SCIENCE ENGAGEMENT - INCLUSION - INTERCULTURAL DIALOGUE

KEY COMPETENCES FOR SCIENCE EDUCATORS, FACILITATORS, AND SCIENCE ENGAGEMENT INSTITUTIONS

PISEA

Promoting Intercultural Science Education for Adults

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Key Competences for Science Educators, Facilitators, and Science Engagement Institutions

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INTRODUCTION

Science centers and science museums are largely considered as informal learning places for "the general public". However, we, as science engagement institutions, are becoming more and more aware that "the general public" is in fact a very diverse society consisting of individuals, groups, communities of people with diverse backgrounds (gender, ethnicity, class, age, language, culture, education, religion,…), diverse social status, and diverse interests, knowledge, competences – and that our audiences often do not reflect the diversity of our societies, especially when it comes to marginalised groups.

However, science engagement institutions could be ideal places for diverse audiences and, more specifically, for marginalised groups of adult learners in order to get better access to informal science learning and to experience empowerment and acquire new competences and skills through science engagement.

The European project PISEA aims at supporting science engagement institutions to become more inclusive and relevant especially for marginalised audiences, by providing a set of useful resources for science engagement professionals and institutions for working with marginalised groups of adult migrants and refugees, in particular.

Why do we focus on marginalised adult migrants and refugees? First of all, these groups have grown significantly in European societies during the last years. Secondly, they are discriminated against in society, and have limited possibilities in participating in a number of socially relevant fields, such as education and science engagement. Science engagement institutions could make a real difference here, by striving for equity and social justice in their professional field. A third motivation is, that against the background of heated discussions about migration, culture and religion in many societies all over Europe, science engagement could be an good opportunity for intercultural dialogue, bringing different people with different backgrounds together on a common ground to experience the fascination for science, to discuss its relevance for their lives, to start talking to each other across cultural, religious or other perceived barriers.

Again, there is no such homogenous group of (marginalised) adult migrants and refugees. There are significant differences in the background (gender, age, education, culture, language, residence permit, access to labour market,…), and experiences (traumata caused by war, persecution, loss of family members,…) between migrants and refugees, and also among each of these groups. They may influence how a science engagement activity should be designed and if and how a group engages in science activities or not.

Working in the diversity and inclusion field means being aware that there are different social groups and identify those aspects, where these groups are discriminated and work very concretely against this discrimination. At the same time, it means being aware that differences are always constructed. They "exist" only "in relation to" - and disappear or change when looking at them from another perspective.

The present compilation is thus, first of all, a tool to become aware of diversity and inclusion aspects in science engagement and to start working with marginalised groups in an inclusive and relevant way – based on experiences of practitioners in science engagement – and written for practitioners in science engagement. It is not about reinventing the wheel: science engagement professionals should, of course, build on their many competences and knowledge in the field. It is rather about taking a holistic and yet structured approach towards inclusive science engagement for marginalised groups and for promoting intercultural dialogue through science activities, and thus becoming a more inclusive institution.

What is the PISEA Project?

PISEA - Promoting Intercultural and Inclusive Science Education for Adults is a European Project, which aims at making informal science learning and science engagement more inclusive and relevant for marginalised adults, particularly for those groups of migrants and refugees, who face economic, social, educational, cultural or language barriers and discrimination.

The PISEA project aims at making science engagement institutions places for adult science learning in an intercultural and inclusive perspective. It addresses science communicators and educators as well as management and other staff and provides resources such as guidelines and sharing of good practise, trainings and multiplier events. The project also directly addresses marginalised refugee and migrant groups as adult learners in piloting a number of science engagement activities. For more information on the project, please, see http://www.pisea.eu.

The PISEA project partners are science engagement institutions from five different countries and an Austrian-based NGO working with young and adult refugees on educational, intercultural and social issues. Project partners are the Association ScienceCenter-Network, based in Vienna/Austria as lead partner, the school Ellinogermaniki Agogi in Attika/Greece, the Association Traces in Paris/France, the NAVET Science Center in Borås/Sweden, the Fondazione idis - Città della Scienza in Naples/ Italy, and the NGO Kompa within Caritas in Vienna/ Austria.

Some of us have already been working with marginalised groups of migrants or refugees for a couple of years, having learned a lot about the potential and the challenges of working with more diverse audiences and of promoting intercultural dialogue through informal science education.

As practitioners, we want to share our experiences and develop new tools and resources. We want to build an international community of science engagement institutions that strive to become places, where both, socially inclusive informal science learning, and intercultural dialogue through science can happen.

