

## Inclusive approach

A new vision of museums has been rising as a response to the idea of museums as just a place of conservation. A vision of museums as a cultural haven, inclusive, alive and living, places that can become meeting points open to the exchange of experiences. This means that the accessibility of contents to an audience as wide as possible assumes a prominent role.

In order to promote accessibility we must first identify what are the fences keeping the audience, or a specific fraction of the audience, from fully enjoying the museum, and work on bringing them down.

This vision is particularly pertinent in relation to interactive science museums. We are, by nature, fully dependant on the active participation of the audience, and our biggest goal to overcome is the transmission of concepts that traditionally depend on specific technical language. To effectively communicate these concepts is part of the core goals of the museum itself.

Therefore, a museum like the Giardino di Archimede, who aim from birth to communicate and disseminate mathematics in all its forms and relations to other disciplines, both inside and outside the museum, across the land, has an inclusive connotation by nature. It is an educational vocation that is quite common in working groups that have then generated temporary or permanent mathematical exposures (Matematikum, Momath, MMACA ...). This vocation, present maybe here more than in other areas of culture, is often an immaterial patrimony made of activities that alongside or replaces the collection of objects of classical museums.

A further discussion on inclusiveness requires taking a long look at the concept of “barrier” in a broad sense: any aspect that may be cause to the exclusion of any specific audience. Many factors are comprised, material and not. These barriers can be overcome, and lead to identifying collectives for whom the enjoyment of the museum is limited or precluded. The reasons for marginalisation can usually be related to a physical or socio-economic disadvantage. In the first group we could find the visually or hearing impaired, the elderly or people with specific disabilities. In the second group we might find foster children, convicts, new immigrants, ethnic minorities with integration difficulties. The final goal of a museum is to open up to as much of a new and wide audience as possible.

Integration and coordination between non-formal education subjects operating in the same area allow a leap of quality and effectiveness of the proposals. In this sense, the English project "Learning outside Classroom"<sup>1</sup> was very interesting, because it was intended to bring together very diverse initiatives (museums, libraries, cultural centers, playgrounds, pools, summer colonies ...) to build an impressive and organized educational network. Unfortunately, it was sacrificed to economic choices before being implemented significantly.

In the same line two experiences that have involved the Garden of Archimedes move; they are examples of good practice that could be implemented, even partially, in each country.

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<sup>1</sup> <https://www.gov.uk/government/publications/learning-outside-the-classroom>  
<http://www.lotc.org.uk/wp-content/uploads/2011/03/G1.-LOtC-Manifesto.pdf>

The first project aimed at the development of inclusive practices was implemented in 2015. It comprised a network of local museums. It later developed further into a second project named WELCOME (We Encourage Living Collective Open Museums Experiences).

Both projects were born inside a workgroup joined in territory, the city of Florence, but very diverse and heterogeneous in type and topic: art, history and science; public and private. The group was formed initially as a response to a series of initiatives promoted by the Regione Toscana. Despite the differences, the resulting synergy aimed at very concrete common goals that took into account diversity and personal need. The workgroup then constituted into a network called “ArteStoriaScienza - Sistema Coordinato di Musei con Attività di Cooperazione”<sup>2</sup>.

The first project realized by the Network was the **MuseoBus**, attempting to facilitate the insertion of the museums in the living tissue of the city. It pursued an audience that is physically unable to reach the museums autonomously, by weaving a net across neighbouring realities. A series of thematic itineraries were created. These itineraries link each one of the partner museums to a specific local reality<sup>3</sup>. The link was both thematic and physical: a touring bus drove visitors from one point of the itinerary to the next. This first version of the project was, therefore, aimed to an audience that already had a cultural interest, offering them the chance to broaden their interests. The different itineraries that the Giardino di Archimede organised were:

EXTERNAL INSTITUTION	MATHS INSTITUTION	THEMATIC LINK
Central Dairy	Giardino di Archimede	The geometry of Packing
Istituto Nazionale di Ottica	Giardino di Archimede	Geometric shapes linked to the reflection of light
Crystals section of the Science Museum	Giardino di Archimede	The geometry of soap bubbles
Library of the Department of Mathematics and Computer Sciences	Giardino di Archimede	Liber Abaci and the indo-arabic numbering system

Among the other different itineraries linked with other museums there were a visit to a foundry, a textile mill, a pottery workshop, a coffee company, a crystal factory, a nursery maintaining of old plants, the company for public lighting, all connected to a specific museum.

