**Inclusion Training**
for Explainers in Museums
and Science Centres

# Guidebook

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

**All materials and contact details can be found on the project websites as well as in the Erasmus+ project profile:**

*https://www.deutsches-museum.de/en/forschung/forschungsinstitut/projekte-und-forschungsbereiche/projects/detail-page/erasmus-items*

*https://erasmus-plus.ec.europa.eu/projects/search/details/2019-1-DE02-KA204-006202*

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However, a lot more people contributed substantially to the emergence of the training modules and the guidebook, be it persons from the target groups sharing their view and experience, developers and researchers from the different partner institutions, many explainers that ran through the training and shared their experience and pushed the improvement, to student helpers supporting the organization of the trainings and events.


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## Imprint

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Print: Blueprint AG
August 2022

# Abstract

**All museums are visited by old people and people with a migration background, but not very many museums know whether there are any aspects that require consideration in the facilitation of such visitors.** In the project ITEMS we designed a workshop in four parts that will help explainers in museums to improve and enhance their interaction with old people or people with a migration background. In preparation for these workshops, we talked to relevant people and reviewed and analysed what other people have already done or discovered. We found out that it is not really helpful to think of our visitors in such general classifications, due to the fact that they are all so different individually. Instead, we want the explainers to avoid stereotypes and think about or inquire on the special needs of all visitors directly. It is important to make everyone feel safe, welcome, and heard during a museum visit because museums should be places for everybody.

We tested the workshops with a first group of explainers from our museums, then implemented improvements before conducting them again. In this book, we explain the whole process, and also show what the explainers learned in the workshops and reflect on their personal thoughts regarding this experience. There are two other documents outlining the workshop elements in detail, an online and an offline version. We hope that many other museums will use this book to train their staff so that all museums become more accessible.

**In chapter 1 of this document, we explain why we found it important** to design the workshops, and what we can say about the two visitor groups Seniors and People with Migration Background to define them.

**Chapter 2 illustrates how we talked to people from the two visitor groups to find out what they would like in museums.** We also describe some well-designed programmes in other museums, as well as outlining what research can tell us about how people visit museums, and what can help them have a better experience.

**In chapter 3 we describe how we designed the workshops.** We also explain how we changed the workshops into an online version because of the COVID19-pandemic, and how we improved them after the first feedback.

**Chapter 4 and 5 outlines the different elements of the workshop we designed.** We clarify who the final users of the training course are, what needs we started from and which objectives we aimed to reach. Then, we describe in detail what is inside each of the four parts, by analysing the activities one by one.

**In Chapter 6 we explain how we evaluated our workshops and what our findings were.** Our group of explainers was very diverse in terms of background and job experience, but most reported an increase in knowledge and an interest in the two target groups after the workshops.

**Chapter 7 finally introduces the project and the project partners involved in ITEMS.** All references can be found in the Appendix.

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# 1 Introduction

## 1.1 The need to address different target groups – on a way to "museum for all"

**We live in a diverse society that consists of people of different ages, with various interests, a huge range of values, ideologies, cultural belongings, sexual identities and religions.** Some of them live with disabilities, others know firsthand what it means to migrate to or from another place. All of these together comprise a large group of potential and actual visitors to our science centres and science museums. All of them share the right for cultural participation. But the possibility to participate is not self-evident for all people. There are manifold reasons to be or to feel excluded.

Some might not see the possibility to be part of activities, because these are not adapted to their mobility requirements. Others might prefer to not visit a science centre or museum because they are not familiar with such places, and thus fear feeling insecure and lost. For some, the level of knowledge on which explanations and descriptions are based does not correspond to theirs, so they prefer to spend their time elsewhere – for a good reason. Others might have had difficulties to understand the texts and signages in a previous visit, and thus consciously or unconsciously decide not to visit a place like this again.
Inclusion in general and in the museum-context has often been discussed in connection with mentally or physically disabled people. A lot of attention is already paid to structural inclusion in the exhibitions, such as wheelchair accessibility and 3D models to be touched by vision impaired visitors. Many institutions provide guided tours for blind people or have special formats for deaf visitors. A number of activities exist for elderly people with dementia.
But what about inclusion in the full meaning of the word: Including people into the normal concept of the institution, instead of separating them in formats and events which are especially designed for them? This quest cannot be met by adding parts to the puzzle. Instead, it requires rethinking many of the systemic aspects of an institution and making deep changes – not only in the physical exhibition space.
When regarding inclusion in this way, we must think about all the people who are currently facing barriers like: "I don't belong here" or "I don't really understand the words explanations are built upon". What prevents them from considering these spaces as "theirs"? Why don't they have the perception that this is a place for them to be? What needs are not met, thus preventing them from coming and feeling welcome?

A significant share of seniors and immigrants are among the groups that may not consider science centres and museums to be „their" institutions. They are a valuable part of our society, and as such all public spaces, which are mostly publicly funded, should be accessible for them. The museum definition of the International Council of Museums (ICOM) describes museums as non-profit institutions „at the service of society and its development".[1] Beside the fact that participation in society's offers is considered a fundamental human right by the UN – how could a place of cultural exchange, lifelong learning, mediation of science, negotiation of the future, and

1 *ICOM – Internationaler Museumsrat: ICOM Schweiz, ICOM Deutschland, ICOM Österreich ICOM (Hg.) Ethische Richtlinien für Museen (Code of Ethics for Museums), deutsche Übersetzung, überarbeitete Auflage von 2006, Berlin / Wien /*

many other important and society-shaping encounters, neglect to carry away the barriers which prevent those growing and important parts of our society from participating?
To overcome these barriers it is necessary to consider the perspective of migrants and seniors on the level of institutional strategy or curation. Participation is a big deal and a buzzword that is often used. However, many institutions still have a long way to go to implement these ideas and move from theory to practice. In addition, other, more systemic levels must also be questioned. In the development of ITEMS, the "Inclusion Training for Explainers in Science Centres and Museums", the focus was on the direct mediation work on the museum floor with visitors. However, we learned at several points during the project that you cannot look at and understand the issue if you ignore the other system levels such as access, strategy, partnerships, personnel or content.

The ITEMS training aims to work within the existing structures. It is acknowledged that this can't be enough to become an inclusive institution – many more things would have to be changed on a structural level. But still, there are things that can relatively easily be done and changed within the existing structures and help inclusive facilitation – this is where this training aims to leverage.
The systemic level question concerns aspects such as access: Do migrants or seniors get to know about the offers and the programmes of a science centre or a science museum? Does this information even reach them through their normally used media channels? And if yes, is this information communicated in an appealing and understandable way?
Another aspect that needs to be reviewed would be the staff: Can migrants and seniors relate to the place through the people, especially the employees they find there? Do they find people mirroring their social identity like cultural belonging or their generation?
To tackle systemic challenges like this, inclusion needs to be embedded in the institution's long-term strategy.
Is the perspective of the mentioned target groups represented? Science communication seems to be ruled historically by white and male perspectives. Long term partnerships and participatory projects have the power to overcome this deeply incised self-evidence and find their way into programming.
On the other hand, we can find more direct ways and methods to implement the relevant perspectives and aspects for senior citizens and migrants in our daily mediational practice on the floor. This is what the ITEMS training aims to offer: A training that consists of a selection of activities and methods for science explainers to work with groups, including seniors and migrants, so that the content, the topics, the exhibits – how inclusive or not they are at the present moment – become accessible from an intellectual perspective and become relevant to them. Within the ITEMS project we came to the point that paving the way to a relevant (museum) experience for everyone in a visitor group is the final goal of inclusive facilitation.
So, how does it happen? How does the content become accessible and relevant? Physical or architectural aspects of accessibility for seniors and migrants of course cannot be neglected as a foundation for participation. But there is another field of barriers for those groups which must be respected.
During the elaboration process of the training, we found out that accessibility often lacks on a representational level, for example: Can the language be understood in terms of jargon, language-difficulty, or articulation?
Or on a very foundational level, such as: Do the people know how a place like this "works"? Can they orient themselves there? Do they know what is expected from them and what they should and should not do? Can they feel secure in these means? Just to mention a few examples here.

To meet needs like this and to overcome barriers like this serves many seniors and migrants. Also, no one else will have a less interesting or worse experience in the museum when the things we conduct in the training are respected. But it is crucial for some of them to be able to get access and to participate. In the end, it serves all visitors and all target groups. So, we can say that to level up the issue of inclusion gives a huge benefit to every institution that starts to take the topic seriously and decides to work on it.

With this guidebook we want to provide the framework for the use of the training "Inclusive Facilitation". The idea of an "museum for all" might not be within a realistic reach and especially with this training we can only look at a very specific part of the issue. But it is an important contribution to getting one step closer there. The exchange between explainers and senior visitors as well as with migrant visitors shall be put on a next level – not on a strategic and theoretical level, but on a very, very practical one with hands-on quality.

## 1.2 Why those target groups?

Unconsciously/unwittingly our museums exclude various visitors. Such audience exclusion particularly affects elderly and migrants.

The selection of senior citizens as one of the target groups has a two-fold reasoning: on the one hand today's museum experience shows them not as a majority of museum visitors, but nevertheless present. On the other hand, demography shifts towards higher age citizens. Various forecasts show an expected increase of the median age in the EU. Especially the age group of 65 years and above is significantly growing.[2]

Large numbers of people migrate for various reasons. "The number of refugees is on the rise worldwide. Most refugees seek harbour in neighbouring countries. Since 2015, with the so-called "refugees and migrant crisis", Europe too has dealt with increasing numbers of asylum seekers. 2.4 million refugees and people in refugee-like situations and 860 thousand asylum-seekers (pending cases) were hosted in EU-27 Member States at the end of 2018".[3] Today we are facing the war in Ukraine, with again thousands of people having to migrate. In the future the climate crisis might force even more people to leave their homes and seek another place to live.

They might be marginalised, but migrants and senior citizens indicate an increasing percentage within the overall society. One way or the other – to stay relevant to the whole society, museums and science centres need to address these two target-groups, and familiarise themselves with their needs and interests.

Furthermore, science centres and science museums understand themselves more as places of societal dialogue rather than places of pure knowledge transfer. Seniors have a huge life-experience, and they most likely experienced more fundamental, societal changes than the ones who are younger. Migrants might be capable of seeing what is going on not only from an inside perspective, but they can also imagine what it looks like from the perspective of another culture. Both are very valuable perspectives which are brought into museums and science centres automatically with migrants and senior citizens as visitors.

2 *"During the period from 2021 to 2100 the share of the population of working age is expected to decline, while older people will probably account for an increasing share of the total population: those aged 65 years or over will account for 31.3 % of the EU's population by 2100, compared with 20.8 % in 2021". Source: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_structure_and_ageing&stable=1#The_share_of_elderly_people_continues_to_increase*

3 *https://www.migrationdataportal.org/regional-data-overview/europe*

## 1.3 Target group definition

The approach we planned was to develop a special training for explainers to be more welcoming to, and to better understand the needs and attitudes of these groups. But already in the very beginning we realised how difficult it was to sketch a typical "senior citizen" or a typical "migrant citizen". Who are they? What do they do? How do they use a museum? What are their needs in a museum? What barriers prevent them from participating? We struggled already in the beginning, and that became even worse the deeper we investigated the issue.

In society we might perceive seniors and migrants as groups, but they are very, very heterogeneous people. We might have heavy stereotypes and superficial group attributions about migrants and seniors in our heads. For the training, we did not want to fall into the trap of working with these prejudices.

In the beginning of the project we talked about "special needs" of the target groups. According to our learnings during the process of the project this changed to "needs", as we thought we should not see them deficidal. Finally, we discussed if it was more appropriate to talk about "wants". Why? It seemed to be encroaching to give people what we thought they needed. This seems to be right for babies and dogs, but not for grown ups.[4] We should elaborate with them what they want and react to that.

The survey we did in the beginning of the project tried to catch those "wants". But it only became clear that with the limited number of answers we only got proof of how heterogenous the groups are and the answers we got were a few and specific examples. Yes, seniors and migrants have some things in common, but it didn't seem right to hand too much general information to the explainers beforehand anyways. So, we looked for a way to teach how to adapt to the situation influenced by diverse "wants" and needs the explainers are confronted with in a specific work situation. And how to find out about the actual needs and "wants" in very specific circumstances.

The key seemed to be to create awareness about the stereotypes we all have about seniors and migrants. To open up the horizon about cultural differences and values. Self Determination Theory[5] served as a basis for the picture we want to create about seniors and migrants and to dissolve stereotypes.

Nina Simon[6] provides a practical strategy of asking questions in the process of an engagement and linking to the answers during the process. This seems to be a good and practical way to create a connection between the object and the visitor.

The idea of inclusion strives to dissolve itself. If society would already consist of people living together in equity the attribution of certain people to groups that are to be included becomes absurd. Nevertheless, in the current moment, we do not live in this (utopic?) inclusive society. Therefore, both this guidebook and the training itself, attempt the balancing act between the prevailing notion of an existing „group" of seniors and migrants to whom certain needs can be attributed and the perception as individuals with unique motivations and backgrounds. The approach outlined above attempts to do justice to this.

Even though we found it impossible to characterise a "senior" or a "migrant", as both target groups cover a large and highly diverse group of people, we chose to explain in the following part of this guidebook our thinking and our starting-point working definitions. These are by no means conclusive but should give key points of whom we were thinking of. For anyone who wants to adapt the workshops, these will also give an indication what aspects were covered and which (e.g. special psychological needs of refugees) were beyond the scope of this project.

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4 *cf.: Nina Simon: http://www.artofrelevance.org/2018/04/18/wants-and-needs/*

5 *Deci, E. L., & Ryan, R. M. (1985). Self-determination and intrinsic motivation in human behavior. EL Deci, RM Ryan 1985.*

6 *http://www.artofrelevance.org/2018/04/18/relevance-for-everyone/*

### 1.3.1 Senior citizens

There is no universally accepted definition of a senior. In the context of the training, if we say „senior" we are talking about an „older" person, approximately starting from age 50, in pension or (part time) employed. With the increasing age of seniors, physical limitations often increase as well. However, they are individually very different. Most feel fit and little limited up to high age. Some are familiar with museums and science centres, some are less.

Ester Gajek, author of "Seniorenprogramme an Museen"[7], emphasises that we need a new view on visitors 60+, respectively on people in this age range generally. How we feel at a certain age has changed a lot over the last centuries. Life changed; workloads changed. Health changed. And a lot more. Many of the stereotypes we have are remaining from the past. The group 60+ is incredibly heterogeneous – it is after all composed of all the people of at least two generations.