How to Use the Compilation of Intercultural Key Competences for Science Educators and Facilitators

The idea of this set of Intercultural and Inclusive Key Competences for professionals in science engagement is to provide an overview of relevant and helpful competences and skills for working with marginalised groups of adult migrants and refugees. It is an extensive, but, of course, not complete list of competences and skills, that we as practitioners have found valuable.

The compilation of intercultural key competences is one of several resources being elaborated within the PISEA Project. The two other resources will be a set of training modules on selected intercultural key competences for science engagement staff, in particular for facilitators and educators, and a handbook on pilot science engagement activities done by the partners in order to test innovative formats, methods, activities in working with marginalised groups of migrants or refugees and share both, good practise and experiences on these activities.

These resources can be downloaded from the EPALE website on European projects in adult education (https://ec.europa.eu/epale/), as well as from the project website (www.pisea.eu) and be used as a basis for institutional and staff development, e.g. in in-house trainings.

This compilation is supposed to serve as:

– An introduction for institutions and individuals who want to make their science engagement activities more inclusive for diverse audiences, or who want to work with marginalised groups of adult migrants and refugees, who face educational, economic, social, cultural, language or other barriers towards informal science learning and science engagement.

– A framework for identifying training needs of educators/facilitators and other staff in science engagement institutions, working in the context of diversity and social inclusion.
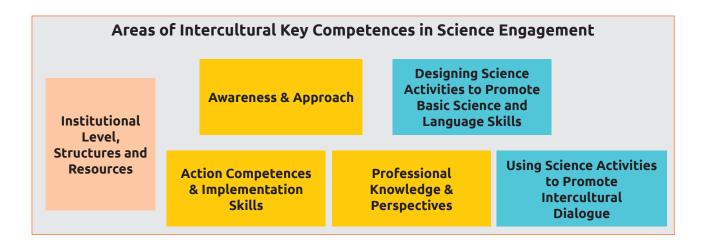
– A framework for identifying needs for structural changes and other development measures at institutional level in science engagement institutions in the context of diversity and social inclusion.

It is divided in five competence areas for people working in science engagement, and one area addressing the level of institution and institutional structures more specifically. For each area you can find an overview of the rationale behind it, a short description of the envisaged aim when tackling with this area, and a brief description of each of the identified key competences or skills.

These descriptions can help you to identify the strengths and the weak points in your work towards social inclusion and intercultural dialogue and should give you some clues, how to improve these weak points/gaps.

The most important learning aspects, we want to share here, are:

- Develop a clear vision towards inclusiveness and share it within your institution – but concrete steps have to be taken as well.
- Build on those competences you already have as an educator/facilitator/ in your institution. There is no need to start everything from scratch.
- Identify weak points and blind spots in your institution/in your work in view of social inclusion and intercultural dialogue.
- Cooperate with people from those communities, you want to work with, with NGOs and experts on social inclusion and intercultural dialogue.
- Provide for more resources than usual (time, facilitators, translators, money) – and in all phases: preparation, implementation and recap/reflection phase of your science events and activities.
- Single events may be a first step, but in order to become a well-trusted partner on inclusion and intercultural dialogue with diverse audiences you have to invest into long-term and sustainable changes.

Areas of Intercultural Key Competences in Science Engagement

Institutional Level, Structures and Resources	Awareness & Approach	Designing Science Activities to Promote Basic Science and Language Skills
	Action Competences & Implementation Skills	Professional Knowledge & Perspectives	Using Science Activities to Promote Intercultural Dialogue

The orange box addresses the institutional level and draws attention to necessary structural changes, resource management etc. in order to become a socially inclusive and interculturally sensitive science engagement institution.

The yellow boxes concern skills and competences of the staff of your science engagement institution, first of all educators and facilitators. But they can be relevant for other staff as well, e.g. in exhibition or activity development, communication and management.

The blue boxes focus on two fields, where informal science learning or science engagement activities can play a major role with view to intercultural and social inclusive science education: using science activities to promote basic science and language skills and promoting intercultural dialogue through science activities.

