

MASTER THESIS

A mobile interactive exhibition about sustainability for children

Student: Thomas Imhoff
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Supervisory Team

Chair: Arnold Vermeeren
Mentor: Mathieu Gielen
Company Mentor: Friso Visser



EXECUTIVE SUMMARY

Project goal

The goal of this project is to design an immersive interactive experience inside an electric truck for Museon for pop-up locations at schools aimed at preteenagers to inspire, activate, and make them care about nature and sustainability. The experience should be made accessible to children from disadvantaged neighbourhoods.

The project consists of 2 phases, a research phase and design phase.

Research phase

During the research phase, two user research has been done. The first

a context mapping session is done to understand how preteenagers perceive sustainability. It was discovered that their focus is mostly on nature, and they know the basic principles if a behaviour is good or bad for the environment. Often when asked for reasoning it is missing or wrong. The second were expert interviews, with the goal to learn more about how to design for children in the museum setting. Museum educators at Museon were interviewed. Information transfer is important when designing

for children, they should enjoy the experience and therefore the experience should be designed to fit their identity needs. A design framework consisting of design principles, personas, design goal, interaction vision, and creative vision has been made using the information of the user research.

Literature research has been conducted to understand how to educate children about sustainability. According to Janssen et al. (2019) an approach to educate children about wicked problems is providing them with the perspectives of different stakeholders which should improve their systematic thinking and is necessary to solve complex issues.



Figure 1: Front side of Museon which is the main stakeholder of the project



Figure 2: Front side of Museon

Literature research also has been done to better understand how to design for museum experiences. According to Bär and Boshouwers (2018) it is essential to design a story which the visitors can go through. The 9 experience journey steps have been adopted as blueprints for the final design to create a good story.

Design phase

The second phase is the design phase, creative sessions has been done to design a theme, exhibits, camper layout, and thematic objects. The final concept is a campervan experience in which the visitors make a journey along the Rijn. The camper is relevant to preteenagers

as it reminds them of holiday and adventure. The experience consists of introductions using iconic objects of traveling to immerse the visitor, exhibits designed to fit the identity needs of the different personas to make the experience enjoyable, and an educational message with the educational approach of Janssen et al. (2019) where the children make sustainable choices after every exhibit and revealing how this affected their environment in the end of the experience.

The design phase ends with an evaluation done with preteenagers visiting Museon. A paper prototype has been used to walk the visitors through the exhibition and using the

PrEmo tool (2007) as a discussion tool to understand how they feel about the exhibits. The exhibits were rated positive, and the educational message was seen as insightful for the children. Making their own choices and seeing how it effects the environment made it easy to understand the bigger system connected to the chosen sustainable behaviour.

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INTRODUCTION

Museums serve an educational purpose in our current society. The way museums educate their visitors have shifted over time. A popular method is to engage the visitors by making the exhibition more interactive, learning by experiencing yourself instead of reading. This method makes information more relevant for all ages (Hornecker, Stifter, 2006). Museon uses interaction in their exhibitions to actively make visitors think and learn about the world Figure 3. They want to inspire visitors to think about complex issues and start the discussion. One of these issues is sustainable development and is being presented in the 'Oneplanet'



Figure 3: Interactive exhibition about water inside Museon

exhibition. Museon wants to expand the 'Oneplanet' Exhibition with a satellite exhibition. Using an electric truck to drive an exhibition around to make a small 'Oneplanet' version available to all.



Figure 4: "Klimaat studio" an interactive exhibit about climate change inside Museon

Assignment

Kick-off design goal

Design an immersive interactive experience inside an electric truck for Museon for pop-up locations aimed at groups of young people aged 8-14 to inform and make them care about a selection of sustainable developments. The design is experienced when schools or other youngster organizations hire the mobile exhibition of Museon for a day event.

Problem

Museon sees an opportunity to use the mobile exhibition to reach children from disadvantaged neighbourhoods. Socioeconomically disadvantaged families visit less museum than other families. One of the problems is cost of the museum's, socioeconomically disadvantaged families are less likely to visit because of the perceived cost of the museum. Another problem is that other media such as television is more interesting to watch than visiting a museum Moss et al. (2015).

Assignment

A solution to this problem is making the museum experience available directly for those children. A mobile exhibition can directly visit schools in disadvantaged neighbourhoods to make the children experience a small version of the 'Oneplanet' exhibition. The mobile exhibition should be designed to create a short immersive experience that the children can go through when visiting the truck. This experience should spark inspiration to care about sustainability.

The goal of Museon is to make this experience available to all children therefore it should be designed in such a way that it is relevant to all.

Project approach

This project will make use of the double diamond design model from the British council (2019) as shown in Figure 5. This approach first diverges and then converges in the project scope making one diamond, it does this process twice. This allows for exploring a wide scope in the diverging phase and in-depth scope exploring and focusing on the converging phase. The model is adopted to allow for an out-of-the-box creative exploration while diverging and keeping focus while converging. The model consists of 4 different phases.

Discover

The first phase will consist of literature research and user research. Gaining a wide understanding of the project context

Define

The second phase will group the research to define the direction of the project as well as creating a design framework for the project.

Develop

The third phase will be a wide exploration of ideation and user testing ideas. Short iterative process to explore out-of-the-box ideas.

Deliver

The final phase will focus on defining one concept and evaluating the different aspects of that concept.

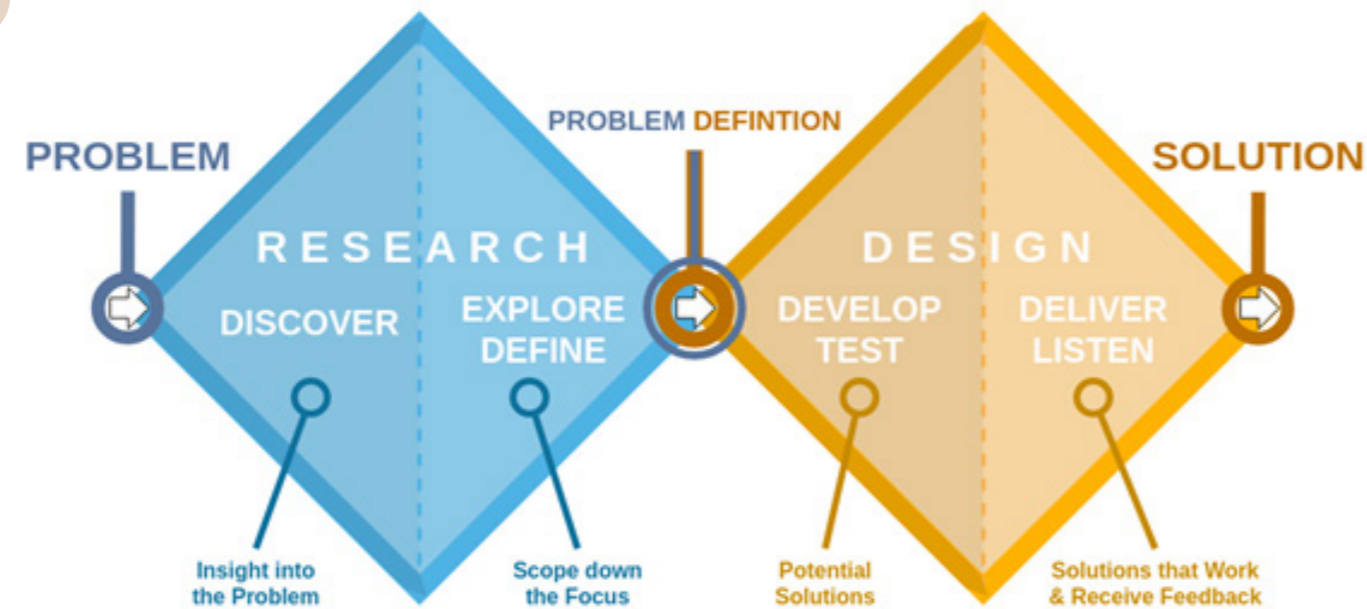


Figure 5: The 4 D Model or 'Double Diamond' design process model, developed by the Design Council

Me as a designer

My aim is to create long-lasting experiences for the user. My goal is to create an immersive interactive experience (IIE) for the user to enjoy. My designs evoke emotions by creating funny, sad, angry, happy elements. Adding this personal touch creates a more memorable and empathic experience for the users. This experience will make the user more open to learn and understand new things. Leaving your comfort zone to try out new things and learn new things is essential for self-development.