Ageism[8], commonly defined as the negative social construction of a specific age group, can affect a person at any stage of their life. "Old age", however, carries a particularly negative connotation and „old people" are often perceived as having no value to society. Unlike other forms of discrimination, such as racism or sexism, ageism often tends to be ‚normalised', while age stereotypes are accepted without being challenged.

Being old is not only related to a person's 'chronological age' (for example, being over 55, 60, 65 or 70 years) and the biological process of getting older. Being 'old' and treated as an 'old person' is also a social construction linked to social realities and perceptions about age that change over time and differ across societies within Europe and globally. Individuals have different perceptions of what age means depending on where they are on the age continuum, as they experience throughout their life cycle what it means to be 'young', 'middle-aged' or 'old'.

Age and ageing can be discussed and addressed from four distinct but intersecting perspectives:

- chronological age, based on the date of birth;
- biological age, linked to physical changes;
- psychological age, referring to mental and personality changes during the life cycle;
- social age, which defines the change of an individual's roles and relationships as one gets older.

Together these aspects result in the perceived age. They can develop at different speeds and affect individual experiences as well as social reaction, influenced also by the social, historical and cultural environment. This affects not only how society views older people, but also how older people perceive themselves.

Societal perceptions and policy responses are often based on a conception of older people as a homogenous 'group' with common needs and experiences. This has led to polarised and distorted views of older people, affecting their human rights. One view sees older people as 'dependent and vulnerable', associating old age with a withdrawal from economic activity and increased illness and disability. This influences policy approaches aimed at compensating deficits and meeting needs. The other view sees older people as active contributors to economic and social life. This perspective calls for policies that focus on active ageing and increasing opportunities for participation. Such polarised views, "portraying later life as common experience", fail to capture the distinct experiences of individuals with different life courses, incomes, or genders, which affect their later life.

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7 *Gajek, Esther: Seniorenprogramme an Museen. Alte Muster – neue Ufer. Waxmann, Münster 2013*

8 *Shifting perceptions: towards a rights-based approach to ageing; European Union Agency for Fundamental Rights, 2018; https://fra.europa.eu/sites/default/files/fra_uploads/fra-2018-fundamental-rights-report-2018-focus_en.pdf*

What all elderly people have in common is that they know different times. This means they also know another "culture" – as culture changes over time at the same place. They experienced changes in their physical condition. They experienced mental and personality changes and they are „native" with different technologies than younger people.

### Demarcations/Definition – Who is addressed in this training

To create the training we figured out that we had to choose some demarcations to make it work. In 16 hours not everything can be discussed. We chose to have those people in mind which are facing barriers when it comes to a museum visit. There might be 85 year old visitors who do not fall into this group at all. But we also decided to not target old people who:

- cannot access a museum or science centre at all because of immobility
- need personal care for their basic needs such as going to a toilet, eating, etc.
- are heavily impaired or handicapped
- live with dementia

Of course, the training supports explainers to better serve these people as well, but there might be some more considerations to be made.

## 1.3.2 Persons with migration background

The UN migration agency (IOM) defined a migrant (until a revision in 2019) as any person who is moving or has moved across an international border or within a state away from his/her habitual place of residence, regardless of (1) the person's legal status; (2) whether the movement is voluntary or involuntary; (3) what the causes for the movement are; or (4) what the length of the stay is.[9]

Migration has always existed, but it has changed a lot recently due to globalisation (new communication and information possibilities support networking, better infrastructure facilitates travel). The motives are various. They reach from political reasons to personal ones to economic or religious motives. The term "migration" also comprises to move with the aim of further education at school, academically or professionally. Labour migration can be permanent or temporary to where the workplace is located. Migrants can be refugees, but by far not every migrant is a refugee.

Just like older people, migrants are a very heterogeneous group. Some might have trauma to deal with, others might have found good coping strategies. Some might experience bureaucratic difficulties, others experience life as an exciting journey.

What they might share is that they are facing the societal attribution of being a "problem" for society, a challenge or even a threat. The human rights of migrants are often violated. But of course the opposite perspective exists as well, which perceives migration as a factor to create diversity and cultural and economic richness.

What migrants share, and where explainers can build up on in their work, is that they know another culture. They changed their centre of life. They changed ways of expression (cultural language). They experienced a change of social role. They have a lot of experiences. They are „bridges" to other cultures.

9 *Source: Jørgen Carling at www.meaningofmigrants.org*

### Demarcations/definition – Who is addressed in this training

For this training we cannot target everyone who would be considered "migrant". It is assumed that not all of them need special efforts, in order to ensure equity and inclusion. This means that migrants who live in a cultural environment which is the same or very similar to their former one are not primarily targeted. For instance, this could be the case with migrants who moved with the aim of further education at school, academically or professionally, working migrants who moved within one country or migrants in second or third generation (i.e. third culture people). Another demarcation is made to people that do not speak the local language at all.
Also it must be said that the training addresses mainly grown up migrants. There is no specific content about working with juveniles or kids, but most of the content of this training also applies to them. Still, to be fully equipped to work with juveniles or kids, or completely age-mixed groups, would need extra attention and extra training content.

# 2 Target group needs assessment and results

**After some initial considerations about the target groups, we quickly decided that instead of working based on assumptions, we should rather ask the relevant persons themselves about their needs and wishes.** This plan was met with some obstacles, as not all museums had established programs for migrants (refugees) or seniors, and the visitor structure analysis showed the low number of visitors from the groups in question in other cases. We therefore decided to consult with experts who regularly work with either of the two groups as well as conduct a literature review and to collect best practice examples. The results of this research will be presented below.

## 2.1 Methodology

We tried a number of approaches to work out concrete needs and requirements of our target groups to address in our workshop. All data was collected in a table and sorted roughly by topic, such as language and speaking habits (presentation techniques, language tics, volume, dialects, etc.), cultural background knowledge (including on age issues and current politics), engagement/interactivity (in particular ways to interact with objects or each other), or group management (a topic raised by explainers). Because the COVID19 pandemic has hampered our efforts to engage more deeply with members of both target groups, we subsequently expanded our literature review to include general audience motivation and mental health issues related to particular ageism (i.e., age discrimination).

### 2.1.1 Literature review

During our literature review, we found that many papers worked experimentally by recruiting a group of museum outsiders (mostly people with migration background) and observed them during their museum visit. The participants were then interviewed about their experiences. All papers found similar results, namely that people felt uncomfortable in the museum environment because they were unaware of the social cues involved in a museum visit, or felt that their race, gender or cultural background was misrepresented or not represented at all. While a lot of work is being done to improve inclusion of women, working class people and minority groups in STEM, museums are not yet working to their full potential[10].

In our literature review, the work of Emily Dawson[11], and her studies on exclusion of ethnic minorities stood out in particular. The fact that many minorities simply do not feel welcome in current museum settings – be that through lack of representation, unwritten rules of how to engage with the exhibitions, or actual discrimination – is an unbearable situation. If museums and museum staff consider themselves allies to excluded people in any way, the need for action is obvious[12].

Only few papers could be found which dealt with seniors as a visitor group, and those that did often focused on persons with serious impairments, such as dementia. Our main research input on that side came from Dr. Esther Gajek at the University of Regensburg, who did her dissertation on seniors in museums, and evaluated programs offered particularly to seniors[13]. We also looked into age perception, and ageism (discrimnation based on the perceived age of a person)[14], which in turn lead us to once again question our own perception of senior visitors.

To expand on this issue, we moved on to looking for papers on the mental impacts and stages of ageing[15] and lifelong learning, although these were helpful only to complete the overall picture. They did only marginally help to identify the needs of seniors in museums, and rather strengthened our conviction that it was important to not fall back on the stereotype of seniors as fraip, slow, and only interested in past things, but rather to challenge them with new inputs and current topics.

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10 *Archer, L., Dawson, E., Seakins, A. and Wong, B. (2016) Disorientating, fun or meaningful? Disadvantaged families' experiences of a science museum visit. Cultural Studies of Science Education, 11 (4). pp. 917939.ISSN 18711510 doi: https://doi.org/10.1007/s1142201596677*

11 *Dawson, E. (2014a). "Equity in informal science education: developing an access and equity framework for science museums and science centers" Studies in Science Education, 2014 Vol. 50, No. 2, 209–247. Dawson, E. (2014b). ""Not Designed for Us": How Science Museums and Science Centers Socially Exclude Low-Income, Minority Ethnic Groups." Science Education, 98(6): 981-1008. Dawson, E. (2018). "Reimagining publics and (non)participation: Exploring exclusion from science communication through the experiences of low-income, minority ethnic groups" Public Understanding of Science 2018, Vol. 27(7) 772– 786. Dawson, Emily. (2019). Equity, Exclusion and Everyday Science Learning: The Experiences of Minoritised Groups. 10.4324/9781315266763*

12 *Wendy Ng, Syrus Marcus Ware & Alyssa Greenberg (2017) Activating Diversity and Inclusion: A Blueprint for Museum Educators as Allies and Change Makers, Journal of Museum Education, 42:2, 142-154, DOI: 10.1080/10598650.2017.1306664*

13 *Esther Gajek: Seniorenprogramme an Museen. Alte Muster – neue Ufer. Waxmann Verlag (Münster/New York/München/Berlin) 2013*

14 *Fraboni, Maryann & Saltstone, Robert & Hughes, Susan. (1990). The Fraboni Scale of Ageism (FSA): An Attempt at a More Precise Measure of Ageism. Canadian Journal on Aging. 9. 56-66*

15 *Cohen, G. D. (2005). The mature mind: The positive power of the aging brain. Basic Books*

### 2.1.2 Interviews with experts

We did conduct some interviews with target group experts, such as senior assistance personnel or people working with refugees. The questions were mainly based on the questionnaire used for the focus groups as explained below, but also asked about specific experiences or advice with museum visits. However, most of the experts working with seniors, again, were mainly concerned with people with severe handicaps or disabilities. Others worked on age poverty and had little experience with museum visits.

Concerning people with migration background, we interviewed people working with refugees, for example through offering "Science Without Borders", a program designed to guide young refugees through the museum, or people offering language courses in an exhibition. Their main concerns were the language barrier, and often the language training took precedence over transporting scientific content. There were reports of intercultural conflicts arising, which were only rarely targeted in any systematic way, but mainly via passed-on advice for the explainers to handle their own way. Many of the experts on migrants' wants and needs also revealed that often, a visit to a science centre or museum was not perceived as relevant to the migrants. This may actually be a symptom of the systemic exclusion mentioned in the introduction!

### 2.1.3 Focus groups

We decided to use focus groups for a number of reasons. For one, the open discussion with the group and among the participants would ideally create a more open and honest atmosphere in which people would feel encouraged voicing their opinion. Secondly, we tried to formulate open questions that would not steer the participants in a certain direction caused by our own bias and stereotypes. The questionnaire was split between the two target groups, and within the target groups between visitors and non-visitors. The interviews were conducted either within the museum by asking a group of visitors (e.g. participants of a tour), or outside the museum by approaching people in meeting points, such as a language class for foreigners.

The questionnaire (see evaluation pack) was introduced by asking people to describe their (imagined) ideal museum visit, and then based on their replies, moved on to questions concerning mobility, representation, language skills and interactivity. We also asked about their experiences with explainers and explainer-facilitated activities, such as tours or workshops.

Following the focus groups, we also approached the topic from the other direction and interviewed the explainers of our respective museums about their experiences and coping strategies, as well as what they felt would be helpful or necessary as an improvement.

### 2.1.4 Best practice examples

The definition of best practice results is a tricky one in this project, as many museums do implement programs for seniors or people with migration background, but the best examples are also often projects that are not aimed at any specific target group but are merely designed to be inclusive and accessible to all visitors.

One such program for example is the Deep Space room in the Ars Electronica in Linz[16]: a space that allows for high resolution (and optional 3D) visualisation, which gives visitors the feeling of not just being spectators, but being immersed in the world projected and enables them to interact with the environment. The program offers various games and visualisations and offers a wide variety of topics that can be chosen by the explainer in charge in accordance with the interests and abilities of the visitors present.

A second best practice example is the intergenerational dialogue project called "Speak Dating" facilitated by the Landesmuseum Vorarlberg[17]: here a group of seniors and a group of young adults were invited to fill out the same basic questionnaire on interests, opinions and experiences. After an introduction which explained the process and answered all questions, the participants were arranged in two rows of seats (young adults on one side, seniors on the other). After announcing one of the topics from the questionnaire, people were then invited to discuss with the person across from them. This low effort approach allowed for both, superficial as well as in-depth exchanges and brought together people who might otherwise rarely interact.

Many art museums offer programs in particular to seniors[18] or people with low language skills that allow them to try out producing artwork with some specific technique (painting, sculpting, etc.) by their own. This offers the opportunity to try out new things, learn new skills and experience self-actualization, which often helps people to feel empowered. The communal activity also offers a space for exchange and socialising. While many science and technology museums offer tech or tinkering workshops for kids or students, adult visitors may not yet feel invited.

Already a diverse staff can vastly improve the accessibility for minority visitors: many museums report that having more diverse explainers or facilitators on staff helped to gain the interest and engagement of visitors from minorities. Visitors found it comforting to engage with a person of a similar habitus to themselves, relating not only on the basis of content but also on a personal level through shared language or pop-culture knowledge.

## 2.2 Results

We collected the information from the focus groups (10 instances in Italy, Germany, Austria and France) and expert interviews (4 instances in Germany and France) in a table and subsequently summarised the table by assigning one of five categories: language issues, interactivity and engagement, tech issues and accessibility, systemic problems, and (for explainers) group management. While we expected more requests on general cultural background knowledge, we found that very few of our participants mentioned this, mainly as they found that in their day-to-day business there was little need for it beyond common knowledge.

16 *https://ars.electronica.art/center/en/exhibitions/deepspace/*

17 *https://www.vorarlbergmuseum.at/veranstaltungen/kalender/detail/2018-09-10_1800/speak-dating/, personal communication*

18 *Again, see Esther Gajek's work on seniors in museums for various examples*

### 2.2.1 Senior citizens

While many museum professionals are worried about accessibility when it comes to seniors, the topic was rarely raised in our focus groups. The argument usually was that the persons concerned know best what they can and cannot do and have learned to handle their impairments during their development over time and feel more discriminated when reminded of them. A rough estimate of being able to sit down comfortably after approximately every twenty minutes of a tour or similar event was given, and comfortable seating arrangements within an exhibition are considered helpful for all visitors in any case.