INTERCULTURAL COMPETENCE AREAS FOR SCIENCE ENGAGEMENT PROFESSIONALS AND INSTITUTIONS

INTERCULTURAL KEY COMPETENCE AREA	Institutional Level, Structures and Resources
RATIONALE	Promoting intercultural science education and becoming more socially inclusive is not a matter of some singular science activities, but needs more comprehensive and sustainable measures.
	A clear vision and commitment of the institution are necessary to really become a socially inclusive science engagement institution.
	The gain: it is rewarding and motivating for the institution and the staff. It has a social impact on the marginalised groups you work with, and contributes to social justice at a larger scale. Bringing new audiences and new co-operations with communities and NGOs to your institution brings new perspectives on your work, new, creative ideas how to develop further.
	And it is a chance to make links with new audiences and also increase your relevance with people, who are not so much into science itself. It may also help to attract new donors and build new co-operations.
	It needs, at least in the beginning, more efforts and resources (time, communication efforts, translation, etc.) in order to get it going.
AIM	Management staff of science engagement institutions is able to define the cornerstones of a social inclusion strategy for their institution. They will be able to identify the necessary resources and decisions to be taken to implement the strategy and provide the necessary support for their staff.
KEY COMPETENCES AND STEPS	– Developing a clear and written vision as an intercultural, socially inclusive science center/museum – Developing a clear strategy and measures – Identifying the potential barriers for marginalised groups – Allocating resources (staff, time, money) – Promoting staff training and development (diversity, competences) – Cooperating with different communities at all levels (in terms of participatory content and exhibit(ion) development, appropriate communication with new audiences, translation)

Developing a Vision as Socially Inclusive Science Engagement Institution

Working with diverse audiences, and among them also with marginalised groups requires more efforts at all levels of a science engagement institution than just labelling an activity as "being for all".

To develop a clear vision as socially inclusive institution is a first step. This institutional commitment is an important support for science educators and facilitators in their work with diverse groups, as well as with marginalised groups.

It will, however, need more concrete steps to turn the vision into reality. See → all other boxes

Identifying Potential Barriers for Marginalised Groups

In order to really improve access for marginalised groups among migrants and refugees, the specific barriers they face in your country, should be identified. This might be a diverse range of aspects from financial and transport issues to language, lack of information, lack of relevance, non-representation, feeling not familiar or welcome, etc.

Identifying potential barriers will help to → develop a strategy and concrete measures to initiate institutional change, instead of just doing symbolic, but not sustainable events. Singular events may backfire, as people may feel "used" for a PR event.

Promoting Staff Training and Development

Science educators, facilitators and other staff already have a lot of competences and skills, which are also relevant for working with new audiences.

For specific aspects and competences staff might need additional training. In a mid-term perspective, diversity in your staff itself will help to include diverse perspectives and competences, and contribute to the sense for and (practise of) inclusiveness of the institution.

Cooperating with NGOs and Communities

Science engagement institutions cannot always become expert organisations on social inclusion and intercultural perspectives in science learning, themselves. Therefore they should work with expert organisations and NGOs in order to be able to reach out to these new audiences and provide accessible and meaningful science learning for them.

Allocating Sufficient Resources

To bring new and difficult to reach audiences to your institution will require some additional resources. Most important will be a good time management: More time is needed to reach out to new and especially to marginalised audiences, communicate with them and build trust, to develop, adapt or co-create relevant and socially inclusive activities and formats, to cooperate with NGOs and experts – and to make all these efforts sustainable.

Developing a Strategy & Define Measures

Becoming a socially inclusive science engagement institution concerns various levels and aspects of your institution, e.g. exhibitions and programmes, staff development and training, co-operation with external partners, public relations, financing issues, allocating resources etc.

A clear strategy will help to define and implement the envisaged changes, define possible time-lines and pace, give orientation and motivation to your staff, and help to re-frame the public image of your institution.

It will be especially helpful and even essential for educators and facilitators, as they will work directly with the new and more diverse audiences and will need support and orientation, especially in the beginning.

INTERCULTURAL KEY COMPETENCE AREA	Awareness & Approach
RATIONALE	Science engagement institutions are becoming more and more aware that their audiences do not reflect all social groups of today's societies, for example, ethnic minority groups are often less represented as visitors (and as staff) in science engagement institutions. This is true to a greater extent for marginalised groups, such as economically and socially disadvantaged groups, among them also migrants and refugees. Making informal science learning more equitable means making it accessible, inclusive and meaningful for diverse audiences, and more specifically for marginalised groups. To achieve this, science engagement institutions should become more aware of the barriers these groups are facing in science engagement. To overcome these barriers, the diversity of visitors in terms of economic, cultural, language and different educational "starting points", i.e. educational demands, interests, approaches have to be taken into account, and own biases towards different groups have to be reflected. However, science engagement institutions should not get stuck in differences, but rather find ways to overcome them in a creative, valuing and productive way and create shared experiences, empowerment and equity for all their visitors.
AIM	Science educators and facilitators are familiar with concepts of diversity and social inclusion (e.g. with the diversity wheel). They are aware of social inequalities and discrimination. They are able to reflect their own prejudice management, e.g. towards specific groups of visitors, "ideal" and "non-welcome" visitors, and to develop an open, non-discriminating attitude towards diverse audiences.
KEY COMPETENCES AND STEPS	– Awareness of diversity and inclusion – Self-reflection competence – Mutual respect, empathy, and tolerance – Awareness of diverse learner types – Openness, curiosity, and flexibility – Awareness of biased learner-teacher-relations and their dynamics

