakers understand speech well. Their communication is characterised by exclusivity. Personality is characteristic of both directions of communication: they rarely understand the “everyone” instruction, many are unable to apply it to themselves and cannot direct it to the community. Some diseases are accompanied by typical movement.

Never underestimate someone’s abilities! If a person lives with some kind of disability or disabilities it doesn’t mean that they need assistance with everything. Rather, we should provide an environment that helps them to be self-reliant, which will help to grow their self-esteem and confidence as well.

C

Get your target group involved, talk with them, not about them!

Recommendations

When we talk about making a place accessible, we have to think about many aspects, not only physical but info-communicational too. When creating a new place or redesigning your already existing makerspace – especially when you want to make it accessible for people with special needs –

make sure you get your target group involved from the very beginning.

Let individuals and groups test your space before opening it to the public, in order to get feedback from them. Use this feedback to make changes if necessary.

Train your staff with different simulations, so they can experience how people with diverse disabilities perceive the surroundings.

Make sure that your website and other publications include texts and pictures of people from diverse backgrounds! Be proud if your makerspace is accessible and don't forget to communicate it to the world! This way you are going to make it easier for your target group to hear about you and find you.

Make your communi-cation simple

The right way of communication can be the first step towards accessibility.

Use a supportive inclusive language when talking to/about and depicting people living with disabilities!

It is a sensitive area indeed, but don't let overthinking get in your way. There are a few good pieces of advice to keep in mind though.

During communication, stay positive. Don't be afraid to use everyday phrases to describe daily living, for example: you can invite a wheelchair user to go for a walk, or you can freely say to a visually impaired person that you are happy to see him. On the other hand, avoid phrases like „suffers from", because it suggests discomfort, constant pain and hopelessness. The word „disabled" is a description, not a group of people. As a collective term use „disabled people", or „people with health conditions or impairments", or „people with special needs". There are certain terms and phrases which can be seen as completely politically correct for someone, but may be rude for others depending on the cultural background as well. So don't be afraid to ask someone with some kind of impairment how they like to refer to themselves. Of course it's much easier when talking to an individual, because then you call them by their name. Pay attention to what pronouns they use to refer to themselves.

The following table is intended as suggestion, not as fixed rules:

Avoid:	Use:
• (the) disabled, (the) handicapped	• disabled people
• suffers from, victim of, afflicted by	• has name of condition, impairment
• cripple	• disabled person
• normal, able-bodied	• non-disabled
• confined to a wheelchair, wheelchair-bound	• wheelchair user
• retarded, mentally handicapped, subnormal, mentally defective	• with a learning disability / disabilities
• insane, mad, mental patient	• person with a mental health condition
• deaf and dumb, deaf mute	• deaf, member of the deaf community, user of sign language, person with a hearing impairment
• the blind	• blind people, people with visual impairments, blind and partially sighted people
• dwarf, midget	• someone with restricted growth or short stature
• spastic	• person with cerebral palsy
• fits, spells, attacks	• seizures

Some tips on behaviour

• When you are talking to someone with an impairment, just talk to them as you would to anybody else.

• Use a normal tone of voice. It's a typical mistake by non-disabled people to patronise or talk down people with special needs.

• Speak directly to a disabled person, even if they have an interpreter or companion with them.

• Never attempt to speak or finish a sentence for the person you are talking to.

Channelling your target group

You need to consider which is the best way to reach out to your target group. It can be done online and offline as well. Get in touch with associations who can connect you to larger groups of people living with diverse disabilities!
For detailed online communication the most obvious way might be to use social media and your own website. How can we make our websites barrier-free? Ideally, we should offer several options in settings so that users can pick what suits them best, e.g:

• font sizes,
• grey scale,
• high contrast,
• negative contrast,
• light/clear background,
• underlining of links,
• easy to read font type.

These options should be chosen on the users' demand. If you use digital surfaces in your makerspace it can be helpful to upgrade them with setting options too. Make your content fit for the most commonly used screen reader softwares and screen magnifier programmes, so blind and partially sighted people can be more independent. If you make your platforms comprehensible and easy to navigate then it will do a great service for everyone, particularly for people with learning disabilities. When you want to make your videos, animations or audio files accessible for people with hearing impairments, provide a text alternative to non-text contents. You can make subtitles or brief descriptions.

Make sure you give enough time for the users to look at or read your content. If you use pop-up windows or self-changing screens then it's useful to apply a countdown or give a warning before they run out of time. Make it an option for the user to be able to extend the duration or be able to easily restart from the part they wish. If you provide audio features, give the option to the users to mute or control the volume. Beware that moving, flashing, strobing images can trigger seizures for people having photosensitive epilepsy and can also be annoying and disruptive. If not necessary, try to avoid these flickering images, or give the option to stop, pause or hide them.