All members of the target groups we interviewed stressed that they would prefer not to be treated as frail or unfamiliar with modern technology. While this may be the case with some people, many of the group of seniors are well-acquainted with the tools of the digital age such as smartphones or tablets, and will not hesitate to interact with them. At the same time, it can be enriching for any activity facilitated by an explainer to make use of the experience of seniors that are present. This can be both beneficial due to increasing the emotional aspect of a topic, and also provides the seniors (or any other visitor who is an expert in their field) to feel seen and valued. While main museums focus on historic aspects when it comes to designing programs for seniors, the seniors themselves often preferred current topics or experimenting with unfamiliar fields such as art, music, or robotics (or a combination). For many, the experience of being and interacting in a group and doing something unusual and "special" may be more important than the actual content, and they enjoyed being hosted and experiencing self-actualization throughout all programs. The classic "tour and coffee and cake" combination was occasionally appreciated, but often considered patronizing or even discriminating. Only if the get-together allowed for additional exchange with e.g. curators or new (younger) people, it was appealing to the focus groups. Many seniors also belonged to the type of museum visitor called a facilitator[19] and would visit the museum with friends and family, in particular grandchildren, and stressed the importance of having the possibility for intergenerational and interactive, child-appropriate activities.

### 2.2.2 Persons with migration background

The main point raised from people with a migration background was the need for clear pronunciation and articulation of the explainer, given that many were learning the local language as a second or third foreign language and might otherwise have difficulties understanding what was said. Meanwhile, the museum visit was also seen as a welcome opportunity to practice their language skills and learn new vocabulary. To have at least a second language (e.g. English) present was nevertheless seen as beneficial.

At the same time, they felt it was important not to underestimate the skills and knowledge of a person who might struggle with articulating their thoughts. Stereotypes were found harmful and discriminating, and some were rather critical of the fact that they were considered to have special needs. Representation was another point stressed and is closely connected with the overall perception of migrants within society. Museum exhibitions were perceived as being biased towards certain cultures or cultural backgrounds (mostly white, male, western), and representative content for Women, People of Colour, or other cultural backgrounds was often lacking.

19 *Falk, J.H. (2009). Identity and the Museum Visitor Experience (1st ed.). Routledge. https://doi.org/10.4324/9781315427058*

Similar to the seniors, this group also preferred interactive modules to merely listening to a presentation or demonstration. Interaction within the group would also allow for people more familiar with the language or content to explain it to their peers; a pattern that has also been observed as being helpful in school program contexts or other learning environments.
The two groups were also in agreement on the topic of relevance: the topics presented should be somehow connected to their day-to-day lives, current topics of societal discourse, or in some other way be of interest. Otherwise, neither the museum nor any of its activities were considered useful or worth the time, money, and effort.

### 2.2.3 Explainers

The topic most often brought up by the explainers was that of group management, in particular of very heterogeneous groups. The explainers struggled to find good ways to quickly assess the knowledge levels and interests of all group members simultaneously, as well as worried about addressing said interests in a balanced manner without boring or overwhelming parts of the group. They were also very interested in stage presence techniques and speech training, as many worked in noisy or very busy environments and wanted to improve their performance.

# 3 Design Process

## 3.1 An essential prerequisite: knowing the profile, constraints, and needs of the people to be trained

The target group of the training developed are science explainers. They are in direct interaction with the public. And, as mentioned in the introduction, reflections and actions on inclusion must be shared by all the services of an institution, not only by explainers. However, science explainers are rarely specifically trained on these issues.

To design the training it was therefore essential to

1. know the realities in the field of these science explainers
2. identify their training needs
3. know in advance the logistical constraints of the training

Validating the elements of the specifications will ensure that the training will target the right people, with objectives corresponding to their needs, at the right time.

### 3.1.1 „For whom?" Trainees profile

In order to design the training course, we needed to identify precisely who the trainees were going to be: Which audiences do they meet? What are their constraints? Can they design new actions? The different partners were able to identify the convergent and different elements depending on the museum and country. This phase was essential to designing an action that would be relevant in the various working contexts.

The training was designed to be applicable to various types of science explainers: Whether they are in a museum with collections or not, whether they can invent new formats or just adjust existing ones, whether they have on-off or regular actions, and whether they have the opportunity to create partnerships with other organisations or institutions, or not. Within the explainers in our institutions, we found some common points: all science explainers have interactive activities with various audiences, these are delivered via specific formats, and all explainers are in contact with other services in charge of other elements of the visit (booking, exhibition design, collection management, partnerships...).

### 3.1.2 „Why?" Trainees needs

What do explainers need to know to shine in this field? It is essential to ask this question. Otherwise, there is a risk that the training will be interesting, but the content will not be appropriate and will be quickly forgotten because it is not relevant to the trainees, it is not related to issues or practices that interest them, and seeing no direct effects can slow down implementation in the field.

In the context of the ITEMS project, the aim of the training was already defined: „explainers in museums and science centres should become better aware of the special needs of various groups of visitors, as well as be able to support these people in a decent and comforting way." Therefore, the operational objective was simple to define: enable explainers to carry out inclusive actions for migrant and senior visitors.

But for what aspects do science explainers need support, tools, and skills to be able to offer these inclusive activities? In the same way that we explored the needs of seniors and migrants, we invited science explainers to share their training needs related to inclusion. Early in the project, each partner questioned science explainers in their institution via interviews or surveys. Some answers were not included in the training because they were outside the scope of the training because they were linked to other services than education or equipment for accessibility (e.g., learning a new language, installing lifts). However, this type of response remains very interesting at the institutional level to identify additional ways to become more inclusive. The other responses allowed us to identify the main themes to be addressed during the training: language, group management, cultural background knowledge, and engagement.

This list of trainees' needs was necessary but not sufficient to design the training. Indeed, a particularity of the inclusion theme is that without prior awareness, one has an extremely partial vision of the solutions to be provided. Thus, the science explainers could not, on their own, identify all the elements to be included in the training. These surveys were therefore supplemented by the work of the project team to identify all the skills to be put into practice.

### 3.1.3 „When? How much? Where?" Training logistical constraints

Imagining a month-long training course for trainees who will – due to work constraints – only be able to take part in two days would be a big waste of time. This is why it is important to identify the constraints linked to the training so that they can be taken into account at the design stage rather than having to make adjustments afterward.

In the case of the ITEMS project, we defined the training situation as follows – based on the constraints in the four museums/science centres. The training was designed

- to address groups of about ten people
- relatively short (when ten science explainers are being trained at the same time even in larger museums the offers for the visitors would need to be reduced)
- face-to-face (we will describe the changes linked to the pandemic situation later on this document)

For the other aspects, we were free to make the choices that seemed most relevant to effective training.

### 3.1.4 Is this training useful for other profiles?

Of course, we want as many professionals as possible to be trained so that our institutions become more and more inclusive. We, therefore, wondered whether training could be offered to other profiles than scientific explainers. Definitely yes. With small adaptations, this training could be used to support other professionals to become aware of the need for inclusion in cultural institutions and give them concrete ways to contribute to it. However, the objectives and especially the examples will have to be adjusted to make the training relevant.

For example, if you aim at training a group of people who interact with audiences but not in a science museum, the activities talking about the institution at large should be updated (e.g., in the module highlighting situations of exclusion in science museums, it will be necessary to check that the examples work in the institution concerned). Or if the target audience are science museum professionals but not science explainers, some activities should be deleted or adapted (e.g., the module on welcoming visitors is only useful for people who directly interact with an audience).

## 3.2 The designing steps

To co-create a training course it is important to work in a methodical way. Here are the steps we followed. For ease of reading they are presented chronologically and linearly. However, some of our exchanges have led to adjustments and back and forth between certain stages in a dynamic of continuous improvement.

### 3.2.1 From needs to objective

#### Trainers' needs and target groups needs

In the first design stage we analysed the needs and wishes expressed by the science explainers and target groups (focus group and literature) of each partner institution. They were grouped into 4 main categories: language, group management, knowledge of cultural background, and commitment.

From this list we then collectively identified which ones were priorities for training. Criteria considered for this ranking included the expected impact on the target audience, feasibility within the training and applicability in as many contexts as possible (i.e. not just useful for one museum).

#### Pedagogical objectives

Based on these needs, we then drafted pedagogical objectives. These formulate what we want the training to bring for the trainees, the targeted skills. To be precise, they are formulated as follows: „at the end of the training, the participant will be able to" followed by an action verb. In order to specify the type of competences expected, we used Bloom's taxonomy which has different levels of complexity: from memorization to creation.

**For example:** at the end of the training, participants will be able to organise a welcome that creates a safe environment for visitors from the target groups: where everyone feels comfortable expressing themselves, without fear of being ridiculed, where everyone knows what is expected of him/her, where everyone feels accepted by the rest of the group.

In order to facilitate the evaluation, for each objective we have defined an outcome that is specific, measurable and achievable.

### Training progression

Then we organised the learning objectives in a logical order that contributes to the strategic overall objective of the project: to increase awareness of the special needs of senior citizens, migrants and refugees, and to support these people in a decent and comforting way. There are several possibilities: from simple to complex, from more known to less known, in chronological order, etc. In our case the progression is rather from the abstract to the concrete. Indeed, the awareness of the issues related to inclusion had to precede the reflection on the type of offer to be made to the target groups.

## 3.2.2 From objectives to content to activities

For each pedagogical objective we then selected the associated content through a search for information, data, research articles, pedagogical tools, existing training sequences, project documentation, etc. Special mention should go to the fellow Erasmus+ projects PILOTS[20] and PISEA[21] at this point, from whose work we greatly benefited, and in particular the PISEA partner TRACES[22] gave valuable input and advice on the topic of systemic change assessment. Finally, we defined and documented the content to be used during the training in more detail.

We have selected activities that meet the following criteria:

- provide an „emotional" experience
- combine theory and practical exercises for greater efficiency
- a rhythm that maintains attention
- activities consistent with the message

**For example:** we alternated between individual, small group and whole group work. We used tools that were both engaging and that fostered empathy in order to become aware of the problems of the target audience. We use the method of personas where we focus on characters that represent part of the target group: their individual personal history allows us to have a more „human" approach to start to talk about fears, motivations, and skills of a person that belongs to the target group.

## 3.2.3 Design of training materials

The final stage of this development process is the design of the training materials.

The material for the trainees includes a visual presentation with module titles, instructions, and diagrams, as well as material to be read or filled in during the activities. For example, interviews that give information for the development of personas, a grid that is used to fill in criteria for a good reception.

For the trainers we wrote a training guide. At the end of the course design, all information was organised in this handbook. It allows a trainer (who maybe did not participate in the creation of the course) to take ownership of the training.

Each module is characterised and described by the following categories:

- **duration:** indication of the minutes of this unit
- **equipment:** listing of the required materials and equipment

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*20 PILOTS, PILOTS Resource Pack, Edt. Camilla Rossi-Linnemann and Michael Creek, June 2010*
*21 https://pisea.ea.gr/*
*22 https://www.espgg.org/*

- **objective:** description in one sentence what skill the participants will have, or which tasks they can master after taking part in this unit.
- **process:** description of what happens in this unit: the procedure of actions, the task. What does the explainer have to do and what do the participants have to do?
- **content to be transmitted:** Debriefing questions, input, examples that are given
- **facilitation advice:** describe focus/tasks of the facilitator that could be easily forgotten or overseen and have to be highlighted, because they are crucial to achieve to convey the take home message.
- **exercice instructions:** exact wording of the task statement to the participants in direct speech or description in detail of the instruction

### 3.2.4 Design of the training evaluation

The evaluation of the training was developed in parallel with the design of the training by the project partner TUM. The role of the museum partners was to describe very clearly and specifically which outcomes are expected, to choose the essential elements to be evaluated, to in the end ensure the measures being in line with the content of the course. (More on this in Chapter 7.)

## 3.3 The challenges we faced

### 3.3.1 Challenges related to the content of the training

#### The inclusion challenge

One challenge we are facing is related to the overall topic of the training: inclusion. Research clearly shows that inclusion is a shared responsibility among all professions in the institution, including management (this is even a key message in the training). How can we ensure that science explainers do not feel frustrated at not being able to solve the problem entirely (especially on the systemic level), while at the same time raising their awareness to the importance of systematic consideration of inclusion?

Our solution has been to provide activities that show all the aspects of inclusion that need to be addressed and then focus explicitly on the aspects that science explainers can have impact on.

#### The target group challenge

The second challenge is that of target groups. As mentioned in the introduction, it is important to focus on these under-represented groups in our museums, but they are both extremely heterogeneous. This means that it is exceptionally difficult to identify shared characteristics in each group or specific needs without falling into a stereotyped or simplistic view that is contrary to the objectives of the training.

Our proposal for the training was therefore to highlight this heterogeneity within the target groups. Then we highlighted some major commonalities (discriminated groups, knowledge of another culture or life experience, experiences of change) that need to be taken into account within a museum, but at the same time offer a rich environment for participation. The activities developed allowed us to think of relevant offers by focusing on a type of motivation or obstacle faced by the target audiences.

## 3.3.2 Challenges due to the COVID pandemic

The project started at the end of 2019 with a first meeting in early 2020. Two months later the COVID19 pandemic started, which had a huge impact on the project.

### Museum closures

Our museums were closed to visitors for many months, so we had no visitors. When museums reopened, there were many restrictions (physical distancing, wearing masks, access only with health pass), and the fear of infection was still very present, which meant that the public targeted by the project was even less present. We were therefore able to create the training, but the implementation by the trained science explainers was hardly possible and very delayed. This limited the feedback from the target groups on the relevance of these new offers.

### Travel restrictions

During the pandemic, there were also travel restrictions which had three major consequences. The first was that transnational exchanges between trained science explainers could not take place at the beginning of the project. We therefore developed a virtual exchange possibility in order to keep the opportunity for explainers to exchange on professional practices, awareness of local specificities, and feedback on the training.
The second consequence was that all the working meetings to design the training, train the trainers and adjust the content took place online during this time. We therefore used collaborative tools and implemented regular meetings between the design team.
The third restriction was the one that had the most impact on the design of the training. As gatherings were not allowed we had to move towards an online version of the training itself. Indeed, it seemed too risky to postpone the training in its face-to-face version as we did not know how long the restrictions would last.

## 3.3.3 Moving towards an online version: lessons learned

The partners therefore worked to adapt the training to take place online. Below are the adjustments we made and the lessons we learned. They are presented in the form of good practices valid for other online adaptations.

### Update the specifications

The first question was to update the specifications taking into account the constraints and possibilities of online formats. In the case of the ITEMS project we decided to maintain the pedagogical objectives of the course and the presence of active methods.
We therefore worked on adapting the content, tools and materials as well as the modalities of delivery.

