Intellectual Output 3 Training material

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1. Executive Summary

The present Intellectual Output (IO3: Training Material for Professional Development Course – Design, Content, and Implementation), has been developed within the Erasmus+ Program entitled "ToMIMEUs: Towards a Multisensory and Inclusive Museum for Individuals with Sensory Disabilities" (No: 2019-1-RO01-KA202-063245) which is funded by the European Union. The coordinating partner of the Project is the Transylvanian Museum of Ethnography (Romania) and the leading organization for the present IO is the University of Thessaly (Greece).

According to the approved proposal of ToMIMEUs Project the development of the IO3 is based on the results of the following intellectual outputs and tasks respectively:

- The Intellectual Output 1 (IO1): Scoping. The IO1 summarizes the level of accessibility in museums for persons with sensory impairments (SI) (i.e. blind and visually impaired persons and Deaf and hard of hearing persons). The Scoping (IO1) was based on: literature review with a collection of best practices and examples of each participating country in the project (Romania, Greece, Hungary, Turkey and Bosnia and Herzegovina) regarding issues of access to museums, and a needs' assessment study of the museum staff regarding the enhancement of access of persons with SI in museums[1].

- A survey regarding the experience of the museum staff of each participating country in relation to educational programs with persons with SI and groups with and without SI. The survey was conducted via a questionnaire with five open ended questions, and it was part of the tasks for the development of IO3.

The participating organizations of the IO3 (including the Project coordinator organization and the leading organization of the IO3) are the following:

1. Transylvanian Museum of Ethnography (Project coordinator)
2. University of Thessaly
3. Babes-Bolyai University
4. Eötvös Loránd Tudományegyetem
5. Istanbul Medeniyet University
6. Nicholas and Dolly Goulandris Foundation Museum of Cycladic Art

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[1] For further information regarding the research tool for the data collection in the needs' assessment study see the IO1 of the project.

7. Hungarian Heritage House

8. TCDD 1st Regional Directorate

9. Atomo Ro SRL

10. Balkan Museum Network

The following sections include a. issues regarding museum staff needs in relation to training for the access of persons with SI, b. the aims of the training material and how it can be used, c. a brief presentation with the thematic areas of each module of the training material, and d. the content in each area of the modules.

2. Museum staff needs and experiences with persons with sensory impairments (SI)

ToMIMEUs Project focuses on the ways that museums can address visitors with SI in their spaces and programs. The theoretical framework of the project underlines both the heterogeneity of the population of persons with SI and the different social contexts of visits in museums (Falk & Dierking, 2013). Persons with SI can visit museums as independent visitors, as members of groups of persons with SI (e.g. a school group of children with visual impairment, a school group with deaf and hard of hearing children, etc.) or as members of groups of persons with and without SI (e.g. school groups of inclusive educational settings, families, etc), (Argyropoulos & Kanari, 2015; Kanari & Argyropoulos, 2014; Nikolaraizi, Kanari, & Marschark, 2020; Reich et al., 2011). Addressing this diversity is a challenging task for many museums in terms of the range of various facilitations, provisions, and programs for persons with SI as well as of the availability of access provisions and their less or more systematic character.

Museum staff training in issues of accessibility and disability awareness is considered a crucial parameter of a museum accessibility policy (Argyropoulos, Kanari & Chamonikolaou, 2017; Argyropoulos, Nikolaraizi, Kanari, & Chamonikolaou, 2016; Partington-Sollinger & Morgan, 2011). Within ToMIMEUs project the investigation of museum staff needs and priorities regarding access of persons with disabilities including those with SI it was considered as an important starting point and part of the intellectual outputs and activities of the project. The development of the IO3 is based on the results of

the IO1 and a survey regarding the museum staff needs and experience of educational programs with persons with and without SI. The results of the IO1 and the survey revealed a range of difficulties, challenges, and suggestions for the enhancement of access of persons with SI to museums.

2.1 Practical knowledge from focus groups

As mentioned above part of the tasks for the development of the present training material (IO3) was to gather the perceptions, the experiences, and the suggestions of the museum staff. The different experiences of the participating museum staff, their comments, difficulties, and suggestions can be summarized into the following axes of parameters towards an inclusive museum for persons with SI:

Museum staff suggestions regarding training needs and the enhancement of access of persons with disabilities including those with SI to museums:

Access facilitations and provisions/museum infrastructure and equipment:

Availability of accessible educational materials and interpretative means for different subjects of the museum collections such as: information in Braille, accessible information for foreign visitors, permanent tactile exhibitions, replicas and touchable exhibits for more subjects of the museum collections, mobility and orientation facilitations in the space of the museum, physical access and spatial arrangements, accessible and captioned videos, appropriated printed material (e.g. large print, readable, understandable content and information, visual material like pictures, etc.), guiding maps, tactile maps, audio guides, audiovisual tools, accessible websites, accessible on line resources, use of new technologies, assistive technologies, audio descriptions, Sign Language and generally issues of communication with persons with SI, etc.

Museum programs/activities

Special designed programs/guided tours, inclusive practices, and programs for groups of persons with and without SI, appropriate and suggested methods and activities, activities related to creative arts, music, dance, etc., multisensory activities, group members with and without SI and duration of the educational programs/guided tours, appropriate behavior and proper language towards persons with SI, application of the principles of universal design.

Museum staff training needs

Museum staff training in issues related to the characteristics and needs of persons with SI, seminars and workshops regarding the social model of disability and accessibility in general.

Universal Design and implications on inclusion and the development of inclusive practices and programs as well as on the museum's brand, audience development, interpretation strategies and awareness towards human rights and International Convention on the Rights of Persons with Disabilities, etc.

Teachers' training

Awareness and training in Museum education and the qualitative characteristics of learning in museum for the effective support of children with SI during the museum activities.

Cooperation

Development of cooperation and networks with various associations of persons with SI, professionals with different specialties, carers and/or parents of children with SI, cooperation with schools and Special Education teachers for the design, implementation and evaluation of educational programs and activities with persons with SI.

Funding and staffing

All the aspects underline the need for museum staff training in issues of disability awareness, access facilitations under the umbrella of basic theoretical frameworks such as the Universal Design and the Universal Design for Learning as well as the need for the development of interdisciplinary collaborations and networks among different associations, institutions, and professionals.

3. Aims and objectives of the training manual

The aim of the present training material is to become a practical, comprehensive and useful resource for museum professionals who are engaged in a range of museum activities in order to enhance access and inclusion of persons with disabilities and persons with SI to museums. The thematic areas of the training material are in line with the Convention on the Rights of Persons with Disabilities (UN, 2006) and tuned to the multidimensional educational and social role of museums (Black, 2005, 2012). Furthermore, the main concept for the development of the training material is that access to museums for persons with disabilities including those with SI should be an ongoing and systematic process integrated in all museum activities and practices (Weisen, 2008).

In this framework and in line with the aims of ToMIMEUs Project the aims of the present training material are to enable museum staff to become aware of contemporary approaches regarding access and inclusion in museums and in specific in relation to the characteristics and needs of persons with SI and to think globally and act locally.

More specifically the objectives of the present training material for the museum professionals are the following:

- ✓ To understand the heterogeneity of the population of persons with SI and their needs regarding access and communication.
- ✓ To be able to identify barriers impeding access and inclusion of persons with SI to museums.

- ✓ To be aware or/and update their knowledge regarding Universal Design and Universal Design for Learning.
- ✓ To be aware and get familiarized with new technologies in relation to issues of access or persons with SI to museums.
- ✓ To adopt strategies and practices based on Universal Design and Universal Design for Learning for the improvement of access in museums and the development of accessible materials and tools in museums.
- ✓ To be able to design and implement inclusive educational programs and activities for persons and groups with and without SI.