Assess and be aware your facilities

Where does the physical accessibility of your makerspace really start? Well, not by the doorsteps of your building. Physical accessibility depends a lot on where your place is situated, in which town or city it is, in which part of the town it is. All these ambient factors affect how people can get to you. You may not be able to make all the trails more physically accessible from one point of the town to the other. What you can do is an info-communication accessibility help by providing univocal, clear direction signs on the streets, giving itinerary for route options, making maps that are easy to follow.

There are regulated governmental definitions of what makes a built environment accessible, including buildings, parking areas, pathways, entrances etc. In order to call your makerspace wheelchair-friendly all levels of your space needs to be connected via an accessible route or travel. If you have several stories you should provide elevators or ramps. If your place is a bit crowded you can use portable and convertible stair ramps.

Tips for working with groups with special needs

Blind and visually impaired group:

• take into account the degree of visual impairment (if possible, find out in advance)

• don't be afraid to use everyday "sight" related words when communicating with the group

• take enough time to get to know the objects and tools - do not start telling about a new tool until all participants have looked at the given object (therefore it is worth using duplicates so that the waiting time is not too long)

• tactile sensing of the blind and partially sighted is called haptic perception, in which objects provide information based on their different characteristics: surface roughness (if the object is smooth, no skin vibration occurs, it puts the same pressure on the skin surface of the finger); surface temperature and shape of objects

• if the group can sense light it is important to ensure adequate lighting

• if possible, the buttons of the machines should not sink into the flat surface, they should be tactile and colour-contrast - we can also help with embossed stickers (it would be worthwhile to test how much the embossed sticker helps)

• the teacher / programme facilitator should reach all participants with his/her arm (helping, handing out objects, motivating by touch instead of eye contact, praising, raising attention, etc.), therefore it is advisable to arrange the space in a semicircle, in case of frontal work the teacher sits in the middle of the circle.

Deaf or hearing impaired group:

• there should be enough time allowed for participants to clarify the meaning of new words

• the greater the degree of hearing impairment, the narrower the vocabulary of both active and passive

• vision is the primary information-receiving channel for the deaf person

• it is useful to use word cards - we not only say a new word and its interpretation (with a sign language interpreter), but also display it visually

• use illustrative tools, objects, films, illustrations

• it is advisable to give short, precise instructions in simple terms, with some questions to check comprehension

• have a sign language interpreter present in the program to help with communication; take into account that translating is tiring - sign language interpreters should take a rest after translating 1 hour, so if your programme takes longer than that, it is better to hire more than one interpreter

• avoid overly complex sentences in both verbal and written communication

• it is important to see the facial expressions, to follow the movement of the mouth during speech - therefore the room should be well lit; there should be no strong backlight that casts a shadow (e.g., the window should not be behind the person talking but in front of them)

• due to the pandemic regulations, if necessary wear a transparent face-shield instead of a face mask

• a moustache covering lips, a beard, smoking, chewing a pencil and placing his hand in front of his face all make it difficult for a deaf person to follow what has been said

• it is a false belief that hearing impaired people understand speech more easily if it is very articulated and slow, instead have a normal speech rate and articulation

• it is also beneficial for the teacher not to walk while speaking and to turn to the participants

• eye contact supports the feeling of direct communication - even if an interpreter is present, continue to speak directly to the hearing impaired person

• the deaf and hearing impaired group needs to know in advance what topic they will be talking about in order to insert words that will help them continue the conversation; this is especially important for deaf people who rely on word-of-mouth reading

• if several people take part in a conversation make sure to indicate the intention of communication (e.g. by waving)

• in group communication, the semicircular sitting position is advantageous so that everyone can see the speaker well

• repeat the questions or statements that were made from the end of the room and point them to the speaker

• keep in mind that the deaf person is excluded from anything that happens outside his or her field of vision

People with physical disabilities:

• make sure that not only the space you'll use for your workshop is accessible, but it is not challenging to get all the way to the place

• try to avoid using spaces with stairs, doorsteps, narrow corridors, overcrowded rooms

• for stairs provide (portable) ramps

• install a stair lift or consider an elevator

• the room should be wide enough for a wheelchair to turn around easily

• doorways must be wide enough – if it is not necessary to install a door, leave an open space

• if doors are a must, install them with offset hinges (also known as Z-hinges), which allows the door to swing freely

• instead of doorknobs use door handles

• the tables should be high enough to fit a wheelchair underneath

• place handrails in key areas

• put the light switches (and any other buttons or switches that need to be used by the group) at a wheelchair-friendly height

• you'll want a surface that is slip resistant, easy to maintain, one that wears well and one that is easy to manoeuvre in a wheelchair

• avoid thick, fluffy carpeting

• provide an accessible bathroom – not only the toilet, but the sink should fit the needs of everyone.