Self-reflection Competence

On a personal level, facilitators and educators should be aware of their own identity dimensions, as well as of own experiences of privileges and discrimination.

As an educator you should also be aware of your own, often unconscious, biases and prejudices, as a prerequisite to tackle them, even in challenging situations.

Mutual Respect, Empathy and Tolerance

Science engagement institutions should pay special attention to create an atmosphere of mutual respect and tolerance. Facilitators are also acting as role models here, who have impact beyond the science activity itself.

It is essential to give room for individual views, ideas and contributions of participants and have a dialogue at eye-level with them, in order to make the science engagement activity meaningful and relevant to them.

Awareness of Diversity and Inclusion...

as a multi-dimensional concept of differences AND similarities, which not only targets identity issues, but also inequality and discrimination at individual, group and societal levels.

Visitors of science engagement institutions/museums are diverse in many ways. Each individual has different identity dimensions, e.g. of gender, age, generation, education, ethnicity, culture, language, religion, science-interest, values, learning styles, etc.

Their relevance is context-specific and also influenced by majority/minority-relations.

Educators/facilitators should be aware that the diversity concept is necessarily linked to the fundamental goal of becoming a socially inclusive institution.

Openness, Curiosity and Flexibility

These are generally important competences of educators and facilitators, as they always work with diverse groups, in sometimes unexpected situations etc.

The better you are prepared, the easier it is to be open and flexible. Therefore you should get to know your unfamiliar audience better **before** the activity to be able to respond to the real needs and interests, and to address your audience at the right level of language and scientific knowledge.

See also → *Institutional Aspects* for the planning of time and resources.

Awareness of Biased Teacher-Learner-Relations and their Dynamics

Facilitators and educators should be aware of their own stereotypes considering the way formal and classical teaching is anchored into them, in order to avoid repeating some patterns that could drive the audience away - in particular the ones who did not keep a good memory of their school time. Instead, they could build on → Concepts of diverse learner types to create alternative science learning and engaging settings for marginalised adult learners.

INTERCULTURAL KEY COMPETENCE AREA	Action Competences and Implementation Skills
RATIONALE	Diverse audiences and individual learners have diverse starting points to science learning, as well as diverse demands, interests, experiences and approaches to informal science learning. To better respond to diverse needs and demands and overcome concrete barriers for marginalised groups, science engagement institutions have to work on the content, on the formats, and the facilitation of science engagement activities, as well as on organisational and structural issues. Science educators and facilitators need the necessary action competences, as well as implementation/organisational skills to adapt to the variety of demands and interests. They need to adapt learning aims, settings, activities, etc. in order to make the learning experience meaningful, motivating, and inspiring for everyone, e.g. create a welcoming atmosphere for marginalised groups, who are not familiar with science engagement, or provide for a language-sensitive or multi-lingual setting.
AIM	Science facilitators and educators are able to work with diverse and heterogeneous groups of visitors and to adapt to the specific needs and interests of diverse audiences, e.g. in the way of facilitation approaches, language used, atmosphere, topics and content, level of complexity, equality and participation etc. They are aware of specific challenges and know how to meet them.
KEY COMPETENCES AND STEPS	– Building an atmosphere of welcome, trust & mutual respect – Good general communication competences – Management of group dynamics and conflicts – Adapting science language to needs of diverse audiences – Dealing with multilingual audiences: be simple, clear, understandable for different levels – Skills to promote participatory approaches – Flexible Time-Management

Creating an Atmosphere of Welcome & Trust

New audiences may feel uncomfortable in the unfamiliar setting of a science center, museum, or workshop.

A welcoming and trustful atmosphere can be created in different aspects: the design of the space, open and personal communication, and the workshop programme itself, which should give time for getting to know each other better, e.g. having coffee/tea together.

The chosen activity/format should give enough room for participants to express personal views and experiences. However, especially with refugees, re-traumatizing topics or talks should be avoided.

