



Home
of 21st Century
Education

Part 3
Practical
Guidebook

Sarai Lenzberger

Museums in the 21st Century
Pioneers of Education



hands on!

21st Century Children

International Association
of Children in Museums

Table of Contents

Unlock your superpower	4
Children in museums	9
Target group, Children's Museum	10
Children-focused museum work, Children-friendly museum	11
Legal types, funding & partners	12
Potential funding sources	14
Partners	15
Forms of children-focused museum work	16
Educational approaches	20
Hands-On! Minds-On! Hearts-On!	22
Progressive education	22
Expressionists & Art education	25
Techniques for children-focused museum work	25
Design	29
Dramaturgy, Sensorimotor skills, Scenography	30
Quality standards	31
Directory Homes of 21 st Century Education criteria	32
How to get certified	35
Resources & further reading	36
Sources	40

Unlock your superpower

This guide is a capacity building tool for everyone interested in starting, running or enhancing an organization dedicated to children-focused museum work.

Collecting, comparing, and distinguishing approaches of children-focused museums from different parts of the world is a great opportunity to learn. Regardless of the fact that they might serve different communities with different needs and issues, there are many elements they all have in common. The aim behind sharing knowledge and ideas through this publication is not to standardize offers, but to inspire individual solutions by recording contemporary practices of the field.

Over the past decades, applying an interactive Hands-on approach and focusing on children turned from a niche within the museum sector to a mainstream practice. Nonetheless, children-focused museum work is still lacking elaborated international working standards and mapping.

Even though Hands On! International Association of Children in Museums has been connecting the community by organizing networking and training opportunities for more than 25 years, no comprehensive written recordings of this knowledge have been kept.

In the past, expertise and knowledge were usually tied to dedicated individuals, and with them leaving the field most of their knowledge was lost.

Therefore, successors or new initiatives often find themselves forced to reinvent the wheel, instead of being able to build upon what was already created in the past.

The following collection of types and approaches used in children-focused museum work is based on unwritten knowledge and existing resources gathered by Hands On! International office over the course of the past three years. As our office is currently based in Austria, we considered sources in English and German language.

We are convinced that children-focused museum work can serve society by utilizing the sector's unique abilities to effectively tackle contemporary challenges.

But what are these superpowers of children-focused museum organisations?

To uncover these one-of-a-kind potentials, let's have a closer look at the overall development of the sector's roles and responsibilities in society.

The following generation model of children-focused museum work is inspired and based on ideas of Gail Dexter Lord¹, which were developed further and expanded with the 3rd generation as part of the 21st Century Children project.



First Generation: interactivity/play

Focus: Hands-on

The first generation of children's museums, which lasted from 1899 to the 1980s, was tailored to the needs of the industrial economy. 'The industrial economy required children (and adults) to be compliant learners, who follow set directions.'¹

Children's museums were focusing on providing learning environments tailored to children's needs and abilities and playfully teaching them how to adopt expected behaviour and views.

Second Generation: interactivity/play & knowledge/critical thinking

Focus: Hands-on, Minds-on

Around 1970, the sector entered the second generation, featuring a broader range of topics, and following an approach of offering multiple perspectives by asking critical questions and demanding the reflection of one's own behaviour.

The need for critical thinking corresponds with society transforming from the industrial economy to a post-industrial 'knowledge economy'², where everything evolves around the power of assessing, processing, and possessing information.

It is not a coincidence, that the children's museums boom starting in the 1990s falls right into the time of the adoption and ratification of the UN Convention on the Rights of the Child, indicating the emancipation of second generation children's museums from classical museum values to becoming true advocates for children.

Third Generation: interactivity/play & knowledge/critical thinking & soft power/change agents

Focus: Hands-on, Minds-on, Hearts-on

Today, twenty years into the new millennial, we are once again confronted with the need to take the audience-orientation movement even further by replacing outdated educational and institutional paradigms and finding adequate ways to address new societal demands. This urgency to offer new approaches to stay connected to contemporary society becomes evident in many ways and is mirrored in current discourses of the cultural scene, like the infamous debate about adapting ICOM's museum definition.

The added conjunction Hearts-on represents the new focus on fostering soft power by taking on the role of change agents. Sensing what a society will need in the future to respond to the constant information and sensory overload of our disposable society is due to mark another chapter of children-focused museum work.

Catering to the immediate needs of communities, has become even more relevant throughout the global Covid-19 pandemic. With children-focused museum work being once again at the forefront of coming up with new ways to meaningfully serve community by becoming *Homes of 21st Century Education*.

The global vision of *Homes of 21st Century Education* was created within the scope of this project. It is intended as a call to action: unlock your superpower, be a change agent, empower children, and test new means of informal education!

We encourage and dare museums, galleries, and science centres to take on the role of change agents, by meeting the immediate learning needs of children and thereby future-proofing next generations.

Sarai Lenzberger

Hands On! International Association of Children in Museums Office
Cultural scientist & children in museums enthusiast

¹ Ibid.

² Ibid.





Children in museums

Target group

The main target group of children-focused museum work can be split up as follows:

- **Babies & toddlers, 0–3 years**
- **Non-readers, 3–6 years**
- **(Primary) School children, 7–10 years**
- **Pre-teens 10–12 years**

It makes sense to highlight pre-teens as an additional group, because experience has shown that this age group no longer wants to be called 'children', while still having similar learning needs as the school children cohort, and therefore must be addressed differently.

- **Teenagers**

They no longer identify as children and their cognitive abilities along with their learning needs and interests significantly differ from other age groups. Therefore, they can only be added to the core target group to a limited extent. However, some organisations reach them by using terms like 'youth museum' and offering separate spaces, programmes and marketing strategies.

Generally, it is important to highlight that teenagers are the most neglected age group in today's museums, galleries, and science centres, especially when it comes to offers for individual visitors. The lack of adequate offers when they grow out of children-focused settings, but are not yet met with offers for adults, carries a high risk of losing them altogether once they grow into adults.

- **Adults**

Although the child is the focal point, adults usually organise the visit to a cultural institution. Therefore, a children-focused museum must also function as a family place, serving an intergenerational audience. Additionally, it is important to acknowledge the fact that concerning offers for children, the communication channels mainly go through adults.

Furthermore, especially when it comes to strategies and decisions regarding marketing, communication channels and pricing, we recommend distinguishing between target groups such as frequent visitors, occasional visitors, and potential visitors.

Children's museum

In general, we can outline children's museums as hybrids of museums, leisure time places and extracurricular early learning facilities, that utilize culture as a social experience to foster learning through exhibits and other visitors.

Like the term museum, children's museum is not a protected name. To help specify this type of institution and distinguish between high-quality offers of informal education and more casual forms of children's entertainment, ACM (US association of children's museums) has created a short profile for children's museums featuring the following definition:

'A children's museum is defined as a non-profit educational and cultural institution committed to serving the needs and interests of children by providing exhibits and programs that stimulate curiosity and motivate learning. Children's museums are unique community institutions where...

- *Children are valued citizens with the right to developmentally appropriate and high-quality learning experiences.*
- *Play is learning, and it is critical to the healthy social, emotional, and cognitive development of children.*
- *Family, culture, environment, and society are recognized as critical factors in all children's lives to effectively serve them.*
- *Pursuing equity and inclusion is a best practice that reflects a commitment to serving all children and families and advancing the growth of our field.³*

Children-focused museum work

Evidently, the children's museum movement has led to a large-scale rethinking and boost of innovation throughout museums, galleries, and science centres. Today, visitor-centred programming for an intergenerational audience, interactive hands-on exhibitions and playful approaches are to be found in a multitude of cultural organisations and not limited to classical children's museums. To better reflect the various types and forms of the sector, we have chosen the term 'children-focused museum work'.

This definition includes all organisations who aim to equip children to actively co-create a more sustainable society by offering individual education based on a combination of high-quality interpretation and joyful engagement with tangible and intangible heritage. Namely, children's museums, museums, science centres, galleries, and similar cultural organisations with a particular emphasis on permanent heritage-based and interactive children's programming.

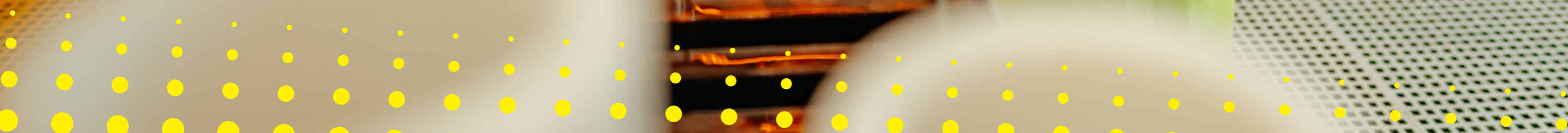
Children-friendly museum

This concept marks a stepping-stone and crucial element to become a children-focused organisation.