People with learning disabilities:

• difficult thinking, which is dominant in the learning, judgement, adaptation, attention, speech, communication and perception of those involved

• the process of learning is difficult, the recognition of causal relationships, the time: the precise perception, connection, separation of the past and the present, the recognition of the consequences of actions

• it is difficult to abstract, to understand abstract things, to think logically

• give simple, concise, clear information and instructions

• start from specific things: a specific, concrete thing is what can be seen, experienced, felt by a person with a disability, what he or she remembers, to which some action or experience is connected

• avoid tasks with a complex structure and requiring a complex explanation, design a logical connection consisting of maximum 3 steps, a causal relationship based on each other

• it is difficult to maintain focus, so keep the program as short as possible

• strive for a varied program structure (although it depends on the disability), it is usually characteristic that they do not like monotony, they require variety (keeping the basics and boundaries firm)

• their attention is easily distracted, any small moment upsets their thoughts, it is difficult for them to get back to the previous course – so if possible, do not do different activities in parallel

• the stimulus must be addressed to them personally, not to "everyone" in the group

• their adaptability is less flexible, the reason being that it is difficult to break away from the constant, usual order, way of life, established behavioural responses

• continuous motivation, positive feedback and reinforcement to participants throughout the program is important.

Safety comes first

Apart from preparing your space to be accessible for everyone you also need to train your staff to assist and provide a safe and welcoming environment for individuals with diverse disabilities.

Safety procedures have to be considered for participants with hearing, visual and/or mobility impairments. Use high-contrast, large print signs throughout your makerspace. Use visual indicators for members of the deaf community and audio indicators for the visually impaired people for safety and equipment notifications. All safety equipment, including fire alarms, fire extinguishers and a first-aid kit must be accessed to every individual, including those who have limited dexterity. Before anyone participates in your makerspace they must know the house rules.

High-contrasted tactile flooring and high-contrasted guide bars on walls can help the blind and partially sighted people to navigate more easily on site. Using laser cutters, saws and other tools can be dangerous, so you must provide safety goggles and gloves for the users in a variety of sizes and styles. Think of those who miss some of their fingers or ears.

Make clear rules and expectations for users on how to use tools and that once they are done they need to clean up the space to maintain a well-organised environment. Training materials and instructions should be available in multiple formats: audio for blind and partially sighted people, text for deaf and hearing impaired people. Make sure that for those who have learning disabilities the language you use is not over complicated.

How to set up your space

A spacious place offers you more opportunities to install the furniture and find a place for all your tools and equipment. The aisles between work surfaces should be wide and clear of obstructions. You need to provide an accessible pathway and enough room to be able to turn around with a wheelchair.

The work surfaces should be clearly marked, easy to clean and accessible.

If you want to differentiate the work stations you can use different high-contrast colours or different tactile signs around the edges.
It is essential to have good lighting in the makerspace. There should be no dropped shadows from any angles on the surface of the work station.
Provide a quiet space where individuals and groups can sit down, so they can brainstorm, exchange ideas and get creative.

Furniture

Give the users the freedom and flexibility to make the space work for themselves.

Use mobile furniture, so users can rearrange the space according to what is most practical and functional for them.

Casters must have a break, so you can safely fix the furnitures' position. The break should be activated without the need to bend down to the ground. Use portable divider screens that can help to split the space into as many sections as needed. These screens can also be used to decorate and display information or to hang tools on them.

The surfaces of furniture in makerspaces should be durable and easy to clean. It's very practical for planning to have dry erase surface work stations.

Have plenty of storage racks with clearly labelled open bins. There must be easily accessible storage for projects and supplies.

The height of the tables and seating should be adjustable. Counters must have enough space underneath for wheelchair users. Also tools must be easily reached from a seated position.

Tools and equipment

Although the majority of the population is right handed, there are some very talented left handed people out there. Think of them, and provide left handed tools to use. Suspend power cords from the ceiling in order to keep aisles clear of obstructions. The cord's position should be adjustable. When you hang something from the ceiling, make sure they are at the right height, on one hand they must be reachable, on the other hand you must pay attention so that those with visual impairments won't bump into them.

Materials and tools that are supposed to be used by all participants should be kept in a designated area, all those that are not meant to be used by the public must be kept in a restricted area.

Make it easy to see what kind of tools and equipment you have.

Seeing the wide variety can be inspiring and engaging. Spread your tools out on a tool wall. If you outline your tools on the wall it'll be easier to keep track of what is currently in use, and will help to put everything back to its place and keep up a well-organised workshop area. You can use labels on/under the tools so it won't be a problem to use the right word for them.