### Adapt the content and activities

Because attention is more difficult online, we have been careful not to put in too much theoretical content.

Furthermore, in many cases, simple online transposition does not work or is impossible. We had to find alternative solutions. For example we proposed virtual hand signals to communicate, we changed a card game in an online rolling dice activity that contributed to the same objective. We also transformed an activity where you have to move yourself into an activity where you move a virtual pawn, we used the digital media created as a collective memory…

### Adapt the rhythm

Rather than full days, we therefore preferred to offer half days with one or two breaks because concentration is more difficult online.
We have adjusted the order of the activities to alternate between plenary/sub-group/individual work and between theoretical/practical activities.
We took advantage of the distance learning to vary the composition of the sub-groups
Each half-day starts with a practical exercise for the trainees (icebreaker, survey, exercise...) which helps to get involved in the training, recalling the previous half-day... At the beginning of each module, we made the objectives of the module explicit to encourage the acquisition of skills.
During module 1, we allowed time at the beginning (or even before) for the progressive appropriation of the tools: the video coll tool and the digital board.
We planned a real debriefing time at the end of module 1, as trainees often want to share their feelings about the remote mode.

### Choose the right tools

In view of the objectives and teaching methods we decided to use two digital tools:
• For exchanges between participants and with the trainer: we have chosen a tool where the participants can be seen, where they can activate their microphone freely, where they can make sub-groups and discuss via a chat.
• We also used a digital whiteboard. It had to allow the participation of the trainees without prior registration, the possibility to put and move documents, URLs, photos, to write on notes within a „template".

### Prepare the logistical aspects

To ensure that the training runs smoothly we have sent an email to participants explaining technical requirements (connection on a computer, camera highly recommended, microphone essential, ask them to install the right video software), the material needed, the objectives et cetera.

### Facilitate differently the training

There are also good practices when conducting a distance learning course. If possible, we tried to be two trainers in the first hour in case of technical problems. The start of the training included the usual phases with the addition of the specificities of distance learning: welcome (individually, make sure everyone can hear us), clarify logistical and technical aspects (timetables, tools, etc.), share the rules of videoconferencing.
We asked the trainees to have cameras permanently activated except in case of connection problems.
Exchanges after the theoretical input were focused on specific issues, echoing participants' practices. Indeed, the remote format tends to reduce reactions to very open questions such as „What are your comments on what has just been said?

The instructions for sub-group work were very clear, repeated and written down; the duration had to be announced beforehand.
We were vigilant about respecting time during plenary sessions: in screen-sharing mode with a single screen, the computer clock is invisible, the participants‘ thumbnails are small, and it is therefore less easy to see when attention is waning and when there are tunnels.

## 3.4 Redesigning the training after first implementation

### 3.4.1 Working process

In order to improve the training after the first and after the second session, we have built on three elements:

- **Evaluation results:** the partner TUM analysed the pre- and post-training evaluation results of the trained explainers. The results were rather positive, however the evaluation highlighted which areas need further emphasis.
- **Participants feedback:** direct feedback from the trainees during and after the training also allowed us to identify the strong points as well as the points that needed further improvement. These comments included the structure of activities, the balance between the modules, as well as the clarity of certain concepts.
- **Trainer feedback:** finally, each trainer documented their feedback to each module.
  Several meetings were organised to analyse the findings and discuss the improvements for the training.

### 3.4.2 Implemented changes

For the second round of trainings we changed the following points:

- **Modality:** the biggest change was the return to face-to-face training. Fortunately we were able to build on the drafts of the first version. However, we had to take into account the still existing COVID measures (masks, physical distancing, etc.). (example: we replaced an activity where participants handled the same food).
- **Preparation:** if the second round of training would have taken place online, we would have put more emphasis on setting up the digital communication. The training is based on video conference tools and a digital whiteboard – if participants have never before used such tools, a decent preparation including tutorial and/or specific training sessions is necessary.
- **Content:** we have reduced some of the content (deleted some activities) to leave more space for collective discussion. This limits the feeling of running out of time and dealing with everything in a superficial way.
- **Duration:** we have adapted the overall duration so that the training now can be offered in two full days.
- **Overall coherence or „fil rouge“:** we changed the order of the activities and insisted on certain definitions in the training guide so that the logical articulation between the activities and their link with the objectives is now easier to understand.

The content of the published training guide is the improved version, based on the feedback from evaluation, trainees and trainers.

# 4 Structure of the ITEMS training

## 4.1 Overview of the professional development course

The professional development training course is the main outcome of the project, as it has been designed with the general scope to be a transferable resource potentially usable by all those institutions that may be willing to join the path to create a more equitable, inclusive and culturally diverse environment, specifically for the given heterogeneous groups: migrants and seniors.
To do so, the project reflects and acts on the operative side of the matter by involving museum and science center explainers: professionals that are in close contact with those potentially affected by inequity, exclusion and discrimination on a daily basis.
Other roles of museum staff are taken into account, e.g. in defining the area of intervention and responsibilities in this journey.
Despite the fact that even among the consortium partners the word "explainer" identifies a range of different job profiles, each one with specific and distinct features (at some institutiones it implies developing and designing contents and structures, in other institutions the focus is on delivering cultural experiences designed by other colleagues), in the context of this projects, the partners agree on a shared definition: explainers are museum professionals who (at the very least) guide tours and activities (whether interactive or hands-on, and regardless of who is responsible for developing such experiences).
During the training development phase, the partners kept in mind that the explainer role could respond to different demographic profiles: professionals with or without previous working experience, different biological age ranges (youngsters or more mature people), diverse personal backgrounds, especially related to the groups of seniors and migrants. All considered, the training has been designed to be adequate to a heterogeneous group of professionals.
At the same time, the training has been conceived to be suitable for different types of scientific museums or centres, regardless of the cultural provision or the educational approach (hands-on, inquiry-based, more traditional and transmissive, etc).

## 4.2 Structure

The training has been developed as a set of four different modules with an estimated duration of three hours per module. Each one covers specific topics, but the structure is progressive, both content and approach wise: from the general to the particular, from the theory to the practice (see above).
To ensure a good pace and variety of the training, different activity formats have been chosen among interactive and cooperative activities, brainstorming, conceptual maps, individual and collective reflections, frontal presentations.
Considering the purpose of the training to be as much transferable as possible, the suggestions below could be useful when it comes to adapting to different contexts.

To preserve and enhance the effectiveness of the training as a whole:

- It is possible to merge the four modules two-by-two (module 1 + module 2; module 3 + module 4). Other options of merging are discouraged.
- The four training modules should be implemented within the ideal time frame of one month (four weeks), trying to keep a reasonable amount of time between the different modules (enough to let the stimuli nourish and transform in further reflections, not to much that would lead to forgetting)
- Ideal group size: from 6 up to 15 participants.
- Heterogeneity within the participants' profiles as well as first hand experiences to share are encouraged and could be considered as an added value for the training itself as they could prompt further reflections.

## 4.3 Needs

The training aims to respond to the following needs, shared by the partners:

- Create a common ground to start from, by creating a common understanding of specific concepts: equity vs. equality; inclusion vs. integration; discrimination. Calling the things with the right name is not just a matter of semantics.
- Highlight issues related to discrimination and exclusion that may exist in a cultural institution when it comes to migrants and seniors. These issues could be both evident or hidden: being able to identify them is a key point of the effort towards equity.
- Collect and acknowledge misunderstandings, bias, stereotypes embedded both in the museum experience and in the explainer working practice/behaviours that unconsciously could affect the groups' experiences.

## 4.4 Objectives

Considering the above, the training aims to provide the participants:

- Awareness about equity and inclusion topics concerning the selected groups.
- A clear overview of the respective areas of intervention when it comes to tackling those issues, to avoid any form of frustration and to be as effective as possible: who's responsible for what?
- Some strategies, tools, suggestions, and insights to embed in the working practice, with the scope of having a "toolbox" to tap into when facilitating museum experiences.

## 4.5 Contents

As mentioned before, the training has been conceived with a progressive and consequential structure that unfolds during the four modules and drives from general considerations and reflections to more specific thoughts and actions relating to the museum context.

The training starts framing the core concepts, words and context of equity and inclusion. From this, the attention shifts on the specific environment of the museum, reflecting on embedded cultural stereotypes, on respecting and representing cultural diversities within the museum experience. From this, the focus is moved on how to shape a museum experience that is relevant for the audience, that considers and fulfils personal interests as well as agency.

# 5 Module Description

## 5.1 Module 1 – The need of inclusion

In the first module, entitled "The need for inclusion" the overall objective is giving an idea of the meaning of inclusion, according to resources and studies on this topic. From this, participants will consider together where the leverage can be applied when it comes to inclusion in museums or science centres: on the floor, which means at a practice level, or higher, on a systemic level. This allows to frame the respective field of actions (operational and managerial), delimiting the area where the explainers can operate and have the possibility to impact (operational level).

### 5.1.1 Activity 1

**Title:** Photolanguage

**Duration:** 30 minutes

**Description:** Participants are asked to choose among a set of cards the one that resonates mostly with the meaning they attribute to the word "inclusion". Each one shares their association. After that, the facilitator summarises to find a common understanding of inclusion and equity in the context of the training, using the resources provided.

**Output and take-home message:** participants gain a common understanding of inclusion, as well as of equity, equality, exclusion, integration, segregation, and justice. Introducing these concepts serves to shift the point of view: inclusion implies not limiting ones' reflection to the individual efforts and responsibilities of those excluded.

### 5.1.2 Activity 2

**Title:** One Step Forward

**Duration:** 55 minutes

**Description:** Each participant is assigned with a role that needs to be kept secret. The roles refer to different personas representative of migrants, seniors, privileged, disadvantaged, etc.). Participants stand shoulder to shoulder, while the trainer announces aloud some sentences (the first set refers to everyday life; the other set refers to the museum context), to which participants answer in their minds with "yes" or "no". If the answer given is "yes", the participant will make a step forward. If the answer is "no", the participant won't change the position.

**Output and take-home message:** the activity aims to present different situations of privilege or disadvantage. In this way, participants become more aware that in museums and science centres, as in everyday life, not everyone has the same opportunity to participate or to be engaged. Participants understand that unknowingly museums exclude various visitors. Such audience exclusion might specifically affect the elderly and migrants.

### 5.1.3 Activity 3

**Title:** Definition of the target groups

**Duration:** 20 minutes

**Description:** Definition of the respected target groups and demarcations are presented by the trainer, referring to official documents, studies and resources (e.g. UNESCO, International Migratory Agency etc). He/she points out the heterogeneity of these groups, as well as the elements these groups have in common.

**Output and take-home message:** This activity frames the target group of the training. It demonstrates that stereotypes also affect the way in which these groups are considered. Despite classifications, it is extremely important to be aware that also these groups are extremely heterogeneous.

### 5.1.4 Activity 4

**Title:** Obstacles

**Duration:** 25 minutes

**Description:** The trainer introduces a set of obstacles to inclusion, emerged from the situations of discrimination presented during "One Step Forward" (module 1, activity 2). These comprehend a wide range of obstacles. Participants are asked to cluster them in three different categories, according to who is responsible for solving that issue: explainers during the working practice – managers at an institutional level – society if the problem is systemic.

**Output and take-home message:** Many issues can be influenced by explainers but not being solved by them alone. It requires the impact of management and other parts of museum staff as well. Other obstacles are completely not in the explainers' reach. But, explainers are co-responsible for/play a role in removing physical, language and other barriers that lead to exclusion.

### 5.1.5 Activity 5

**Title:** Systemic Change

**Duration:** 35 minutes

**Description:** In this activity, five different areas of inclusion related to the systemic-management environment are introduced: accessibility – strategy – partnerships – staff – content. The participants consider only those obstacles of the previous activity (module 1 to inclusion) that refer to the institutional or systemic level. They are asked to place each of those obstacles under one of the specific systemic-management areas. Then, they place their institution in a grind that assesses, for each of the five areas of inclusion, to what extent possible solutions to inclusion issues are considered (awareness level) and/or already in practice (put into action).

**Output and take-home message:** The activity gives an overview of which directions could be taken when it comes to deal with inclusion issues. Along with those obstacles that can be removed by the explainers alone in their working practice (on which the training will focus later on), there's a need, at all levels and in all the professional positions, to work in removing physical, language and other barriers that lead to exclusion.

### 5.1.6 Activity 6

**Title:** Accessibility and relevance

**Duration:** 15 minutes

**Description:** In this activity, the participants focus on those obstacles that are in their power to remove (see module 1 – activity 4). With the guidance of the trainer, they assign each obstacle to the theme of the other three modules of the training. Short explanations are given about which learning outcomes will be reached in the training. Then the concept of each module is wrapped up in a few sentences.

**Output and take-home message:** The activity shows in a glimpse which contents will be covered by the training and how it tries to address the different issues that are in the power of the explainers. At the end of the activity it should be also clear that the training has been conceived with the scope to help in creating a museum experience which is accessible on all levels (physical, language, cultural, belonging, needs, motivations, and knowledge related). This is the basic condition to create a relevant experience for seniors and migrants, which is the key for inclusive facilitation.

### 5.1.7 Activity 7

**Title:** Check out: how do you leave?

**Duration**: 10 minutes

**Description:** Several random objects are positioned in the middle of the group on a table or on the floor. In turn everyone chooses one that helps to verbalise how she or he leaves the first module.

**Output and take-home message:** The trainer finds out about what information was strongly recognized, what moods are present, which problems evolved and what was clear or not in the first module.

**Note:** if the training is done with merging modules two-by-two, this exercise could be eliminated.

## 5.2 Module 2 – A culture other than your own

Module 2 will deal with awareness about seniors and migrants and their cultural identities: having an assessment of the target audience is the basis for being able to design a relevant experience for them. The module questions stereotyped pictures of seniors and migrants, investigating cultural differences among both homogeneous and heterogeneous groups. It raises awareness on the plurality each culture represents, and highlights how empathy through intercultural competences can help in dealing with such diversity. The module digs into the needs and motivations seniors and migrants might have when they experience an institution like a museum or a science centre.

### 5.2.1 Activity 1

**Title:** Text Message

**Duration:** 15 minutes

**Description:** The participants are asked to individually craft a short text message about the first module of training, pointing out the important elements emerged during the module 1.

**Output and take-home message:** This exercise aims to underline the existing link among the different training modules.