A children-friendly museum aims to offer a welcoming and accessible infrastructure for children and families. This includes features such as: baby changing facilities, breastfeeding/feeding areas, booster seats in restrooms, stroller parking areas, family tickets & reductions, co-operations with local family pass schemes, picnic areas, highchairs in café areas, child-proof interior, child-friendly attitude & communication style of frontline staff, and family tours.

³ ACM: What is a children's museum? <https://childrensmuseums.org/wp-content/uploads/2021/11/ACMFourDimensionsofChildrensMuseums.pdf> [last accessed: 10.03.2022]

Legal types, funding & partners



There is no stipulated legal type for children-focused museum work. First and foremost, the suitable legal structure for every children-focused museum organisation depends on national laws and legislation. Given the international nature of Hands On! International Association of Children in Museums and this guidebook we cannot provide detailed universally applicable information on legal frameworks. Therefore, this is a generic overview of options we recommend start-up organisations to explore further through individual research.

Overall, the legal type for an organisation should be chosen based on the goals and strategies outlined in the business plan. Especially factors such as profit distribution, liability, earmarked funds, requirement for initial capital, not for profit exigencies, and governance structure should be carefully taken into consideration before determining a legal type for an organisation.

In general, we can distinguish between two superordinated organisational categories in children-focused museum work:

- **autonomous organisation**
no superordinate entity/ownership, usually in the form of NGO/NPO: clubs, foundations, limited liability company/close corporation, etc.
- **part of an overarching entity**
e.g., part of public entity, part of traditional museum, publicly owned, part of overarching association, part of cooperate brand/company, etc.

Naturally, the chosen legal structure of your organisation will also impact the form of financing of your organization. Funding options are also highly dependent on the individual business plan and national legal framework. Most organisations secure their funding through a mix of sources, this also holds the benefit of functioning as a safeguarding instrument, in case one financing source temporarily or permanently is not available.

Potential funding sources

- **Public:**
e.g., allocated budgets (if part of public entity), subsidy
- **Sales:**
e.g., tickets (entry fee, attendance fee), shop/gift items, hospitality-related income (café, buffet, restaurant, packaged snacks), special events (birthday parties, Christmas parties, fundraisers), consulting services
- **Grants (public and private):**
regional, national, EU and other funding schemes

e.g., EU grants:
Citizens, Equality, Rights and Values Programme
Creative Europe
Erasmus Plus
Global Europe -Neighbourhood, Development, and International Cooperation Instrument
Horizon Europe
New European Bauhaus
Single Market Programme

e.g., special grants for Central Europe
Visegrad
CEI- Central European Initiative
(For more information on grants scroll to the 'resources' section of this guide)
- **Sponsoring**
e.g., permanent partners/house partners, foundations, exhibition sponsors, programme sponsors, barter deal/goods sponsoring

Partners

Especially when building a children-focused museum (entity) from scratch, local partners are crucial to help establish the organisation. These partnerships can have various forms and cover a multitude of areas.

- **Individuals**
(e.g., patronage, supporters, public personas)
People who are really invested in the idea of your organisation, and help highlighting the value and relevance of the project as lobbyists towards decision-makers and a broader public.
- **Cultural organisations**
(e.g., libraries, theatres, museums)
Local partner organisations can share venues, expertise, and audiences. These kinds of partnerships open up various opportunities to complement each other's offers and reach out to local audiences.
- **Public governance departments**
(e.g., ministries, bureaus, departments for families and children, education, culture) & local NGOs/NPOs dedicated to children's rights, play, etc.
These kinds of partners can help with disseminating your offers, reaching potential target groups, exchanging knowledge and expertise, and reaching institutions of the formal education sector.
- **Formal education institutions**
(e.g., schools, preschools, kindergartens)
These are partners that can help you secure visitors and reaching children from various areas and backgrounds.
- **Research institutions**
(e.g., universities)
Research partnerships can help establish and conduct scientific and high-quality evaluation procedures and feedback loops and ensure staying on the cutting-edge of children-related research and findings.

Forms of children-focused museum work



Children-focused museum work comes in many forms, as concept-wise and content-wise the landscape is highly diverse. Due to the great variety of cultural and political contexts, there is no such thing as one core-concept that works for all regions and organisations. Additionally, being confronted with such diverse audiences and topics often rooted in very regional conditions, most concepts are not transferable without major adjustments.

Nevertheless, during our 21st Century Children project, we tried to narrow down individual concepts of children-focused museum work to a list of generic types. Whenever put into practice, organisations often use hybrids of the types listed below to better meet their local needs.

Universal children's museum

A stand-alone children's museum covering a wide range of content areas and topics closely connected to the living realities of children. Topics range from arts to humanities, cultural history and science, social issues and every-day life. Contents are conveyed through permanent and changing exhibitions, workshops, and programmes.

Topic-focused children's museum

A children's museum dedicated to a certain overarching topic area such as arts, history, science, medicine & human body, world cultures, books, or emotions. All contents are somehow rooted and connected to the topic of choice, using exhibitions, themed play areas, workshops, and programmes.

Inhouse children's museum

A children's museum with its own spaces, galleries, or building, housed and run by a classical museum, gallery, or science centre. It has a permanent team of staff with a professional background in education, and often maintains its own educational collection. The contents are loosely or closely connected to the topics, collections, and exhibitions of the parent entity. Annual themes or other major events of the overarching cultural entity are picked up and reflected in the programme.

Children-only museum

Children's museums and/or exhibition areas that can only be accessed by children of a certain age group. Parents, caregivers, and siblings below or above the targeted age cohort cannot enter. Usually organised as a timed programme run with a fixed start and end date. Sometimes there is a show-and-tell element at the end where parents, caregivers and siblings are presented with outputs of the programme.

Mobile/pop-up museum

A travelling children's museum with no permanent home venue. They usually travel to schools, libraries, community centres, cultural centres, or public outdoor areas. In contrast to travelling children's exhibitions,

mobile children's museums also supply staff members with educational expertise, who convey contents and conduct supporting programmes such as tours and workshops. Some concepts also rely on education staff of venue partners (e.g., schoolteachers, library staff with pedagogical backgrounds) and provide detailed educational materials and guides to ensure their overall concept is applied by the staff members of local partners as intended.

Family museum

A family museum is a classically rooted museum, gallery or science centre organisation which has adapted its whole facility for an intergenerational audience. It usually offers multiple information strands evolving around a central topic (e.g., natural or cultural history, science, arts, etc.) in various difficulty levels and a compound of non-tactile, interactive, and Hands-on exhibits.

Children's exhibitions (hosting)

Traditional museums, galleries, science centres, libraries or cultural centres that regularly or permanently host changing travelling children's exhibitions. These exhibitions are created by external children in museums experts (often by children's museums, exhibition planning companies or mobile children's museums) and are carefully chosen by the local team. The content and design is usually slightly adapted to better meet the requirements of the local venue and audience. In contrast to mobile/pop-up children's museums the educational supporting programmes and workshops are developed and conducted by the inhouse education team.

Children's exhibitions (development, concept, design)

Developing children's exhibitions complete solutions for other organisations to host temporary or permanently is usually a task either conducted by a children's museum as part of their business model or specialist exhibition developing freelancers or companies. The exhibition concepts are either created proactive by the developing organisation or placed as pre-orders by the buyers.



Children-focused programmes inhouse

These children's programmes are usually offered by traditional museums, galleries, and science centres to break down their adult-focused contents to children and make their collections and cultural heritage more accessible to young visitors. This is done in the form of activities like workshops, guided tours, scavenger hunts, kids' paths, activity stations, and toolkits. The programmes are created and conducted by the organisation's permanent education department.

Children-focused programmes external

Children-focused workshops, tours, activities, activity stations, and toolkits in connection with the contents offered for an adult audience are created and conducted by an external specialist provider. This consulting organisation designs, creates, and implements heritage-based children-focused activities for various museums, galleries, and science centres.

Children-curated spaces

A co-creative museum or gallery space inviting children to express and exhibit their own thoughts and ideas through artistic creations and DIY exhibits. Depending on the concept, children are in charge of design, contents, and installations. These spaces are either created with a certain group of children over a predefined amount of time with a final output or are very dynamic and can be manipulated, adapted, changed, pivoted and (re)created by every individual visitor.

Children-themed museums

These organisations include childhood museums, toy museums, play museums, children's book galleries and similar cultural organisations. Despite their overall theme being closely connected to children, they are not necessarily focused on children as a primary audience or apply state-of-the-art children-focused approaches. Some concepts are in fact children-focused, pairing their children-themed collections with the 'Hands-on, Minds-on, Hearts-on' approach to create a meaningful and future-oriented learning experience for children.