4. How the training material can be used?

The present training material for professional development will be used during and beyond the ToMIMEUs project. More specifically the training material will be used as:

- ✓ A **theoretical and methodological framework** for the design and implementation of workshops and training events within ToMIMEUs project (IO4).
- ✓ A **motive** for museum professionals to reflect on their practices, access facilitations, provisions and programs and evaluate them.
- ✓ A **useful and easy to use material** for the development of inclusive practices and programs for persons with SI.
- ✓ A **resource** for further and future training events organized by the trained museum for in-service training events or other members of the museum staff of museum professionals from other museums.
- ✓ An **Open Educational Resource** accessible to all museum professionals, researchers and professionals who are interest or involved to accessibility issues and practices for persons with disabilities including those with SI.

✓ **Important note!** By the time of writing the present training material the ongoing COVID-19 pandemic had affected all the range of social life, activities, and services. Thus, the present material includes also open access resources, useful links, videos, and activities that can be used and adjusted in case of distance learning/training events.

5. Structure of the Training Material – Content – Design

The following table (Table 1) presents the structure and the principal concepts of each module:

Table 1: Structure and modules of the training material

Modules	Thematic areas
Module I **Introductory** **Key concepts**	✓ Museum Definition ✓ Social Model of Disability ✓ Access and Accessibility ✓ Universal Design ✓ Universal Design for Learning ✓ Differentiated Instruction ✓ Multisensory Learning
Module II **Persons with sensory impairments (Visual impairment & Deaf and Hard of hearing persons)**	✓ Definitions ✓ Significant element of heterogeneity ✓ Basic characteristics – Common misconceptions ✓ Educational and social needs ✓ Specialized services ✓ Increased desire for normalcy ✓ Need to successfully confront all type of barriers

Module III

Bridging theory and practice

- ✓ Analysis of the notion "access" in museums for persons with sensory impairments
- ✓ Evidence-based studies
- ✓ Hands-on activities (i. e. examples and practices that successfully removed barriers – such as cultural, intellectual – using appropriate space, differentiated material, methods, inclusive activities, etc.)

MODULE I

Introductory - Key concepts and definitions for the development of the training material for museum professional development course
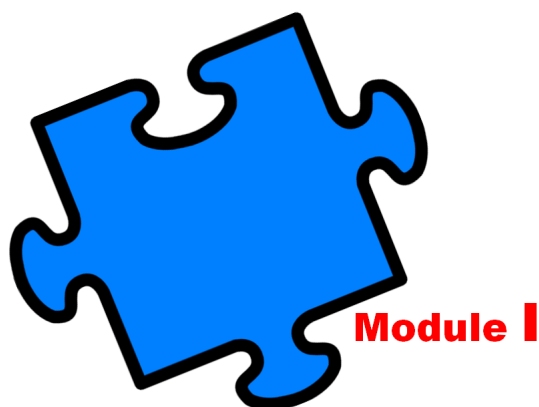
Module I

6. Module I: Introductory – Key concepts and theoretical frameworks of the training material

Creating a multisensory and accessible museum for all including persons with SI is considered as an ongoing process which is not limited to temporary activities and events (Weisen, 2008). Thus, the enhancement of access and inclusion of persons with SI to museums falls under the umbrella of: a. museums' mission in contemporary society, b. the social model of disability, and c. broader theoretical frameworks that recognize and respect the diverse needs and the different ways that people learn.

More specifically key concepts of the present training material are the following:

- ✔ Museums' educational and social role
- ✔ Social model of disability
- ✔ Access and accessibility
- ✔ Universal Design
- ✔ Universal Design for Learning
- ✔ Differentiated Instruction
- ✔ Multisensory Learning

Figure 1: Key concepts of the training material

6.1. Towards a new museum definition

Museums are cultural institutions with an increasing and multidimensional educational and social role in the contemporary society (Black, 2005, 2012). According to the relevant literature, museums of the 21st century, besides their functions of collecting, preserving, and exhibiting evidence of the tangible and intangible cultural heritage, they act as lifelong, informal, or/and non-formal learning environments that should:

✓ Be accessible and open to all.

✓ Act complementary to formal education providing a range of educational resources, programs, and activities.

✓ Provide opportunities for lifelong meaningful learning experiences.

✓ Support and expand research, science and arts.

✓ Provide opportunities connected to leisure activities and tourism.

✓ Promote social cohesion and inclusion.

✓ Contribute to social outcomes such as *"stronger and safer communities"*, *"health and well-being"* and *"strengthening public life"*.

✓ Promote understanding of diversity and cultural dialogue, etc.

(Ambrose & Paine, 2018; Black, 2005, 2012; Coxall, 2006; Dodd & Sandell, 2001; Gibbs, Sani & Thompson, 2007; Hansen, 2014; Hooper-Greenhill et al., 2007).

According the ICOM Statutes (2007) the definition of the museum is the following:

A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment (https://icom.museum/en/resources/standards-guidelines/museum-definition/).

To respond to their mission as well as to the vast changes and social, environmental and cultural challenges of the 21st century, museum professionals have followed a process of a broad, intensive and international dialogue for the creation of a new museum

definition (ICOM/MDPP, 2018). As a result, a new, alternative museum definition has been suggested:

> Museums are democratising, inclusive and polyphonic spaces for critical dialogue about the pasts and the futures. Acknowledging and addressing the conflicts and challenges of the present, they hold artifacts and specimens in trust for society safeguard diverse memories for future generations and guarantee equal rights and equal access to heritage for all people. Museums are not for profit. They are participatory and transparent, and work in active partnership with and for diverse communities to collect, preserve, research, interpret, exhibit, and enhance understandings of the world, aiming to contribute to human dignity and social justice, global equality and planetary wellbeing
>
> (https://icom.museum/en/resources/standards-guidelines/museum-definition/)

However, in September 2019 in Kyoto the ICOM's Extraordinary General Assembly (EGA) after a profound dialogue decided to postpone the final vote on the new definition of museums. Thus, the current definition of museums by the time of writing the present training material is the one that has been adopted in 2007.

6.2. The Social Model of Disability

The **social model of disability** in contrast to individual/medical model of disability stresses the barriers of the society that impede the equal social participation of persons with disabilities (Barnes, Mercer, & Shakespeare, 1999; Oliver, 1990).

The social model of disability in combination with the Convention on the Rights of Persons with Disabilities (CRPD) (UN, 2006) as well as the antidiscrimination legislation in many countries had a great impact within museums (Argyropoulos & Kanari, 2015; Moussouri, 2007). Social barriers can be:

- ✓ Environmental (e.g. inaccessible buildings, etc)
- ✓ Attitudinal (e.g. stereotypes, prejudices).

✓ Communication (lack of information in accessible format, etc.)

✓ Organizational (lack of flexibility, etc.)

Watch the following videos:

"Social Model of Disability with Mike Oliver"

https://www.youtube.com/watch?v=gDO6U0-uaoM&feature=emb_rel_end

"Medical and social models of disability"

https://www.youtube.com/watch?v=MdzbyJq58Ws

6.3. Access and accessibility

Access and **accessibility** (i.e. all the actions in order to design accessible products, environments, devices and services) are key concepts and principles and obligations of the States Parties for the equal participation of persons with disabilities in all domains of social life including culture. The Universal Declaration of Human Rights (UDHR) (UN, 1948) underlines the right of all people for equal participation to cultural life (UN, 1948, Article 27). Also, the Convention on the Rights of Persons with Disabilities (CRPD) emphasizes the issue of accessibility in specific articles and sections (UN, 2006). For example in the preamble of the CRPD (section v) it is mentioned that the States Parties recognize, among others: "*the importance of accessibility to the physical, social, economic and cultural environment, to health and education and to information and communication, in enabling persons with disabilities to fully enjoy all human rights and fundamental freedoms*".

Furthermore, according to the CRPD (Article 30: "Participation in cultural life, recreation, leisure and sport") there are specific references regarding access and cultural life, including museums:

States Parties recognize the right of persons with disabilities to take part on an equal basis with others in cultural life, and shall take all appropriate measures to ensure that persons with disabilities: a. Enjoy access to cultural materials in accessible formats; b. Enjoy access to television programmes, films, theatre and other cultural activities, in accessible formats; c. Enjoy access to places for cultural performances or services, such as theatres, museums, cinemas, libraries and tourism services, and, as far as possible, enjoy access to monuments and sites of national cultural importance.