This project contained some trips for specific groups who, for various reasons, might not had the initiative or the ability to plan a visit to the museum. Both the trips and the activities inside the

<sup>2</sup>The members of this network are the eight museums in Florence: Fondazione Casa Buonarroti, FirST-Firenze Fondazione Scienza e Tecnica, Museo Galileo, Museo di Storia Naturale dell’Università di Firenze, Museo Fiorentino di Preistoria “P. Graziosi”, Museo Marino Marini, Il Giardino di Archimede-Un Museo per la Matematica, Museo Horne.

<sup>3</sup> This project had already been started by the rest of the museums in the network. The Giardino di Archimede joined in 2015. This project was cofounded by the Regione Toscana.

museums were organized on purpose. Among these groups were some children from a juvenile facility in the suburbs of Florence, some from a Rome community in the metropolitan area, senior centres, rehabilitation centres, institutions for the hearing impaired.

These very positive first experiences encouraged all the partners to develop the project for inclusion in the next WELCOME project, which got public funding and support in 2016, and made a strong point for the accessibility to culture, seeing museums as a place for inclusion and integration. Specifically, the purpose of the project was to increase the usability of the museum by disadvantaged public by implementing various strategies of involvement and strengthening services in favour of visitors. This was attained through the specialization of the creation of dedicated itineraries, choosing new topics and approaches and new types of materials to be used in visits and educational activities.

#### Activities in the Project<sup>4</sup>

Types of disadvantage	Elderly, disabled, migrants, foster care, patients in hospitals, specific physical or mental disabilities (hearing or visually impaired, autistic, Alzheimer patients)
Actions in the museum	Ad hoc visits, free transportation, design and creation of specific resources and materials.
Actions outside the museum	Preliminary meetings for the preparation of the visits, workshops and activities in the host structures.

In order to identify the specific needs of each group and, therefore, organise the activities accordingly, different existing structures were involved so that promoter museums could get an inside informed view. Collaborations with public institutions and volunteers dedicated to different kinds of social work, both with minors and the elderly, migrants, socially excluded societies, disabled (starting a collaboration with the city paediatric hospital) and convicts.<sup>5</sup>

For the inclusive approach the proposal of the museums to the audience have been adapted. A crucial point was choosing the contents and modalities accordingly so that they would be the most interesting and communicative, with the help of experts, and even which resources to use, if necessary, to make them accessible.

<sup>4</sup> The project was submitted by Dr. Cioppi from the Museo di Storia Naturale at the 26<sup>th</sup> Congress ANMS- Associazione Nazionale Musei Scientifici (Trieste, November, 16-18, 2016) through a communication and a poster and at the demonstration Facciamoci Vedere (Milano, December 13 - 15, 2016). There is also a website for the project (<https://welcome-musei-firenze.blogspot.it/>), with links to the partner museums.

<sup>5</sup> List of the institutions involved in the project: Associazione Anelli Mancanti, Associazione FuoriMercato, Associazione Interculturale Messaggeri di Pace, Associazione Oltre, Caritas - progetto Rom, Casa circondariale di Volterra, Casa circondariale Mario Gozzini, Centri Educativi Gould e Ferretti, Centro Anziani diurno I Tigli, Centro anziani Villa Bracci, Centro di Solidarietà Anconella, Chini Lab, Comunità per minori P. Annibale M. Di Francia, Comunità di Sant'Egidio di Firenze, Cooperativa Il Mandorlo, Cooperativa sociale Le Rose, Cooperativa sociale Matrix onlus, Guidi Raggi RSA, La Cupolina RSA, Le Magnolie RSA, Montedomini RSA, Opera Madonna del Grappa, Ospedale pediatrico Meyer, Progetto Villa Lorenzi, Residenza Villa Canova, Unione Italiana Ciechi e Ipovedenti, Villa Michelangelo RSA.

USERS	ACTIVITIES	MAIN POINT
Foster children, Roman communities	Little difference	The possibility of a different experience: going to a museum
Teenagers in foster homes	Insertion in the Open Days among the general audience	Working amongst others the same age: origami
Minors at risk of social exclusion	Collaboration with the activity in Day Centres	Specific materials
Rehabilitation Patients	Collaboration with the activity of the centres	
Convicts <sup>6</sup>		
Migrant groups	Guided visits	Intercultural connections
Patients with various mental disorders	Activities in small groups	Personalization of educational interventions
Patients with Alzheimer's	Adapted activities	Stimulus and social insertion
Elders		
Handicapped		
Patients in the Pediatric Hospital	Activities in the centres	

Among the groups that were addressed through the WELCOME project, two had a particularly significant role: the visually and hearing impaired. This was due mostly to the involvement of experts interested precisely in the design of actions and initiatives dedicated to their inclusion. In addition to being the final users of these dedicated proposals, they were also included as co-protagonists of the designing of these proposals.