Educational approaches



Hands-on, Minds-on, Hearts-on

The educational concept of today's children-focused museum organisations is based on the 'Hands-on, Minds-on, Hearts-on' approach, which is play-based and combines child-led tactile-cognitive experiences with emotional experiences to create ideal learning moments. Engaging cultural Hands-on experiences are used as impetus for learning and gateway to encourage the individual exploration of a topic.

The idea of children requiring other learning settings than adults developed in the 19th century along with the perception of childhood as an independent stage of life, separate from adulthood⁴. Even though often overlooked or not taken seriously as long-standing pioneers of the museum sector, children's museums are historically closely interlinked with the standardization and professionalisation of the international museum industry, especially regarding museum education.

It is an important but little-known fact that when ICOM- the International Council of Museums was founded in 1946, they had a Children's Museums Committee- notably with a female chair and mostly female members- proving the early significance and influence of children-focused museum work.⁵

However, the state-of-the-art play-based approach was only established 30 years ago. When Michael Spock from Boston children's museum got rid of all display cabinets and created an exhibition around a topic particularly relevant for children ('What's inside?'), which would probably not be considered as museum-worthy for adults in the 1960s, a new era began for museum education and exhibition-making. Children's museums turned into educational institutions which offer content *for* someone, rather than *about* something.

In the 1990s, when the European children's museum movement gained strength, a redefinition of the Hands-on approach was necessary to pay respect to the fact that Hands-on activities *can* be an impetus for learning, but not necessarily always *are*. Hence, the adjunct 'Minds-on' was added to highlight the importance of fostering learning and conveying knowledge. The latest addition 'Hearts-on' emphasis on invoking an emotional connection and empathic resonance. Today's children-focused museum education is based on this three

pillars approach (tactile, knowledge transfer/learning, meaningful experience /socio-empathic component), which regards play as major learning strategy of and for children.

Using a mix of cognitive stimuli (tactile, social, knowledge, instinct-based, visual, emotional) paired with a multidisciplinary compound of reform pedagogy, holistic approaches, creative methods, innovative design and ancient cultural techniques, children-dedicated museum projects offer high-quality learning experiences, tailored to meet the specific needs of their visitors.

Hands-on, Minds-on, Hearts-on exhibitions and formats aim to enable learning by functioning as mediators between an actuality and the child and are therefore closely associated with reform pedagogical approaches.⁶

Before any further in-depth explorations of the educational approaches in children-focused museum work, we need to establish basic working definitions of three generic terms:

Interaction

Actively engaging a visitor physically, intellectually, and emotionally.⁷

Play

Play is a child's main method of accessing, discovering, and communicating with the world. By combining intrinsic motivation, joy and repetition, positive and successful learning experiences are enabled.

Immersive stories/experiences

Immersion describes the effect of creating a holistic artificial environment so appealing that it causes the visitor to perceive it as an additional reality.⁸

Immersive stories serve as framework, guiding system, and impetus for learning. They can encourage participation and inquiry-based learning, and offer the emotional connection necessary for a successful learning experience.

Progressive education: theories, methods & types

The terms progressive education and reform pedagogy can be used to describe a wide range of alternative

educational approaches and ideas, opposing the classical rote-learning and ex-cathedra teaching and learning concept. The following list of child-centred and child-led progressive pedagogies⁹ ¹⁰ is a non-exhaustive collection of theories, methods and types influencing and inspiring children-focused museum work.

Johann Amos Comenius (1592–1670) Didactica Magna (Great Didactic), can be regarded as the first charter of childhood. He propagated universal education for children of all social classes and genders and established a child-based focus on education, which can be regarded as the starting point of progressive pedagogies.

Jean-Jacques Rousseau (1712–1778) built upon Comenius' ideas. In his 'Emile or on education', he propagates childhood as the most important stage of life when it comes to learning, the idea of an individual education, considering the character of a child and emphasising inquisitive learning, and allowing students to make their own experiences, rather than just telling them what is right or wrong.

Johann Bernhard Basedow (1724–1790) created a series of ground-breaking pedagogical books, outlining the major areas and questions of childhood education and guidelines on attitudes teachers should show towards young learners, including the paradigm of breaking down complex topics for children and applying a child-friendly language.

Christian Gotthilf Salzmann (1744–1811) started out as an avid critic of contemporary education of his days and developed an ethics-based, holistic, and ability-centred pedagogical approach. The educational facility he founded took on a pioneering role in creating comprehensive and children-friendly textbooks.

Johann Heinrich Pestalozzi (1746–1827) established the family as the first informal learning setting. He introduced the term 'education of the heart', which together with intellectual knowledge and artistic education should empower children to grow into self-reliant adults. His pedagogic theories also heavily influenced the development of the social pedagogy and curricula development for physical education.

Friedrich Fröbel (1782–1852) was a student of Pestalozzi and introduced play as main mode of explora-

tion-led learning as a pedagogical standard, along with creating a detailed catalogue of games, songs, stories, and other play-based learning materials, which are tailored to meet the specific learning needs of children of various age groups.

Francis Wayland Parker (1837–1902) has established a curiosity-rooted approach based on his practical teaching experiences. His 'quincy method' led to the first major reformation movement of the US school system and teacher education.

Paul Robin (1837–1912) was a French anarchist pedagogue, who was dedicated to mainstream a co-educative and collective/democratically organized teaching approach with a special focus on combining theoretical knowledge with practical life skills (craftmanship).

John Dewey (1859–1952) established the term 'learning by doing' and heavily influenced the democratization of the US school system. For Dewey education and learning are social and interactive processes, that are enabled through problem-solving-based thinking.

Cecil Reddie (1858–1932) founded the progressive Abbotsholme School. Physical punishment was banned from the campus, fine arts and craftsmanship introduced as main subjects along with a focus on languages. The school also made history by offering the first sex education course in the country.

Rudolf Steiner (1861–1925) founded the Waldorf pedagogy, which is based on his own holistic philosophical approach called 'Anthroposophy'. The main aim is to 'provide an education that enables children to become free human beings'¹¹. For Steiner personal freedom and developing a strong spiritual identity are interlinked. The fact that this pedagogy derives and is rooted in spiritualism makes the Waldorf pedagogy one of the most controversial offshoots of progressive education.

Maria Montessori (1870–1952) created her pedagogical approach based on the natural development of a child with the famous credo 'help me to do it by myself'. For her the impetus for learning always lies in the living world of children and is brought to them through the so-called 'prepared environment'. This learning setting, which is based on the principles of

4 König, Gabriele: Kinder- und Jugendmuseen. Genese und Entwicklung einer Museumsgattung, pg. 29.

5 ICOM: Children's museums committee – icom.museum/en/news/women-in-museums-margaret-m-brayton-and-the-childrens-museum-committee-of-icom/ [last accessed: 28.02.2022]

6 Köhler Kroath, Nikola: Exhibits im Kindermuseum – Vermittlung in einer Hands-on-Ausstellung, pg. 62

7 Adams, Marianna/ Moussouri, Theano: The Interactive Experience: Linking Research and Practice. in: Interactive Learning in Museums of Art and Design. International Conference.

8 Wally, Teresa: Der kindermuseale Raum, pg. 84

9 cf. Pfeiffer, Silke: Reformpädagogische Konzepte. Geschichte und Theorie der Frühpädagogik.

10 Wikipedia: Progressive Education – en.wikipedia.org/wiki/Progressive_education [last accessed: 10.03.2022]

11 Wikipedia: Waldorf education – en.wikipedia.org/wiki/Waldorf_education#Educational_theory_and_practice [last accessed: 09.03.2022]

continuity, progressivism and simplicity allows children to unfold their full potential as competent learners. In connection with these core principles and her theory of sensitive periods, which provide intrinsic motivation for reaching developmental milestones, Montessori developed a wide range of teaching tools and materials.

Alexander Sutherland Neill (1883–1973) was the founder of Summerhill school, which aimed to create a positive, community-focused, happiness and well-being focused and democratic learning environment for students.

Helen Parkhurst (1886–1973) created her 'Dalton Plan' pedagogy based on her experiences working for Maria Montessori, and the first reform movement of the US school system. Dalton Plan is centred around the banishment of frontal teaching in favour of independent learning. The core principles of the plan are unguided student-led learning, peer cooperation and individual time budgeting.

Elfriede Hengstenberg (1892–1992) was a human motion educator who established a practice-oriented play and movement concept along with children-friendly gymnastic equipment to encourage the ideal development of children's motoric and physical skills.

Lev Vygotsky (1896–1934) was a psychologist focused on child-development. He made pioneering contributions to the theory of consciousness, special needs education, the relationship between language development and consciousness, and to the general developmental psychology of the child.

Célestin Freinet (1896–1966) & **Élise Freinet** (1898–1983) combined various reform pedagogical elements into one comprehensive teaching and schooling concept. Children are encouraged to follow their own interests in self-directed work within the framework of the lessons.

