



Design for play-based learning

A set of 12 guidelines for a kids' museum

Design for play-based learning

These guidelines are the result of research conducted by Marit van Grinsven as part of her graduation project at the TU Delft in collaboration with the Green Kids' Museum Kenya, the Play well lab and the MuseumFutures lab.

The guidelines aim to be a reference in designing a play-based learning experience specifically for the target group of children aged 9-11 living in Nairobi, Kenya.

The research that resulted in the guidelines consists of literature review, the experience of the researcher with current trips in Nairobi, observations in Dutch children museums, a creative session with the target group and interviews with stakeholders such as parents and teachers. For more information, please refer to the report concerning this research; Geotricity: an interactive installation to playfully foster awareness around renewable energy at the Green Kids' Museum Kenya

Structure

All 12 guidelines are presented with the same structure, as shown in the Figure on the right. The column on the left presents the child's need which is underlying of the guideline. Each card has a title with a short explanation of what the guideline entails. This is followed by a representative quote made during the research by one of the participants. In addition, potential implementations of the guideline regarding an exhibition design are highlighted. The bottom of the card has a visual depiction of the guideline.

Child's need	Title: insight
	Explanation
	Quote
	Implementation
	# Visual

Support different kind of visitors

Every child is different, they all have their own knowledge level, interests and preferred way of learning. A museum attracts many different visitors and although it is not possible to match all installations to all types of visitors, all children should have the opportunity to express themselves with at least one of the installations. Hence, it is important to have a variety of installations with a diversity in perspective, approach and required experience.

"Every child learns differently, and that needs to be taken into account. One likes to listen, so audible, another is more visual so they prefer to see things and yet others have a more kinetic approach so they want to experience things."

Teacher

Implementation

- Indicate different trails through the museum based on different interests of children



Feeling of being in control

The children must feel that they are in control of their experience. This will enhance the learning process as the visitor is intrinsically motivated to engage in a play activity. Meaning the child must be at the centre of the installation, rather than the supervisor. Furthermore, the feeling of being in control is closely related to self-confidence of the child's own choices. To ensure that the children can start their journey of discovery with confidence, without constantly worrying about missing out, the museum can provide an overview of the various installations. This enables the children to make a well informed decision about the exhibits that appeals most to them.

"I would like to have a viewing point so you can see the whole museum [...] then you can have an overview and see what you missed."

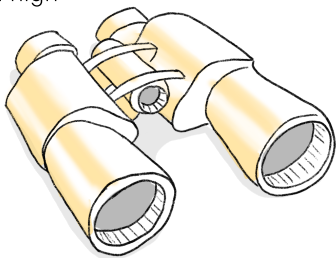
Boy age 10

"Some [subjects] just come naturally so it is easy and then it is also a nice subject, but if it is hard than you find it less fun."

Girl age 11

Implementation

- Provide an overview point, for example with a high viewpoint
- Provide a map



Leave room for reflection

Give the children the opportunity to take a break between all the impressions. A museum can be overwhelming. It is important to allow children to take a break and let them catch their breath. A moment of rest also helps to reflect on what they have learned, increasing the learning experience.

"We always provide a reflection moment to make children aware of learning moments. [...] The teachers join in the play and afterwards they name what the children have learned. To make the connection from unconscious to conscious learning."

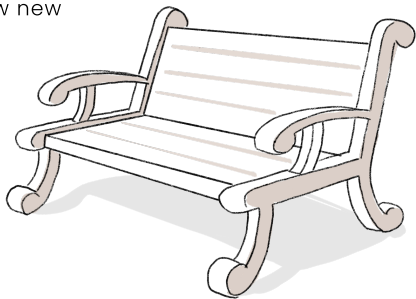
Teacher

"Between all the impressions, it is sometimes difficult to let children take a break, for example to eat a sandwich. [...] It is useful if the museum allows these kinds of moments of rest."

Dutch parent

Implementation

- Create peaceful resting points at areas where there are few new impressions



Enable discovery

Children enjoy discovering new places and objects. With regards to a museum installation children are mainly interested in exploring elements and manipulating those to achieve the desired result of the child. This discovery process can be an immersive experience for the child in which they are challenged with cause and effect. By reaching the desired result of the child they might feel proud by their competence in discovery.