Therefore, it is recommended to discuss the programme and the topic with an expert or representative of the group or the NGO first, in order to ensure the relevance of your envisaged topic and activity.

Facilitation

To respond to diverse levels of language, (science) literacy, interests of new visitor groups, it will help to be familiar with a range of different formats and facilitation approaches.

Guiding principles should be a focus on participation and co-creation, communicating at eye-level, a mix of activities responding to different learner types, working in smaller groups or with more facilitators.

Communication

Facilitators should always have good communication competences, but they are even more important when working with new and diverse audiences, among them marginalised and/or multilingual groups.

These competences should include e.g. active listening, using adequate language, being aware of different communication styles, dealing with misunderstandings, etc.

Time-Management

More time/flexible time-planning is needed before and during the science activity for establishing contact and trust, learning about the needs and interests, planning/co-creating the activities, providing for language support, dealing with obstacles and changes etc.

Language Skills

Educators/Facilitators should be able to use simple, clear, understandable standard language for different language and science literacy levels. As a rule, too technical or complicated terms should be avoided or explained. A clear pronunciation is also prerequisite.

As an educator/facilitator you should know how to adapt an activity/workshop for multilingual settings, e.g. involve translators, provide the necessary vocabulary in different languages, or just "play with languages" (e.g. collect words in different languages on post-its to objects and materials…). "Silent facilitation" may, however, be a too artificial setting and would need other ways of **communication,** in order not to create an uneasy atmosphere.

Conflict Avoiding and Conflict Resolution, Managing Group Dynamics

These are not "new" competences for facilitators, but they may be even more relevant in dialogue-focused formats and when audiences are more diverse in terms of different cultural, political, religious values (and in an often controversial public climate).

Faciliators should thus be aware of group dynamics as well as conflict management skills. They should be prepared how to deal with prejudices, discrimination and hot topics.

It will be helpful, if the science center/museum develops basic common rules and values of communication (e.g. mutual respect, communication at eye-level) and makes them known and explicit, so that staff can easily refer to, if necessary.

INTERCULTURAL KEY COMPETENCE AREA	Professional Knowledge and Diverse Perspectives
RATIONALE	Science is often described as universal language, however the label "universal" often "forgets" other than western culture influences and achievements. Universalism bears the risk to ignore diverse approaches, developments and contributions to science. Historical origins of science from different cultures and different parts of the world have been rather underrepresented in European science engagement institutions until now. However, to present science in a variety of historical, cultural and every-day-life perspectives helps people link themselves to science and makes science accessible and meaningful for people from different cultural contexts as well as for non-science people in general. It can also promote intercultural dialogue. Basic knowledge of diverse cultural contexts, history and traditions as well as of the education systems of different refugee and migrant communities is valuable in order to promote mutual understanding and to design corresponding science activities.
AIM	Science educators and facilitators know the basic history of science, also in a global perspective. They are aware of the diversity of scientific perspectives and concepts, and have more information of other than western science/ science history. They should be able to link science concepts and phenomena to every-day-life experiences and to illustrate the meaning of science. Facilitators should have basic knowledge of culture-specific habits, traditions and history, both of one's own and of the diverse cultural communities, they are working with. It may sometimes be more feasible to integrate this kind of diverse knowledge by cooperating with scientists, community representatives or NGOs, who have the necessary expertise.
KEY COMPETENCES AND STEPS	– Knowledge of Scientific Concepts and Everyday- Science – Taking an intercultural perspective on science (history) – Basic knowledge of historical and cultural characteristics of one's own culture and of the main target communities/beneficiaries

Knowledge of Scientific Concepts and Everyday-Science

Knowing scientific concepts is, of course, one of the basic requirements for science educators/facilitators.

In inclusive science learning settings, which should be open to "non-science people", or in order to bridge language barriers more easily, it can be even more important and effective to link these scientific concepts to everyday-life and everyday-science. People are maybe no science experts or scientists, but they are everyday-life experts and it may be easier sometimes, to make links with science from this perspective.

Inviting people to share, e.g. culturally specific, everyday science experiences can spark an intercultural dialogue at eye-level with lay people.

Taking an Intercultural Perspective on Science

Science engagement institutions should take a more intercultural perspective on science and on the history of science and present intercultural dimensions of science and technology in their exhibitions, too. This can be scientific research done in different world regions, global influences on science disciplines, presenting examples for technical inventions from different parts of the world, workshops on intercultural mathematics, etc. A good way to include an intercultural perspective is to work together with international experts and migrant communities, as well as with science engagement institutions from different countries.