**Note:** if the training is done with merging modules two-by-two, this exercise could be eliminated.

### 5.2.2 Activity 2

**Title:** Spi-Fa Cultural Exchange Exercise

**Duration:** 60 minutes

**Description:** Divided in two different groups, participants are asked to create a culture each (Spi and Fa), following the instructions provided. Then, participants from the first group go visiting the other and vice versa. The receiving group is asked to behave according to the rules, rituals and linguistic code of the culture they invented. Visiting people should try to understand the culture and report to the colleagues the main characteristics of the culture they visited, with the attempt to write a travel guide. At the end of the activity, the trainer reflects on the main points and objectives of the exercise and introduces intercultural competences.

**Output and take-home message:** The exercise helps to simulate the feelings of confusion, anxiety and incomprehension of being in a new culture, but also the experience of adapting and trying to fit into the group based on the information available. Within this activity, participants become aware that these feelings can occur when cultural differences – even subtle, invisible – are not taken into account and when expressive codes of other cultures are not understood. In their working practice, explainers on one hand should avoid taking for granted the cultural background of their audience, while, on the other, they should be conscious that confusion can happen.

### 5.2.3 Activity 3

**Title:** World value survey

**Duration:** 20 minutes

**Description:** This activity is taken from the World Value Survey project (WVS) whose goal is to assess which impact values stability or change over time has on the social, political and economic development of countries and societies. The participants are asked to place themselves on a grind made by two axes that assess "survival vs self-expression values" and "traditional vs secular values". To do so, they use as a guide the questions provided with which they can calculate a score that helps them in taking the position representative of their beliefs. After that, the participants are invited to share their thoughts.

**Output and take-home message:** The activity illustrates to participants that there may be great differences between different cultures and among the members of the same culture as well. Great similarities could be also with the value sets of members of another country. This way, participants can see how their personal perception and view of the world are influenced by the respective belonging culture, and, furthermore, how differences even among individuals with the same cultural background not only exist but also have an impact. Being aware of such plurality can lead to avoid situations of misunderstanding or conflict.

### 5.2.4 Activity 4

**Title:** Migrants and seniors: why do they visit museums?

**Duration:** 30 minutes

**Description:** The participants brainstorm the different possible reasons to visit a museum. They are also invited to think about friends and relatives. Participants share the motivation among the group and with the help of the trainer, they try to cluster them. At that point, the trainer introduces some theoretical inputs that can be seen as ways to read, to interpret and to motivate the broad range of reasons to experience a museum visit (see Self Determination Theory and the research conducted on and about museum visitors by John Falk). It tries to link them with the motivations pointed out by the participants.

**Output and take-home message:** The participants gain insight into the breadth of motivations people can have to visit a museum, which could be diverse even within the same group (migrants or seniors). Indeed, the picture that emerges underlines why visit motivation is considered to be a more relevant criterion than age or cultural background for classifying visitors and designing activities adequate to their assets.

### 5.2.5 Activity 5

**Title:** Existing personas – focus on needs

**Duration:** 40 minutes

**Description:** The participants are divided in subgroups, which are randomly assigned with a persona (taken from the activity One Step Forward, see module 1, activity 2) and they are given an inspiration pack, with information such as interviews, reports etc. After they familiarise themselves with these materials, they build the persona's profile and, accordinsg to the two motivations of the previous exercise which have been randomly assigned to them too, they try to imagine the ideal museum visit for that persona. When the work is done, the different results are shared among the group.

**Output and take-home message:** The activity aims to reflect which elements need to be taken into account when shaping a museum experience for a specific target person. Despite the fact that target groups are heterogeneous, it is interesting to take a persona that represents a part of the group in order to have our audiences in mind and take into account their needs.

### 5.2.6 Activity 6

**Title:** Check out – summary

**Duration:** 10 minutes

**Description:** Participants are asked to assess how they rate the two aspects of the day: content and structure. They could also use this time to add and enrich, if necessary, the personas' profiles created in the activity before (existing personas – focus on needs)

**Output and take-home message:** The activity aims to assess which parts of the module worked well.

## 5.3 Module 3 – On welcome and speech

Module 3 deals with two major parts of the work of an explainer: the need to make visitors and participants feel safe and welcome within the first few moments of contact, and the need to speak clearly and in an understandable manner: how we can create accessibility at the levels of language and communication, aiming to reduce the effort for seniors and migrants so that a relevant museum experience is possible for them.

### 5.3.1 Activity 1

**Title:** Arrival and welcome

**Duration:** 20 minutes

**Description:** The trainer asks each participant to imagine a text message they could send to tell what they found important during the training course on day 1 or 2. The answer should be short sentences about the content, written on individual post-its. The trainer will make a synthesis, and if necessary, additions.

**Output and take-home message:** Participants will be able to recall importants points from module 1 and module 2.

### 5.3.2 Activity 2

**Title:** Couper Les Coins

**Duration:** 35 minutes

**Description:** The participants stand without being able to see each other. Each of them has a paper sheet. The trainer gives some instructions about how to fold and cut the corners of the sheet. Participants cut their papers without looking at each other. Then, they share the results. After that, they do the exercise again but in pairs (giving instructions to each other). At the end of the activity, participants will be very likely to have sheets cut differently, despite the (same) instructions they have received.

**Output and take-home message:** The activity points out how the same information could be intended very differently according to those who heard it (even among people with the same cultural or historical background). This leads to reflecting on the need to avoid misunderstandings, making some rules more explicit within the communication.

### 5.3.3 Activity 3

**Title:** Hello Hello Bingo

**Duration:** 25 minutes

**Description:** Participants are asked to write, individually on an empty grind, one element per box, which they think is important for a successful welcome. While doing so, they should keep in mind the personas as well as remember the welcome(s) they may have experienced. The trainer draws from a random collection of prepared criteria. Every explainer who has the same or a similar square on their personal card checks it off. Whoever has completed their card first, shouts “Bingo!” and has “won” the game. At the end of the round, all remaining squares on the large bingo of the trainer are filled and the group collects if they have any points that were not yet mentioned.

**Output and take-home message:** The activity aims to help in organising a welcome situation, recognizing it as a crucial moment, especially for those groups that may feel excluded from the museum.

### 5.3.4 Activity 4

**Title:** Easy-to-understand

**Duration:** 40 minutes

**Description:** Participants are divided into groups. Each one is given a scientific text (a description of an activity, an exhibition text, a piece of a scientific paper). The trainer introduces the rules of Easy-to-understand and provides an example of text written respecting the easy to understand rules. Participants are asked to change the given text according to the rules.

**Output and take-home message:** The activity introduces the Easy-to-understand rules, as important tools to use in order to facilitate understanding and limit exclusion.

### 5.3.5 Activity 5

**Title:** Speech training

**Duration:** 55 minutes

**Description:** The participants get familiar with some exercise to train their articulation, pace of speech and body posture.

**Output and take-home message:** The activity in each of its parts, provides concrete tools to train how to speak. These techniques should be used regularly and can improve the way of speaking in the long term. Being able to speak more clearly and understandably is particularly important to address visitors who have difficulty hearing or understanding the language spoken.

### 5.3.6 Activity 6

**Title:** Check out – summary

**Duration:** 15 minutes

**Description:** The trainer summarises the core topic of the module. The participants are then asked to assess their current emotional state at the end of the module (happy, motivated, curious, exhausted, confused). They share their feelings and considerations with each other. Each participant is then asked to shortly (one or two sentences) explain their choice.

**Output and take-home message:** The activity aims to assess the feelings of the participants concerning the module, as well as it fixes the core topics.

## 5.4 Module 4 – Relevance

Module 4 is about the theory and practice of relevance. Strategies are given in order to create personally relevant experiences for senior and migrant visitors.

### 5.4.1 Activity 1

**Title:** Elevator pitch

**Duration:** 25 minutes

**Description:** Participants are divided in subgroups, each prepares to "pitch" the core concepts of one of the previous modules in the style of an "elevator pitch" tapping into the notes of the previous modules. Each subgroup shares its pitch with the others.

**Output and take-home message:** The aim of the activity is to recall the core concepts addressed in modules 1, 2 and 3.

**Note:** if the training is done with merging modules two-by-two, this exercise could be eliminated.

### 5.4.2 Activity 2

**Title:** Conceptual map "Relevance"

**Duration:** 30 minutes

**Description:** The facilitator introduces the topic of the module, which is relevance. The topic is presented and discussed in the group, introducing to the participants some resources (i.e. materials from Nina Simon's "The art of relevance"). The trainer moderates the following discussion, providing links and examples and formalises the key learning outcomes of this activity.

**Output and take-home message:** The activity aims to introduce the definition of relevance as formulated by Nina Simon, as well as other inputs about how to achieve relevance in a learning process and how relevance and motivation are fundamental for an impactful museum experience. The concept of relevance implies an experience to be personal-related or interest driven. Explainers become aware about the need to adapt the way they interact with their audience according to the needs, motivations and interests that visitors have brought to the museum.

### 5.4.3 Activity 3

**Title:** Practical exercise "Relevance"

**Duration:** 40 minutes

**Description:** Participants are divided into subgroups, each one assigned with a persona (see module 2 – activity 2 "One Step Forward and module 2 – activity 5 – Existing personas – focus on needs). Bearing in mind the inputs given in the activity before (Conceptual map "Relevance") each subgroup is asked to present an example of a failed mediation. To develop these, explainers could do both, walking around the museum in a specific exhibition, looking for those aspects that could be critical or not relevant for the assigned personas, or remember a personal experience where relevance was failed in the mediation of a certain object/topic with someone who belongs to the target group.

**Output and take-home message:** This activity aims to help participants in becoming able to recognize those elements of an activity or of an exhibition that cause exclusion. Explainers can find opportunities within their field of action to create relevance, as most of the reasons why a topic or an exhibit might seem not to be relevant to a senior or migrant visitor are often rooted in the way it is presented in the exhibition or by the explainer.

### 5.4.4 Activity 4

**Title:** Match angles related to personas

**Duration:** 40 minutes

**Description:** The facilitator contextualises the activity, giving a brief definition of what can be considered as an "angle". Participants are divided into subgroups and each one is assigned a persona. They are asked to imagine that the assigned persona is participating in, for example, a guided tour, a workshop or another format and to find a bridge/link between the exhibit and the persona by creating their facilitation approach around the object which might make the experience relevant for the persona. To support the creation of those links and bridges, the trainer introduces the strategy of the "entrance narrative", a way to immediately include personal interests and motivations of the target audience.

**Output and take-home message:** The activity helps participants in realising that the same story or object could have different points of access, different interpretation and different keys of understanding. To make it relevant for the audience, explainers need to create connections, links and bridges with the audience's entrance narrative.

### 5.4.5 Activity 5

**Title:** **Check list: the features of inclusive facilitation and the role of the explainers**

**Duration:** 60 minutes

**Description:** Participants are divided into subgroups and are asked to reflect on those points they consider indispensable for inclusive facilitation, for being aware of cultural diversities and the value of intercultural communication to avoid discrimination. To do that, they could go back to the notes they have taken and to the results of the Systemic Change chart from module 1 (see module 1 – activity 5 – Systemic Change). Each group has to come up with a list of priorities (among themes, engagement strategies, facilitation suggestions, etc, max. 10) regarding the main topics of intercultural communication.

Then, the trainer highlights and frames the role of the explainer, focusing on those aspects that are in his/her power.

**Output and take-home message:** This activity is important to create a common ground and a common understanding of key terms that should inform and inspire the work of explainers with the target groups. It works as a moment of synthesis of the whole training, where participants share good practices, reflect on the concepts presented in the four modules and provide a list of priorities to address these items in their practice. This activity aims to respond to the question: there are institutional inequalities and someone might feel excluded. You don't have the power and the role to solve these aspects, but when it comes to your work, what can you do?

Within the last part of the activity, which is framing the field of action of the explainers by recalling the concepts and the responsibilities emerged in module 1 (see module 1 – activity 4 – Obstacles). The overall scope of this moment is to demonstrate that explainers can have a significant positive impact on some audience's museum experience – and to avoid frustration and the feeling of not being able to "make the difference". Lately and on a different level, this part of the activity does not end with the training itself: its scope is to induce in the participants a self-reflection process on their professional role, in the context of inclusive facilitation. As the conclusion of a professional development training course, this part aims to open a space for reflection the explainers can "fill" during their practice to come and beyond the training itself.

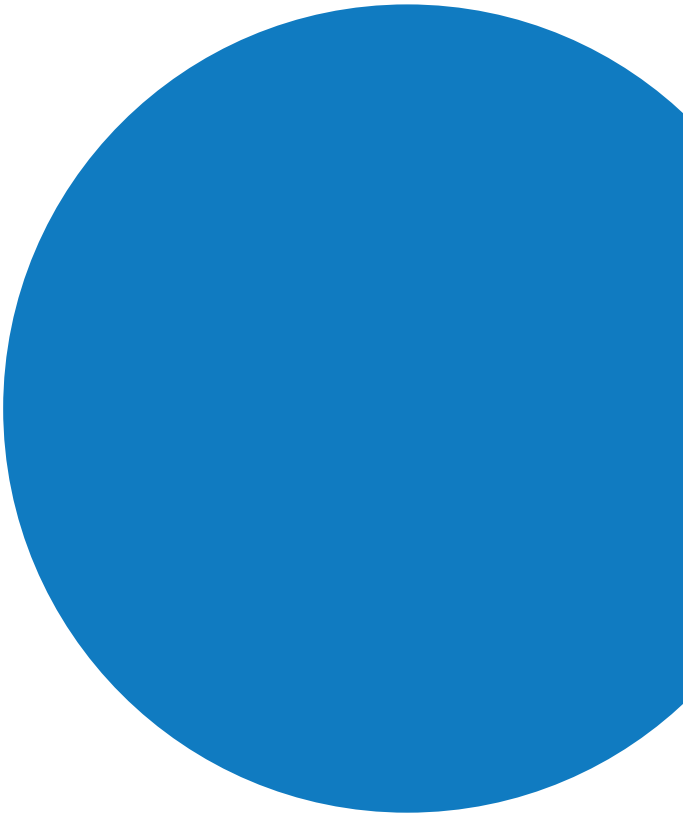
### 5.4.6 Activity 6

**Title:** Check out

**Duration:** 20 minutes

**Description:** Participants are asked to self assess their position, placing themselves according to their perception of how the different modules went. They have to "rate" each module separately.

**Output and take-home message:** This activity works as the final wrap up of the training as a whole.



# 6 Evaluation of the training

## 6.1 Evaluation: introduction and method

In order to assess the quality and success of the training, the Technical University of Munich (TUM) carried out an evaluation. This chapter describes how we carried out our evaluation in the ITEMS project and summarises the main results. We encourage others to carry out their own evaluation and assess the success of the training in their particular case, with their trainer(s) and participants.