Hand tools should have rubberized grips, so they won't slide out from someone's hand when in use. To avoid injuries, keep a plastic guard on all saws and other sharp tools. 3D printers and laser cutters usually operate with touch screens. If you add large or raised labels at least to the key buttons,

you'll make them available for blind and partially sighted people to use on their own. You can upgrade your machines' software and interface and make them compatible for screen-readers and other assistive technology. The use of fume hoods and smoke absorbers are encouraged.

Have materials that are accessible for diverse abilities. Some may prefer wood and nails, while others may prefer foam or clay, depending on their dexterity, strength and background in fabrication.
Provide extra desk lamps and magnifying lenses if they are needed for a project. If sewing machines are provided, make sure there are machines that can be operated by hand for those unable to use pedals.

In a digital makerspace a laptop or computer is a must have. To make their use accessible, provide assistive technology, including trackballs, alternative keyboards, screen-readers, speech-to-text softwares.

Virtual makerspaces?

Going virtual can be a way of accessibility for those who are not able to come physically to your makerspace. It can be a channel, a way of communication - in this case the facilitator and the participant are not in the same place and they are using a digital platform to communicate. This can mean synchronous sessions, when the facilitators and the participants meet at the same time, this allows direct communication with each other. Or it can be asynchronous, which is any type of communication that doesn't depend on immediate response, e.g. online/downloadable tutorials.

Some good practice examples

Virovitica City Museum, Virovitica, Croatia:

The city museum founded in 1953 is located on the top floor of the castle Pejacevic, in Virovitica city centre. It has about 5,000 objects depicting the life of this area, from prehistoric times to the 20th century. There is an archaeological, ethnographic, cultural and historical and art collection, as well as the library, archives and a photo collection. There is a creative space for workshops of 45 square metres. The space is used for temporary exhibitions connected with the workshops' themes from 1 day to 2 weeks. The museum is using the latest pedagogical and education approaches. In order to get acquainted citizens with the museum, there is a necessity of more frequent workshops that should be held. The museum has organised the exhibition of Radiona - Zagreb Makerspace and plans to continue these practices. They want to continue intergenerational workshops for vulnerable groups, because so far the museum has collaborated with rehabilitation centres for visually impaired and blind people, disabled individuals, women's empowerment through handicrafts, knitting, hands-on skills and similar.

Typhological Museum (Tifološki muzej), Zagreb, Croatia:

Zagreb's Typhological Museum is a public institution that collects and stores contemporary art exhibits designed to be felt and introduces the social community to the world of those with special needs, with an emphasis on people with visual impairment. The idea started at the end of the 19th century with Vinko Bek, a teacher who worked with visually-impaired children and collected items for his private collection which he named the "Croatian Blind Museum". His collection was many times displayed to the general public but he never really managed to establish a museum. In 1953 with a collection donated by his daughter, the museum as we know today was founded. The museum has two spaces for creative hands-on workshops for adults used from 1996. For smaller workshops a room of 15 square metres, and a space for workshops and occasional exhibitions of 150 square metres. The museum is designed with a purpose that the exhibition space can be used for workshops as well. It is conceptually conceived so that workshops are integrated with set-up. It is multifunctional because the workshop participants are from diverse vulnerable groups. Target groups: people with disabilities, chronic diseases, the visually impaired and blind, dementia and Alzheimer patients. The concept is to use objects that evoke memories like old records and objects. Visual arts workshops facilitate making various objects, working with clay and painting. Apart from working with these vulnerable groups, workshops for people learning Croatian language - learning language through museum experience - is provided. The museum has started collaboration with a mental health hospital, too.

Museuo Tolomeo, Bologna, Italy:

The Tolomeo Museum in Bologna (Italy) was created within the Cavazza Institute, the city's institute for the blind. It exhibits the history of the instruments that have accompanied the lives of the blind over the past centuries in a room with a richly stimulating layout that can be used by both the sighted and the visually impaired. After the Museomix experience in 2016, the museum gained more confidence and thus a large workshop space within the institute.These rooms host activities for children and families in which either parents or children are visually impaired, blind adults and museum educators/ mediators. The workshop can accommodate up to 30 persons. The physical space is full of self-made tools and installations, maquettes, materials for creating and building (tactile books, their visual transposition, game kits) and a 3D printer, tables, chairs and adjustable lighting.

The workshop provides such activities as: produce tactile books (different depending on whether the parents or children are blind), teach families how to make games for the visually impaired, and prepare maquettes useful for stimulating blind adults. Assistance activities through creativity for the visually impaired child and his family is done via integrated processes with the involvement of physiotherapist, psychologist, and orthoptist of the Institute. These services are free of charge. Workshops for visually impared adults include: progressively working on the relationship and perception with urban and architectural space, discovering complex concepts through scale models and cultural-historical elements. Capacity building activities include: museum and libraries workers and educators learn the methodologies to creatively work with blind and visually impaired people.