(UN, 2006: Article 30: 1)

Regarding museums, the very concept of audience access is in the heart of museums' social mission as institutions "open to the public" (see 6.1). The recognition of museum audiences' diversity and the need to address and develop relationship with new audiences – including those who were traditionally excluded – (Black, 2005; Hooper-Greenhill, 1999) is a major topic of intensive discussion and practices within museums.

Thus, museums investigate different types of access barriers. According to Dodd and Sandell (1998, p.14), access in museums includes the following dimensions:

- ✓ **Physical access** (e.g. ramps, other facilitations for mobility and orientation for visually impaired and blind persons, etc.).
- ✓ **Sensory access** (e.g. tactile material, assistive listening devices, etc.)
- ✓ **Intellectual access** (e.g. taking into account persons with different knowledge background, learning disabilities, etc.)
- ✓ **Access to information** (e.g. information in accessible formats, etc)
- ✓ **Attitudinal/emotional access** (e.g. creating a welcoming environment, openness to diversity, etc.)
- ✓ **Cultural access** (e.g. taking into account different cultural and life experiences of different audiences, etc.)
- ✓ **Financial access** (e.g. economic policy for different target groups, etc.)
- ✓ **Access to decision making** (e.g. developing partnerships, etc.)

Remember!

"Barriers of access are multidimensional and interdependent"

(Weisen, 2008).

In the 21st century, it is also of great importance to consider barriers to **digital access** as for example accessible websites and general digital technologies (Lisney, Bowen, Hearn, & Zedda, 2013; G3ICT White Paper, 2018; Weisen, 2008). Other barriers may also be the lack or limited choices and educational opportunities (Weisen, 2008). Barriers may also include the lack or limited facilitations outside of the museum as for example the transport (Reich et al, 2011; Weisen, 2008).
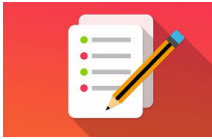
Think about your museum…Can you identify barriers for persons with disabilities?

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Addressing the diverse needs of persons with disabilities may be a challenging task.

How can museums provide access and meaningful experiences to persons with disabilities?

6.4. Universal Design

Universal Design (UD) is an approach and a theoretical framework that recognizes the diverse needs and abilities of the population and aims to the design of a friendly and accessible environment (buildings, products, services) to the greatest extent possible for all people without the need for adaptation (Mace, 1998).

Universal Design is among the core definitions and principles of the CRPD for the protection of the rights of persons with disabilities and ensuring their equal participation in social life. In case of persons with disabilities assistive devices are also important:

"Universal design" means the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. "Universal design" shall not exclude assistive devices for groups of persons with disabilities where this is needed.

(UN, 2006: Article 2)

Universal Design is based on **seven principles** for the design of environments, products, and services accessible and usable for all people:

1. **Equitable Use** (useful design for persons with different needs and abilities without s segregating or stigmatizing them).

2. **Flexibility in Use** (providing choices and facilitations for persons with different preferences and abilities).

3. **Simple and Intuitive Use** (understandable design for persons with different language skills, knowledge or concentration level).

4. **Perceptible Information** (accessible information with different formats).

5. **Tolerance for errors** (minimizing hazards and errors).

6. **Low Physical Effort** (minimizing physical effort, comfortable and usable design).

7. **Size and Space for Approach and Use** (providing space and size for use, approach, etc.),
   (https://projects.ncsu.edu/ncsu/design/cud/about_ud/udprinciplestext.htm)

Watch the video "Universal Design Principles"
https://www.youtube.com/watch?v=b4lw6K61uHo

6.5. Universal Design for Learning

Universal Design for Learning (UDL) is a theoretical framework that is based on the notion that people learn or prefer to learn in different ways (CAST, 2018). This recognition leads to the need of flexible curriculums, educational programs, activities, and teaching practices in order to meet the diverse needs of different learners. **Universal Design for Learning** emphasizes three **basic elements** of learning and **principles** respectively:

- ✓ The "**why**" of learning and the **"engagement"** which means to motivate learners and stimulate their interest.
- ✓ The "**what**" of learning and **"representation"** which means to provide multiple means of representation of the information, content, etc.
- ✓ The **"how"** of learning and **"action and expression"** means to provide opportunities and different options for expression, physical action, etc.

According to CAST (2018) there are many ways to enhance learning based on the principles:

- ✓ The **"why"** of leaning and the **engagement.** In practice engagement includes "*recruiting interest*" (e.g. providing different choices and options, optimizing value, minimizing threats, etc.), "*sustaining effort and persistence*" (e.g. clear goals and displaying goals in multiple ways, vary demands and different resources, promoting collaboration, etc.) and "self-regulation" (e.g. optimizing motivation through promoting expectations and beliefs, reflection, etc).
- ✓ The **"what"** of leaning and the **representation.** This principle includes issues of "*perception*" (e.g. visual, auditory information, etc.), "*language and symbols*" (e.g. clear vocabulary, syntax, structure, etc.), and "*comprehension*" (e.g. connection with prior knowledge and experiences, emphasis on key elements and information, use of examples, etc.)

✓ The **"how"** of leaning and the **"action and expression".** In practice this principle includes the *"physical action"* (e.g. providing choices and access to different tools and assistive technology, hands-on activities, vary time, speed, different ways to respond, etc.), *"expression and communication"* (e.g. use of different media and tools for communication, feedback, etc.), and "executive functions" (e.g. providing opportunities for more effective goal setting, planning, reflection, etc.).

(CAST, 2018)

For more detailed guidelines of UDL see the CAST website: http://udlguidelines.cast.org/?utm_medium=web&utm_campaign=none&utm_source=cast-about-udl

Watch the following videos:
 "UDL at a glance"
https://www.youtube.com/watch?time_continue=3&v=bDvKnY0g6e4&feature=emb_logo
"Universal Design for Learning: UDL"
https://www.youtube.com/watch?v=gmGgplQkrVw

6.6. Differentiated Instruction

Differentiated Instruction (DI) is another theoretical framework that recognizes the diversity among students in relation to their readiness level, their interests, their learning styles and other individual characteristics, needs and abilities (Tomlinson, 2001, 2014). In order to respond to the diverse needs and abilities of students, teachers based on the assessment can differentiate and adjust the following elements:

- ✓ The **"content"** that refers to what teachers teach; what students are expected to learn and be able to do after the teaching process; how students will have access to the content.
- ✓ The **"process"** that refers to instructional and organizational strategies which promote students' engagement with the content.
- ✓ The **"product"** that refers to the ways in which students can demonstrate, apply, or extend what they have learned, and
- ✓ The **"learning environment"** that should be organized to promote each student's participation, collaboration, interaction between teachers and students and among students and a positive pedagogical climate.

<div align="right">(Tomlinson, 2001, 2014; Tomlinson & Allan, 2000)</div>

Similarly, with the UDL theoretical framework, Differentiated Instruction promotes different and multiple ways for the differentiation of the *"content"* such as differentiated reading material, a range of resources, accessible material, working in small groups or independently, etc. Organizational and instructional strategies such as tiered activities, entry points, hands-on activities, learning or interest centres, the jigsaw strategy, flexible grouping, peer tutoring, varied length of time for a task, etc., can enhance students' engagement in the learning *"process"*. The *"product"* can be also differentiated by providing options and choices such as written or oral activities and assignments, presentations, art activities, etc. Finally, a positive and encouraging *learning environment* refers to all these arrangements that allow students to have access to different materials and resources, to collaborate with other students, to express and reflect on their own ideas and have opportunities for personal development and achievement (Gregory & Chapman, 2007; Tomlinson, 2001).