Basic Intercultural Knowledge

In an intercultural setting, differences and also common aspects in cultural traditions, values etc. may play a great role, be it a workshop on Newton's laws of movement, a tinkering activity, interactive labs for DNA extraction, or else. These cultural aspects, social conventions or values may concern communication and behaviour patterns, diverse opinions, and feelings of the participants. They can offer new perspectives to other participants, but also lead to misunderstandings and unintended offences.

Being aware of diverse cultural traditions, history and habits may help to avoid such conflicts or to identify misunderstandings and to resolve them.

At the same time, facilitators should be aware, that cultural traditions and cultural identity are contingent and may be important for some people, but not for others. Thus, facilitators should keep a balance of being aware of differences, but not "doing" (constructing) cultural differences, where they are not relevant.

INTERCULTURAL KEY COMPETENCE AREA	Designing Science Activities to Promote Basic Science and Language Skills
RATIONALE	Adult learners may have specific "learner" demands and expectations when participating in informal science learning activities, even more so those marginalised groups of adult refugees and migrants, who have limited access to formal education. Informal science education for marginalised adult refugees and migrants needs to be meaningful for them, also in terms of promoting their basic competences and skills in science and in language learning, as these are important for improving job chances or starting/continuing formal education and training. Science activities often foster knowledge and competences in science, but their learning potential is often not made explicit, and links to the formal learning and knowledge are not systematically made. In order to make learning in science engagement activities more sustainable for marginalised adult learners, different approaches and formats should be developed in order to foster learning that responds to the specific demands of these learner groups. There are a number of relevant frameworks of basic skills and competences, which science center activities generally can be linked to, e.g. the European key competences for life-long learning, the framework of 21st century skills, the concept of science capital, to name only a few. A second important aspect here is the recognition of learning. This could be promoted in two different aspects: ➢ Making the learning (process, progress, achievements) more explicit for the learners themselves, which would help them value their informal learning progress, identify their individual skills and competences, and strengthen their self-confidence. ➢ Offering possibilities for a more formal /written/digital recognition of informal learning, e.g. using the open badge approach, issuing certificates etc.
AIM	Science facilitators and educators are able to adapt existing/develop new science activities and programmes to meet the needs of adult refugee and migrant learners to improve their basic science and language competences. They are able to make the learning process and success of individual learners explicit and thus more sustainable for the learner.
KEY COMPETENCES AND STEPS	– Promoting basic science competences – Promoting basic language competences – Identifying the learning interests and needs – Offering a range of hands-on science activities – Making learning and competences of adult learners explicit

Identifying the learners' needs and interests

The actual learning demands and interests of refugees/migrants and other adult learners may differ widely from one another.

In order to offer relevant and meaningful activities, these demands and expectations should be clarified before with the learners themselves, or with the NGOs supporting them in their learning activities.

Promoting Basic Science Competences

In order to become more relevant for adult learners from refugee and migrant communities in promoting basic science competences, science activities should be adapted to their concrete demands. Informal science learning could happen in a more systematic and structured way, e.g. in a series of workshops focusing on basic maths or physics, coding, tinkering, etc.

Science engagement institutions not only contribute to basic science competences, but also to social key competences and skills, such as identified in the EU framework of key competences and in the framework of 21st century skills.

It is important to → identify the concrete learning needs and interests of the participants first, and to → make the learning (progress) explicit to the learners.

Promoting Basic Language Competences

Hands-on science activities can contribute, in a playful way, to promote language competences of multilingual visitors.

A discussion game promotes spoken language and conversation skills; a workshop on physics experiments or tinkering can help to gain specific vocabulary and typical expressions; bilingual texts, objects and exhibits contribute to general language competences.

You should clarify the language level and learning demands of refugee/migrant groups in advance and adapt the activities and resources, possibly in cooperation with language experts, trainers etc.

Making Learning and Competences of Adult Learners Explicit

Science educators and facilitators should develop an approach to make the learning and the specific acquired or improved competences of individual learners clear and explicit in order to steady these competences, strengthen the learner identity and also add to the recognition of these competences.

This can be done in different ways, in an informal or structured feedback, issuing certificates or using digital or analogue badges of recognition of competences.

You should check with your audience groups, which forms of feedback/ self-evaluation/recognition would be helpful and easily accessible *to them*.

Offering a range of hands-on science activities

Hands-on science activities offer an ideal learning approach for marginalised learners, as they can be adapted to different levels of science and language literacy and promote a competence-oriented learning experience, instead of a deficit model of learning (i.e. filling gaps of knowledge).