Pilot testing workshops with people living with disabilities

The Hungarian Open Air Museum planned and tested three workshops for three different disabled groups.

General considerations for workshops:

- when planning, consult with an external expert on the disability
- 1 time occasion (non-project-like structure) to be designed
- max. 3-4 hours duration per workshop (breaks included)
- the session must be based on objects from the museum's collection
- 3-5 people with disabilities, adult group (visually impaired / 1 session; hearing impaired / 1 session; people with intellectual disabilities / 1 session)
- 1 session / 1 disability group / 1 makerspace tool
- each participant needs to experience success through accomplishing the task
- make a product/participant to take home with themselves
- reserve some time at the end of the program for evaluation and feedback

See with your hands – workshop for a visually impaired group

• Product: 2 in 1 product – beer coaster & tactile memory game

• Objects from the museum's collection: 8 objects – textile: a towel and a pillowcase, wood: a carved wooden spoon holder and two differently carved mangles, pottery: two different water pitchers, iron: waffle-making iron

• Makerspace tools: laser cutter, contouring paint

Structure of the programme:

1.
introduction – of all the participants and facilitators while sitting in a circle (15-20 minutes)

2.
tour of the venue (20 minutes)

3.
getting to know museum objects – what is what, the relationships between function and object shape, what decorations can be found on it (30 minutes)

4.
break (25 minutes)

5.
getting acquainted with the laser cutter (10 minutes)

6.
creative painting with the contouring pen (25 minutes)

7.
filling out the evaluation questionnaire (25 minutes)

Feedback from participants:

It would have been better if we didn't have to walk back and forth between the different workstations to do the activities.

It would be better if there was a screen reader software, so the visually impaired participants would be able to use the laptop (more) independently.

It would be better if there was tactile floor marking, so I would be able to move around in the space more independently. Also if there was a tactile floor plan, it would be easier to orient myself.

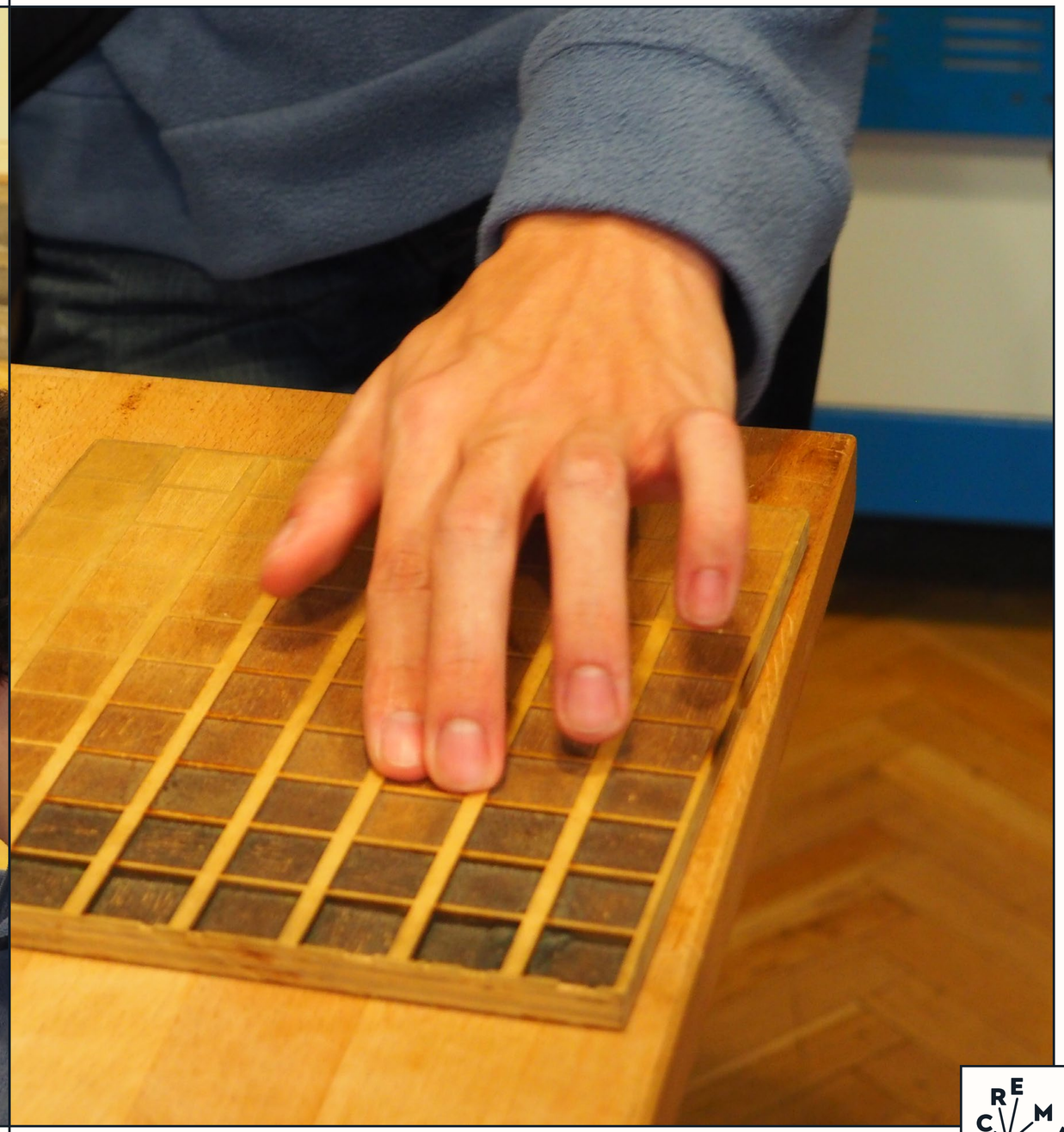
It was great that the museum educator knew how to guide a blind person; she asked me how I would like to be led, so it was my choice. She was also a pro when showing and describing the object. I guess she did it before.