Watch the video "Differentiated Instruction: Why, How, and Examples" https://www.youtube.com/watch?v=8BVvImZcnkw

6.7. Multisensory Learning

Multisensory learning and teaching (i.e. learning opportunities and experiences with the involvement of two or more senses during the same learning activity) is based on theories of learning such as the different learning styles (Dunn, 1990), theories of multiple intelligence (Gardner, 1983,1993) or perceptual systems (Kim, Seitz & Shams, 2008). Despite the existing debate regarding specific issues such as the learning styles (Pashler, McDaniel, Rohrer & Bjork, 2009), it is generally accepted that multisensory learning and relevant teaching practices have multiple benefits for children (Baines, 2008). Furthermore, multisensory learning is in line with the principles of the UDL and DI. For example, providing learning experiences with two or more senses and different modalities (i.e. visual, auditory, tactile, kinaesthetic) can enrich choices for different and multiple means of representation, for different ways of engagement in the learning process, for the enhancement of the motivation of learners, etc.

Remember!

The aforementioned theoretical frameworks do not refer specifically to persons with disabilities. They recognize the diversity among persons.

MODULE II

Persons with sensory impairments
(Visual impairment & Deaf and Hard of hearing persons)
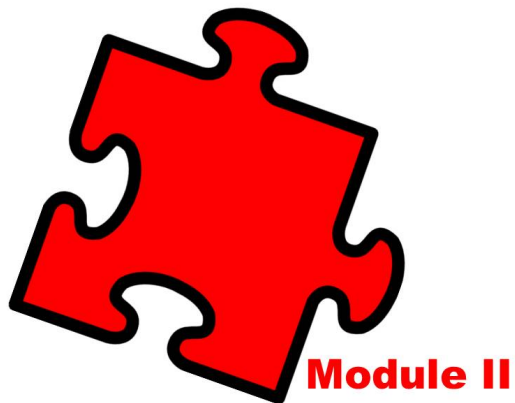
Module II

7. Module II: Persons with Sensory Impairments

Module II is dedicated to sensory impairments. Sensory disabilities constitute an umbrella term which describes situations where a disability affects at least one sense (i.e. vision, hearing, smell, taste, and touch). Nevertheless, the term "sensory disabilities" in the present context, will focus on disabilities which are related to hearing, vision, or both hearing and vision; for this, the term "sensory impairment" is going to be used in the present material.

The main components of Module II are the following:
- ✔ Definitions
- ✔ Significant element of heterogeneity
- ✔ Basic characteristics – Common misconceptions
- ✔ Educational and social needs
- ✔ Specialized services
- ✔ Measures to confront successfully different types of barriers

7.1. Persons with Sensory Impairments - Tracing – Defining - Interpreting

The prevailing characteristic in sensory impairments is the element of heterogeneity; and because of this element the audiences in the museums, when it comes to sensory impairments, are diverse.

Who are Deaf and hard of hearing persons **(DHH)**

The **Deaf** community is coupled with cultural and linguistic constituents which includes people who were born deaf, or became deaf before beginning to speak, or people who may have deaf parents and whose first language is a sign language (Children of Deaf Adults – CODA). The capital **D** is used by people who are deaf and consider themselves as members of this specific community using a sign language, participating in clubs and interacting on a regular basis (Nikolaraizi, 2007). On the other hand, people who are hard of hearing, have varying degrees of hearing loss which entails different levels of communication needs. Thus, it is difficult to define a uniform public that is hard-of-hearing.

Some common misconceptions and myths about DHH persons

✓ Sign Language is a code of communication. **No, the truth is** that Sign Language is the natural language of Deaf persons and a basic component of their culture. It has its own grammar, lexicon, etc.

✓ Sign Language is an international or universal language: **No**, **the truth is** that there are many SL in the world in different countries such as the American Sign Language, the British Sign Language, the Greek Sign Language, etc. There is also an International Sign which is used in international meetings, conferences etc.

✓ Deaf and hard of hearing persons can use lip reading or speech reading. Given the heterogeneity of DHH persons **the truth is** that not all DHH persons use lip reading or speech reading is the same way. Besides the need for a systematic education there are other limitations as for example words of phonemes that look same even if their sound is different, the speech rate, etc. It is important to note that lip reading or speech reading does not allow the perception and understanding of all the amount of the oral information.

(Nikolaraizi, 2017).

Watch the video "What It's Like To Be Deaf"

https://www.youtube.com/watch?v=0YcGev7B5AA
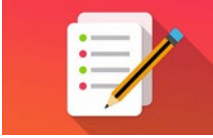
DHH persons do no face barriers of access in museums since they can see… Think about the space and the activities of a museum…
 What do you think?

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Who are persons with visual impairment (VI)

Similarly, persons with visual impairments are also characterized of great heterogeneity. For example, persons with visual impairments may be blind or with low vision, congenitally or late blind and with different skills, knowledge background and other individual characteristics and differences (Huebner, 2000). Thus, it is documented that the global population of people with visual disabilities may fall under common categories and needs, such as the need to develop social skills and establish relationships, the usage of assistive technology, and so on, but at the same time, people with visual disability (i. e. low vision and blindness) comprise a highly heterogeneous group. The characteristics of this heterogeneity "impose" the design and development of specialized support and services to meet educational, developmental, and physical needs (Argyropoulos & Gentle, 2019; Best, 1992).

Some common misconceptions and myths about persons with VI

✓ Blind (legally blind) people are totally blind and live in the dark. **No**, **the truth is** that a small percentage is totally blind. There are legally blind persons who have some degree of sight and blind persons who have light perception.

✓ All people with visual disabilities read Braille. **No, the truth is** that many persons with visual disabilities have functional vision and they can read large pint material or with assistive technological devices.

✓ People with visual disabilities have "special abilities" ("sixth sense"). **No, the truth is** that people with visual disabilities rely more than sighted persons to inputs from others senses. Sensory efficiency is also a critical educational area for children with visual disabilities.

(Huebner, 2000; Allman & Lewis, 2014; Wapner, 2013)

Watch the video "16 myths about blindness"

https://www.youtube.com/watch?v=8weMFaRFN5g
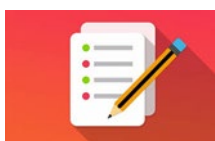
Imagine a congenitally blind visitor and a visitor with low vision in a museum...Think about possible barriers and facilitations….

……

……

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……

> **Remember!**
>
> Deafness (or hard of hearing) and vision disability may be grouped under the term "sensory disabilities" but they hold their own unique characteristics bringing up issues of specialized designs, different needs and specialized services.

> **Remember not to forget…**
>
> Persons with sensory impairments (DHH & VI) like all the other people have different interests and consequently different motivations for visiting museums.
>
> (Argyropoulos & Kanari, 2015; Nikolaraizi, Kanari, & Marschark, 2020)

7.2. The element of comorbidity or the element of the combined disability

During the last decades, the element of comorbidity or the presence of a combined disability seems to be traced and diagnosed more and more in the "sensory disabilities" field (Argyropoulos & Gentle, 2019; Court, McLean, Guthrie, Mercer, & Smith, 2014; Petrovsky, Sefcik, Hanlon, Lozano, & Cacchione, 2019).

More specifically, many people with hearing loss also have other sensory impairments, such as disabilities in vision (e. g. tunnel vision), or mobility difficulties. Similarly, there has been a dramatic increase in the number of persons with visual impairments and multiple disabilities (MDVI) within the general population of persons with visual impairments. In addition to blindness or visual impairment, a child may have such additional disabilities as cognitive, developmental, hearing, physical or mobility impairments (Kyriacou, Pronay, & Hathazi, 2015).

It is important to realize that…

The element of combined sensory impairments leads to a unique educational challenge. The group of people with combined sensory impairments constitutes a distinct, diverse and heterogeneous one with a unique set of needs that are mainly associated with each individual's combination and severity of disabilities (Holbrook & Koenig, 2000).

7.3. Deafblindness: a unique representation of dual sensory impairment

There is no one specific definition of deafblindness; on the contrary, literature review is enriched with different approaches and contexts but at the same time they all use common variables and characteristics [see for example, Sense UK (nd) or The Individuals with Disabilities Education Improvement Act of 2004 (IDEA, 2004)]. It seems that all approaches and interpretations converge upon the following:

Deafblindness is a unique, severe, and complex condition which falls into the category of sensory impairment. This has a significant effect on communication, social skills, mobility, and daily living skills (Anthony, 2016; Dammeyer 2014; Schalock, 2015; Simcock, 2017).