INTERCULTURAL KEY COMPETENCE AREA	Using Science Activities to Promote Intercultural Dialogue
RATIONALE	As places for informal science learning for the broad public, science engagement institutions should take a stronger role in our societies in promoting socially inclusive science learning and intercultural dialogue. They could become places, where different social groups and communities meet and get to know and understand each other better through the way of playful, cooperative science activities. Science and technology can serve as non-threatening subjects for intercultural dialogue, building on shared experiences in science engagement activities. Intercultural dialogue through science center activities should follow the same principles as intercultural dialogue in general: They should take place at eye-level, in an appreciative and trustful atmosphere, ensure and promote equity, build on individual interests and contributions, and be relevant and meaningful for all participants.
AIM	Science Educators and facilitators have the skills and competences to provide a setting which is suitable for intercultural dialogue, with a welcoming, trustful, cooperative and "safe" atmosphere, dialogue at eye-level, and meaningful encounters and experiences for the participants.
KEY COMPETENCES AND STEPS	– Developing Science Activities to promote intercultural dialogue and cooperation – Group Dynamics in Intercultural Dialogue – Communicating and Cooperating at eye-level – Networking with NGOs and migrant/refugee communities, language schools and the like. – Time Management – Intercultural Dialogue and Co-Creation

Developing Science Activities to Promote Intercultural Dialogue and Cooperation

Many science activities incorporate elements of promoting dialogue and cooperation between visitors/participants, e.g. building huge chain reactions or any other tinkering activities, doing challenges etc.

Other science activities may be expanded with dialogue, cooperation and reflection elements in order to make them particularly useful for intercultural dialogue.

Focusing on everyday life aspects and experience-based knowledge, e.g. dialogue and hands-on activities on household devices, kitchen science etc. can be a good start for an intercultural dialogue, too.

Group Dynamics in Intercultural Dialogue

Group dynamics "happen" everywhere, not only in intercultural dialogue – but here possibly with a greater potential for misunderstandings due to language stereotypes and misconceptions. Facilitators therefore should focus on common identity aspects, e.g. "interest in /fun with science", instead of reinforcing "the usual lines of difference" (e.g. muslim/non-muslim culture), offer ice-breaking/ trust-building exercises, work in smaller, mixed teams, and give time for informal talk.

Networking with NGOs and migrant/refugee communities

Cooperation with external partners, e.g. gatekeepers for migrant communities, or NGOS working with refugees, is vital for the success of promoting intercultural dialogue, because they are the ones who have the network and the expertise on needs, demands and interests of the target groups, and they can help with translation, if necessary.

Time Management

Promoting intercultural dialogue through science activities will be more promising and sustainable in a long-term format instead of single events, e.g. offer a couple of events, a regular day per month, where visitors can come on purpose, and already have trust in the setting.

Take care, that both, the science activity and the dialogue part have enough time allocated and are not done under time pressure.

Communicating and Cooperating at Eye-level

For intercultural dialogue it is paramount to create the activity and the setting in a way, that everyone is at eye-level and can contribute his/her own perspective, knowledge and skills.

Make sure, that participants have access/ can participate at equal level in terms of language, information, understanding of a specific topic, but also in terms of time and money (fees, transport, food).

This will require an exchange with the community/NGO you want to invite, because you won't be able to figure it all out yourself.

Intercultural Dialogue and Co-Creation

Intercultural Dialogue happens both between different groups of visitors and between visitors and science learning institutions. This dialogue helps to learn more about the perspectives and views of different visitors, and helps these groups to learn from each other.

A further step to promote intercultural dialogue could be to start a co-creation process with diverse groups of visitors/learners, starting with a discussion about topics, skills and activities, which would be interesting and relevant for them to engage with, and leading to produce new content and new activities together.

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RESOURCES

European Key Competences for Life-Long Learning: https://ec.europa.eu/education/policy/school/competences_en

Framework for 21st Century Learning: http://www.p21.org/our-work/p21-framework

10 things you need to consider if you are an artist not of the refugee and asylum seeker community looking to work with our community: http://riserefugee.org/10-things-you-need-to-consider-if-you-are-an-artist-not-of-the-refugee-and-asylum-seeker-community-looking-to-work-with-our-community/

1001 Inventions & Awesome Facts from Muslim Civilization. Official Children's Companion to the 1001 Inventions Exhibition, National Geographic Kids, 2012

GLOSSARY

Migrant

A migrant is 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.