PHASE

1

RESEARCH & ANALYSIS

This is the first phase of the double diamond method and will be about the research analysis phase of the project. User research, and literature research has been done to diverge in the project scope, and afterwards converging has been done by creating a design framework consisting of design principles, personas, design goal, interaction vision, and creative vision.



Figure 6: First floor of Museon

MUSEON

This chapter will be about the context of Museon. They are the main stakeholder of the project, and the project should be in line with their vision and museum experience. There are some differences in context of Museon and of the mobile exhibition, the context of Museon should be taken as guidance instead of a direct example.

Vision of Museon

Museon is a science and culture museum located in The Hague, the Netherlands. It is founded in 1904 but the current location at the Stadhouderslaan was founded in 1986. The name is a conjunction of the Dutch words for museum and education. The name stems from their vision:

“We share the adventure of exploring for solutions. Museon realises this mission by offering visitors a dynamic, museum educative environment. Core concepts are innovation and sustainability, interaction and dialogue, quality and excellence.”

Museon does this by providing a broad image of the world. They want to inspire and activate visitors to think and contribute to societal issues such as sustainability. Museon has exhibitions about issues that we face in our world in the present and in the future. The exhibitions show the problems, the contributors of those problems but also a wide range of solutions to these problems. They aim to offer a broad image of current issues since they are wicked problems with complex causes

and complex solutions. (Museon, 2021)

Target audience

Museon has many different visitors, however, they designed their exhibitions with two target audiences in mind: Families and primary school classes.

Families

Museon identifies their main visitor using the visitor identity profile from John Falk (2009). Children are the main visitors in the museum, but they are always guided by a family member or a guardian. This group together serves as the facilitator visitor profile. The parents choose to visit the museum to satisfy the educative needs of the children. The parents decide if the museum is educational, fun, or inspirational enough for the children to visit. The exhibitions are designed in such a way that they also offer interesting information for the facilitators. The parents should enjoy their time at the museum, otherwise they might make the decision to not come back with their children anymore.



Facilitators

Want to ensure that their companions meet their visit goal

Primary school classes

Museon offers museum lesson for primary school classes. Schools can visit an exhibition space Figure 7 with a whole class in where an educator from Museon will teach them about a specific subject. The lessons consist of explanations of the educator, videos, or interactive assignments. The whole experience is more guided than the regular museum experience. The educator can better adapt to the information need of the children and is therefore more flexible to a regular museum experience.



Figure 7: Workshop at Museon for interns to understand the context of museum lessons

Oneplanet

The Oneplanet exhibition is an exhibition about sustainability. The 17 Sustainable development goals (SDGs) Figure 8 are used to make sustainability more concrete and approachable to all. The goal of 'Oneplanet' is to activate the visitors to think about sustainable topics. This is in line with the vision of the museum discussed in vision of Museon.

There is currently one permanent and two planned exhibitions for Oneplanet.

Oneplanet expo (current)

Oneplanet festival (planned)

Oneplanet on tour (planned)



Figure 8: 17 sustainable development goals developed by the United Nations



Figure 9: Start of the Oneplanet expo, Take the card to answers questions about the SDGs throughout the whole exhibition



Figure 10: Interactive exhibit inside the Oneplanet expo about good health and well-being

Oneplanet expo

The current exhibition Figure 9 is a permanent exhibition using examples around the world with issues and solutions about the sustainability. There are 17 exhibits, and every exhibit is themed to one of the SDGs. The exhibit consists of an interactive game and information themed to an SDG. Afterwards, visitors answer 'What-would-you-do' questions regarding sustainability; in the end of the exhibition, they can analyse what kind of sustainable person they are. Making visitors aware of perspectives regarding sustainability around the world is the core value of the exhibition.

Oneplanet festival

Oneplanet festival is a temporary festival style exhibition. The exhibition is divided in multiple themes: Sport & movement, Fashion and clothing, Human and nature, Food and drink, Building and living. The focus of the exhibition is to get visitors inspired about sustainability by using sparkling futuristic examples and solutions. This exhibition is still under construction Figure 11.



Figure 11: Concept drawing for the Oneplanet festival

Oneplanet on tour

This is a future exhibition this project aims to design for. The goal is to make Oneplanet more accessible to all children by having a mobile exhibition. If the children are not able to come to the museum due to economical or mobility reasons the museum can come to them. The mobile exhibition should be a 10-minute immersive experience for the children to experience. This experience will be accompanied with an educative midday with lessons about what has happened during the experience. According to Bär and Boshouwers (2018) extending the experience with a lesson can help the children to process the information better.



Figure 12: Electric truck gifted to Museon to be used for a new exhibition about sustainability

Target audience: Oneplanet on tour

There are two different groups expected to mainly visit the 'On tour' exhibition: Teachers/parents, and children. These groups are defined using the visitor identity profiles (Falk, 2009) as facilitators and experience seekers.

Facilitators

The facilitators in this group are the teachers or parents that accompany the children through the exhibition. This group wants to teach the children about sustainability and therefore make the children go through this experience. The advantage of this group is that they can guide the children through the experience. Children on their own might

find it too difficult to navigate themselves independent through the experience. The facilitator can help the children in case they get lost. The children should always be able to navigate themselves with ease through the experience, therefore there should always be a facilitator present. If no teacher or parent present a museum educator can take over the role of the facilitator.

The facilitator is the person that decide if the experience is deemed valuable enough for the children to visit. This decision is based on if the experience is insightful, inspirational, educative, or enjoyable enough. In short, the experience should be good otherwise they do not want to visit anymore. Which is why the next visitor profile is included for the project as well.



Experience seekers

Want to see the most renowned pieces and make memories

Experience seekers

The experience seekers visit museums to have a fun, interesting experience and want to make enjoyable memories. The children visiting the "on tour" exhibition are the experience seekers. They seek to have an enjoyable time and make memories with their peers. Creating these memories and experiences allows them to better remember educational information as well. They remember examples of the exhibition better if they thought it was interesting or funny. An interesting and fun experience can therefore be an educative experience. The main goal is that it should be an enjoyable experience with the secondary goal that it should be educational.

IMMERSIVE INTERACTIVE EXPERIENCE

This chapter is about why an IIE was chosen as the solution space for the project.

Transformative qualities

The importance of using an IIE lies in the goal of the project: Create an experience for pre-teenagers to inspire, activate, and make them care about sustainability.

The advantage of an IIE is that it is a good platform to generate long lasting changes for visitors, which is called transformation. According to Roppola (2013) museum experiences can be a powerful memory that educate and transforms people since they experienced it themselves. The goal of the project is to transform people to be inspired about sustainability. If an IIE is a strong platform to facilitate a transformation, then it is the perfect solution scope for the project.

The reasons why IIEs are suitable for transformation are explained below

Positive values for behaviour change

Understanding the transformative properties of an IIE can be explained using behaviour change theory. Fogg (2019) created a model regarding the elements that need to be present to stimulate behaviour change. The basis of the model is: Behavior = motivation x ability x trigger as shown in Figure 13. All elements of the formula need to be present to create the right conditions for behaviour change. The model shows a line which represents the behaviour change threshold. Behaviour change is more likely to happen when the conditions are above the line, meaning if there is enough motivation, ability, and a trigger is present.