Relevant literature review identifies a variety of terms referring to deafblindness and these reflect the broad spectrum of people who can be considered as 'deafblind' (Wittich, Southall, Sikora, Watanabe, & Gagne, 2013). There is variety in terms of age, etiology, age of onset, cognitive and communication functions, cultural background, and language use. It must be mentioned here that by the term "language use", it is meant a great variety of communication means such as sign languages including tactile sign language, visual sign language, deafblind manual or oral communication, Tadoma, etc. (Bodsworth, Clare, & Simblett, 2011; Dalby et al., 2009).

Thus, it seems that deafblindness does not constitute **a simple addition** of significant hearing loss and visual disability. The combination of severe visual and hearing loss has a multiplicative nature which generates a new domain: a dual sensory impairment (Anthony, 2016; Bruce & Borders, 2015; Brabyn, Schneck, Haegerstom-Portnoy, & Lott, 2007).

> **To recap,**
>
> Children with sensory impairments and multiple disabilities are a population that is challenging to educate and serve. Most learning comes through visual and auditory channels and when these paths are blocked or limited then direct learning is reduced. While the impact of the sensory impairment may not always be the primary impediment to learning it is a factor that has significant impact on a child's ability to learn because it affects significantly their access to the physical and social environment.

7.4 Barriers: types and consequences

Vision and hearing are the two major senses, which formulate channels of conveying information from the environment into the perceptual system of the individual.

These two senses are characterized as "remote senses" because they tell us about distant parts of our environment by receiving waves. One of the main capacities of the sound or light waves is the huge amount of information that can be transferred from the environment to the individual. Theoretically, the number of the stimuli is infinite, but practically the number of the inserted stimuli, which is received and elaborated, is very limited and incorporates many subjective elements.

There are many models, which interpret the process of elaborating a message and most of them converge to the same components. More analytically every model usually incorporates the following characteristics: a. source of the message, b. the message, c. mediators, and d. interpretation. These characteristics formulate concomitantly the factors on which clarity and stability of the interpreted message depend. This generic model combines elements mainly of two theoretical underpinnings. First, from the spontaneous interaction theory, the word "mediators" embodies the importance of the context and the general reference organization within which the message is interpreted. Secondly, from
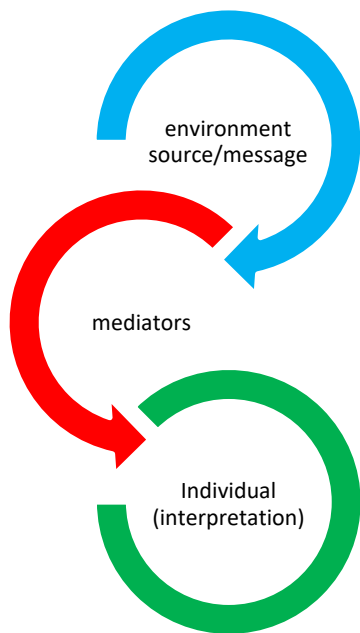
the cognitive theory, interpretation, and higher cognitive operations (memories, assumptions, and decisions) are used in this model, because they are complex mental activities and not just sensory information (Ward, Grinstein, & Keim, 2015). Besides, at this point, Hell (1983) stressed the fact that perception is fundamentally cognitive but at the same time, he does not exclude non-cognitive or sensational parameters. Characteristically, he mentioned that: "*Perception depends on two things. Sensory endowment and cognitive equipment*" (p.216).

Hence, the above simplified model of perception lays the foundations regarding communication. Communication is one of the most complex bidirectional mental operations because it consists of many levels, which operate simultaneously. The basic conceptual functions are a. collection of the data b. organization of the data, c. coding and decoding, and d. interpretations. It is evident, that communication depends upon perception and perception depends upon senses.

Therefore, it may be argued that when there are deficits in sensory function then potential malfunctions may take place in communication, daily living, and quality of life in general (Pinto et al., 2017).

It is documented that people who have disabilities regarding their sight or/and hearing are not able to rely on their sight or on their sense of hearing to a. have access to information, and b. to communicate with others, in other words, to interact with the external world. If the *external world* is the world of a museum, then a limited *interactive net* may be developed between the person with sensory impairments and the museum. This limitation creates a combining set of barriers, such as psychological, emotional, physical, attitudinal, and so on.

These barriers may appear in many phases of a person's life who have hearing or/and vision disabilities. Furthermore, individuals who are deafblind face obstacles regarding communication, mobility, self-care, literacy or decision-making areas (Convertino, Borgna, Marschark & Durkin, 2014; Hodges, 2000; Miller & McClarty, 2000). Usually, they have difficulty in moving between tasks or environments. During schooling they face challenges in their access, many of them affect the development of literacy skills (Antia, Jones, Reed, & Kreimeyer, 2009; Hintermair, 2010; Hodges, 2000; Miller & McClarty, 2000).

7.4.1 Confront barriers

Barriers, as they were defined above, are due to sensory restrictions and have a negative impact on communication. Therefore, the question which seems to prevail in nowadays is "*what are the compensatory procedures that society, researchers, practitioners and policy makers are working out in order to confront effectively all type of barriers?*"

The question is not a rhetorical one and potential answers may be traced in many contemporary studies, reports, and evidence-based research. Many societal and political fermentations took place during discussions and "fights", regarding the defence of human rights, social equity and dignity, equal access to education and culture, inclusion of all people in all aspects of life. People with disabilities have been "in the eye of the storm" all these years and it seems that many barriers were "fake barriers" or "pseudo-barriers" because they did not reflect the difficulties that these people had because of their sensory restrictions per se; rather, most of these barriers reflected a social ignorance (Ungar, 2008), discrimination or racism. Museums have acknowledged the above situation and it seems that they work out very intensively to define their role towards the rights of people with disabilities providing access to their artifacts (Argyropoulos & Kanari, 2015, 2019). On this ground many steps were done to confront obstacles which stem from sensory impairments (i.e. hearing and vision restrictions).

The following Table (Table 2) presents some examples of measures and facilities that the museums have adopted the recent years and it seems that they pave the way for a

more inclusive cultural place aiming at the creation of learning and social spaces, increasing active participation of visitors with and without disabilities through personal communication and involvement (Parry, 2007; Phillips, 2011). Table 2 contains measures and methods which meet the needs of people with sensory impairments while navigating in a museum place. In essence, the content of Table 2, describes the characteristics of a multi-sensory, engaging, learning and social place within which a deaf or a blind visitor can interact with the artefacts of a museum in conjunction with the museum space and create their own experiences. Orientation, mobility, space and proximity, proper light and acoustics, enhancement of visual information via a variety of methods and techniques, transformation of visual information into alternative sensory cues, such as sound or touch, just to mention a few, constitute museum targets in order to ensure engagement and active participation (Argyropoulos & Ravenscroft, 2019; Axel & Levent, 2003; Boussaid, 2004; Kanari & Argyropoulos, 2015; Levi, 2005; Nikolaraizi, Kanari, & Marschark, 2020; Parry, 2007; Phillips, 2011; Tsitouri, 2004).

Table 2: Measures and facilities to increase access to museums for visitors with sensory impairments

Spatial awareness Orientation & Mobility	Means of access	Means of assistive technology
Embossed floors	Sign languages resources	Assistive Listening Devices (ALDs)
Audible warning systems	Touch exhibitions/touch collections	FM systems, loops
Guide dogs	Touch tours	Large monitors with built-in magnifiers
Lighting	Audio guides	Portable CCTVs
Acoustics	Verbal/audio descriptions	Desktop CCTVs
Mobile technological devices	Three-dimensional models/3D printed objects	Wearable technological devices
	Replicas/relief sculptures	
	Tactile diagrams	
	Mobile technological devices	
	Large print	
	Braille	
	Accessible websites	

MODULE III

Bridging the gap between theory and practice

Module III

8. Module III: Bridging the gap between theory and practice

Bridging theory and practice constitutes the most effective way of building up robust experience and knowledge. In addition, when theory meets practice – and vice versa- then professionals, experts and practitioners can reflect on their own work improving their instruction and assessment methods. Many studies have shown that there is a lack of training courses which combine hands-on activities with lectures and papers. It turns that in all areas of formal and non-formal learning, the direct bond between theoretical approaches and instructional repertoire, constitutes the foundation upon which experts and educators may increase their professional effectiveness regarding quality learning (Wæge & Haugaløkken, 2013).