Jean Piaget (1896–1980) was a developmental psychologist who developed cognitive development theory, a theory on the nature and development of human intelligence, outlining various stages of human development and proving children are not 'little adults', but mark a separate stage of cognitive development.

Emmi Pikler (1902–1984) was a paediatrician who focused on infant and early childhood development.

Her pedagogy is based on the theory of free movement development, which encourages parents and caregivers to not intervene with a child's natural development of gross-motor skills. The core principle is that infants should never be brought into positions they cannot reach themselves (e.g.: helping a child into a sitting or standing position). Additionally, free play and relationship-based care are important pillars of this approach.

Jerome Bruner (1915–2016) was a psychologist who made important contributions to cognitive learning theory. Regarding learning theories, he introduced the spiral curriculum as a teaching approach, where each thematic area is revisited at intervals. He also pathed the way to mainstreaming project-based learning into formal education by advocating for exploration as crucial impetus for sustainable learning processes.

Loris Malaguzzi (1920–1994) created 'Reggio', a unique concept in which the entire societal environment takes on the responsibility for the individual education of each child. Reggio pedagogy represents the image of the competent child who actively advances his or her own development and explores the world independently, while the caregivers support the learning process as peer, sparring partner and researcher. Respect and appreciation of the family and the child's culture of origin is also an important component. To preserve the flexible and dynamic make-up of the concept, the principles of the Reggio pedagogy deliberately are not recorded in an official written publication.

Howard Gardner (1943) is a developmental psychologist who developed the theory of multiple intelligences. His theory offers an alternative concept to the IQ-centred definition of a person's intellectual capacity by outlining several distinct types of intellectual competencies which function independent from one another.¹²

John Falk (1948) & **Lynn Dierking** (1956): are leading experts and researchers on free-choice learning, a mode of learning guided by a person's needs and interests, especially within a museum context.

Expressionists & Art education

Parallely to the progressive education movement of the 20th century, expressionist artists, such as members of the blue rider group (Kandinsky, Marc, Klee) also picked up the idea of encouraging the natural curiosity of children. The group in fact named children as one of their greatest sources of inspiration and role models. These progressive ideas were carried on by the alternative movements of the 1968 generation, leading to a great variety of projects dedicated to children. Artists and art educators tested new ways of engaging children in cultural life. Some established as lasting institutions like art schools or creative workshop centres, but most of them were temporary projects in the tradition of performance and happening art. Even though these projects certainly had exhibition-like elements and related to the museum sector, they were neither directly associated as museum programmes nor connected to traditional museums.

In the traditional museum sector, the art education movement pathed the way towards audience and youth-oriented approaches. The main aim was to get children and young people in touch with art. **Alfred Lichtwark** was one of the first museum directors in Germany to permanently implemented this new approach in his museum.

Techniques for children-focused museum work

One of the key characteristics of children-focused museum work is the unique mix of educational techniques. The techniques below are listed in alphabetical order and might not be exhaustive. All techniques are general practices which are implemented in various ways in children-focused museum work and are often combined to better meet the needs of a specific target group and create one-of-a-kind heritage-rooted learning experiences.

Aesthetic practises

Using cultural heritage techniques such as art, dance, music, film, literature, handicraft, new media, architecture, new art forms, but also circus, urban culture, contemporary and ancient sub-cultures, and similar modes of cultural expression as tools to convey knowledge and access culture.

Case studies/scenarios

These educational practises encourage empathy and reflection to convey a deeper understanding of a topic at hand. Participants are presented with a character or actual situation, whose role or point of view they are asked to represent or consider in a specific scenario. Roles can come along with a set of rules and restrictions, which must be considered when deciding how the character should react. All decisions have consequences and often present the participant with a dilemma¹³. Giving participants a crucial role in finding solutions encourages them to reflect on the possibilities and consequences of their decisions. This method is not to be confused with role play, as the focus is not on acting out the role. Instead, decision-taking, reflecting, and discussing the social and economic status and scope of action of a character are the main elements.

Co-creation

This participatory bottom-up approach actively involves the target group in the creation of the educational content. In children-focused museum work this means, young visitors take on an important role in the development process of an exhibition or programme. They can be included or consulted in various ways at different stages of the project: thematic research, content development, design, prototyping, testing, etc. Co-creation goes beyond mere collaboration like asking for feedback or conducting test runs with a children's council. Instead, children should be offered the opportunity to truly contribute and shape parts of the project, while their preferences and working pace are cherished.

Digital learning

Digital media is used in children-dedicated museum work to encourage individual interpretations and engagement with content, to increase the attention span of visitors, to visualise complex subjects, and as an outreach tool. Additionally, digital learning plays an important role in ensuring accessibility. Digital tools are utilised to facilitate life-long learning. They function as a response to an increasingly digital learning environment and enhance the overall learning experience. From touchscreens and tablet computers to robots, VR, AR, apps, virtual tours and smart exhibits, digital learning in museums has many faces and is one of the fastest evolving educational practices of the 21st century.

¹² Wikipedia: Howard Gardner https://en.wikipedia.org/wiki/Howard_Gardner [last accessed: 10.03.2022]

¹³ Andersen, Kåre & Bager, Marianne & Laurs, Anneken Appel: History conveyed through dilemma-based communication. A toolbox for museums and schools, pg.6

Enquiry-based learning

Enquiry-based learning is an educational method based on self-directed exploration or research by the learner. Presented with a general theme, children are encouraged to identify their own issues and questions. They then examine the resources they need to research the topic.¹⁴

An important aspect of enquiry-based learning is the use of open learning, which has no predefined outcome or result which children are simply asked to confirm with their research.

'In open learning there are no wrong results, and students have to evaluate the strengths and weaknesses of the results they collect themselves and decide their value.'¹⁵

One of the most renowned enquiry-based learning styles is project-based learning.

Gamification

Gamification is the application of game design principles, game design thinking and game mechanics to non-gaming applications and processes to solve problems and engage participants.¹⁶

Gamification can be implemented in various forms – digital and analogue. Common elements used in museum work are points/scores, badges, riddles, quests/challenges, leader boards, individual performance feedbacks and teams.

Media-based learning

These are educational practises based on the individual or guided exploration of books, magazines, video clips, audio files, documentaries, digital libraries/databases or online contents.

Nature play/outdoor play

Nature play allows children to experience nature and can have physical, cognitive, and emotional benefits such as risk taking, discovery, exploration, imagination, sensory stimulation, development of physical skills, teamwork, and cooperation. Increasing urbanisation and smaller backyards have significantly reduced children's daily contact with the natural environment and their connection with it, therefore museums take on an important role in offering nature experiences to children.¹⁷

In our context the term 'nature play' includes any form

of outdoor play, outdoor-like play, and the (indoor) use of natural materials such as wood, stones, sand, and water.

Object-based learning

The object-based learning method uses objects to facilitate learning. Objects come in various forms, such as collection items, facsimiles, everyday objects, symbolic representations, but the method typically involves visitors handling and interrogating physical artefacts. The use of objects can act as multi-sensory tool to promote learning and engagement.¹⁸

Objects stimulate imagination and help transfer and apply newly gained knowledge to other contexts. They can be used in multiple ways and offer an authentic and often tactile experience combined with encouraging associative processes, which fosters a deep understanding.

Open-ended play/loose parts play

Open-ended play settings are environments that have no pre-determined limitations, instructions, rules, or pre-set sequential guides for children to follow or a set outcome.

Children are encouraged to make their own decisions and engage their creativity and imagination. Open-ended materials are non-descript items that a child can play with freely. However, they can be themed (e.g., different kinds of tree items like bark, wooden discs, dried leaves, little branches, and other wooden items in an exhibition about the forest).

Peer learning /intergenerational learning

The main concept of these methods is to encourage in-depth learning by facilitating learning between individuals. The museum and its staff transfer their sovereignty of interpretation to the visitors and merely provide the tools and platform to exchange knowledge, instead of ready-made explanations and perceptions along with a predetermined learning plan. Visitors serve as learning peers, guides, and learners alike.

In peer learning, children are encouraged to acquire and share in-depth knowledge with their peers. They become experts on a certain topic and are asked to find ways to convey it to other visitors.

Intergenerational learning is based on reciprocity and mutuality involving people of different age groups where the generations work together and benefit from

each other in terms of perception, learning methods and experiences.

Phenomenon-based learning

Phenomenon-based learning centres around the shared observation of genuine real-world phenomena. These phenomena are approached holistically from different points of view, crossing the boundaries between subjects naturally and integrating different topics and themes.¹⁹

These learning techniques share similarities with enquiry-based learning and are often implemented together. The major difference is that phenomenon-based learning always requires a global context and an interdisciplinary approach.²⁰ This means that a topic must be a real-world issue or "phenomena" and that learners are required to apply different perspectives to study the topic.