Since there wasn't a tactile floor plan here, it was a great solution that the session facilitators showed us around the space.

I want to highlight that the facilitators were very empathetic and friendly.


L.E.A.F.
LEGION


Tóth
Dani



Hear with your eyes – workshop for a hearing impaired group

- Product: cookie form
- Objects from the museum's collection: gingerbread percussion mould, motifs
- Makerspace tool: 3D printer

Structure of the programme:

1.
introduction – of all the participants and facilitators while sitting in a circle (15 minutes)

2.
getting to know the topic (gingerbread making) and museum objects (10–12 minutes)
short film about how to use gingerbread cookie moulds (2 minutes)

3.
learning how to use a 3D printer software and design their own cookie mould (60 minutes)

4.
break (30 minutes) meanwhile printing with the 3D printer

5.
Q&A about 3D printing (15 minutes)

6.
filling out the evaluation questionnaire (20 minutes)

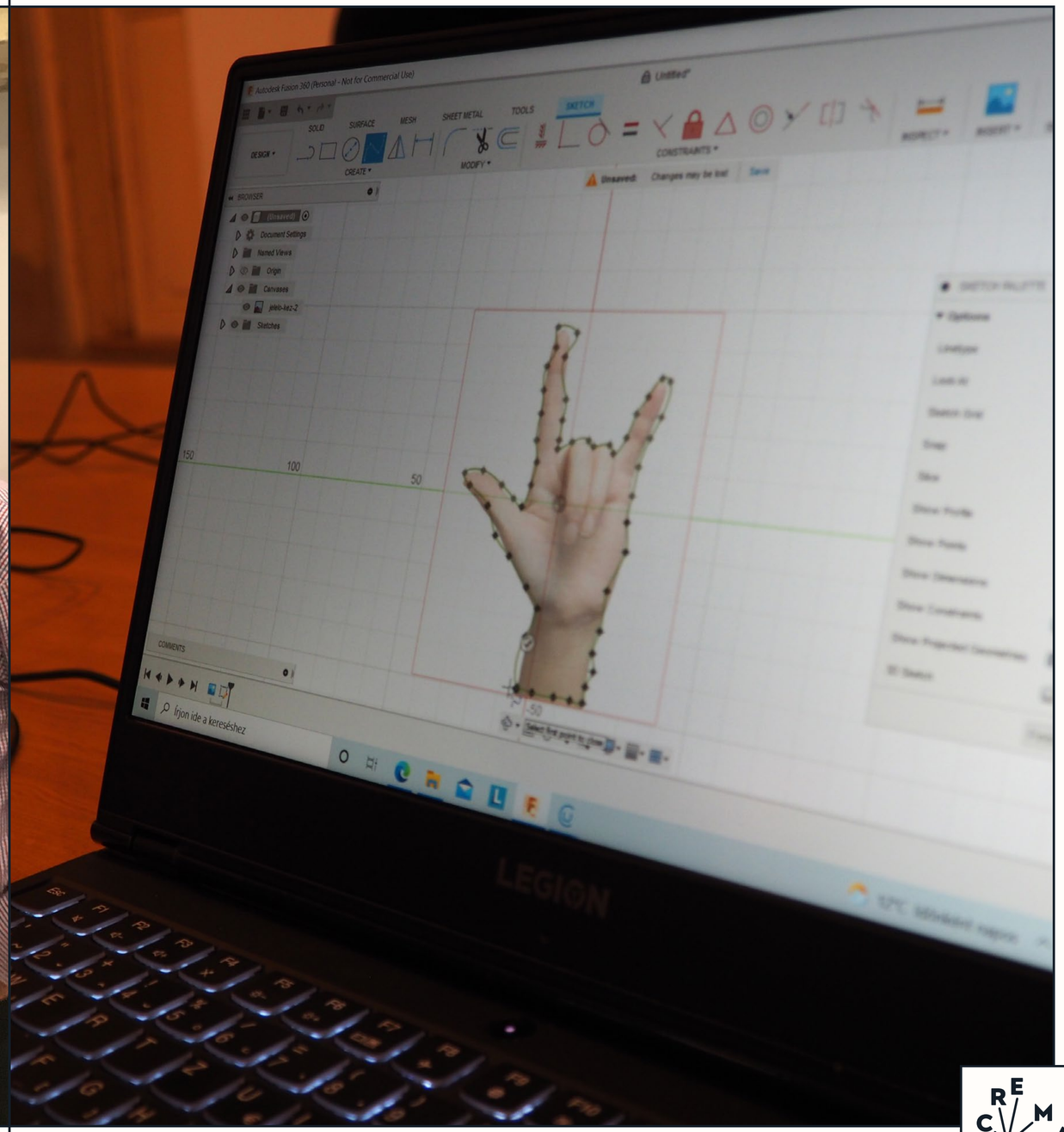
Feedback from participants:

It would've been better to sit at a round table - it would make it easier to see everyone at the same time, it would make the communication easier.

There were many cords hanging down from the tables and laying around the floor. It would have been better if the wires and cables had been connected with a quick binder.

It could help if the room was a bit brighter.

We were working with a very considerate, helpful team. It was a well-prepared introduction for the topic with great ethnographical facts and background information. I was completely satisfied with the facilitators.


Autodesk Fusion 360 (Personal - Not for Commercial Use)
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SHEET METAL
TOOLS
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DESIGN
CREATE
MODIFY
CONSTRAINTS
BROWSER
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Named Views
Origin
Canvases
Sketches
COMMENTS
Írjon ide a kereséshez
LEGION


NASA

Learn with your heart - workshop for a group with learning disabilities

- Product: friendship necklace/ bracelet + pendant
- Objects from the museum's collection: hemp cracker, hemp comb, textiles, yarn
- Makerspace tool: 3D printer

Structure of the programme:

1. introduction - of all the participants and facilitators while standing in a circle (5 minutes)
2. examining the plant, a strand of hemp (5 minutes)
3. getting to know and trying out museum objects: hemp cracker, hemp comb, textile (30 minutes)
4. braiding a bracelet/ necklace (15 minutes)
5. using google search about hemp (15 minutes)
6. getting to know the 3D printer (10 minutes)
7. designing a pendant with a 3D printer software (25-30 minutes)
8. break (15 minutes) while 3D printing (10 minutes)
9. filling out the evaluation questionnaire (10-15 minutes)

Feedback from participants:

It could be better if we did more DIY, use less digital technology and more hand tools.

It would be better if the makerspace workshop master would talk a bit slower.

It could be better if the whole session was a bit shorter, because I had to pay attention a lot and it made me tired.

It would be good (interesting) to disassemble or assemble machines.