This section of the training material will focus on practical issues and will invite museum members and other professionals who are involved in similar disciplines, to bring their knowledge into practice and reflect on their methods and techniques.

The main components of Module III are as follows:

✓ Analysis of the notion "access" in museums for persons with sensory impairments

✓ Evidence-based studies

✓ Hands-on activities (i. e. examples and practices regarding space, differentiated material, methods, inclusive activities, etc.)

8.1. The notion of access in museums for persons with sensory impairments

Access of persons with SI should be integrated into all museum activities considering all the different types of access and the interdependency nature of accessibility barriers (Dodd & Sandell, 1998; Weisen, 2008) (see section 6.3). It is important to underline that

access is not a technical matter, but it is a process that aims to enhance and enrich the quality of the museum experience (Wapner, 2013).

Basic frameworks, elements, and principles for the enhancement of access to museums for persons with SI are the following:

✔ Awareness about disability and inclusion

✔ The Universal Design framework without excluding assistive devices

✔ The Universal Design for Learning

✔ The different characteristics, interests, etc., of persons with SI and not only in terms of disability but also in terms diversity like all the other people and visitors

✔ The different educational settings (special and inclusive) in case of school groups

✔ The needs of groups of mixed abilities (e.g. a family, friends with and without disabilities).

✔ Collaborations with associations, schools, and community

✔ Interdisciplinary approach

Remember!

The enhancement of access of persons with disabilities including those with SI to museums benefits all and provides different means and ways for approaching exhibits for all visitors.

And also

Access is not synonym to engagement

(Rappolt- Schlichtmann & Daley, 2013).
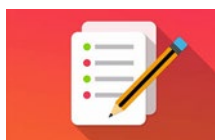
Let's talk about this

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8.2. Evidence- based studies - Spatial awareness - Orientation and mobility

Based on the axes of measures and facilities to increase access to museums (see section 7.4.1, Table 2). issues of spatial awareness and orientation and mobility are very important.

Undoubtedly **physical access** is the first type of access and condition for a visit in a museum. Guidelines and regulations for an accessible built environment are available at international level and according to the legislation of each country. Although there are many differences among museums (e.g. historical buildings, location of each museum, archaeological sites, etc.), based on the principles of the Universal Design an accessible museum should take into account the external environment of the museum and all the areas of the internal environment, the entrances, all the areas in the museum (displays areas, areas for educational activities, the sanitary facilities, café, etc.).

There are many features and facilitations in a building that may contribute to an accessible, safe, and friendly environment which also facilitates orientation and mobility in different ways for blind and visually impaired persons, D/deaf and hard of hearing or deafblind persons. Some examples are the following:

Embossed floors, floor patterns can be incorporated in the museum space as well as in the external environment of the museum and facilitate orientation and mobility.

Spatial arrangements in order facilitate moving with white cane or users of wheelchairs with SI. Spatial arrangements are also important in order to facilitate guided tours or activities in Sign Language and achieve the visual connection between DHH persons or persons with deafblindness and sign interpreters.

Audible warning systems (e.g. in specific areas of the museum).

Mobile technological devices that can facilitate navigation.

Visual contrast (e.g. walls, floors, etc.) can facilitate orientation or to identify possible obstacles, different areas in the museum, etc. Similarly, **markings on the edges of stair treads** are important for orientation and mobility. Appropriate use of colours may facilitate way finding also for DHH persons.

Appropriate **floor finishes** and design may contribute to issues of orientation and mobility.

Tactile maps or **three-dimensional models** for the building of the museum, in different floors or areas of the museum, etc. Tactile maps may also be available for the position of specific exhibitions or exhibits (e.g. touch exhibitions). Audio tactile maps are also used for the enhancement of orientation and mobility.

Maps and plans with clear information, directions for areas in external or internal museum environment, etc. **Clear** and **simple information** is very important for DHH and deafblind persons and also helpful for many other visitors (e.g. foreign visitors, persons who face difficulties in reading texts, etc.).

Accessible, simple and clear **signage in different formats** (tactile, audible, visual). Information must also include symbols for persons who have difficulties in reading texts or foreign visitors.

Tactile and Braille information in appropriate surfaces in order to facilitate reading in Braille. **Large print** labels, information material, etc.

Appropriate position of the information to facilitate visitors to find easily the information.

Visual contrast for signage. Appropriate type and size of letters. Availability of information.

Guide dogs are allowed by law in museums. Staff awareness about how to behave to a guide dog and what to avoid is important. Providing water for the guide dog.

Lighting is an important element of museums for the protection of the exhibits as well as in terms of the design of museum exhibition. Lighting is a crucial parameter for persons with low vision, deafblindness and DHH persons and the visual communication. Some solutions to achieve a balance are the specific areas with appropriate light for the sign interpreters, use of torches, etc.

Acoustics is also important in the museum space. Appropriate **floor finishes and surface materials** may contribute to a good acoustic environment. **Assistive Listening Devices (ALDs)** and other related technologies should be available (see section 8.4).

(Abd Hamid & Edwards, 2013; Argyropoulos & Gentle, 2019; Argyropoulos & Ravenscroft, 2019; Argyropoulos & Kanari, 2015; Boussaid 2004; Ginley, 2013; Nikolaraizi, Kanari & Marschark, 2020; Resource, 2001; Taylor, n.d; White book, n.d.).

Useful links/resources:

For more detailed information for an accessible built environment see the website

http://universaldesign.ie/Built-Environment/Building-for-Everyone/#figBfE1ExternalEnvironment

See also the Smithsonian Guidelines for Accessible Exhibition Design, https://www.sifacilities.si.edu/ae_center/pdf/Accessible-Exhibition-Design.pdf

All the above – one by one – constitute basic elements of an accessible and informative environment. One notion which bears more attention and includes many elements which have been already mentioned in this section is the so-called "deafspace". **"Deafspace"**, is a real space with attributes and properties which facilitates and enhances the "dialogue" between a deaf person or hard of hearing person with the built environment. These attributes may be grouped as follows: a. sensory reach (i. e. spatial orientation), b. space, mobility, and proximity (i. e. enough space to ensure clear visual communication in conjunction with "signing space"), c. light and colour (i. e. avoidance of poor lighting and shadow patterns), and d. acoustics (i. e. avoidance of echoes and reverberations).

Useful links/resources for **"Deafspace"**

"How architecture changes for the deaf"

https://www.youtube.com/watch?v=FNGp1aviGvE

"Deaf space- Architecture that works for deaf community"

https://www.youtube.com/watch?v=4fy9AcZ4zkU

The Deaf Space Project (DSP)

https://www.gallaudet.edu/campus-design-and-planning/deafspace



Remember!

Provide all the necessary pre-visit information and information for the available accessibility facilitations on the museum website.

Make the museum website accessible!

Museum staff must be aware of the accessibility facilitations of the museum, to be able to handle and use specific devices, to provide information and assistance if it is needed.

Appropriate behavior matters!
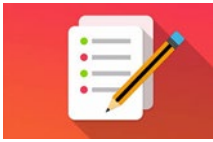
Think about the space of the museum you work or different areas in the museum...Check what facilitations are available and make suggestions for the improvement of physical access, orientation and mobility in your museum.