Role play

Role-playing games are a form of play which are encouraged and structured by pre-designed settings. The core of this immersive method is the playful exploration of different roles and characters, which helps children and adults alike to experience different realities and dive into a topic.

Storytelling

Storytelling is one of, if not the oldest cultural technique of humankind to convey knowledge. It generates memory and promotes learning. Similar to the construction of memory in the brain, storytelling works with emotional connection and associative processes. Dramaturgy and narrative elements are used to create subtexts that allow us to remember content over long periods of time.²¹ Even if the listener does not understand every detail concretely, they will still understand the core elements of the story.

In children-focused museum work stories are used in various ways: Oral storytelling, using narratives in exhibition design as a guiding system to provide an emotional connection to abstract concepts and content, object-led storytelling, visitor-led storytelling, story-based game design, etc.

Take-over (day)

Takeovers allow children to discover museums from

a behind-the-scenes perspective, by taking over the roles and jobs of adult museum workers. They get the chance to step into real-life decision-making positions in organisations for a predefined period.

Children gain valuable insights, and experience a workplace, while organisations benefit from a fresh perspective on their work.²²

Tinkering & Making

The tinkering and making approach is based on the realization that learning works best through trial and error and when involving all senses.²³

'Tinkering' refers to making small changes on something, often to repair or improve it. In the context of learning, tinkering is part of a trial and error-based process that rewards persistence, resourcefulness, and self-sufficiency. 'Making' is part of the DIY-culture and emphasizes learning through doing, often in a social environment. The term includes a set of multifarious activities from traditional crafting techniques to robotics and 3-D printing. Making activities are often peer-based and motivated by creativity, fun and self-fulfilment.²⁴ Tinkering and making develop the capacity for innovative problem solving by engaging children in projects that incorporate all STEAM topics (Science, Technology, Engineering, Art, Math).

In museum work, the term 'Tinkering' was introduced and developed as a museum education concept at Exploratorium science centre, San Francisco.

14 The University of Manchester: Enquiry-based learning www.ceeb.l.manchester.ac.uk/eb/ [last accessed 28.02.2022]

15 Wikipedia: Inquiry-based learning en.wikipedia.org/wiki/Inquiry-based_learning [last accessed: 28.02.2022]

16 Wikipedia: Gamification en.wikipedia.org/wiki/Gamification [last accessed: 28.02.2022]

17 Gill, Tim: Physical Play in a risk averse society [/rethinkingchildhood.com/](http://rethinkingchildhood.com/) [last accessed: 26.02.2022]

18 Weschenfelder, Klaus & Zacharias, Wolfgang: Handbuch Museumspädagogik, pg.220

19 Phenomenal Education: Phenomenon-based learning www.phenomenaleducation.info/phenomenon-based-learning.html [last accessed: 27.02.2022]

20 Järvinen-Taubert, Johanna: Why do we need phenomenon-based learning? learningscoop.fi/why-do-we-need-phenomenon-based-learning/ [last accessed 03.03.2022]

21 Wikipedia: Storytelling en.wikipedia.org/wiki/Storytelling [last accessed: 28.02.2022]

22 Kids in Museums: Takeover day kidsinmuseums.org.uk/what-we-do/takeover-day/ [last accessed: 28.02.2022]

23 Deutsches Museum: Tinkering www.deutsches-museum.de/angebote/schule-im-museum/projekte-forschung/tinkering/ [last accessed: 28.02.2022]

24 The Exploratorium: Tinkering Toolkit learningisopen.org/toolkit/tinkering-making/ [last accessed: 01.03.2022]

Design

Children-focused spaces in museums, galleries and science centres do not only rely on engaging exhibits to be interactive. The physical venue itself holds the potential of fostering interaction. Providing an appealing and atmospheric, yet functional and save space that enables and fosters various types of interaction is key to conveying the prepared contents.

A well curated and designed space creates natural encounter zones. Here, the old, the new, the unknown, the familiar and the surprising elements come together. The space offers children a protected environment in which they can explore, experience and wonder.

Creating appealing areas for children is a crucial step towards enabling a positive, holistic learning experience. When designing children's exhibitions and workshop spaces, we need to consider how children move: they sit, lie, and move on the floor, jump from elevated areas, climb, run, hide, swing, scratch, fiddle, and pick. Some age groups even tend to bite and lick their environment.

Providing a comprehensive guide on exhibition design, exceeds the scope of this guidebook and is a content area well covered by other resources. Thus, in this chapter we will focus on three core principles for children-focused exhibition design, which go hand in hand with educational content development and curation.



Dramaturgy

In exhibition design dramaturgy can be defined as a spatial and chronological sequence between a starting point and an end point.²⁵

Here it is yet again crucial to consider how children approach an exhibition setting with various offers: they most likely will not follow predefined orders or paths (unless enforced by guides or restrictive design), explore the room before settling in one area, drag loose items to other areas, repurpose items and interior, are drawn to bright colours or sounds and will be easily distracted by the plenitude of options or other visitors.

The overall aim is to build an arc of suspense on a meta level that covers all elements of the exhibition to create an atmosphere which pulls children into the topic at hand. Instead of arranging one independent phenomenon after another, a dramaturgic approach creates an overarching story-based setting through content and design elements.²⁶

Sensorimotor skills

Sensorimotor skills refer to the interdependency of sensory and motor functions. All learning fundamentally consists of a unity of knowledge and ability.

'Sensory and motor interaction provides for the foundation for a child's growth, development and learning within the world around them. Sensory stimulation/feedback and motor go hand in hand. The motor system drives the sensory stimulation and sensory stimulation/feedback drives the brain. It is critical for these skills to improve and develop to aid in behaviour and academic learning. Often, children struggling with learning or behaviour have inadequately developed sensory and motor systems.'²⁷

Hence, design features that stimulate and encourage the development of sensorimotor skills are essential in children-focused museum environments.

Scenography

Scenography can be summarized as the act of staging contents in multidimensional settings which can be physically entered and experienced by the audience. The goal is to create a sense of place through crafting holistic environments or atmospheres. Illustrations, pictures, art design, interior design elements, eye catchers, visual breaks, colours, fabrics, light, sound, digital media, films, and scents are used to craft immersive spaces.

In immersive exhibition spaces, the boundary between imaginary space and real space is deliberately blurred. The story-driven imaginative world becomes a multidimensional reality, visitors can literally step into. This emotionally and aesthetically appealing design approach is a powerful tool to accelerate the memorability of the contents offered by turning information into experiences.

Quality standards



²⁵ Hanak-Lettner, Werner: Szenografie, in: Handbuch Ausstellungstheorie und -praxis, pg. 156.

²⁶ Wally, Teresa: Der kindermuseale Raum, pg. 77f

²⁷ Pediatric boulevard: Sensorimotor skills pediatricboulevard.com/what-is-sensory-motor-and-why-is-it-important/ [last accessed: 28.02.2022]

Today, children and families are the fastest growing audience segment in the museum, gallery, and science centre sector. Additionally, education is recognized as a core function of museums by ICOM since 1961. However, until this project, there was no elaborated framework of international working standards for children-focused museum work.

We at Hands On! International are convinced that children-focused museum work is the key to replacing outdated educational paradigms and fostering skills children need to tackle contemporary challenges.

Together with our *21st Century Children* project partners Junges Museum Frankfurt and Sladovna Pisek, and dedicated members and colleagues from all over the world we have created a global vision of children-focused museums, galleries and science centres serving as change agents by being *Homes of 21st Century Education*.

This initiative aims to highlight the unique potential of places of cultural education by putting a spotlight on their capability as education pioneers for 21st century children.

Additionally, we provide an elaborated common ground and defining characteristics for these various forms of children-focused museums, galleries, science centres and similar organisations, paying respect to the wide range, whilst still making a clear distinction from other museum types and play spaces such as playgrounds.²⁸

Home of 21st Century Education aims to:

- Accelerate the want and need for children to co-create a more sustainable society.
- Offer a meta-vision for sustainability of the sector. Including: social sustainability, peace education, empathy, combating poverty, gender-issues, and tackling disadvantages on all levels.
- Highlight future-oriented informal education in museums, galleries, and science centres as a key to tackle contemporary challenges.

Organisations certified as a '*Home of the 21st Century Education*' are innovative learning spaces with children at the centre of their work. By encouraging playful engagement with cultural heritage, they equip children for a sustainable future of social, cultural, and environmental cohesion.

The manifesto of eight characteristics for *Homes of 21st Century Education* is accompanied by a catalogue of cri-

teria, which serve as a benchmark for high-quality children-centred informal education.

Directory Homes of 21st Century Education criteria

The following criteria are used to establish a common ground for all organisations interested in becoming a certified *Home of 21st Century Education*.

To help organisations to work towards meeting these criteria, we provide additional information, tips, and examples along with each criterion below.