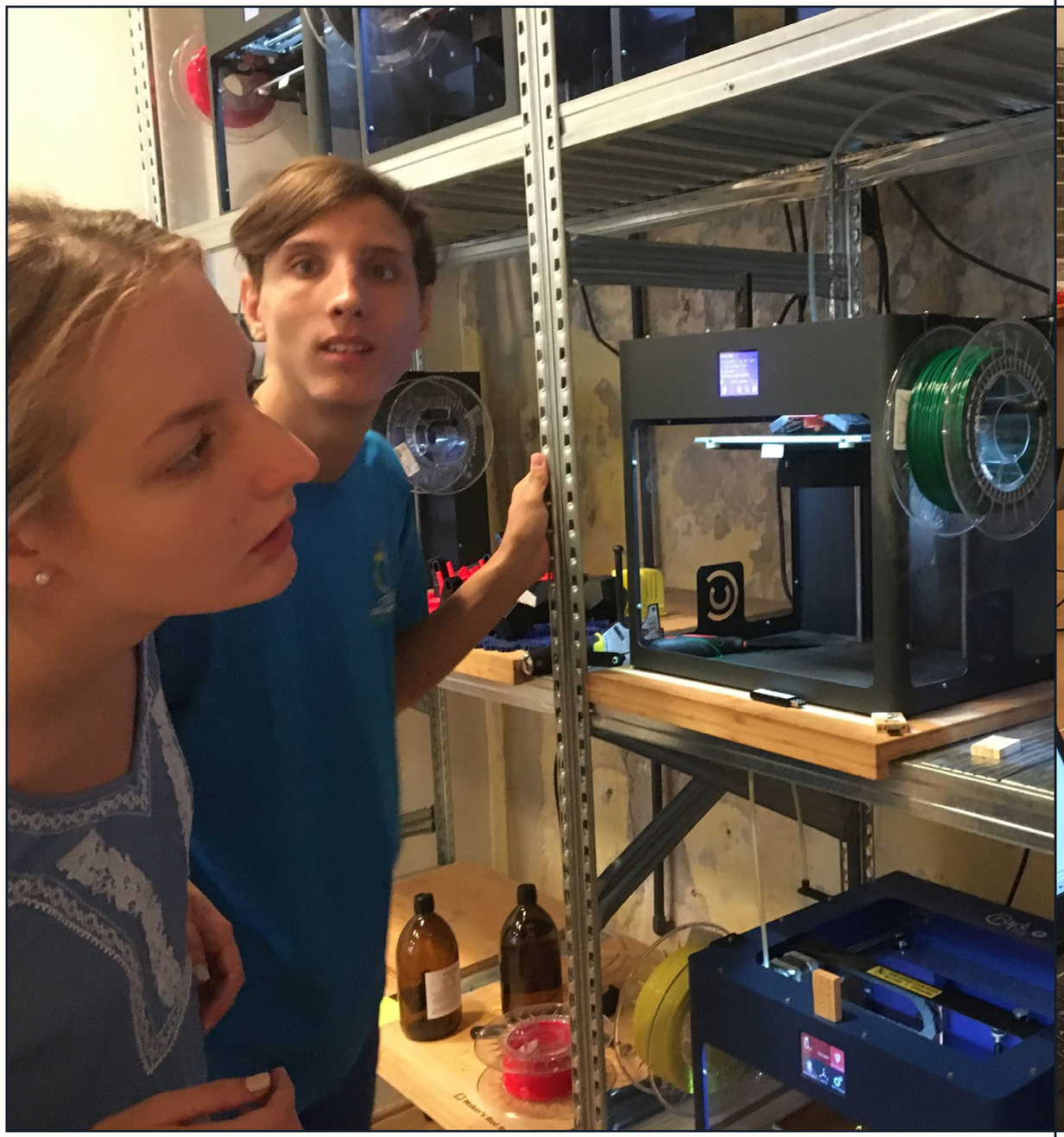
It would be better if the venue was nicer, the chipped-paint on the walls look strange." (the venue's walls are rustic, industrial covered with chipped-paint, on purpose).

Some people with moderate intellectual disability might never be able to make the logical link between designing something on a laptop and then printing it out with another machine which is not visibly connected. If we can step over this, then there is no problem. If we want to make the logical connection then we need to explain it more, and have more than one session.

The facilitators fully helped, and the communication difficulties that arose were well resolved.

The facilitators are friendly and nice.

The equipment was modern and I found it culturally interesting.




PLASTIC
YATO


MAKER'S
RED BOX
MAKER'S
RED BOX
PAPER
TRASH


L.E.A.F.
Long Endeavour Autonomous Fabricator
Research Ship

Conclusions

Accessibility is for everyone, which means that it's not only good for specific groups of people living with different needs, but for every individual.

For example, if you have objects from your collection that people can use or just hold in their hands, it can satisfy their curiosity more than just looking at them in a showcase. Being able to touch the object can help them to examine it close-up, see every angle and the smallest details, to feel its weight, understand its structure, etc. Is it only useful for blind and visually impaired people? Of course not. Giving the opportunity to handle an object is great for everyone. If your place doesn't have steep steps or too narrow spaces, that will not help only people who use wheelchairs, it'll make it easier and more comfortable for everyone to move around there. If you provide easy-to-understand information, use easily recognizable, obvious pictograms, it will definitely help deaf and hearing impaired people, also individuals with learning difficulties, and everyone else as well.

Humanity is a keyword because makerspaces should not be about tools, equipment and objects only, but about people. Making your space and programmes barrier-free, both in a physical and methodological sense will help you to make a step forward to cultural equality and inclusivity. The more accessible your museum and your makerspace are, the more inviting it is. It'll encourage people to come, use it, get creative and will also help them to be more engaged.

SKANZEN

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

CREMA

Designed by Creative Museum, Edvards Percevs