The ITEMS training was subjected to a formative evaluation, which means that the evaluation took place alongside the training development process. There were two rounds of evaluation. Based on the findings of these two evaluation rounds as well as on the trainers' experience and the feedback they received during the training, the training was reworked and improved. The third and final version of the training (as reworked after the second evaluation) was used for dissemination. By analysing and comparing results from the second training with the first, we were able to show that our training developers indeed succeeded in making various improvements to the training. These comparisons are not part of this guidebook, however. Our aim here is to present results describing the success of the ITEMS training and to provide the necessary information for others to assess the success of their training. In order to present the ITEMS evaluation as clearly and concisely as possible and provide a template for future users to carry out their own (summative) evaluations of the training, this chapter only focuses on those variables and results that are relevant to that purpose. Some items and scales were omitted from the documentation, as these were only relevant for the development and optimisation of the training in the sense of a formative evaluation, and would be irrelevant or too elaborate for any future evaluation studies.

### Method

The evaluation took place in the form of an online survey filled out by the training participants (i.e. the explainers) in each of the four ITEMS countries (Austria, Germany, France and Italy). The TUM selected and developed survey items and scales based on the objectives and content of the training. The survey consisted of five questionnaires. All explainers participating in the training were asked to fill out each of these questionnaires. We chose to survey participants immediately after each of the training modules in order to avoid memory distortion and to receive tips for possible optimizations. In some cases (for module one and for full day training) participants had to fill out several questionnaires per day, so we had to keep our questionnaires as short as possible to avoid survey fatigue. The first questionnaire, which participants filled out before the start of the training, aimed at assessing their individual interest in the two target groups (seniors and migrants), their professional experience with the two target groups and their prior knowledge and skills concerning the main training content. This first questionnaire also contained questions on participants' age, gender, level of education, and how long they have been working as an explainer. Over the course of the training, participants filled out each of the remaining four questionnaires immediately after each of the four parts of the training. These four

questionnaires all aimed at assessing the success of the training in a broad sense. They included items to self-assess various aspects of participants' learning experience during the training, to self-assess the relevance of the training for their work as explainer, and to assess the trainer amongst other things. Each questionnaire also included a situational interest scale. Situational interest can be described as a temporary interest that arises in a specific situation, in our case the ITEMS explainer training. It differs from the above-mentioned individual interest in the target groups, which is a more stable form of interest. Besides the above mentioned items and scales, the fourth and final questionnaire additionally included items requesting participants to reflect on and assess the training as a whole as well as a repeat of knowledge, skill and interest items that were also part of the first questionnaire. By repeating these questions, we were able to compare these variables before and after the training. All five questionnaires are included in the evaluation resource pack.

We used an online survey software called Unipark to design and administer the questionnaires. Participants could fill out each questionnaire on a tablet, laptop, pc or their mobile phone. Unipark automatically uploads and stores the collected data. All data was anonymized and only the TUM had access to the database. The first training took place in each of the four countries between January and March 2021.

## Sample

A total of thirty-five explainers participated in the first training: ten in Austria, ten in France, seven in Germany, and eight in Italy. In the second training, which took place between January and February 2022, we had nine participants in Austria, eight in France, twelve in Germany, and six in Italy (thirty-five explainers in total). Participants' average age in the first training was 45 years ($M_{age}$= 44.80, $SD_{age}$ = 12.42). Twenty-two female (63%) and thirteen male explainers (37%) participated. Participants' average age in the second training was 38 years ($M_{age}$= 38.40, $SD_{age}$ = 14.11). Twenty-two female participants (63%), twelve male (34%) and one 'other' (3%) explainer participated.

Participants' job experience as an explainer ranged from no experience (just starting at the job) to 44 years of experience. In view of the topic of the training, we also asked our participants about their previous experience with senior visitors and migrants respectively ("How many explainer interaction events (e.g. science shows / tours / …) have you facilitated specifically for groups of seniors/migrants?"). Of our total of 70 participants (both trainings combined), 27 had no prior professional experience with seniors, eleven had facilitated 'one or two events' for groups of seniors, ten answered, '2 to 10 events', eight answered '10 to 20 events', and ten had facilitated 'more than 20 events' (4 missing). As for groups of migrants, 32 had no previous experience, sixteen had facilitated 'one or two events' for groups of migrants, eleven answered, '2 to 10 events', four answered '10 to 20 events', and three had facilitated 'more than 20 events' (4 missing).

Finally, it is worth noting that, on average, our participants in training one and two had a relatively high prior interest in the two target groups addressed in our training. Answer options were on a scale of 1 'not at all interested' to 5 'very interested. Participants' average interest in seniors as a target group was 3.9 and their interest in migrants as a target group was slightly higher, with an average value of 4.1 for both evaluations combined (n = 66). We found no significant differences regarding participants' prior interest in each of the two target groups between participants in the first and second training.

## 6.2 Evaluation: results and discussion

The following section describes a selection of results to give an idea of what we measured and the insight we gained from our evaluation. We've included more detailed results in the appendix. As mentioned in the introduction, the evaluation served two main purposes, to improve the training (from the first to the second and finally the third version) and to assess the success of the final training. The following results concern our assessment of the success of the training and will therefore focus on results from the second evaluation. Unfortunately, in part due to COVID-related dropouts, not all training participants were able to participate in each training module and its respective part of the evaluation. As we had a relatively small number of participants to begin with, worsened by the dropouts and combined with differences between countries (different languages and different trainers) the results below (and any generalisations) must be considered with care.

As described in chapter 6.1, our questionnaires included various items and scales that we consider to cover general aspects of 'training success'. We looked at participants' situational interest during each of the four parts of the training, as well as their self-reported enjoyment of the training, the extent to which they were able to understand the training and learnt new things and their perceived usefulness of the training, amongst other things. We also compared participants' self-reported content-specific knowledge and skills at the start of the training with their answers to the same questions at the very end of the four training modules.

The first variable we looked into was situational interest. Situational interest was measured with a 4-item short-scale and example items are: "To what extent did the training spark your curiosity" and "To what extent would you like to find out more about certain topics of the training?". Answers were given on a 5-point Likert-type scale (1 'not at all' to 5 'very much interested). Results show that participants' situational interest during all four training modules as measured in round two of the training (i.e. the second evaluation) ranged between 4.43 and 4.64 (i.e. between moderately = 4 and extremely = 5). This suggest that we succeeded in capturing and maintaining participants' interest throughout the entire training.

To further assess the success of our training in a broad sense, our questionnaires (all except the pre-questionnaire) included an item block that we called 'experience during the training'. This consisted of sixteen questions on various aspects we considered important elements of a successful training. These aspects include participants' enjoyment, learning experience, the usefulness of the training, but also ratings of the trainer and various other items. All statements belonging to 'experience during the training' can be found in the questionnaires, which are included in the appendix. After each part of the training (that they just completed) participants answered to what extent they agreed with each of the statements on a scale of 1 "strongly disagree" to 5 "strongly agree". Although these statements were presented as a block of questions, they are in fact separate items that were not combined into any scales. Results show that except for the item 'The training was just as I expected it to be', which is in fact not an indicator for success, average ratings in training two were all above 4, i.e. between agree and strongly agree. This suggests the training was well-received and succeeded in achieving participants' enjoyment of the training, active participation, participants' feeling at ease, direct relevance for participants' work, etc. Participants' average ratings for each of these statements for all four training modules in round two of the training can be found in the appendix.

We also asked participants to assess their own knowledge and skills regarding certain topics that are specific to the content of the training, both before the training and at the end of the training. All content-specific knowledge and skill questions were developed by the ITEMS researchers and the ITEMS training developers. Some of these items were general statements such as "I am able to crudely assess visitors' level of familiarity with the scientific topic of my facilitation activity" and "I know how to identify my visitors' needs and motivations", while others were directly related to the two target groups. Examples of the latter questions are: "I feel comfortable interacting with [seniors/migrants]"; "I am familiar with the psychological needs of [senior/migrant] visitors"; I know how to make [seniors/migrants] feel at place (i.e. feel safe and welcome) in the museum; "I am skilled at communicating with groups of [seniors/migrants]; I am skilled at engaging [seniors/migrants]. By asking participants to answer the same knowledge and skill questions before and after the training, we were able to find out to what extent and in which areas they were able to increase their knowledge and skills. For sixteen out of twenty-one items we found a significant increase in participants' average self-rated knowledge and skill levels after the training compared to before, which is an indicator for the success of the training regarding these specific topics (see appendix for more detail).

In addition to these knowledge questions, in the fourth and final questionnaire (at the very end of the training) we asked participants to look back and rate the overall training regarding three broad target group related skills: "The training as a whole prompted me to reflect on the way I perceive [seniors/migrants]", "The training as a whole prompted me to reflect on the way I interact with [seniors/migrants]", and "The training as a whole made me feel more equipped to engage with [seniors/migrants]". Participants were asked to what extent the following statements apply to them on a scale of 1 "not at all" to 5 "extremely". In all cases, average ratings for round two of the training were all above 4, i.e. between moderately and extremely, suggesting the training succeeded in making participants reflect on how they perceive and interact with the two target groups and in making participants feel more equipped to engage with the two target groups.

## 6.3 Concluding remarks

Based on these evaluation findings as well as on participants' feedback during and after the training and on the trainers' own experience during the training, we feel confident that the final version of the training succeeds in achieving what it sets out to achieve. Almost all indicators for the success of the training, such as an increase in knowledge and skills after the training on the one hand and participants' rating of different aspects of their training experiences (such as enjoyment, being able to actively participate, perceived usefulness of the training etc.) were above four on a scale of one to five.

As mentioned in the introduction above (chapter 6.1.), besides being able to assess the success of training, the evaluation also served to improve the training from the first to the second and to the final version. Furthermore, in the process of jointly discussing and developing content specific (knowledge and skill) items for each of our questionnaires, the training developers were able to adjust and 'sharpen' certain learning goals and consequently already improved part of the training content during the development of the evaluation. For anyone considering adjusting or adding to the ITEMS training content, we can therefore recommend evaluating these adjustments, not just as a way to test if the (new) content was successfully conveyed, but also for an in-depth reflection on what you aim to convey. Of course, if you don't make any changes, carrying out your own evaluation can be very insightful to test the success of different aspects and different parts of the training in your particular case, with your particular trainer and participants, as mentioned at the start of this chapter. Finally, as we have included our main results in the appendix, you also have the option of 'comparing' your evaluation results with ours.

# 7 Project Partners

## Deutsches Museum

The Deutsches Museum, founded 1903 by Oskar von Miller, is one of the biggest museums devoted to technology and natural sciences in the world. With over 73.000 square metres of exhibition space and 52 departments in total, it attracts approximately 1.4 million visitors per year. The museum shows and explains the evolution of technology and science from the early beginnings to the present. The unique collection of exhibits (historical and modern) on display is supplemented by interactive experiments, dioramas, films and multimedia systems. A large library (with about 900.000 volumes) and extended archives also belong to the Deutsches Museum, as well as a research institute for the history of technology and science and the Kerschensteiner Kolleg for the advanced training of teachers, students and museum staff.
As an independent public institution, Deutsches Museum currently employs more than 600 people, of which about 100 work in the exhibitions, explaining science and technology to and interacting with the visitors. In addition, the Deutsches Museum is also supported by over 180 unpaid volunteers. Currently, the museum is undergoing a complete renovation and refurbishment programme, with the first half finished in July 2022. The museum is permanently looking for innovative ways to communicate science and technology to its visitors. A special focus rests on pupils and students, bridging the gaps between formal and informal learning, as well as between historic and latest research and technology. At the same time, the discussion of the impact of science and technology on society and the environment plays an increasing role during museum visits. The renovation also opened up the opportunity for new facilitation and even participation formats, like the recently opened Science Communication Lab.

*www.deutsches-museum.de*

## Fondazione Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci

The National Museum of Science and Technology Leonardo da Vinci in Milan (MUST) was founded in 1953 and is the largest science museum in Italy. It is a private non-profit foundation controlled by representatives of public bodies: the Ministry of Education, the Ministry of Culture, the Region of Milan, the City of Milan, the Chamber of Commerce. It has a collection of 15.000 historical objects displayed in permanent exhibitions on themes such as: Leonardo da Vinci, Communication, Materials, Energy, Mobility, Space, Food. In addition, it has 15 Labs, experiential learning spaces inviting visitors to engage with science and technology directly through experiments and hands-on activities. The labs are dedicated to STEAM, Tinkering, Digital Culture, Robotics, Space, Materials, Biotechnologies, Genetics, Energy, Chemistry, Food, etc.

The Museum works for:

- The safeguarding, conservation and display of cultural heritage.
- The study of Leonardo da Vinci, using a historical collection of 170 historical models of his drawings and the totally-renovated 1300mq exhibition which presents new interpretations of Leonardo's work on the integration of Art & Science.
- The continuous research in educational methodologies, tools and resources for learning and training in STEM aiming at different audiences.
- The promotion of dialogue, discussion and collaboration among different societal stakeholders – researchers, citizens, institutions, schools and other museums at national and international level – aiming to the development of scientific citizenship and social responsibility.

Education has been one of the core functions of the Museum since its foundation. The staff of the Education Department consists of experts in science and technology, pedagogy, science education, Science & Society and the Arts and is responsible for the design, development and delivery of learning programs for a range of audiences such as schools, families, and adults. The Education Department also includes CREI, the Centre for Research in Informal Education, carrying out methodological research to identify and integrate innovative pedagogies and learner-centred methods into the labs of the Museum to promote STEM education and meaningful experiences for all visitors.

The educational provision of the Museum is constantly updated taking into account the newest methodologies, tools and activities with the scope to engage the public, to encourage lifelong learning and to help the development of scientific citizenship. The permanent staff of the Museum is today 104 full-time employees to which are added about 25 part-time junior explainers and senior volunteers. In 2019 and before the pandemic, MUST attracted 520.000 visitors, among which 150.000 family members and 4.500 school groups. It is an accredited body for training and professional development of educators, at national and regional level. In 2019, 185 hours of professional training were delivered for a total of 1030 formal and informal educators.