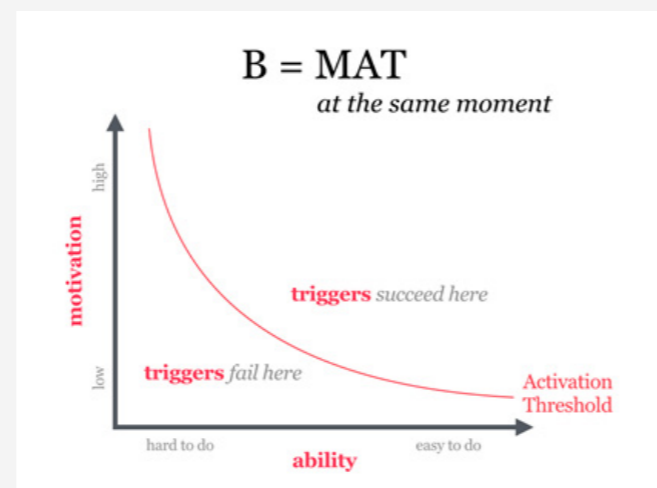


Figure 13: Fogg behaviour model

For example, you want to be more active, to do so you go to the gym every week. The first factor is motivation. It is your drive to go to the gym every time. In this case you might enjoy the feeling of being active and the pleasure of having a fit lifestyle. The other factor is ability, how

easy or how hard is it to do the activity that leads to behaviour change. Going to the gym might be hard to do since you don't know what kind of exercises you need to do in order to become more fit.

The last factor is a trigger, which is a call to action that leads to behaviour change. There should be some message or notification that leads you to wanting to change. This could be a documentary about how an active life is good for you. The trigger is final straw that makes you want to change your behaviour.

So how does this relate to sustainability and IIEs?

Looking at an IIE and sustainability it is possible to make 3 different models. The first model being how normal behaviour

change to live more sustainable could take place, the second is how behaviour change to live more sustainable after you went to a traditional museum exhibition about sustainability could take place. The final model is about how behaviour change to live more sustainable after you went to an IIE exhibition could take place.

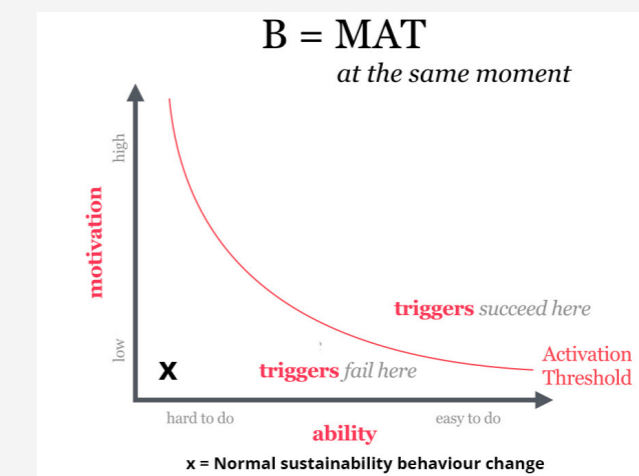


Figure 14: Fogg behavior model for a normal sustainability behaviour change

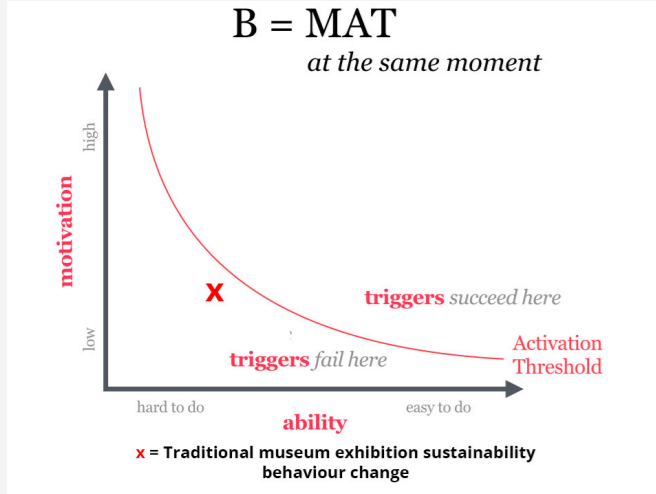
Normal sustainability behaviour change

If you need to change your behaviour to be more sustainable in a normal situation it is likely to fail. The motivation to do so is low since it does not give you any pleasure or enjoyment. The ability is also hard since sustainability is a complex topic and you might not know which activities you could do that are good for being sustainable. There is also no trigger present since nothing tells you to act more sustainable.

Traditional museum exhibition sustainability behaviour change

Now imagine a traditional museum exhibition about sustainability. According to Desvallées (2010) exhibition can have multiple meanings one of them being:

Figure 15: Fogg behavior model for a traditional museum exhibition sustainability behaviour change



“when they are understood as the entirety of the objects displayed, include musealia, museum objects or “real things”, along with substitutes (casts, copies, photos, etc.), display material (display tools, such as show cases, partitions, or screens), and information tools (such as texts, films or other multimedia), and utilitarian signage.”

The only way you would receive information is by reading, watching, or hearing. The motivation might be higher since you see the pain it can cause through examples and get motivated, the ability would also be higher as the visit provides information of sustainable behaviours you can do, and a trigger is present as the exhibition probably ends with a call to action. However, the behaviour change might still fail since

the intensity of all the elements are not high enough. So, what is missing?

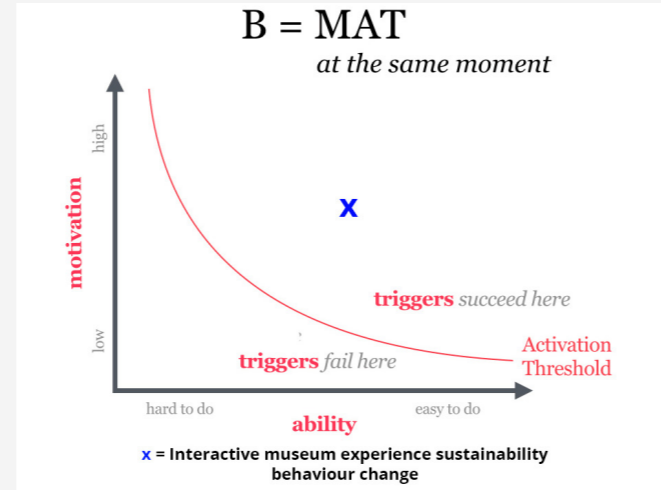
Interactive museum experience sustainability behaviour change

Immersive interactive museum experiences have two extra factors that benefit behaviour change.

First, the exhibition immerses you inside the topic. you don't just hear about the story you are an actual part of the story. This can lead to more empathy about the story which can lead to a higher motivation for sustainability

The other factor is the interactivity, the engagement of interactive exhibitions is higher than regular exhibitions (Hornecker, Stifter, 2006) making it more

Figure 16: Fogg behavior model for an interactive museum exhibition sustainability behaviour change



likely that you actually paid attention to the examples to become more sustainable. This increases your knowledge about sustainable behaviours and makes the ability easy to do. Another reason could be that you already gain some practice in sustainable practices because you can do them at the exhibition. However, this is normally the case for skill-based abilities and sustainability is in general a knowledge-based ability. Therefore, the second reason is less likely the reason for an easier ability.

Finally, the trigger is present in an IIE as well since a good experience usually ends with a call to action on how to take the information home.

In the model Figure 16 you can see that the motivation and ability are high enough to be present in the succeed trigger zone. There is also a trigger present in an interactive museum experience thus meaning it could be the right situation leading for a behaviour change.

Conclusion

Interactive museum exhibitions are a good breeding ground for behaviour change since it includes all the elements for behaviour change. This fits with the design goal to activate sustainable behaviour. The design goal also wants to achieve inspiration and care about sustainability, these factors could be the motivational factors in the Fogg model that lead to activating.

The next step would be to find out how to motivate the children and how to transfer information to them to make the ability easier. The next chapter will be about experience design research done to learn more about the target audience.