Cultural gateways

- Regular opening hours/available to the public/permanency of offers

We are looking for organisations that are permanently committed to serving children as Homes of 21st Century Education. Therefore, one-time projects or organisations whose entire children-focused offers are only available to a very restricted group of visitors are not eligible for this scheme.

Generally, offers must be available on a regular basis to groups and individual visitors alike. However, not all offers necessarily need to be available to each visitor segment.

- Permanent organisation type/legal entity

The entity in charge of children-focused museum work must have a permanent organisational form and verified legal status in the country of operation (registered company, association, NGO, or similar)

- Elaborated mission statement with focus on education

The mission statement outlines the main purpose and aims of the organisation. It is a public expression of core activities and values and is an important management tool to ensure internal and external transparency and professionalism.

To serve as Home of 21st Century Education, an organisation needs to commit to education in the mission statement. Ideally the dedication to serve children is also anchored in this formal expression of identity.

- Rooted in cultural heritage, interpreting tangible and intangible heritage with a focus on low-threshold interpretation

No matter if you identify as museum, children's museum, gallery, science centre, or centre of art pedagogy, the *Home of 21st Century Education* movement

is open to all organisations whose working mode derives from the museum sector and uses tangible and/or intangible cultural heritage to interpreted and impart topics. The formats used to convey overarching topics through cultural heritage must be comprehensible and accessible to a family audience.

- Content is always chosen in connection to the concrete community, its needs & circumstances
This includes creating a clear predefinition of target groups for each offer and assessing relevant contents and topics for this very group. Local conditions, living realities, factors and potential challenges are carefully considered when choosing topics.
To ensure relevancy and representation, children and/or the local community should be in some way involved or consulted when creating new offers.
- Socially responsible pricing structure
The organisation is required to consider the financial capability of various visitor groups when setting ticketing prices for their offers. E.g., group deductions, bulk tickets, free passes or reductions for low-income families, participation in national or local accessibility schemes for cultural participation, free entry for personal assistants/carers/accompanying persons, annual passes, etc.

Educational lab

- The creation of exhibitions, environments and programmes is supervised/advised by psychologists, sociologists or pedagogues, and the team respects latest research findings and developments in education, learning theories and practices
The organisation acknowledges state-of-the-art findings connected to children and learning in the fields of psychology, pedagogy and sociology and implements them into its practises. Furthermore, the organisation takes measures (e.g., expert consultants, research cooperation, partnerships with universities, internal scientific research and/or monitoring of programmes & exhibitions, postgraduate staff trainings, desk research of scientific journals, etc.) to stay on the cutting edge of relevant scientific research.
- Educators and staff with expertise in learning theories, child development, and pedagogy
The organisation permanently employs staff with profound pedagogical expertise for all children-focused offers. Educators, guides, and other frontline staff are internally or externally trained to communicate adequately with children.
- Articulated learning objectives
Each offer is created to enable visitors to achieve pre-specified learning objectives. These are learning

aims elaborated as specific statements of what knowledge and skills visitors gain as a result of each offer, clearly outlining what kind of learning is expected to take place throughout a given programme/activity. For organisations to qualify as *Home of 21st Century Education*, the educational quality and benefit of each of their offers must be evident.

- Articulated philosophy/working method (or combination of methods)
Another measure to ensure the educational quality of an organisation's children-focused offers on a long-term basis is a defined and transparent working method, along with a structured and pre-planned course of action when it comes to creating new offers.
- Play-based approach
Learning through play is undoubtedly one of the main common denominators of children-focused museum work. Hence, we consider a play-based approach an obligatory minimum standard for our sector.
- The organisation invests into on-going training of their staff
E.g., regular internal and external training opportunities, such as seminars, workshops, lectures, courses, conferences, job shadowing, and postgraduate programmes.
- Education staff is involved during the early stages of designing new products
The role of education staff is not limited to conveying ready-made contents. Pedagogical expertise must be a constant in all stages of creating and implementing a new offer.
- Ongoing long-term partnerships with local schools, teachers, and caregivers
- Established policies to track audience feedback and adapting programmes and environment accordingly.
- Focus on innovation: new methods and tools are tested
A crucial role of children-focused museum organisations is to serve as incubators of contemporary education. This includes developing, testing, and researching innovative practices.
- National and global networking
Organisations share and exchange practices with colleagues and other professionals on a national and international level.

Holistic education

- The learning setting offers meaningful experiences based on the Hands On! Minds On! Hearts On! principles
E.g., interactive elements need to convey meaning

²⁸ View the second part of our trilogy: What can be the quality of museums as pioneers of 21st century education? Part 2: Best Practice

not just interaction ('button pressing' vs. 'Hands-on learning'), a clear commitment to the educational mission, and to conveying scientifically correct content.

- All formats are interactive and foster individual exploration based on the needs of the audience
E.g., finding ways how to break down complex topics without oversimplifying and carefully choosing which concepts children can really grasp.

Education for humanity

- Society (and its big issues) -oriented / Even a little child is a part of society with its big problems
Children are regarded as competent members of society and are made aware of contemporary societal issues, challenges, and concerns.
- The *Homes of 21st Century Education* also effect through their environment, uniqueness, and innovative design, which can serve as inspiration to envisioning a new world
Organisations take on the role of change agents by serving as meeting place and centre for active citizenship.
- Asking questions and encouraging visitors to create and test their own solutions, instead of providing ready-made & one-sided answers
E.g., transparency about potential biases, never judgemental, raising questions to be answered individually by each visitor, and offering a wide range of perspectives.

Intergenerational: with children in the centre

- Permanent children-focused offers for individual visitors and groups
Examples for non-permanent offers: hosting/creating a children's exhibition once, that is on show for a limited duration, or all offers can only be accessed by a small group of partner schools.
- Learning spaces that elevate child-centred learning and encourage positive adult-child interactions
- Offering a diversity of formats catering to children and an intergenerational audience
Organisations are required to predefine the target groups for each of their offers, along with considering the learning needs and skills of each specified target group. E.g., marking all offers as suitable from 0-99 is not a realistic concept when it comes to adequately serving each target group.

Polyphonic, Participatory, and inclusive approach

- Diversity in staff (culture, gender, age, ethnicity, etc.) regarding the specifics of the local environment or

elaborated strategy to ensure local communities feel welcome (bridging potential gaps between staff & visitors to ensure representation)

E.g., measurements/policy/approaches to ensure that the diversity of visitors is addressed appropriately by all staff members and all local communities feel welcome and represented (trainings, awareness raising, inclusive language, outreach strategies etc.), a hiring policy that considers the local demographic landscape.

- Collaboration with children, young people, and families as equal partners of events, displays and exhibitions
This will help to include their stories and give them a stronger sense of ownership.
- Adequate communication strategy & channels and keeping them up to date
- Website/social media: children ('s offers) and playful approaches visible and visually represented
Commitment to children as an audience must be evident on the organisation's main online communication channels. E.g., children's offers on website visible at first glance, either visually (images) or in the written text.
- Design & content for everybody
Apart from the obvious means of accessibility such as ramps, heights of objects and information material in multiple languages, inclusion is considered in every content area.

Digitally aware and active

- Offering means and opportunities to develop and practise skills, which might not be fostered in other environments
E.g., complementing contents and skill development offered by other organisations (schools, libraries, playgrounds, etc.), focus on 21st century skills.
- Being aware of the digital world and having a clear strategy to support children to navigate reality and virtuality
Organisations are asked to develop a clear position on how to respond to current needs in connection with digital tools and environments. Given the unique nature of each organisation, programme, and target group this leads to multifaceted approaches. These can range from a strict no screen policy for pre-schoolers to foster analogue engagement as a response to their increasing consumption of screen time, to using familiar digital devices to approach new topics or as impetus for individual exploration.

Dynamic and evolving organisations

- Inclusion, active partnerships, polyphonic approach,

and interconnectivity should be woven into the organisation's mentality

Towards to audience, but also directing internal practises.

- Focus on sensitive topics: serving as a hub of real social relevance, functioning as a medium of digesting 'big issues' & contemporary developments
Serving as 'glocal' discourse centres for contemporary issues and dedicated to actively serving society.
- Environment and formats need to be adaptable and be able to react to changing societal needs
The organisation must be willing to modify existing offers based on the feedback and immediate needs of the target group. E.g., serving their audiences remotely/digitally/outdoors/on social media during 2020/2021 lockdowns.
- Audience-focused not primarily collection-focused
E.g., choosing topics and contexts relevant for the audience.
- Providing advocacy and a platform for making children's voices heard in society
Advocacy for play and children's rights, providing a platform to children to actively participate in society and express their thoughts and ideas.

How to get certified

Do you want to highlight the quality of your work? Do you want to benchmark it and get international feedback on your work? Do you want to lobby for high-quality children education in museums and similar organisations?