In particular on facilitation, MUST

- has participated in the PILOTS EU-funded project aimed at the professional development of explainers.
- has participated to the Ecsite thematic group "Facilitation Group" aiming to reflect on tools and methods for facilitation in science museums
- organises professional development workshops for the internal staff of explainers and educators aiming to enrich and strengthen their work for visitors

For social inclusion, in 2015 the Museum designed and currently delivers an educational programme aimed at the schools of the Region with high poverty and/or high migration risk (the schools are part of a disadvantage-related ranking established by the Regional Authority for Schools). The Museum promotes visits of the students to the Museum engaging in learning activities based on the Maker movement (using 3D printers, laser cutters, open source programmes, all aimed at digital fabrication and customised production), teacher training courses and work in the classroom. The programme aims to improve students' access to science and technology opportunities, help develop skills and competences and employability.

In 2020, during the pandemic, part of the work was the systematic reflection (still ongoing) on the ways science education can become more inclusive and a means to tackle future challenges. For this reason, the Museum has been intensifying its action to integrate the DEIA (diversity, equity, inclusion, access) values into its strategy and offer by fostering synergies, developing programs and resources addressing under-represented communities, and by involving ever more types of new audiences.

*museoscienza.org*

## Etablissement Public Du Palais De La Découverte Et De La Cité Des Sciences Et De L`industrie

As the 4th most visited cultural institution in France with around 3 million visitors per year (and around 10 million online through its web portal *www.universcience.fr*), Universcience groups two scientific institutions: The Palace of Discovery (Palais de la découverte) and City of Science and Industry (Cité des sciences et de l'industrie) which are very much involved in disseminating scientific culture for all.

The Palace of Discovery (opened in 1937) offers to 550.000 annual visitors science shows with real experiments carried out by scientists dealing with the basics of science, exhibits and workshops to discuss the latest scientific issues. In The Palais, visitors learn about phenomena, observe spectacular experiments and experience sciences through interaction, questioning, demonstration in an interactive way. In addition, the City of science and industry (opened in 1986), organises new forms of dialogue and initiatives between scientific research and civil society through participatory events which present the latest developments in science and technology to large audiences through its wide range of areas and year-round events, collaborative projects in an interdisciplinary and cocreation approaches integrating debates, best practices, workshop and digital communication strategies. Both museums are committed to being an inclusive, accessible and engaging cultural institution.

As a public service institution, Universcience has also developed accessibility awareness through the production of tactile and audio exhibition elements, to enhance the sense of inclusiveness, for all. Employees receive training in disability awareness which is officially implemented by Universcience in its inclusive and management policy guidelines. Disability awareness is also a key part of science education training programmes for visitors that includes workshops and interactive activities with specialised facilitators in that field. The institution hires a total of 1.116 paid employees on a permanent contract.

Universcience is fighting against all forms of discrimination and thus acts in favor of promotion, diversity and equal opportunities as a managerial challenge. Equality is a citizen requirement and an asset in terms of skills. A set of procedures guaranteeing professional equality and diversity is integrated in the charter of the institution providing adequate training.

Universcience leads the School of mediation, a professional development centre for facilitators. Each year, this multi-partnered project designs training modules, conducts studies on explainers' practices and delivers continuing vocational training for 300 explainers from science museums, science centres and associations. Universcience has developed a strong expertise in addressing the explainers needs and enabling them to acquire competencies relevant for their practices (designing and facilitating activities, project management, scientific watch…). Throughout 2020, School of Mediation ran several short training courses for explainers and other science communication professionals, conferences and workshops related to audiences issues including gender issues, social inclusion, universal design for disabled visitors, participative approach. This program is in accord with the thorough approach to physical and social accessibility conducted by Universcience regarding its locations and offers.

*https://www.palais-decouverte.fr/*
*https://www.universcience.fr/*

## Ars Electronica

An Innovative Ecosystem for Art, Technology, and Society
Since 1979, Ars Electronica has been exploring the shaping of the future and the impact of new technologies on our lives, with the focus always on the role of people, the cultural and social challenges, and the resulting creative opportunities. Ars Electronica has developed an internationally successful platform from the innovative exchange and interplay between art, technology, and society. Formulated in 1979 for the first Ars Electronica Festival, the "Art, Technology, and Society" focus has lost none of its programmatic value. Within four decades, Ars Electronica has created an ecosystem for innovation that encompasses a whole spectrum of activities.
Every September at the annual Ars Electronica Festival, we bring together artists and scientists, creators and engineers, and activists and economists from all over the globe to present their work and their visions for the future. It is a great feast of eclectic, enchanting, intriguing, and captivating creations, a unique environment of intense discussions and inspiring encounters.
The Prix Ars Electronica is the world's most highly regarded award for artists working in science and technology. About 4,000 submissions from more than a hundred countries each year impressively document the dynamics of international media art. The presentations of the award-winning projects and artists are special highlights of each Ars Electronica Festival.
The Ars Electronica Centre with its exhibitions and programs focuses all year long on educating people about how new technologies and sciences are changing their lives as well as engaging them in the process through interactive displays and experiences. Special education programs and workshops have earned the Centre its reputation as a "school of the future."

The powerful pillar for research and development is the Ars Electronica Futurelab, a place of inspiration and creative ideas, where artists, engineers, and developers team up to work together from the outset on art projects as well as commissioned research projects.
As a spin-off of the Futurelab, Ars Electronica Solutions takes the creations and prototypes that emerge from this ecosystem and brings them to the market, supporting local industry and business in their development of new products and services.
u19–create your world is the name of Ars Electronica's exciting programs for and with young creators. Since 1998 we have celebrated and supported the creative and innovative ideas of young people and their visions for the world of tomorrow.
Due to its extensive international network of artists and creators and the rich experience of curating and producing festivals and exhibitions, Ars Electronica has become an attractive collaborator for many museums, festivals, and exhibition venues worldwide. Under the name Ars Electronica Export we realise exhibitions and workshop programs all over the world, each custom-tailored to our partners.
With a permanent presence and activities in Tokyo and Osaka, Ars Electronica Japan is engaged in artistic projects, collaborations with universities and museums as well as research, development, and consulting projects with many leading Japanese companies.
The goal of Ars Electronica Education is the development and practical evaluation of new innovative methods and technologies for education and knowledge transfer with special consideration of new digital media. The applications range from use in kindergartens and schools to special programs for universities and professional training and qualification services for business and industry.
With its nearly 160,000 entries the Ars Electronica Archive is a remarkable collection of project descriptions and documentation material relating to several thousand projects linked with Ars Electronica, a unique opportunity to research the cultural impact of the digital revolution since 1979.
Ars Electronica has an international network of partner institutions: academic collaborators (e.g. MIT, UCLA, University of Tsukuba) to media partners (e.g. ORF, Wired Magazine), research facilities (e.g. CERN, ESO, ESA), cultural partners (e.g. Japan Media Arts Festival, Science Gallery Dublin, Pilzen 2015, Waag Society Amsterdam), commercial cooperation in the field of creative catalysis (e.g. Hakuhodo, Mercedes Benz, Quanta Arts Foundation), and international institutions (e.g. OECD, EU, ITU, UNESCO).

*ars.electronica.art*

## Technical University of Munich (TUM)

The Technical University of Munich (TUM) is one of Europe's top universities. It is committed to excellence in research and teaching, interdisciplinary education and the active promotion of promising young scientists. The university also forges strong links with companies and scientific institutions across the world. TUM was one of the first universities in Germany to be named a University of Excellence. Moreover, TUM regularly ranks among the best European universities in international rankings. It founded the Institute for Advanced Study (IAS) in order to support scientific creativity and set up Clusters of Excellence and Graduate Schools in many scientific fields. Founded in 2009, the TUM School of Education (now called School of Social Sciences and Technology) is the first faculty for teacher training and educational research in Germany. It deals with teaching and learning processes in formal and informal educational contexts throughout the entire life span.

The TUM team was the leading partner concerning the evaluation of the ITEMS project. The TUM team contributed significantly to the project through expertise concerning theoretical and empirical questions with regard to the development and evaluation of the training of the explainers and the development and evaluation of the ITEMS materials. The theoretical work conducted by the TUM team concerning the development of self-determined and interest based motivation, motivational relevant emotional experiences (so called basic needs) and motivations for visiting educational leisure settings (e.g. museums) was an important theoretical background for the evaluation. Additionally the TUM team's long research experience regarding field and evaluation studies in various educational settings strongly supported the project. The TUM team has already conducted several evaluation research studies for the Deutsches Museum such as the evaluation of the school program of the pilot project "Mobility issues with climate change" of the Deutsches Museum Munich within the EU-project PENCIL or the evaluation of the EU-Project SETAC or the EU-Project NanoToTouch within the FP 7. Furthermore, the TUM team has a multitude of experiences in publishing in nationally and internationally relevant journals and conference presentations.

*https://www.edu.sot.tum.de/fil/home/*

# 8 Appendix

## Evaluation Results

The ITEMS evaluation took place in the form of a process-accompanying online survey consisting of five questionnaires filled out by the training participants (i.e. the explainers) in each of the four ITEMS countries (Austria, Germany, France and Italy). Participants filled out the first questionnaire before the start of the training and the other four immediately after each of the four parts of the training. There were two training rounds and two accompanying rounds of evaluation, which allowed for a design-based research approach. The first ITEMS training and evaluation took place in each of the four countries between January and March 2021 and the second between January and February 2022. Thirty-five explainers participated in the first training: ten in Austria, ten in France, seven in Germany, and eight in Italy. In the second training we also had thirty-five participants: nine in Austria, eight in France, twelve in Germany, and six in Italy. The evaluation served two main purposes: to improve the training and to assess the success of the final training. The results presented here concern our assessment of the success of the training and will therefore focus on results from the second evaluation (after the training was improved). We used an alpha level of .05 for all statistical tests.

## Sample description

### Age, gender and level of education

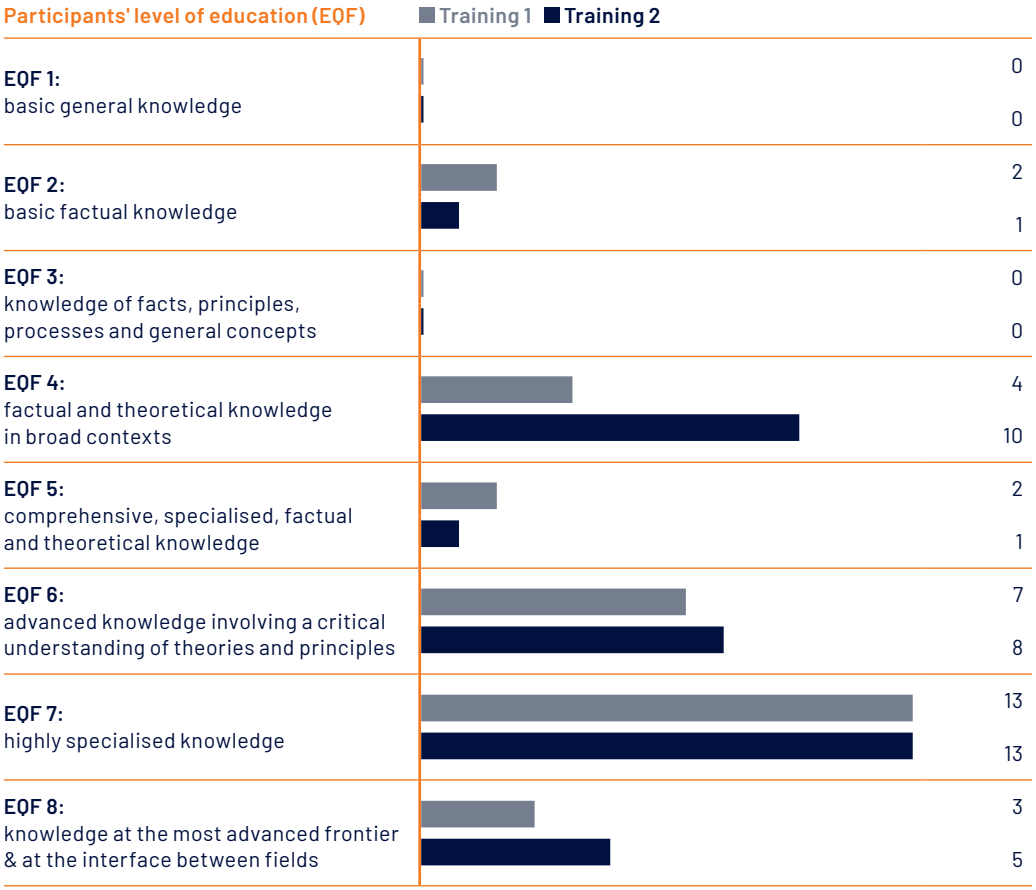
Table 1 shows our participants' average age and gender distribution in each training and figure 1 shows the highest level of education our participants reached, defined by the European qualifications framework (EQF; see European Union 2022 for more information).

**Table 1: participants' age and gender**

| | Age M (SD) | gender | | | n |
|---|---|---|---|---|---|
| Training 1 | 44.80 (12.42) | 22 (63%) female | 13 (37%) male | 0 (0%) diverse | 35 |
| Training 2 | 38.40 (14.11) | 22 (63%) female | 12 (34%) male | 1 (3%) diverse | 35 |

*Note: M=mean; SD=standard deviation; n=sample size.*

## Figure 1: participants' highest level of education (European qualifications framework, EQF)




*Note: EQF levels depicted here are shortened general descriptions of the 'knowledge level' (European Union, 2017). See Cedefop (2022) for country-specific educational qualifications for each level.*

### Work experience

Participants' prior work experience as explainer was measured with a single item ('How long have you worked as explainer?'), which could be answered in years and/or months of experience. Of our total of 70 participants in trainings one and two combined, participants' job experience as an explainer ranged widely from 1 month of experience to 44 years of experience in training one and from no experience (just starting at the job) to 26 years of experience in training two.

Participants' prior experience with the two target groups the ITEMS training focuses on (seniors and migrants) was measured with the following item: "How many explainer interaction events (e.g. science shows/tours/…) have you facilitated especially/specifically for groups of seniors/ migrants? Table 2 shows participants prior experience with the two target groups.