USER RESEARCH

This chapter is about the user research that has been done to better understand experience design for children. A context mapping session has been done to understand the thought and feelings of children regarding the topic sustainability but also get a better feeling of the context. The other research was an expert interview with museum educational experts to understand how to design for children and how the children behave in a museum setting.

Contextmapping

Introduction

Several children were asked to participate in a contextmapping (Sanders, Stappers, 2012) session with the goal to gain a better understanding of the thoughts and feelings of the children regarding sustainability. Contextmapping was used since the topic sustainability is a broad complex topic and there was a lack of information about the knowledge level of the target group. Contextmapping will provide insights about the needs, motivations, and experiences of the children regarding sustainability. The study was done by 10 children aged 8-12 at the day-care Bohemen Kijkduin. Organisation Triodus assisted to organise this session by replacing their regular after-school program with a contextmapping session.



Figure 17: Contextmapping session done at the day-care Bohemen in Kijkduin

Research questions

1. What is the knowledge level of sustainability for children?
2. What is relevant in terms of sustainability for children?

Method

One session of 2 hours has been conducted with 10 children at the day-care Bohemen Kijkduin. A sensitizer in the form of an interactive presentation was being used to prime the participants towards the topic. Followed by a make toolkit Figure 18 where the children had to work in pairs and make a collage with a collection of abstract pictures and words about what a healthy planet means to them. During the session, the researcher would walk around and ask questions about the pictures chosen by the participants. Using multiple why questions to reach the deeper levels of reasoning behind the picture chosen. The study was being recorded with multiple recording devices set up on their desks, the recordings were analysed using context cards and the 'analysis on the wall' method Figure 21. The conclusions have been discussed with a museum expert to verify if the conclusions being made from the results were accurate. The procedure of the interview can be seen in Figure 20

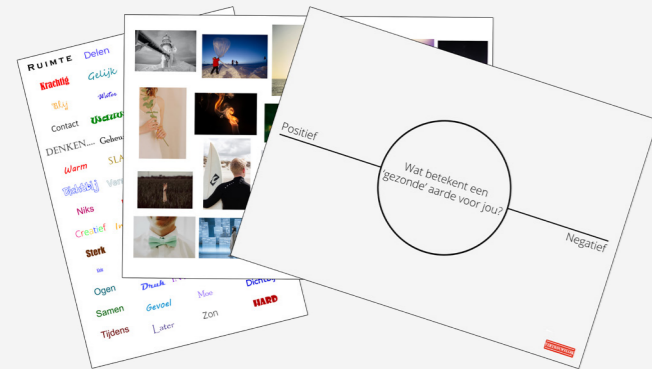


Figure 18: Make toolkit consisting of words, images, and a prompt to fill in positive and negative examples

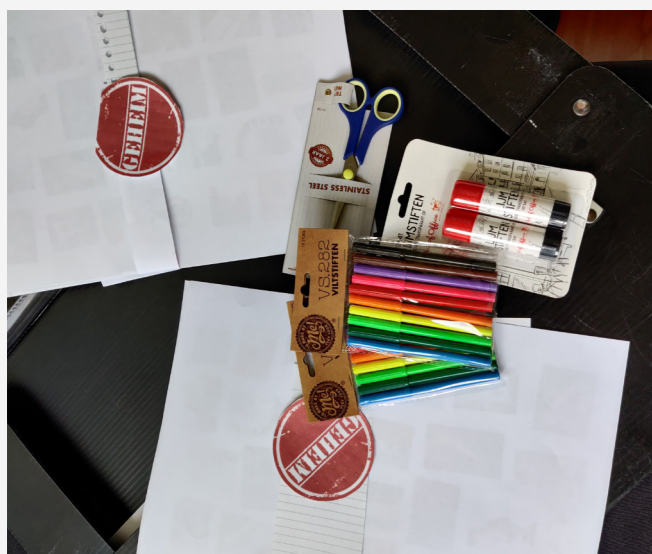


Figure 19: Available tools during the session

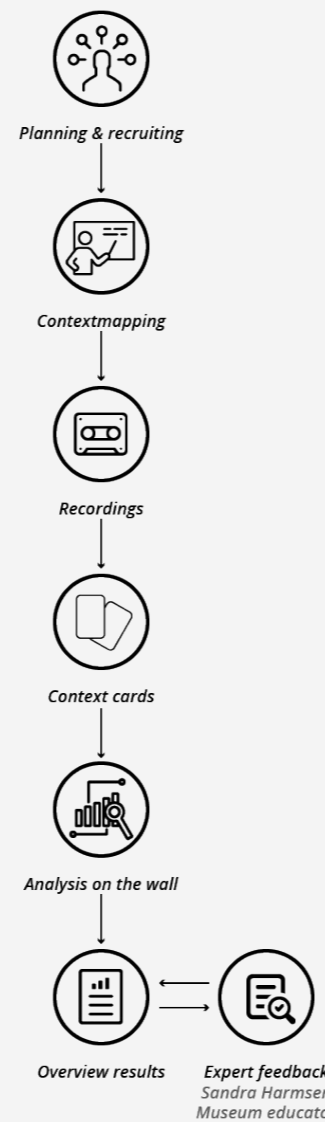


Figure 20: Procedure of the contextmapping research

Results

2 themes “difference in level” and “difficulty in systematic thinking” were found that fit the first research question. Another theme “relevant information” was found and, has been divided into 2 subthemes “relevant sustainable information” and “choosing own interest over assignment”, they fit the second research question Figure 21.

Difference in knowledge level

There was a difference in the knowledge level of children about sustainability. Some response had basic information but were merely facts without reasoning:

“Yes because if you use too much gasoline it is bad for the environment, because... ehm just gasoline.”

Other levels were more advanced and knew the reasoning behind their sustainable facts.

“This bottle is made out of plastic and it is bad for the environment, it can end up in the oceans and be eaten by animals”