Source : IOM https://www.iom.int/who-is-a-migrant

Refugee

Refugees are people who have fled war, violence, conflict or persecution and have crossed an international border to find safety in another country.

Refugees are defined and protected in international law. The 1951 Refugee Convention is a key legal document and defines a refugee as: "someone who is unable or unwilling to return to their country of origin owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion."

Source: UNHCR http://www.unhcr.org/what-is-a-refugee.html (19.07.2018)

Marginalized group

Different groups of people within a given culture, context and history at risk of being subjected to multiple discrimination due to the interplay of different personal characteristics or grounds, such as sex, gender, age, ethnicity, religion or belief, health status, disability, sexual orientation, gender identity, education or income, or living in various geographic localities.

Source: http://eige.europa.eu/rdc/thesaurus/terms/1280 (19.07.2018) Information provided by European Union Agency for Fundamental Rights (FRA) and the Office of the United Nations High Commissioner for Human Rights

Diversity

The term diversity is used and defined differently in many different study fields. Due to the high complexity and wide scope of the diversity research it is difficult to develop a single definition of this phenomenon. In general, the concept of diversity means understanding that each individual is unique, and recognizing our individual differences. These include but are not limited to age, ethnicity, class, gender, physical abilities/qualities, race, sexual orientation, as well as religious status, gender expression, educational background, geographical location, income, marital status, parental status, and work experiences. It is the exploration of these differences in a safe, positive, and nurturing environment. It is about understanding each other and moving beyond simple tolerance to embracing and celebrating the rich dimensions of diversity contained within each individual.

Source: http://www.qcc.cuny.edu/diversity/definition.html (19.07.2018)

See also: Thomas, D. A. / Ely, R.J. (1996): Making Differences Matter. A New Paradigm for Managing Diversity, Harward Business Review

Social inclusion

Social inclusion is a process by which efforts are made to ensure equal opportunities for all. The multi-dimensional process aimed at creating conditions which enable full and active participation of every member of the society in all aspects of life, including civic, social, economic, and political activities, as well as participation in decision making processes. Social inclusion may also be interpreted as the process by which societies combat poverty and social exclusion.

Source: Mahaldar, O./ Bhadra, K. (2015): ICT: A Magic Wand for Social Change in Rural India In: P.E. Thomas, M. Srihari, Sandeep Kaur (2015): Handbook of Research on Cultural and Economic Impacts of the Information Society, Chapter 21, p. 501-525

For the field of science engagement and informal science learning we define "social inclusion" as the commitment to make science engagement and informal science learning accessible and meaningful for diverse, and especially for marginalised audiences, and to contribute to equity in informal science learning.

Culture

The definition of the term "culture" is highly disputed with over 500 different definitions in the field of cultural and social anthropology. (Steindl, M.: Leben ohne Kultur in: Interkultureller Dialog-Interkulturelles Lernen (2008), ZentrumPolis, p.3.).

Culture can be defined as "the sum of a way of life, including expected behaviour, beliefs, values, language and living practices shared by members of a society. It consists of both explicit and implicit rules through which experience is interpreted".

Source: Herbig, P. (1998) Handbook of Cross-Cultural Marketing, New York: The Haworth Press cit in: https://www.gcu.ac.uk/media/gcalwebv2/theuniversity/centresprojects/globalperspectives/Definition_of_Intercultural_competence.pdf (19.07.2018)

See also: Rathje, S. (2009): The Definition of Culture: An application-oriented overhaul. In: Bolten, J. (Hg.)/Rathje, S. (Hg.) (2009): interculture journal. Jahrgang 8, Ausg. 8, p. 35-58

Intercultural competence

Intercultural competence is the ability to develop targeted knowledge, skills and attitudes that lead to visible behaviour and communication that are both effective and appropriate in intercultural interactions."

Source: Deardorff, D. K. (2006), The Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization at Institutions of Higher Education in the United States, Journal of Studies in International Education 10:241-266 cit. in: https://www.gcu.ac.uk/media/gcalwebv2/theuniversity/centresprojects/globalperspectives/Definition_of_Intercultural_competence.pdf (19.07.2018)

Intercultural competence is no field of competence as such, but could be understood as from latin competere "bring together" as a set of skills, individual, social, professional and strategic competences combined in it the best possible way to interact in intercultural contexts.

Source: Bolten, J. (2006): Interkulturelle Kompetenz in L.R. Tsvasman (Hg.): Das grosse Lexikon Medien und Kommunikation. Würzburg, p. 163-166

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