"I like to go to new places I have never been before. [...] It is like an adventure and I always get so excited."

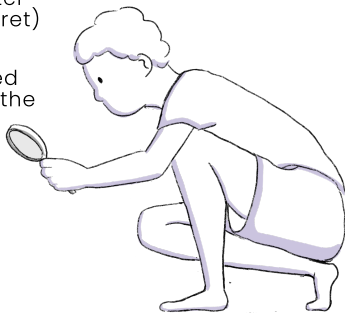
Girl age 9

"I would like a cycling track. [...] What about the energy here? Maybe the faster the cycle the more energy you have. Yes that is true so, maybe we can light up the track more the faster you cycle? Yes that is cool!"

Boy age 10

Implementation

- Let something only become visible after completing a (secret) play activity
- Do not make a fixed solution but allow the visitor to decide



Emphasis on the feeling of fellowship

By supporting children in interacting with peers, they are more likely to reach new insights. Discussing and arguing over a topic or challenge stimulates creativity and the ability to solve problems. In addition, children can encourage peers to become more involved with an installation or topic. The interaction among children will result in a feeling of fellowship, which can ultimately lead to a sense of commitment to the museum and its goal.

"I would like to have a podium. [...] It can be a place where everyone comes together."

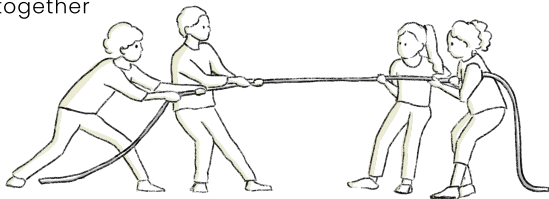
Boy age 10

"As a ranger, I come into contact with up to 200 people every day. [...] I know almost everybody and that's what's so nice about the forest, it really feels like something we all share."

Ranger

Implementation

- Let visitors build upon efforts made by previous visitors
- Encourage competition
- Establish a common goal to be achieved by working together



Challenge abilities

Children like to improve and expand their skills. By giving them the opportunity to test their abilities with a specific task, they are prompted to take up the challenge and practice it several times in order to improve. By repeating a specific task and experimenting in order to progress, the learning curve is enhanced. Besides, by improving and reaching personal goals the child will get a sense of pride.

*"So you like solving puzzles?
Yes! and also playing games.
What do you like most about it?
You can get better at it."*

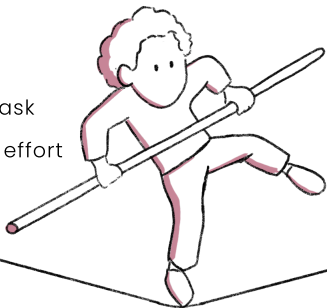
Girl age 10

*"I can't solve it
[A rubics cube]
but the friend of
my brother can
and he will teach
it to me."*

Girl age 10

Implementation

- Score tasks on which they can improve
- Compete with other visitors
- Give the visitor a demanding or hard task which requires a significant degree of effort



Clear & simple introduction

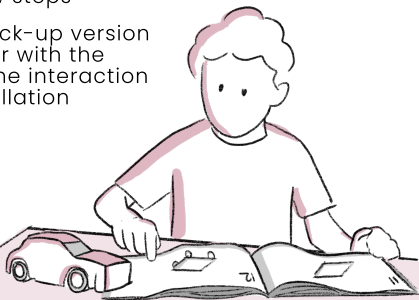
It is important to give children the confidence that they can handle the play activities of an installation and the museum. By starting with a simple, easy task, the child is gently prepared for what is to come, after which they can progressively engage in more advanced play activities. This simple task can also allow for a more open mindset as it reduces some of the visitor's nerves about the installation or museum by indicating that they can experiment, interact and play.