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Guiding a blind or visually impaired person

Watch the video "So, how do you guide a blind person?"

https://www.youtube.com/watch?v=-jqepQ8yASM

And the video "Guide Techniques for people who are blind or visually impaired"

https://www.youtube.com/watch?v=iJfxkBOekvs

Guiding a blind or visually impaired person…From theory to practice

How to behave/assist and talk to blind and visually impaired person

Watch the video "How Do I Talk to a Blind Person?"

https://www.youtube.com/watch?v=fh8x7ie96pQ

And the video "What to do When You Meet Someone Who is Blind"

https://www.youtube.com/watch?v=XFbWlOK9Wxo

How to behave/assist and talk to a Deaf and hard of hearing person

Watch the video "6 TIPS- How to Talk to a Deaf/HOH Person"

https://www.youtube.com/watch?v=d-MHRa0LKG0

And the video "Dos and Don'ts When Meeting A Deaf Person"

https://www.youtube.com/watch?v=fMLp7GhX2qc

8.3. Evidence- based studies – Means of access to museum collections

Museum's exhibitions and collections are the main reason for going to a museum. Museums have many differences regarding not only the kind of the **collections** (e.g. archaeological museums, art museums, ethnographic museums, thematic museums, etc.) but also regarding the **design of the exhibitions** and the **interpretative means** that are used in a museum (e.g. labels, videos, etc.). Thus, persons with SI face different barriers to their access to museum collections and their content as well as to the activities of museums (e.g. guided tours, educational programs, etc.). Persons with VI obviously face sensory barriers to museums as spaces of "seeing" (Argyropoulos & Kanari, 2015; Hetherington, 2000) and DHH persons face different barriers due to their diverse cultural identities (see section 7.1), language styles and cognitive skills (Nikolaraizi, Kanari & Marschark, 2020). Museums in order to provide equal access to persons with SI develop various activities and use a range of means of access although there are differences among museums.

Some of the means of access for persons with SI are the following:

For DHH persons

✓ **Programs in Sign Language**. A lot of museums provide programs in Sign Language or with Sign Language interpretation in regular basis depending on the museum and usually upon request. **Gallery Talks in Sign Language** are also programs for Deaf visitors that museums provide. These Gallery Talks allow Deaf and hearing persons to explore and enjoy together artworks. In some cases Gallery Talks are available in videos for persons who cannot visit the museum as for example in case of the Smithsonian American Art Museum (https://americanart.si.edu/education/adult/asl)

Watch the video

"National Archives Museum Tour in American Sign Language (ASL)" https://www.youtube.com/watch?v=6uZac3anNM0

And the video

"Art Signs - Achelous and Hercules" from the Smithsonian American Art Museum

https://www.youtube.com/watch?time_continue=7&v=yJ7tEQn75IM&feature=emb_logo

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Remember!

Keep eye contact and attention with DHH persons regardless of the language of communication.

Provide enough time and pauses so that DHH visitors are able to attend the Sign interpreter or the guide and look at the exhibits.

Pay attention to issues of lighting!

(Chin & Reich, 2006)

✓ **Multimedia guides** with subtitles and interpretation in a Sign Language or subtitled guides for persons who are hard of hearing or deaf and do not sign. Audio+™ Text Tours are also a mean of access for DHH persons. In this case audio tour scripts, textual information, etc., are available through different means and formats such as in full-screen or in large print along with the audio guide.

Useful links/resources:

For more detailed information about Sign Language Guides and examples of best practices see:

Proctor, N. (2005). Providing Deaf and hard-of-hearing visitors with on-demand, independent access to museum information and interpretation through handheld computers. Retrieved 20 June, 2020 from

https://www.museumsandtheweb.com/mw2005/papers/proctor/proctor.html

Accessible textual information. Simplified vocabulary and syntax, pictures, graphics, and visual elements in combination with texts enhance understanding of ideas, concepts, etc., of DHH persons who have different communication needs.

Transcripts of audio guides or in uncaptioned videos are important for DHH persons.

Captioning such as open captions (e.g. in videos), closed captions (e.g. incorporated in devices) and in real time captions (e.g. during lectures, other events, etc.). Issues of complexity, time and speed are important for DHH since they need to divide their attention between different visual resources. In case of videos without dialogues it is important to note the lack of dialogues so that DHH persons understand that they don't miss some information.

(Chin & Reich, 2006; Johnson, 2013; Martins, 2016; Nikolaraizi, 2017; Nikolaraizi, Kanari & Marschark, 2020; Proctor, 2005; White book, n.d.).

Look at the website of Metropolitan Museum of Art regarding access facilitations for Deaf visitors

https://www.metmuseum.org/events/programs/access/visitors-who-are-deaf

For Persons who are blind or/and visually impaired

Touch tours, touch exhibitions and collections, touch objects. Many museums around the world organize touch tours for VI persons, touch exhibitions (often temporary exhibitions) or they have spaces with touch collections. In other cases, museums select a number of exhibits and organize permanent touch tours. Touch collections are also complemented with tactile material (e.g. tactile diagrams), information in Braille, large and verbal/audio descriptions. Museums also can select specific touch objects that are incorporated in their galleries.

See for example the website of the British Museum regarding touch tours: "Touch tour in the Egyptian Sculpture Gallery in the British Museum"

https://www.britishmuseum.org/visit/accessibility-museum

Watch the video: "Byzantine Museum - Access to Cultural Heritage PART II The Touch Tour"

https://www.youtube.com/watch?v=mwRjWhd1kYs

Three-dimensional models, replicas, relief sculptures. Many museums depending the kind of their collections use the ways in order to provide access to museum objects. 3D printing provides new opportunities for access to museum objects or for other activities using new technologies.

Watch the video "Art exhibit lets blind visitors touch masterpieces in Madrid" https://www.youtube.com/watch?v=dF5oTdfyfwc

Also, you may visit the following link and see how the University of Pennsylvania Museum of Archaeology and Anthropology (Penn Museum) in Philadelphia has developed exciting ancient Egypt touch tours https://www.youtube.com/watch?v=DdtVcXpcilk

Tactile diagrams, tactile maps, tactile graphics are also used in museums to provide access to specific kind of exhibits or to complement information. Tactile diagrams are not exact tactile copies or reproductions of the original visual images and there are specific guidelines for the creation of tactile diagrams.

Watch the video "Creating Tactile Graphics"
https://www.youtube.com/watch?v=QeulfaWn_Ps

Useful links/resources:
For detailed guidelines for tactile diagrams see BANA (2011) http://www.brailleauthority.org/tg/web-manual/index.html

Let's see and explore some examples ...

Audio guides, verbal/audio descriptions are also very important for the access and understanding of museum objects. As Levent, Kleege and Pursley (2013) state verbal descriptions and verbal description tours constitute an important category of access to museums for persons with VI.

They may accompany tactile material as for example tactile diagrams, to be included in audio guides or even downloaded on smart phones in an MP3 format. Audio descriptions can also be used in videos for the depiction of images, etc.

Choose and try to describe a museum object...

Watch the video regarding audio descriptions stored on "Discovery PENS": "Discovery PENS launch - at Bristol Museum and Art Gallery"

https://www.youtube.com/watch?v=uVIJurz5fss

Information in Braille, large print. Accessible information for persons with VI are also very important including catalogues, brochures, labels, etc.

Accessible websites should be part of a museum accessibility policy. Museum websites should provide clear and accessible information, descriptions for images, allowing persons with VI to use screen readers, etc. (Axel & Levent, 2003; BANA, 2011; Candlin, 2004; Ginley, 2013; Levent, Kleege & Pursley, 2013; Mason & Arter, 1997; Leporini & Norscia, 2008; Undeen, 2013).

For Persons who are deafblind

Many of the facilitations and provisions can also enhance the access of deafblind persons to museums (e.g., three-dimensional models, replicas, relief sculptures, tactile maps, graphics, diagrams, access to descriptions in Braille and large print, etc). Many museums and galleries offer to visitors who are deafblind the opportunity to touch original artworks as for example in the context of:

✓ **Guided and Self-guided touch tours.** In some cases museums offer also the opportunity to persons with deafblindness to explore the artwork on their own with braille and large-print labels and audio tour guides.

✓ **Rich sensory experiences and touch tours.** Some museums around the world organize touch tours providing to persons with deafblindness opportunities to use a variety of ways to interact with the environment including movement, taste, smell and touch.