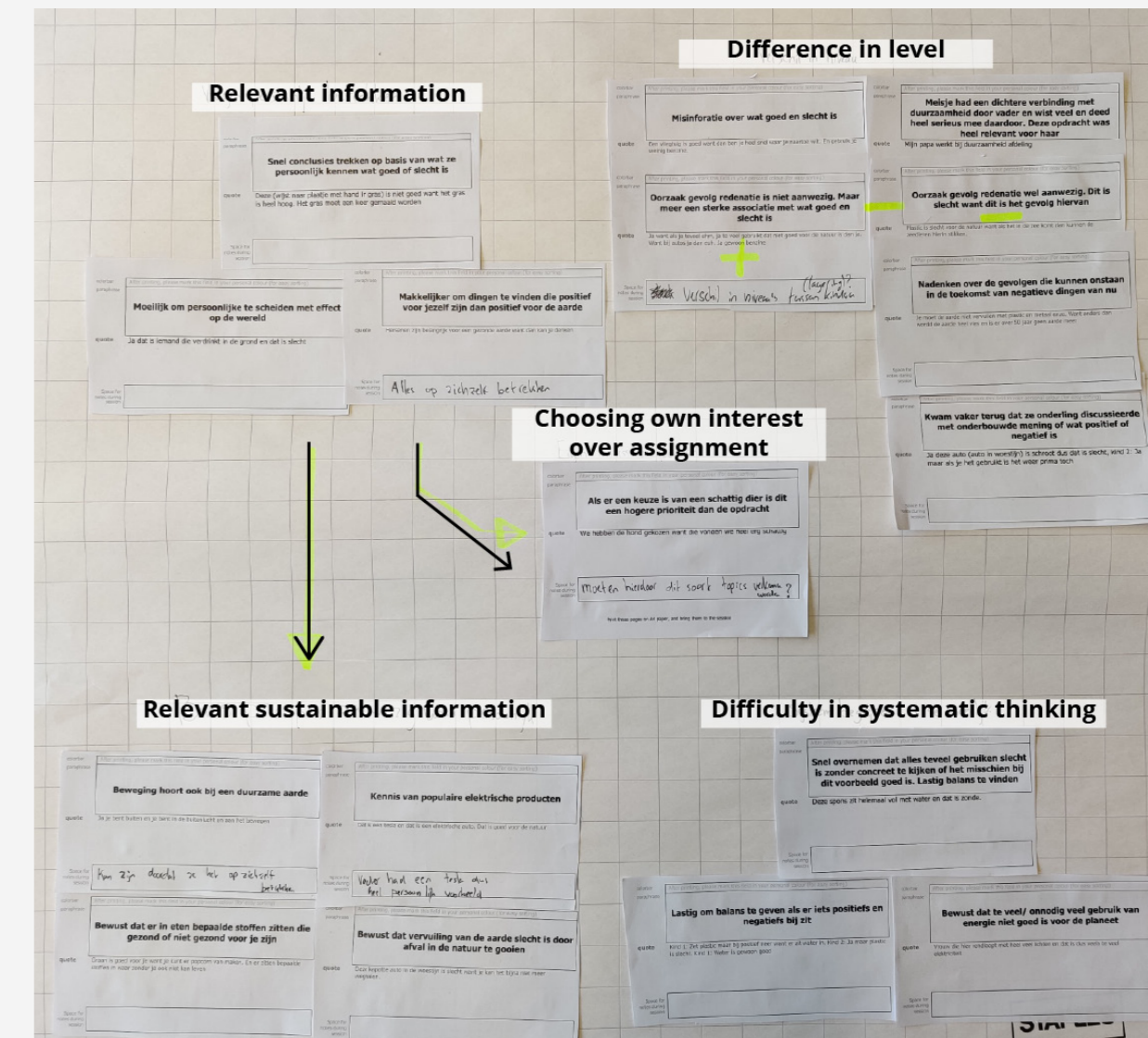


Figure 21: Result of the Analysis on the wall

Difficulty in systematic thinking

Sometimes misinformation was present due to a lack of knowledge. This mostly happened when they had to balance positive sustainable activities versus bad sustainable activities. They seem to understand what is positive or negative for the environment. However, when they find it hard to understand the net balance when an activity is negative but has a positive factor.

"An airplane is good for the environment because it will get you fast to your destination and thus you will use less fuel"

Choosing own interest over assignment

The children often believed images to be sustainable but, were just images that are only positive on a personal level. They forgot the goal of the assignment by centralising themselves instead of sustainability.

"We choose for this dog because we thought it was very cute"

Relevant sustainable information

These were all the examples they gave.

Positive examples were:

- Electric cars (Tesla)
- Recycling
- Staying active and fit
- Caring for nature (flora and fauna)
- Manual labour (no energy use by machines)

Negative examples were:

- Environmental pollution
- Energy waste
- Over consumption of materials (plastics, Fossil fuels)

Conclusion

Differences in knowledge level

The "difference in knowledge level" theme shows that it is important to include layering throughout the exhibition. The knowledge of sustainability was different for all the children. Basic level includes understanding of separate topics that were positive or negative for the planet. Advanced level meant that children could understand consequences of positive and negative sustainable behaviour. This difference in knowledge level could explain the need for layering information when providing information to a child. Extra information should be presented to the visitors when needed. However, it is important the exhibition can still be experienced normally without the extra information.

Expert feedback

Basic information (eating meat is bad for the environment since it causes more pollution than vegan alternatives) can be seen as the most important information and should always be visible first. The advanced information (eating uses more water and space and has a higher CO₂ emission than vegan alternatives) can be showed as second which can always be viewed as a decision. It can be as simple as reading a newspaper where the headlines explain what the article is about.

The differences in understanding could also mean that the children could help each other reaching a similar level of understanding. Some children who have a better understanding could provide information to the children who have

a lower understanding. Designing for a similar level of understanding could promote teamwork among the children.

Expert feedback

Teamwork is important for the development of children. However, when the children are teaching each other, they stick to a very basic level of teaching. They only provide the information without explaining the reasoning behind it. There is a possibility in designing a method where explaining the reasoning behind the information is promoted

Choose own interest over the goal of the assignment

The children sometimes choose the pictures they liked the most instead of choosing pictures that were correct during the assignment. This could show that they want to understand how all their information relates to themselves. The design should focus on making topics more relevant to them by relating the topics to a more personal level. What are the positive and negative effects of sustainability to them?

In one example a child admitted being fully aware the chosen image was not related to sustainability at all, but she liked it on a personal level and therefore chose the image. The dog was chosen in almost every collage, the cuteness factor of the seems to be more important

than the goal of the assignment. Using examples like dogs and other high interest topics should be used with care in the design. The children will ignore the design if they can choose a cute animal over the design.

Expert feedback

They need the information to be personal because if it is not, they will make it personal anyway. On the cost of the assignment.

Relevant sustainable information

The information given were often examples that came from their own environment. These examples can be used to make the design more relevant for the children. What is remarkable is that most of the children named Tesla as an electric car. The environment of the

school was in a rich neighbourhood which could lead to a Tesla being more relevant than just the concept of an electric car. The information should be relevant to all. Therefore, it should be kept in mind to avoid using expensive brands and just using the overall concept of "electric car" as an example.

There were many examples of the flora and fauna. Using pictures of animals and trees, these images seemed to interest them a lot. Using nature environments can be used to make the design more relevant to them.

Difficulty in systematic thinking

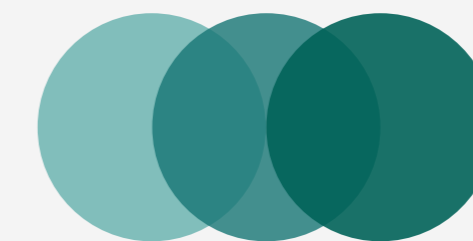
The children seemed to have difficulty understanding the net balance when there are positive and negative topics present. One of the children responded that an airplane would be positive for sustainability because it allows the passenger to be faster at its destination and therefore use less fuel. The problem is that there is not enough knowledge of the impact of positive and negative results. This leads to misinformation on sustainable impact.

The design could focus on explaining small and simple systems to give a better understanding of how a sustainable system behaviour works. The downside of this is that this might be too difficult for the children to understand. Therefore the information about this should be kept very basic to avoid confusion. The focus could also be on showing examples without showing the system behind it.

Providing them extra basic information for when they are old enough to understand the system.

Expert note

It is important for children to practice understanding small systems with different perspectives according to Janssen et al. (2019). The wicked problems we face as a society are so big and complex that practice in systematic thinking is important to face these problems. Understanding of different perspectives of stakeholders is essential.



Discussion

The participants for the study were coming from a middle/affluent neighbourhood. Their perception of sustainability varies from those coming from a disadvantaged neighbourhood. This is due some personal examples might be less common, children from a disadvantaged neighbourhood will be less likely to have parents owning a tesla. However, they do understand the term electric car. The examples of this study should be taken into context and need adjustments to fit disadvantaged neighbourhoods.

There answers of the children could be biased based on the introduction presentation. In the introduction presentation the children had to think and say out loud things they thought were sustainable, other children could have based their answers on the examples given.

Expert interviews

Introduction

Experts in the field of museum education were interviewed with the goal to gain a better understanding of children visitor experience and children's personas. Getting more insights in the likes and dislikes of children regarding topics and teaching activities. Also, forming personas based on the identity needs of children. Ideally user studies with children would be done inside the museum but since the museum is closed this is not possible. Museum educators from different departments but all with museum teaching experience were recruited. The experience ranged from 2 years to 27 years working at Museon.



Figure 22: Experts interviewed

Research questions

3. How do children experience museum visits?
4. What types of children are present during museum visits?
5. What drives children to explore during museum visits?