The brand and label *Home of 21st Century Education* provides:

- a shared vision and mission for organisations dedicated to serve as future-oriented learning spots for children
- a catalogue of global quality standards and benchmarks for children-centred museum work
- an official certification for meeting the quality standards, issued by an internationally acclaimed organisation.
- research findings featured in 3 publications.

Home of the 21st Century Education targets organisations who aim to equip children to actively co-create a more sustainable society by offering individual education based on a combination of high-quality interpretation and joyful and interactive engagement with tangible and intangible heritage.

We welcome applications from children's museums, museums, science centres, galleries, and similar cul-

tural organisations with a particular emphasis on children's programming.

Participating organisations are required to:

- offer active self-education through play
- target children and/or families
- offer interactive Hands-on, Minds-on, Hearts-on exhibitions and programmes

The labelling process consists of two stages.

The first stage is the Commitment stage, when an organisation states that it supports our vision for the *Homes of the 21st Century Education*.

At the second stage, an organisation can participate in the Certification process. We provide a comprehensive questionnaire, which is then evaluated and scored by Hands On!. If the assessment criteria of the Homes of the 21st century education are fulfilled, the organisation gets certified. The Certification is valid for two years after which the organisations need to apply to get re-certified.

Benefits for certified organisation:

- Personalized seal/label
- Individual evaluation report/feedback
- Certificate
- Label communication pack
- Mapping and organisation profile on this website
- Access (limited places available, first come, first served) to one meeting/training course by Hands On! International Association of Children in Museums per year (if it is a paid offer, the regular fee must be paid)
- Instagram post introducing your organisation
- Visibility during our biennial conferences

For more information visit:

www.21stcenturychildren.eu

Resources & further reading



- Children in Museums Award – www.hands-on-international.net/award/
- Hands On! International Association of Children in Museums www.hands-on-international.net/
- Hands On! Resource collection – www.hands-on-international.net/home/reading-corner/
- Home of 21st Century Education – www.21stcenturychildren.eu/
- 21st Century Children – www.hands-on-international.net/projects/21st-century-children/

Children and Museums

- ACM- Association of Children's Museums (2019): What is a children's museum? www.hands-on-international.net/wp-content/uploads/acmkp-4-dimensions-copy.pdf
- ACM Find a children's museum – findchildrensmuseum.org/
- Children's Museums Collected Articles (1992). Curator's Magazine. – onlinelibrary.wiley.com/toc/21516952/1992/35/1
- Children's Museums – museumquestions.com/2015/02/09/why-are-childrens-museums-museums/
- Children's Museums research centre China – www.cmrchina.org/en/
- Exhibit building: ASTC Cheapbooks – blog.orselli.net/2021/06/the-exhibit-cheapbooks-are-now-free.html
- Exhibit design for girls' engagement: – www.exploratorium.edu/education/research-evaluation/edge
- Family Inclusive Language Chart – www.margaretmiddleton.com/resources
- Guide museums to surviving and thriving in the 21st century – www.hands-on-international.net/wp-content/uploads/FINALultimateguideeBooksmall.pdf
- Haas, Claudia/ Zwaka, Petra: Can children's museums survive the 21st century? – www.hands-on-international.net/conferences/conference-2019/session-6/
- ICOM children's museums committee – icom.museum/en/news/women-in-museums-margaret-m-brayton-and-the-childrens-museum-committee-of-icom/
- ICOM museum definition: children's museums as pioneers of cultural democracy – www.hands-on-international.net/childrens-museums-cultural-democracy/
- Idiosyncratic Museums <http://museumtwo.blogspot.com/2010/03/in-support-of-idiosyncrasy.html>
- Museum and Society Journal – journals.le.ac.uk/ojs1/index.php/mas/
- Reading list German National Association of Children and Youth Museums [German] (Bundesverband deutscher Kinder – und

- Jugendmuseen) – www.bv-kindermuseum.de/literatur/
- Reimagining Children's Museums Blog – reimagining-childrensmuseums.wordpress.com/
- Respectful Audience Surveying Toolkit – www.ofbyforall.org/resources/survey-toolkit
- Sani, Margherita: The NL factor. a journey in the educational world of Dutch museums, 2018 – www.hands-on-international.net/wp-content/uploads/NEMO_2018_The_NL_Factor_Sani.pdf
- Alexander, Edward P. & Alexander, Mary (2008): Museums in motion: an introduction to the history and functions of museums, Lanham.
- Bennett, Tony (1995): The birth of the museum: history, theory, politics, London/New York.
- Black, Graham (2005): The engaging museum: developing museums for visitor involvement, London/ New York.
- Corsane, Gerard (2005): Heritage, museums and galleries: an introductory reader, London/New York.
- Impey, Oliver/ Mac Gregor, Arthur (1985): The Origins of Museum. The cabinet of curiosities in the sixteenth and seventeenth century, Oxford.
- Kossmann, Herman/ Mulder, Suzanne/ den Oudsten, Frank (2012): Narrative Spaces: On the Art of Exhibiting, Rotterdam.
- Lang, Caroline/ Reeve, John/ Woollard, Vicky (2006): The responsive museum: working with audiences in the twenty-first century, London/New York.
- Marstine, Janet (2011): The Routledge companion to museum ethics: redefining ethics for the twenty-first-century museum, London/New York.
- Michaelson, Mimi/ Samis, Peter (2016): Creating the visitor-centered museum, London/New York.
- Nightingale, Eithne /Sandell, Richard (ed.) (2012): Museums, equality, and social justice [electronic resource].
- Pearce, John (1998): Centres for Curiosity and Imagination: When is a Museum Not a Museum?, Lisbon.
- Rockefeller Foundation (2006): Museum frictions: public cultures/global transformations, Durham.
- Schubert, Karsten (2009): The curator's egg: the evolution of the museum concept from the French Sani, Revolution to the present day, London.
- Silverman, Raymond Aaron (ed.) (2015): Museum as process: translating local and global knowledges, London/New York.
- Simmons, John E. (2016): Museums: a history. Lanham.
- Simon, Nina (2010): The Participatory Museum Webpage, Santa Cruz.
- Thomas, Nicholas (2016): The return of curiosity: what museums are good for in the 21st century, London.
- Walhimer, Mark (2015): Museums 101 Book, Lanham.

Children & Play

- 21st Century Skills – www.aeseducation.com/career-readiness/what-are-21st-century-skills
- 21st Century Children (Excerpt) – www.hands-on-international.net/excerpt-21stcentury-children/
- Game resource: Live Art Game for kids & adults. – playingup.thisisliveart.co.uk/
- Gill, Tim: Physical play in a risk-averse society. – rethinkingchildhood.com/
- Managing risk in play provision - an implementation guide – www.hands-on-international.net/wp-content/uploads/managing-risk-in-play-provision.pdf
- Sensorimotor development: – pediatricboulevard.com/what-is-sensory-motor-and-why-is-it-important/
- The power of play – research summary: – www.hands-on-international.net/wp-content/uploads/MCMResearchSummary.pdf
- UN Convention on the Rights of the Child – treaties.un.org/doc/Treaties/1990/09/19900902%2003-14%20AM/Ch_IV_11p.pdf

Education & Learning

- AAM: EXCELLENCE IN PRACTICE: Museum Education Principles and Standards – ww2.aam-us.org/docs/default-source/accreditation/commitment-on-education.pdf
- Andersen, Kåre/ Bager Marianne/ Laurs, Anneken Appel (2018): History conveyed through dilemma-based communication. A toolbox for museums and schools. – www.dengamleby.dk/fileadmin/Planlaeg/Undervisning/Dilemma/Metodekatalog_Dilemma_Historier_om_Danmark_EN_ops-lag_2018_final.pdf
- Assessment Tools for Informal Learning – www.pearweb.org/atis/dashboard
- CECA Education toolkit: – ceca.mini.icom.museum/uploads/sites/5/2018/12/2017-10-08_Education_toolkit_-_e-book_EN.pdf
- Comenius Didactica magna – openlibrary.org/books/OL24155794M/The_great_didactic_of_John_Amos_Comenius
- Education toolkits: Methods & techniques – www.hands-on-international.net/wp-content/uploads/Education-toolkit-E-book-EN-6MB.pdf
- Exploratorium.2019. The tinkering Studio. – www.exploratorium.edu/tinkering/our-work
- Inspiring Museum Learning for all – www.artscouncil.org.uk/advice-and-guidance/inspiring-learning-all-home-page
- Järvinen-Taubert, Johanna: Why do we need phenomenon-based learning? – learningscoop.fi/