Furthermore, museums can also provide for deafblind visitors:

✓ **Programs in Sign Language or programs through the use of the Deafblind Manual Alphabet - Enhancing communication.**

✓ **Deafblind intervener** is a professional who provides one-to-one support to a deafblind person. The intervener helps the person to experience and join in the world around him/her (also see https://www.tsbvi.edu/tb-jobs/tb-intervener).

✓ **Different ways of communication**.
Augmentative and Alternative Communication (AAC) methods and techniques may be used such as braille, gestures, tactile pictures, story boxes, objects of reference, tangible objects technological devices and applications, in order to supplement or replace speech or writing.

✓ **Assistive Technology** is an important tool to enhance communication and experiences during the visit at a museum such as Voice Output Communication Aid (VOCA). Assistive technology has been used to replace personal assistance in some circumstances.

(Argyropoulos, Nikolaraizi, & Papazafiri, 2020; Dann & Dann, 2013; Diekmann & McCabe, 2011; Hersch, 2014; Skilton, Boswell, Prince, Francome-Wood, & Moosajee, 2018; Zajabacz, 2012).

Useful links/resources:

Interesting and creative actions are taken place regarding the impact of disability such as deafblindness on art. You may visit the following link and reflect on the actions of "The Deafblind live art project" https://www.abc.net.au/radionational/programs/lifematters/museum-of-imagined-touch/5844884
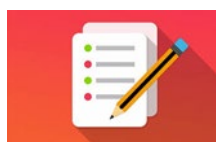
Miscellaneous

Try to compose a Table, similar to Table 2, including measures and facilities to increase access to museums for visitors with sensory impairments. Make sure that these measures or/and facilities are realistic and feasible making a cost plan in conjunction with the specific human resources and the perspectives of the museum within which you are involved.

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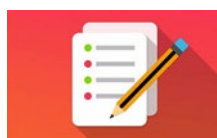………………………………………………………………………………………………
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Which components of your museum website, would you change and why?

You may revisit the website of the British Museum regarding touch tours https://www.britishmuseum.org/visit/accessibility-museum or the website of the Van Gogh Museum which highlights special services for the d/Deaf or hard of hearing visitors

https://www.vangoghmuseum.nl/en/plan-your-visit/accessibility/deaf-visitors-and-the-hard-of-hearing

and work out the components of your museum website.

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8.4. Evidence- based studies – Means of assistive technology

As it was mentioned above (see section 6.3.), Universal Design includes also assistive devices for persons with disabilities (UN, 2006, article 2). The continuous development and progress in the field of technology has influenced the quality of life of persons with disabilities in different sectors of daily and social life. There is a great and increasing number of types of technology for persons with various disabilities including those with sensory impairments (i.e. blind and visually impaired, D/deaf and hard of hearing and deafblind persons) such as assistive technology, augmentative technology, multilingual devices, communication technologies or/and alternative technologies, etc. (Argyropoulos & Ravenscroft, 2019; Carrizosa, Sheehy, Rix, Seale & Hayhoe, 2020; MacLachlan et al., 2018).

This is of particular importance also for cultural spaces such as museums and many researchers have underlined the role of digital technologies and assistive technology for persons with and without disabilities within museums (Carrizosa et al., 2020). There are various types of technological applications that can be used either through mobile devices (e.g. tablets, smart phones) or applications that are used in the museum space such as QR codes: Quick Response Codes. In the above sections besides issues of websites'

accessibility (e.g. description of images, allowing persons with VI to use screen readers) and 3D printing, are also described applications such as multimedia guides or audio descriptions for DHH persons and visually impaired persons respectively that can be downloaded from museums' websites and generally **mobile technological devices** that can facilitate navigation, etc.

In the present section are presented examples of assistive technology. According to the Individuals Disability Education Act (IDEA):

Assistive technology device means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of a child with a disability. The term does not include a medical device that is surgically implanted or the replacement of such device (https://sites.ed.gov/idea/regs/b/a/300.5).

The following examples based on the Table 2 (see section 7.4.1), are representative of the possibilities that are available.

Assistive Listening Devices (ALDs) are very important for hard of hearing persons and they contribute to the acoustic museum environment either by enhancing sound or reducing background noise. ALDs should be available in different spaces of a museum (e.g. auditorium, etc.). They can be permanent or portable and available to hard or hearing visitors. ALDs and related technologies as they are described below conjunction with the personal hearing devices can facilitate communication as well as the enjoyment of artifacts and exhibits. Museum staff it is important to know how to use them and how to address hard of hearing visitors' needs. Information about the availability of ALDs in a museum should be clearly provided in the museums' websites.

FM systems, infrared systems and induction loop systems are the main types of ALDs. In case of **FM systems,** a hard or hearing person/visitor gets a receiver which is connected to the personal hearing aids or cochlear implant. In other cases – of persons who do

not use hearing aids - FM systems can be used with earphones. Infrared systems can be used with headphones or a neck-loop in connection with the personal hearing aids or cochlear implant. The induction loop systems which can be available in different spaces of a museum (e.g. auditorium, etc.), function directly with the personal hearing aids. One important characteristic is that the user can adjust the level of volume according to his/her personal hearing devices.

(Johnson, 2013; Nikolaraizi, Kanari, & Marschark, 2020).

Useful links/resources

"**What is hearing loop".** For more information about hearing loop or induction loop take a look at the website https://www.hearinglink.org/living/loops-equipment/hearing-loops/what-is-a-hearing-loop/

"FM systems". For more information about FM systems take a look at the website

https://www.hearinglink.org/living/loops-equipment/fm-systems/

Watch the video "Assistive Listening Devices"
https://www.youtube.com/watch?v=2m5dYwcBfow

Large monitors with built-in magnifiers, portable CCTVs, desktop CCTVs. These types of assistive technologies address the needs of VI persons enhancing their residual sight. Different types of optical devices (e.g. handheld magnifiers, spectacle-mounted magnifiers, handheld monoculars, bioptic telescope) may address the needs of VI persons enhancing their access to the content of museum collection depending the type of the exhibits, the interpretative means or in different areas of a museum (e.g. libraries). **Closed Circuit Television (CCTV)** (portable or desktops CCTVs) can also be used in the

museums providing access through specific capacities as for example contrast settings, magnification, etc.

(Argyropoulos & Ravenscroft, 2019)

Useful links/resources

"Portable Video Magnifiers in Museums". Take a look at the website https://www.afb.org/aw/3/2/14947

Watch the video "Accessibility at the Canada Science and Technology Museum" https://www.youtube.com/watch?v=z-_TLP369Gc

Wearable technological devices include various types of devices that can facilitate daily life and access to different social spaces regarding navigation, access to information, etc., for persons with VI. Among them are the OrCam My Eye. An attached camera can transmit the information into other formats (auditory) allowing VI persons to have access in labels, documents, etc. Smartglasses are also used to allow access of VI persons to information. The aforementioned examples are indicative of the possibilities of Wearable technological devices in different domains of daily and social life including museums.
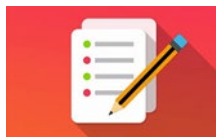
(Argyropoulos & Ravenscroft, 2019)

Watch the video "OXSIGHT Prism Glasses - National History Museum" https://www.youtube.com/watch?v=0dO4NJB1WBs

For more information about OrCam My Eye look at the website ps://www.orcam.com/en/myeye2/

For more information generally for Wearable technological devices take a look at the website

https://www.wearable-technologies.com/2018/12/these-new-generation-of-wearables-are-empowering-blind-and-the-visually-impaired/

Think about the use of assistive technology in your museum…What kind of information or support you would like to have. Are there any other considerations? Let's discuss…

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Remember!

Museum staff must be informed and involved in order to use assistive technology, to support visitors with SI and address their needs

(Carrizosa et al, 2020)

….and finally!!

An accessible, inclusive, and multisensory museum is a matter of all museum staff members who are engaged in different museum functions and services! Collaboration within museums and consultation of specialists in the field of disability and persons with disabilities is THE key to success!

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