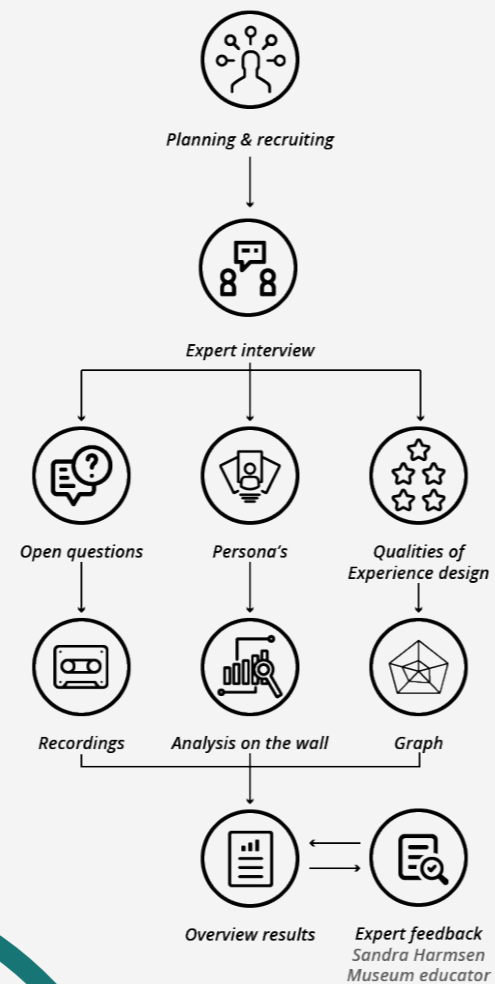


Figure 23: Procedure of the expert interview research

Method

Altogether 6 expert interviews were conducted online through Microsoft teams. The interview took 1 hour and consisted of multiple activities. An introduction to get comfortable with the online meeting, open questions regarding children likes and dislikes, and 3 different Miro exercises. A museum lesson timeline was made in Miro to understand how the experts would normally guide the children. This activity was skipped for half of the instances due to time restrictions. 8 different personas were made in Miro, and qualities of experience design from World of wonder (Bär and Boshouwers, 2018) were rated on a scale of 1-10 based on the desired Museon visitor experience. Notes were taken during the meeting and the meeting was recorded. Insights were gathered from the notes and listening back the recordings. The personas were printed, and patterns were found to create 5 overarching personas. The final personas were based on personality traits. The qualities of experience design were made into a radar chart for overview. The procedure of the interview is shown in Figure 23. More information can be found in appendix B.

Results

Open questions

Insight 1: Introductions are important to sensitize the children toward the topic

The introduction of an exhibition is important to sensitize the children towards the topic of the exhibition. They need to understand what they will be learning and have an open mind towards the topic. This makes it easier for them to adapt the new knowledge and makes it easier to concentrate.

They can be introduced by a story or by thinking back on their own experiences. Thinking back about own stories might break the immersion of the exhibition. There should be done more research on how to introduce children properly to an immersive experience.

"It is the idea of activating pre-knowledge. You prepare people for the theme of the exhibition. They come into the proper mindset and they think back on relevant memories"

Insight 2

Insight: Be free, be fun, be flexible

The main objective of the exhibition should always be a fun exhibition. Children will learn something when going through the exhibition but mainly they will have fun. Do not force information on the children when they do not enjoy it.

The exhibition should easily be adapted to different children. If some children do not like the direction of the experience they have to go through. They should be able to explore a different direction. This can be done by offering different types of assignments based on the identity needs of the children. The children will find an easier time choosing to do something they like.

“Create a flexible environment that allows you to adopt based on the mood of the children. Have extra assignments for fast children.”

Insight 3

Insight: Children are interesting in everything, it's all about how you deliver the information

Most topics are interesting for children. Some topics are more interesting (topics close to their experiences and imagination), and some topics are less interesting (Abstract concepts). But most of the topics are interesting for the children, it is important how the information is conveyed. This should be done with fun methods. Interactive assignments, using props, exploring, etc.

“Children are not so different from adults. Children are open minded people. With adults you have opinions, thoughts, and judges which hinders their information absorption. Children do not have this problem.”

Insight 4

Insight: Not all children are the same

Not all children like the same type of assignments. There should not be one specific type of solution that fits all the children. Some children might be interested in theatrical stories about the subject, and some might want to discover information on their own. This means that there is not one perfect experience for all children. The exhibition could be experienced different for every child depending on what types of assignments he/she will do. This will create a more enjoyable exhibition for the children.

“There isn't a single best solution. Some children respond better to a story and some children to something else.”

Insight 5

Insight: Let the children do it themselves

Do not use too much time of the exhibition to send information, if possible, let the children explore information themselves. When spending too much time explaining things, children will get bored and lose their attention. The information can be explored by having children do discover assignments, where they need to do research about the topic. Or they can do interactive assignments where they learn about a topic while doing an activity regarding the topic.

“They most enjoy doing things themselves. Start maximum with a 10 minute talk and afterwards they need to do something active.”

Insight 6

Insight: Make the information relevant to the children

The information of the exhibition should be relevant for the children. They are most interested in topics that affect their direct environment or their imagination. Irrelevant information can be made relevant by explaining how this information can affect their surroundings. For instance, a warmer climate in Austria can lead to a higher risk of river flooding in the Netherlands. Making it relevant makes it easier for them to understand the topic, it is less abstract when explained with terms they are familiar with.

“It is hard to remember something if you need to learn something new during the lesson but you don't have something to relate it to.”

Insight 7

Insight: Do not treat the children like they are kids

Children of age 8-12 have already learned a lot. They will dislike it if you treat them like they do not understand the world. They have been learning for their whole life which is the same as adults. The information should not be given in a childish way or made to easy. Do not give information to them like you would to a toddler. Getting feedback from Museon experts is important to verify if the information given in the exhibition corresponds with the target group.

“Children feel quite because they have learned already quite a lot. If you look at kids and say that they have a lot to learn that is correct. However, they have learned a lot already. If you treat them smaller then they are you don't respect the learning process they have done and they will be annoyed by that.”

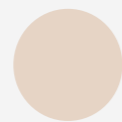
Insight 8

Insight: Make them feel experts by making them experts

Every child enjoys learning something in their own way. This can be used to make them feel like experts of their area and make them pay more attention at the exhibition. When all children will be learning something different during the exhibition, they can proudly share their information when it is needed during activities. For instance, when they all need to discover some information in their own way and need to use this information to complete the next assignment. Another positive result from this is that the children will need to pay attention in their own field since their classmates depend on them. They cannot get away with doing nothing by hiding behind their classmates.

The downside of this that it can get in the way of the flexibility. If the children get stuck in a role, they do not like they are less likely to cooperate during the exhibition. Since the children are so dependable on each other using this method, this could lead to a horrible experience.

“Expert groups. Group of 30 children divided in 6 groups of 5. Everyone will get their own role so that everyone has to do something. The fact that you are an expert makes it necessary for the child to pay attention.”

**Personas**

These findings are based on experiences of museum teachers, the personas reflect what type of children from age group 8-12 are present during a regular museum lesson.

These personas show some similarities with the learning styles of Kolb (2007). Kolb suggest that there are 4 different styles of learning, teaching a kid in their own style would be a more efficient way of learning. There is some discussion if this theory is valid or not (Bergsteiner et al. 2010). The difference with this study is that these personas are findings of the type of children present during museum lessons. The personas can be used to better design for the exhibition needs of the participants. The learning styles of Kolb suggest a model that can be used to understand the learning needs of children. The learning needs and exhibition needs could conflict; thus, the personas will provide a better understanding of the needs of the children during an exhibition.