One of these special collaborations happened with the Unione Italiana Ciechi e Ipovedenti. Their help was fundamental in projecting and designing dedicated resources like captions and guides in braille, with both texts and, eventually, figurines, to make some itineraries in the museums available to the visually impaired.

The case of interactive museums, like the Giardino di Archimede, some contents are already available to tactile exploration. The itinerary dedicated to the Pythagorean Theorem, for example, consist of wooden puzzles, which are entirely usable by the visually impaired. Captions and instructions for the puzzles were translated in braille, so that total autonomy can be achieved

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<sup>6</sup> Some of these experiences ended well, while others were stopped by bureaucratic and technical difficulties.

throughout that part of the visit, with or without help from the staff or facilitators. Until now just a part of the itineraries are available to the visually impaired without accompanying persons.

Some interventions can help approaching parts of the exhibitions, for example the 3D printing of different geometrical objects, in scale, so that they can be directly handled for tactile exploration.

The contribution of the Unione Italiana Ciechi e Ipovedenti has been essential in testing the success of these resources, in which some specific properties like the roughness of the finish or the dimensions of these objects could make their interpretation more difficult. Their contribution was important, in general terms, in understanding how to use these old and new resources better. These materials can mostly only work when the museum facilitator can relate to the experience of the visitor.

Some resources like 3D Prints can have multiple and inclusive functions too: they are useful for the visually impaired, they can be an invitation to tactile exploration for any kind of audience, they can reinforce geometrical and special imagination, they can be exhibits to be carried even outside the physical museum.

In order to promote the accessibility to the hearing impaired a collaboration with a Sign Language interpreter was activated. Some museums implemented visits for the hearing impaired with the presence of the SL interpreter.

Some video presentations<sup>7</sup> of the different museums for hearing impaired were produced. In some cases, the videos had captions, in some cases accompanied by an SL translation. These videos were produced with the help of both the interpreter and a video operator who was hearing impaired himself, in the perspective of a participative.

Other resources include audio-visual guides. Again, the idea was to provide a tool that could be useful to the widest audience. The presence of both audio and video allows its use by those with auditory or visual disabilities. In order to overcome the linguistic barrier, we also aim to expand the available languages. Future plans for the inclusion project in the WELCOME network are related to socio-linguistic barriers, addressing linguistic minorities with difficulties integrating in the local cultural scene.

The project also foresees training for the museum personnel aiming to improve the treatment of audiences with special needs.

Training activities were a very important step, considering the specific aims of the project, focusing on a sector of the audience with physical, mental or social difficulties.

In order to assess the success of the project, an evaluation study was commissioned, with interviews and questionnaires to the participants. The cooperation between different kinds of museums, with strong contact points between didactic methodologies and educators and the management result in a tremendous success for the project. Each and all of the museums involved in the project had a mutual, common, solid ground for work, allowing experimentation with various types of audience.

In general, feedback from the visitors in the museums involved in the WELCOME project has been strongly positive, with respect to both the museum personnel (reception, guiding and competence in both subject and communication) and the museums themselves, which were deemed stimulating in both content and interaction. A point of interest shared and widespread across the comments from visitors is connected to novelty: the discovery of something new, never seen or heard before, not yet

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<sup>7</sup> <https://welcome-musei-firenze.blogspot.com.es/>

learnt, new concepts and notions has been the most appreciated point for all kinds of audiences. The novelty is often referred to as the main reason motivating their enthusiasm: museum experience means learning new things.

Other museums with a deep hands-on character, such as the Museum of Mathematics in Catalonia, have had similar experiences (with the visually or hearing impaired, the elderly, groups of children at risk of social exclusion, people with physical and psychological difficulties, convicts, ..), by exploiting the "natural" accessibility of their exhibits or adapting them when needed. The impressions obtained coincide with those collected from Florentine experience.

As already mentioned, the creation of a network of institutions allows a stimulating complicity between specific languages, increases the capillarity of intervention, multiplying both qualitatively and quantitatively its value.

Our hope is that future implementations and development coherent with the guidelines of a project like WELCOME can transform a visit to a museum into an experience where everyone can feel like a protagonist.