- [why-do-we-need-phenomenon-based-learning/](http://www.hands-on-international.net/wp-content/uploads/NORDIC_INSPIRATION_-_FRESH_APPROACHES_TO_MUSEUM_LEARNING.pdf)
- Journal of Cultural Research in Art Education (JCRAE) – www.jcrae.org/
- Museum Education Case Studies: – gem.org.uk/our-work/publications/case-studies/
- Nordic Inspirations: A fresh approach to museum learning – www.hands-on-international.net/wp-content/uploads/NORDIC_INSPIRATION_-_FRESH_APPROACHES_TO_MUSEUM_LEARNING.pdf
- Phenomenal Education: Phenomenon-based learning, <http://www.phenomenaleducation.info/phenomenon-based-learning.html>
- ReVisiting the educational value of museums: connecting to audiences: – www.ne-mo.org/fileadmin/Dateien/public/NEMO_documents/NEMO_AC2015_EduVal_documentation.pdf
- Scott, Cynthia Luna (UNESCO): Education Research and Foresight / Working Papers / The Future of Learning 2: What Kind of Learning for the 21st Century – unesdoc.unesco.org/ark:/48223/pf0000242996
- Socially engaged museum practises: – www.hands-on-international.net/wp-content/uploads/Socially-engaged-practise-toolkit.pdf
- The Exploratory/Learning is open: Tinkering Toolkit. – learningisopen.org/toolkit/tinkering-making/
- The University of Manchester: Enquiry-based learning. <http://www.ceebl.manchester.ac.uk/ebll/>
- Viewfinder: Reflecting on Museum Education is a peer-reviewed digital publication – medium.com/viewfinder-reflecting-on-museum-education
- Brosterman, Norman (1997): Inventing Kindergarten, New York.
- Falk, John H. (2009): Identity and the museum visitor experience, London/New York.
- Katzenstein, Petra/Koster, Irith: I ASK (2014): Methodology & Training Handbook, Amsterdam.
- Hein, George E. (1998): Learning in the museum, London/New York.
- Hooper-Greenhill, Eilean (2007): Museums and education: purpose, pedagogy, performance, London/ New York.
- Moffat, Hazel (ed.)/ Woollard, Vicky (ed.) (2000): Museum and Gallery Education: A Manual of Good Practice, Lanham.
- Johnson, Anna (2017): The museum educator's manual: educators share successful techniques, Lanham.
- King, Brad/ Lord, Barry (ed.): The manual of museum learning, 2016
- Lang, Caroline/ Reeve, John/ Woollard, Vicky (ed.): The responsive museum [electronic resource]: working with audiences in the twenty-first century, 2016
- Melber, Leah M. (ed.) (2014): Teaching the museum:

- careers in museum education, Washington, DC.
- Perry, Deborah L. (2012): What makes learning fun?: principles for the design of intrinsically motivating museum exhibits, Lanham.
 - The Journal of Museum Education (JME)
 - Vayne, Julian (2012): Wonderful things: learning with museum objects, Edinburgh/ Cambridge.

Founding & Funding

- Art explorat foundation grants – www.artexplora.org/en/home
- Central Europe Initiative grants – www.cei.int/
- Children's museums grants & awards calendar – childrensmuseums.org/resources/grants-awards-calendar/
- Creative Europe – ec.europa.eu/culture/creative-europe
- European Cultural Foundation grants – culturalfoundation.eu/
- EU funding culture guide – ec.europa.eu/culture/funding/cultureu-funding-guide/discover-funding-opportunities-for-the-cultural-and-creative-sectors
- EU funding toolkit – www.hands-on-international.net/wp-content/uploads/NEMO_Toolkit_Funding_and_Cooperation_04.21.pdf
- European Museum Awards – www.hands-on-international.net/wp-content/uploads/NEMO_2018_European_Museum_Awards.pdf
- Fund finder – fconline.foundationcenter.org/
- Visegrad fund – www.visegradfund.org/
- ICOM (2004): Running a Museum. A practical handbook, Paris.

SOURCES

- ACM- Association of Children's Museums (2019): What is a children's museum? – www.hands-on-international.net/wp-content/uploads/acmkp-4-dimensions-copy.pdf
- Adams, Marianna/ Moussouri, Theano: The Interactive Experience: Linking Research and Practice. In: Interactive Learning in Museums of Art and Design. International Conference. Victoria and Albert Museum. London. 17-18 May 2002.
- Andersen, Kåre/ Bager, Marianne/ Laurs, Anneken Appel (2018). History conveyed through dilemma-based communication. A toolbox for museums and schools. – www.dengambleby.dk/fileadmin/Planlaeg/Undervisning/Dilemma/Metodekatalog_Dilemma_Historier_om_Danmark_EN_ops-lag_2018_final.pdf
- Deutsches Museum: Tinkering (2019). – www.deutsches-museum.de/angebote/

- schule-im-museum/projekte-forschung/tinkering/
- Gill, Tim: Physical play in a risk-averse society, (2007) – rethinkingchildhood.com/
- Hanak-Lettner, Werner (2013): Szenografie, in: Handbuch Ausstellungstheorie und -praxis, Arge schnittpunkt (ed.), Vienna.
- ICOM children's museums committee: – icom.museum/en/news/women-in-museums-margaret-m-brayton-and-the-childrens-museum-committee-of-icom/
- Järvinen-Taubert, Johanna (2019): Why do we need phenomenon-based learning? – learningscoop.fi/why-do-we-need-phenomenon-based-learning/
- Kids in Museums: Takeover day, (2019). – kidsinmuseums.org.uk/what-we-do/takeover-day/
- Köhler Kroath, Nikola (2020): Exhibits im Kindermuseum - Vermittlung in einer Hands-on-Ausstellung.
- König, Gabriele (2002): Kinder- und Jugendmuseen. Genese und Entwicklung einer Museumsgattung, Wiesbaden.
- Lord, Gail Dexter: ZOOM 20 years young, in: Menasse Wiesbauer, Elisabeth (Hg.) (2014), 20 years Zoom children's museum [German & English], Wien.
- Phenomenal Education: Phenomenon-based learning – www.phenomenaleducation.info/phenomenon-based-learning.html
- Pfeiffer, Silke (2013): Reformpädagogische Konzepte, Geschichte und Theorie der Frühpädagogik, Göttingen.
- Sensorimotor development: – pediatricboulevard.com/what-is-sensory-motor-and-why-is-it-important/
- The Exploratory (2019): Learning is open: Tinkering Toolkit. – learningisopen.org/toolkit/tinkering-making/
- The University of Manchester (2019): Enquiry-based learning. <http://www.ceebl.manchester.ac.uk/eb/>
- Wally, Teresa (2020): Der kindermuseale Raum. Universität für angewandte Kunst, Wien.
- Weschenfelder, Klaus/ Zacharias, Wolfgang (1981): Handbuch Museumspädagogik, Düsseldorf.
- Wikipedia: Gamification – en.wikipedia.org/wiki/Gamification
- Wikipedia: Howard Gardner – en.wikipedia.org/wiki/Howard_Gardner
- Wikipedia: Inquiry-based learning – en.wikipedia.org/wiki/Inquiry-based_learning
- Wikipedia: Progressive education – en.wikipedia.org/wiki/Progressive_education
- Wikipedia: Waldorf education: en.wikipedia.org/wiki/Waldorf_education#Educational_theory_and_practice
- Wikipedia: Storytelling – en.wikipedia.org/wiki/Storytelling

IMPRINT

Museums in the 21st Century: Pioneers of Education Part 3: Practical Guidebook

© 2022

Publisher Sarai Lenzberger, Hands On! International Association of Children in Museums
Graphic design and layout Ask designers, Markéta Cole
Copyright text Hands On! International Association of Children in Museums and Authors
Photo credits – Cover photo Envato Elements, Florian Kopronik – Back cover photo ZOOM children's museum Vienna: ZOOM Kindermuseum/Gianmaria Gava – *Unlock your superpower*, pg. 4 Envato Elements, Florian Kopronik – *Unlock your superpower*, pg. 7 Pexels, Alexander Dummer – *Children in Museums*, pg. 8 Envato Elements, Florian Kopronik – *Legal types, funding & partners*, pg. 12 Oli Oli children's museum, Envato Elements, Florian Kopronik – *Forms of children-focused museum work*, pg. 16 Creaviva: Creaviva via Wikimedia Commons – *Forms of children-focused museum work*, pg. 19 Envato Elements, Florian Kopronik – *Educational approaches*, pg. 20 ZOOM children's museum Vienna: ZOOM Kindermuseum/J.J. Kucek – *Design*, pg. 28 Le musée des enfants: Musée des enfants, Helene Petit via Wikimedia Commons – *Quality Standards*, pg. 31 Envato Elements, Florian Kopronik – *Resources & further reading*, pg. 36 Creaviva: Creaviva via Wikimedia Commons – *Special thanks to Florian Kopronik, Creaviva, le musée des enfants & ZOOM children's museum*

Partners



Supported by



This publication was created within the framework of the project 21st Century Children, and has been funded with support from the European Commission. The publication reflects exclusively the views of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