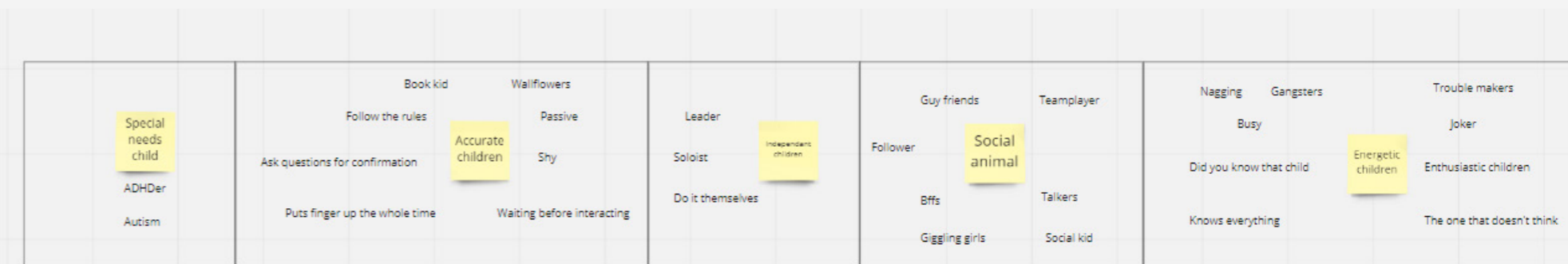


Figure 24: Results of the analysis on the wall for the persona assignment

Special needs children

Special needs children suffer from a learning disability. The special needs children during regular classes are being cared for by the teacher. The ones that are unmanageable by the teacher often go to special education. They require extra care to have personal crafted exhibition experience. This will go beyond the project scope and therefor the design will not focus on this user group.

In 30 children class around 1-2 special needs children

Social children

Social children can get along easily with other members of the group. They like to talk and share their thoughts. They mostly enjoy being around others and sometimes like it more to be around

others then paying attention. They will enjoy group activities where they can work together with others. This way they can still interact with each other and learn at the same time. When doing solo tasks, they will just look at how others do their tasks and try to do the same. Can be avoided by everyone having their own separate tasks.

Some social children have best friends, and they will only interact with each other. This can lead to a bad group dynamic if the group consist of 4 children. It is best to ask to the teacher of the class on how to resolve this.

In 30 children class around 15 social children

Energetic children

Energetic children are full of energy. The energy can come from enthusiasm or just being energetic from themselves. These children want to be doing activities as fast as possible. Activities that require them to think of solution based on their intuition is something they are good at. One downside is that they like to talk a lot or even distract others if they are bored. They should be kept busy to prevent this from happening.

Sometimes they do not realize that they need others and look down on other children. They can learn from team activities that they need others to cooperate and complete tasks together. In 30 children class around 5-6 energetic children

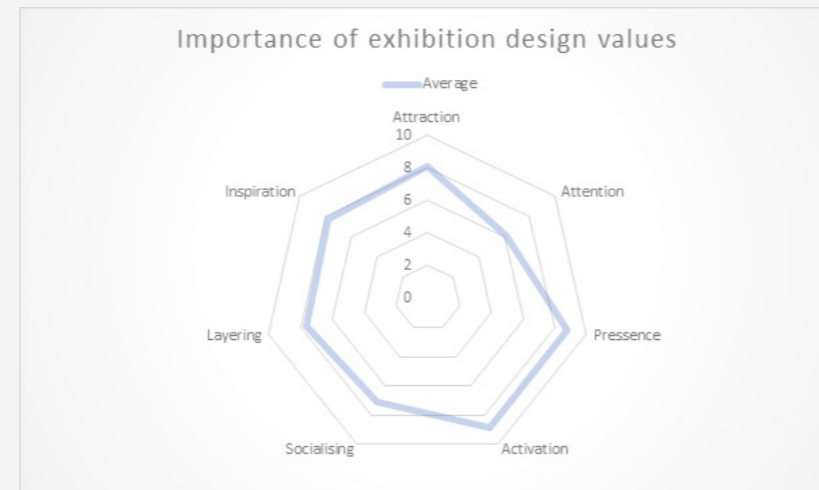


Figure 25: Radar chart of the qualities of experience design results

Accurate children

Accurate children like to think first and then act. They follow the rules and do everything carefully step by step. They are good at tasks that require patience and precision. They can work by themselves if the task is explained very thoroughly step by step. They seek approval and need feedback to understand if they are doing it correct.

Sometimes they need some time to start doing things themselves. Once they start working you would be surprised how much they understand and do. Tasks that that requires them to think first and then act is something they will enjoy.

In 30 children class around 5-6 accurate children

Independent children

Independent children are independent workers. They can easily perform tasks by themselves. They are confident and easily make decisions. Independent children can lead the group by being the first to think rationally about what needs to be done and discovered.

Sometimes they do not want input from other because they believe they know best themselves. However, they will still be very hands on and will start to work. This can also be used to make others secretly follow.

In 30 children class around 2-3 independent children

Qualities of experience design

The averages of the values rating show that the lowest rated value is attention. The highest rated values are activation and presence.

Participants explained that keeping the attention of the children is difficult to do. Sometimes they just lose concentration, and nothing is there to do about this. The goal should not be to keep the attention of the children for a long time. But design for the other values good enough that attention is kept through the experience. Do not force to keep the attention of the children.

Discussion

The results of this study are based on the opinion of museum teacher experts. The context of the answers were museum lessons. It should be taken into considerations that the children might react differently when experiencing an interactive museum exhibition. Some topics that were only relevant to museum lessons have been filtered.



DESIGN DIRECTION

Design direction is the define step of the double diamond method. This step converges all the explorative research and makes it usable for the solution space. The information in this chapter can also be used as evaluation criteria.

Design framework

This chapter will provide a design framework which should be the base for the design of the experience. It is a grouped overview of how the insights of the research phase would be implemented when used inside the experience. These design recommendations should be seen as guidelines instead of design rules. Limiting the project to a set of rules would hinder the creative process too much to brainstorm a viable idea. unexplored recommendations can also be used as design opportunities after the final concept of the project.



Principle 1

Insight: Introductions are important to sensitize the children toward the topic

Design recommendation: The content of the introduction should be about the theme and the story of the exhibition



Principle 2

Insight: Be free, be fun, be flexible

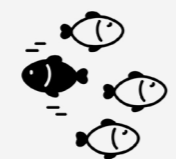
Design recommendation: Children should be free to choose the sequence of the exhibits



Principle 3

Insight: Children are interesting in everything, it's all about how you deliver the information

Design recommendation: The information transfer process should be interesting on itself. Creating fun exhibits leads to a better information transfer.



Principle 4

Insight: Not all children are the same

Design recommendation: The exhibits should be designed by thinking about different types of playfulness. The experience should include enjoyment that matches the different personas.



Principle 5

Insight: Let the children do it themselves

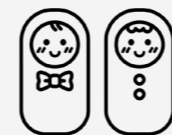
Design recommendation: When inside the experience the time spend for a teacher to explain information should be kept to a minimum of 10 minutes and preferably less.



Principle 6

Insight: Make the information relevant to the children

Design recommendation: The theme and information should be about the Netherlands and common sustainable topics.



Principle 7

Insight: Do not treat the children like they are kids

Design recommendation: Don't use toddler voices when explaining something to children. Give them some credit, don't be afraid to make it a bit challenging.



Principle 8

Insight: Make them feel experts by making them experts

Design recommendation: Give them roles and give them separate tasks for their roles. But give them an opportunity to switch if they detest their role.



Principle 9

Insight: Difference in knowledge level

Design recommendation: Create an easy and a difficult way to experience the information inside the exhibition.



Principle 10

Insight: Choose own interest over the goal of the assignment

Design recommendation: Use animals to evoke reactions from the children. Don't let it distract them though.



Principle 11

Insight: Relevant sustainable information

Design recommendation: Use concepts such as electric cars instead of brands such as Tesla.



Principle 12

Insight: Difficulty in systematic thinking

Design recommendation: Make it easy for children to understand how sustainable behaviours affect the environment

Personas

This section will be about the different design recommendations when designing for the different personas. Animals were found to match the personas to have a better feel of the personas. The special needs child is left out in this section because designing for that target group falls beyond the scope of the project. Also, these recommendations should be seen as guidelines for the project.