## Table 2: participants' prior experience with groups of seniors and migrants (no. of facilitated events)

| | | none | 1 or 2 events | 2 - 10 events | 10 - 20 events | > 20 events | n |
|---|---|---|---|---|---|---|---|
| Training 1 | seniors | 13 (37.1%) | 4 (11.4%) | 6 (17.1%) | 5 (14.3%) | 3 (8.6%) | 31 |
| | migrants | 15 (42.9%) | 6 (17.1%) | 7 (20.0%) | 2 (5.7%) | 1 (2.9%) | 31 |
| Training 2 | seniors | 14 (40.0%) | 7 (20.0%) | 4 (11.4%) | 3 (8.6%) | 7 (20.0%) | 35 |
| | migrants | 17 (48.6%) | 10 (28.6%) | 4 (11.4%) | 2 (5.7%) | 2 (5.7%) | 35 |

*Note: n=sample size.*

### Interest in the target groups (seniors and migrants) before the start of the training

We measured participants' interest in each of the target groups by four items each. The items were partially drawn from Frey et al. (2009), and partially developed based on work by Schiefele (1990). Example items are: 'I am interested in seniors as a target group' and 'I like gaining new knowledge on seniors as a target group'. Answers were given on a 5-point Likert-type scale from 1 'not at all' to 5 'extremely'. An average interest score was calculated by the sum of the responses to the four items divided by the total number of items (Cronbach's Alpha = .751 and .766 for prior interest in seniors and migrants respectively). Our participants' average interest scores for seniors and migrants before the start of the training are included in table 3. We found no significant differences regarding participants' prior interest in each of the two target groups between participants in the first and second training (Welch-test, $t_{seniors}(62.80) = .710$, $p = .48$ & $t_{migrants}(63.27) = -0.94$, $p = .93$).

**Table 3: participants' average interest in seniors and migrants before the start of the training**

| | | Interest M (SD) | n |
|---|---|---|---|
| Training 1 | Interest in seniors | 3.97 (.72) | 31 |
| | Interest in migrants | 4.06 (.64) | 31 |
| Training 2 | Interest in seniors | 3.84 (.71) | 35 |
| | Interest in migrants | 4.07 (.65) | 35 |

*Note: M=mean; SD=standard deviation; n=sample size.*

## Results: Indications for the success of the ITEMS training

### Interest in the two target groups

As a first indication of the success of training two, we looked at participants' average level of interest before training two and compared this with participants' average level of interest after completing the entire training. We measured participants' interest in each of the target groups after the training with the same four items and in the same way as described above for interest before the training (for training two Cronbach's Alpha = .757 and .756 for interest in seniors and migrants before the training and .855 and .783 for interest in seniors and migrants after the training). We calculated a paired samples t-test to compare participants' average ratings of situation interest before and after the training. For participants interest in seniors as a target group we found a statistically significant increase after the second training compared to before. This suggest that the explainers' interest in seniors as a target group increased as a result of the training. For participants interest in migrants we only found a small, descriptive (n.s.) increase. However, the fact that participants' interest in migrants was already very high before the training did not leave much room for an increase. Results are included in table 4.

### Table 4: development of participants' average interest in seniors and migrants (training 2)

| | Interest **before** the training M (SD) / n | Interest **after** the training M (SD) / n | n | t | df | p | d |
|---|---|---|---|---|---|---|---|
| seniors | 3.93 (.69) | 4.22 (.67) | 29 | -2.491 | 28 | .019 | .62 |
| migrants | 4.12 (.68) | 4.22 (.64) | 29 | -0.967 | 28 | .342 | - |

*Note: M=mean; SD=standard deviation; n=sample size; t=t value; df=degrees of freedom; p=significance level, two-tailed; d=Cohen's d. Interest levels ranged from 1 to 5.*

## Situational interest

To assess participants' situational interest during the training we used an adapted four-item short version of a German scale for situational interest (Knogler et al., 2015; Lewalter, 2020), which was developed in the context of science learning in schools and in informal learning settings such as museums. Situational interest was measured after each training module. Example items are: "To what extent did the training spark your curiosity" and "To what extent would you like to find out more about certain topics of the training?". Answers were given on a 5-point Likert-type scale from 1 'not at all' to 5 'very much'. Cronbach's Alpha was .838, .889, .762, and .869 for situational interest in training parts one, two, three and four respectively (measured for participants in training 2). Table 5 shows that participants' situational interest in training two ranged between 4.43 and 4.64 (i.e. between 'moderately' and 'extremely').

### Table 5: participants' average level of situational interest in each of the four training parts (training 2)

| Training part | situational interest M (SD) | n |
|---|---|---|
| Training part 1 | 4.43 (.62) | 33 |
| Training part 2 | 4.48 (.58) | 31 |
| Training part 3 | 4.60 (.50) | 30 |
| Training part 4 | 4.64 (.51) | 29 |

*Note: M=mean; SD=standard deviation; n=sample size.*

## Experience during the training

All of our questionnaires, except for the pre-questionnaire, included an item block we called 'experience during the training'. This consisted of sixteen statements covering various aspects that we considered important elements of a successful training, such as participants' enjoyment, learning experience and usefulness amongst other things. These statements were partially inspired by and adapted from Willems (2011) and partially developed by the ITEMS researchers. All statements belonging to 'experience during the training' can be found in the questionnaires that are also part of the evaluation pack. We asked our participants to what extent they agreed with these sixteen statements on a scale of 1 "strongly disagree" to 5 "strongly agree". Participants' average ratings for each of these statements for all four training modules in round two of the training can be found in table 6. Except for the item 'The training was just as I expected it to be', average ratings in training two were all above 4, i.e. between agree and strongly agree.

**Table 6: participants' average rating of the sixteen items gathered under 'experience during the training for each of the four training parts (training 2)**

| Statement | Part 1 M (SD) | Part 2 M (SD) | Part 3 M (SD) | Part 4 M (SD) |
|---|---|---|---|---|
| 'enjoyed training' | 4.61 (.56) | 4.58 (.50) | 4.70 (.47) | 4,79 (.41) |
| 'able to understand' | 4.73 (.45) | 4.68 (.48) | 4,70 (.47) | 4,76 (.45) |
| 'actively participate' | 4.61 (.70) | 4.71 (.53) | 4,73 (.45) | 4,79 (.49) |
| 'learnt new things' | 4.18 (.53) | 4.35 (.55) | 4,33 (.66) | 4,72 (.46) |
| 'as I expected' | 3.58 (.83) | 3.35 (.99) | 3,77 (.73) | 3,59 (.87) |
| 'at ease in group' | 4.64 (.60) | 4.74 (.45) | 4,63 (.56) | 4,62 (.56) |
| 'at ease with trainer' | 4.79 (.42) | 4.84 (.37) | 4,80 (.48) | 4,83 (.38) |
| 'ask questions' | 4.70 (.53) | 4.65 (.49) | 4,63 (.49) | 4,76 (.44) |
| 'mix of theory and practice' | 4.64 (.55) | 4.58 (.56) | 4,70 (.47) | 4,76 (.44) |
| 'time used efficiently' | 4.73 (.45) | 4.35 (.76) | 4,57 (.63) | 4,69 (.47) |
| 'useful for my work' | 4.33 (.60) | 4.35 (.66) | 4,60 (.56) | 4,52 (.57) |
| 'relevant for my work' | 4.30 (.73) | 4.29 (.82) | 4,50 (.57) | 4,55 (.57) |
| 'will help meet challenges' | 4.09 (.72) | 4.19 (.83) | 4,37 (.62) | 4,52 (.57) |
| 'trainer clear, understandable' | 4.88 (.33) | 4.74 (.51) | 4,77 (.43) | 4,83 (.47) |
| 'trainer pleasant, enjoyable' | 4.85 (.36) | 4.74 (.51) | 4,87 (.35) | 4,90 (.31) |
| 'received sufficient feedback' | 4.48 (.51) | 4.52 (.63) | 4,60 (.50) | 4,62 (.56) |

*Note: For the full statements, please see the questionnaires in the evaluation pack; M=mean; SD=standard deviation; n=sample size.*

### Gaining knowledge and skills

We asked participants to assess their own knowledge and skills regarding topics that are specific to the content of the training, both before the training and at the end of the training. All of these content-specific knowledge and skill questions were jointly developed by the ITEMS researchers and the ITEMS training developers. These pre and post questions enabled us to find out to what extent and in which areas they were able to increase their knowledge and skills. A Wilcoxon signed-rank test was calculated to examine if there was a difference in participants ratings of these items before and after the training. For sixteen out of twenty-one items we found a statistically significant increase in participants' average self-rated knowledge and skill levels after the training compared to before, with moderate to strong effect sizes (see tables 7 and 8 for more detail).

## Table 7: Difference between participants' self-assessed levels of various knowledge and skill items before and after the training (training 2)

| Statement | Median before | Median after | Median difference | z | p | r |
|---|---|---|---|---|---|---|
| 'familiar with concept of inclusion' | 4.00 | 4.00 | 1.00 | 2.73 | 0.006 | 0.51 |
| 'deal with culturally diverse audiences' | 3.00 | 4.00 | 1.00 | 3.19 | 0.001 | 0.59 |
| 'translating technical-scientific language' | 4.00 | 4.00 | 0.00 | 0.66 | 0.513 | - |
| 'assess visitors' language proficiency' | 4.00 | 4.00 | 0.00 | 1.33 | 0.184 | - |
| 'assess visitors' familiarity with topic' | 4.00 | 4.00 | 0.00 | 1.29 | 0.194 | - |
| 'adjust facilitation to increase participation' | 4.00 | 4.00 | 0.00 | 1.78 | 0.074 | 0.33 |
| 'identify visitors' needs & motivations' | 4.00 | 4.00 | 0.00 | 2.58 | 0.010 | 0.48 |

*Note: For the full statements, please see the questionnaires in the evaluation pack; n=29; z=z value; p=significance level, two-tailed; r=Pearson correlation coefficient. Levels ranged from 1 to 5.*

## Table 8: Difference between participants' self-assessed levels of target group related skill items before and after the training (training 2)

| Statement | | Median before | Median after | Median difference | z | p | r |
|---|---|---|---|---|---|---|---|
| 'comfortable interacting with' | seniors | 4.00 | 4.00 | 0.00 | 0.78 | 0.439 | - |
| | migrants | 4.00 | 4.00 | 0.00 | 1.29 | 0.196 | - |
| 'familiar with psych. needs' | seniors | 3.00 | 4.00 | 0.00 | 2.77 | 0.006 | 0.51 |
| | migrants | 3.00 | 3.00 | 0.00 | 3.04 | 0.002 | 0.56 |
| 'feel at place' | seniors | 4.00 | 4.00 | 0.00 | 2.78 | 0.005 | 0.52 |
| | migrants | 3.00 | 4.00 | 1.00 | 3.35 | <.001 | 0.62 |
| 'create connections' | seniors | 4.00 | 4.00 | 0.00 | 2.72 | 0.007 | 0.51 |
| | migrants | 3.00 | 3.00 | 1.00 | 2.81 | 0.005 | 0.52 |
| 'skilled at communicating with' | seniors | 4.00 | 4.00 | 0.00 | 3.00 | 0.003 | 0.56 |
| | migrants | 3.00 | 4.00 | 0.00 | 2.12 | 0.034 | 0.39 |
| 'skilled at relating to' | seniors | 4.00 | 4.00 | 0.00 | 2.18 | 0.029 | 0.40 |
| | migrants | 3.00 | 4.00 | 1.00 | 2.49 | 0.013 | 0.46 |
| 'skilled at engaging' | seniors | 4.00 | 4.00 | 1.00 | 2.60 | 0.009 | 0.48 |
| | migrants | 3.00 | 4.00 | 0.00 | 2.74 | 0.006 | 0.51 |

*Note: For the full statements, please see the questionnaires in the evaluation pack; n=29; z=z value; p=significance level, two-tailed; r=Pearson correlation coefficient. Levels ranged from 1 to 5.*

In addition to these pre and post questions, the fourth and final questionnaire included three post only statements for each of the target groups that describe broad target group related skills. We asked participants to what extent the following statements applied to them on a scale of 1 "not at all" to 5 "extremely": "The training as a whole prompted me to reflect on the way I perceive [seniors/migrants]", "The training as a whole prompted me to reflect on the way I interact with [seniors/migrants]", and "The training as a whole made me feel more equipped to engage with [seniors/migrants]". Results are included in table 9. In all cases, average ratings in training two were all above 4, i.e. between moderately and extremely, suggesting the training succeeded in making participants reflect on how they perceive and interact with the two target groups and in making participants feel more equipped to engage with the two target groups.

**Table 9: Participants' ratings of training impact regarding target group-related skills (training 2)**

| Statement | | M (SD) | n |
|---|---|---|---|
| 'reflect on how I perceive' | seniors | 4.21 (.77) | 29 |
| | migrants | 4.28 (.70) | 29 |
| 'reflect on how I interact with' | seniors | 4.28 (.70) | 29 |
| | migrants | 4.31 (.71) | 29 |
| 'more equipped to engage with' | seniors | 4.24 (.64) | 29 |
| | migrants | 4.07 (.70) | 29 |

*Note: For the full statements, please see the questionnaires in the evaluation pack; M=mean; SD=standard deviation; n=sample size.*

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## Helpful resources and recommended reading

PISEA: *http://pisea.eu/pisea*

How could a museum (learning) experience become relevant? in: Merzagora, Matteo; Mignan, Vanessa: "Listening And Empowering Children And Young People In Science In Society Activities" Traces, Paris 2015, p. 18

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De-Jargonizer (English): *https://scienceandpublic.com/*
De-Jargonizer (French): *https://www.scolarius.com/*

Easy-to-read-guidelines: *https://www.inclusion-europe.eu/easy-to-read-standards-guidelines/*

Ratgeber leichte Sprache: *https://www.bmas.de/DE/Service/Publikationen/Broschueren/a752-leichte-sprache-ratgeber.html*

Handsignals for Group communication: *https://www.seedsforchange.org.uk/handsig.pdf*

Diversci resources: *https://www.diversci.eu/*

What Google Learned From Its Quest to Build the Perfect Team – The New York Times: *https://www.nytimes.com/2016/02/28/magazine/what-google-learned-from-its-quest-to-build-the-perfect-team.html*

CAISE – conversation guide: *https://www.informalscience.org/sites/default/files/BP-Conversation-Guide.pdf*

World Value Survey Project/Ingelhart-Welzel World Cultural Map: *http://www.worldvaluessurvey.org*

World Value Survey live cultural map: *https://www.youtube.com/watch?v=ABWYOcru7js*

Why is my chemistry curriculum White? *https://edu.rsc.org/analysis/why-is-my-chemistry-curriculum-white/4014379.article?utm_source=house-list&utm_medium=email&utm_campaign=monthly-alert*

PILOTS: *www.thepilots.eu*

Deutsches Museum

ARS ELECTRONICA

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DA VINCI

TUM

All materials are available at
*https://erasmus-plus.ec.europa.eu/projects/search/details/2019-1-DE02-KA204-006202*

The ITEMS project was funded in the Erasmus+ KA204 Strategic Partnerships for adult education program (2019-1-DE02-KA204-006202)

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