*"It is important to be very clear. [...]
Don't ask too much all at once."*
Teacher

"You really need to explain to them what it is they are going to do and what is expected of them."
Teacher

Implementation

- Provide a tutorial with easy to follow steps
- Present a mock-up version to get familiar with the museum or the interaction with the installation



Allow children to take risks

Taking risks is foundational for learning and development as it supports children to learn to trust themselves, understand their capabilities, recognise limits and identify when to ask for assistance. Taking a risk can leave a lasting impression on a child. First, they experience suspense and sensation, followed by the pride they feel in their achievement after taking the risk. These intense emotions lead to a memory they will remember.

"We called it the 'Deadly jump' [...] First I was really scared but then I asked them to make my lifejacket extra tight... and then I went and it was really fun!"

Boy age 11

Implementation

- Give the visitors the chance to do something they are normally not allowed to do
- Create the risk of losing, of running out of time or of height



Trigger the senses

Children need to be able to experience the installation in order to fully immerse themselves with the topic and become part of the created world. This immersion in an installation is enhanced by stimulating the senses of a child, like hearing, seeing and touching. Besides, by allowing the children to be able to touch and manipulate elements of the installation to create their own play activity, the play-based learning experience is enhanced.

"I want children to discover their senses.

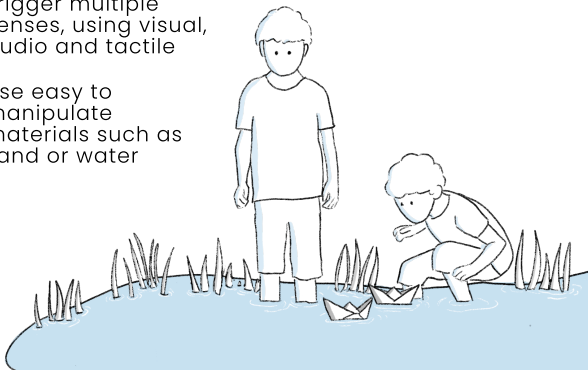
[...]

It's about the combination of playing and discovering."

Teacher

Implementation

- Trigger multiple senses, using visual, audio and tactile
- Use easy to manipulate materials such as sand or water



Reflect everyday life

Children are seeking the experience of everyday life. They want to feel that they are taken seriously by being allowed to experience the real deal, like handling specialised equipment, supplies and materials. Allowing children to explore and experiment with these resources instils a sense of pride, as they experience a unique opportunity to step in the shoes of an expert and handle their activities. Besides, by confronting the children with the materials and methods that are also used in everyday life they become more aware of the world around them outside of the museum.

*"I would like to see
real solar panels.
Why is that?
Than you can see how
it really works"*

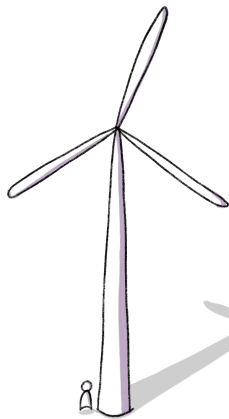
Boy age 9

*"Is a windmill big?
[...]
I want to see how big it
is."*

Boy age 10

Implementation

- Let children pretend to step in the life of an expert
- Present real materials and equipment



Utilise humour

Using humour can increase the engagement with an installation and it opens the way for play. Children often use humour to make an activity playful. In addition, humour can help to make sense of an experience, thus boosting the learning process. Besides stimulating the play-based learning experience, laughter, which is often the result of humour, also has many benefits, such as reducing stress, improving the mood of the child and enhancing creativity.

*"I think the bird is carrying the monkey.
Haha I like that, you got some humour!
I like funny things."*

Girl age 9

Implementation

- Show bizarre things
- Make something unexpected



Aesthetics promote involvement

Aesthetics can play a significant role in catching the child's attention. If a child sees something they experience as beautiful, they are more likely to approach and explore it. By using the aesthetics of the child in the installations, the child can be provoked to engage with the installation.

"I like multicolour I think that will be beautiful. [...] It will create some scenery."

Boy age 10

"I want a big blue door [...] It is beautiful, I think people will want to enter it now."

Boy age 6

Implementation

- Consider scale, colour and texture
- Make something unique, like a mythical creature