Social capibara

- Create an exhibit that require cooperation
- Create an exhibit that require them to share their thoughts and ideas
- If they have a solo task give them separate tasks so they can't copy what others do



Accurate owls

- Create an exhibit that requires them to think before they act
- Create an easy introduction so they can get used to new environment
- Provide feedback when they correctly performed an exhibit



Energy monkey

- Create an active exhibit that requires movement
- Create an exhibit that is fast paced which requires quick intuitive responses from them
- Keep them busy so they don't distract others



Lone wolf

- Work with groups, so they can lead the other children
- Prevent the lone wolf from wandering off by himself
- Create hands on exhibits that don't require many instructions

Design goal

This section will be about the design goal of the project. The design goal is a refined version of the starting assignment. The target group has been defined in terms of cognitive development (preteenagers) to make it more clear how the target group behaves. And disadvantaged neighbourhoods have been added based on wishes from the client Museon.

Design goal

Design an immersive interactive experience inside an electric truck for Museon for pop-up locations at schools aimed at **pre teenagers***¹ to inspire, activate and make them care about **nature and sustainability***². The experience should be made accessible to children from **disadvantaged neighbourhoods***³.



*1 - The age group of the exhibition is for children around 8-12 years old. This group is mainly preteenagers, and the experience should be made relevant for this group.

*2 -Inspire children about sustainability by using inspiring examples from nature and the environment

*3 - The primary target group of the exhibition are children from disadvantaged neighbourhoods. The children from those neighbourhoods are less likely to visit museums. Museum visits are important to broaden the perspective of children on the world and helps their development (Gemeente Den Haag, 2019) The exhibition is should still be accessible to other neighbourhoods as well. Therefore, the information of the exhibition should not made personal for disadvantaged neighbourhoods but understandable and relatable for disadvantaged neighbourhoods.

The goal of the interaction vision is to gain an actual feeling of how the interaction should be experienced. The activity chosen is night climbing since it evokes a strong feeling for me. The interaction vision is not used as a measurement tool but as a tool to create the right state of mind when starting the creative process. The interaction vision is not actively used in a later part of the project but is kept in the back of the mind.

Interaction vision NIGHT CLIMBING

Adventurous

Creating the feeling for a moment that you are alive and exploring

Discoverable

Discovering new routes to reach for the finish

Interactive

Discover by using tools, interacting yourself or speaking to others to discover new steps

Accomplishment

Feeling proud of the achievement when finishing

Collaborative

Trust between belayer and climber

Flow

Being in the zone while going through the whole experience

Sensory

Using all your senses to discover new routes

Immersive

Forgetting where you are and focussing only on the task



Figure 26: Personal picture of night climbing done

Creative vision

This section will be about the creative vision of the exhibition. The creative vision is an image of what the theme of the exhibition is going to be about Figure 27. It makes up of different images which can be seen as a mood board about a specific experience.

Ideation

Before talking about the concept, it is important to show the ideation process. A creative session with design students was held to gain inspiration. The goal of the session was brainstorming about a theme for the exhibition using sustainable development goals as guidance. The creative session gives a wide range of ideas, but none felt like they were interesting enough to pursue.



Figure 27: Early creative vision idea about traveling on different planets that did not make it



Figure 28: Early creative vision idea about an ocean city that did not make it

An individual brainstorm session where several creative visions were made to see if some images sparked creativity.

An ideation technique used by Bär and Boshouwers (2018) for creating a theme is to get a wide range of ideas and step away for a moment to let the ideas sink in. This was done by visiting Naturalis a natural history museum.

An idea sparked to mind during the visit because of two reasons

1. Naturalis consists of multiple exhibitions and every room seemed to be designed to fit the theme of the exhibition. The dinosaur room was huge and fit the theme of dinosaurs being these large animals. The room about



Figure 29: Dino Exhibition Naturalis, The large room fits the theme



Figure 30: Camper in Naturalis that gave inspiration for the theme

death was very dark and maze like fitting the mysterious dark theme of the death. The theme of the mobile exhibition should fit the properties of the truck.

2. Simon and Moscone(2016) Found that a good exhibition should be relevant for the visitor. Relevance is to empathize with visitors. The theme should spark their interest and thus their imagination. During the visit to Naturalis family of two was observed. A mother and a young daughter were viewing a video which was inside a campervan. There was no interaction possible with the campervan except to watch the video. The little girl had other plans as she jumped in the campervan trying to close the door. She told her mom to close the door since they were going on a holiday with the camper. This idea of going on a trip inside a camper was relevant for the child, and an idea was formed.



Figure 31: Roadtrip camper experience creative vision

Roadtrip camper experience

The creative vision shows a campervan that is on a trip to different foreign destinations Figure 31. It shows ice in the background and a desert. The camper is also full of objects that can be discovered. Some objects are hidden, and some are out in the open.

There are multiple reasons why this theme fits the exhibition:
The theme is relevant for the visitor. Every child can relate to going on an adventure. As shown in the observations the child instantly heard the call for adventure even though she couldn't even interact with the camper.

The camper also fits the space of a mobile exhibition. The truck is a basically

a bigger camper therefore the room will be perfect to design an exhibition about travelling in a camper.

Most camper travellers are interested in sustainability as most of the campers are self-sufficient. They either have solar panels on the roof, have a special way to preserve water, and every cm² is used efficiently to use most of the space.

There are opportunities to discover information because the campervans efficiently use space. A coach can be a coach and also a storage room, or even a toilet. One insight of the expert interview session stated that children find it enjoyable to discover information themselves. There are many

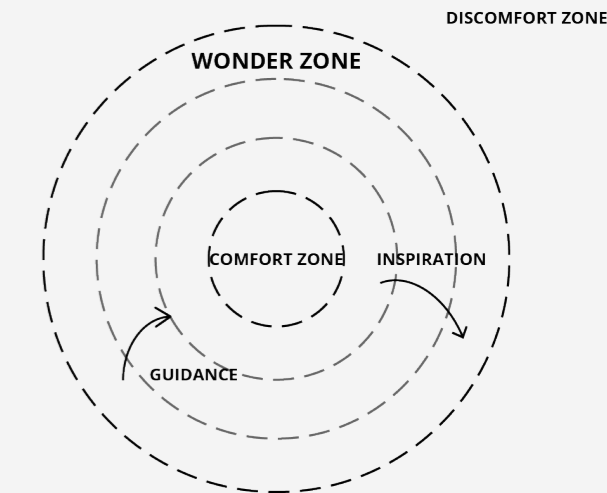


Figure 32: Wonderzone theory

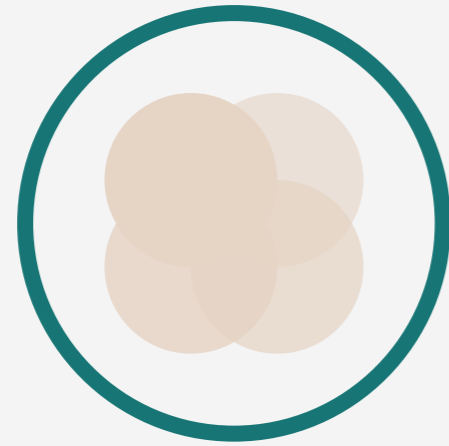
opportunities for this inside the camper. The wonderzone theory by Bär and Boshouwers (2018) state that it is important to guide and inspire the visitor. The visitor should be challenged to step out of the comfort zone but also comforted by having a safe space that is easy and recognizable. The camper has the opportunity to be a comfort zone when you are inside the camper which is known. But also, an inspiration zone where you can view the outside world and are inspired by the great unknown outside.

PHASE 2

DESIGN & EVALUATION

This is the end of the phase one of the project. The second phase is the design phase of the double diamond method (British council, 2019). It is important to understand that the basis of the concept was only the availability of an electric truck. Therefore the first chapter will only be about the ideation process, giving more insight how the concept was formed, and which steps resulted in the final concept called Wanderlust. Afterwards, a detailed explanation about every step of the concept will be given using the experience journey model of Bär and Boshouwers (2018). Followed by an explanation on a different meta level explaining how the concept inspires the visitor using the Body, heart, mind, soul theory of Bär and Boshouwers.

The converging phase will be the evaluation of the concept and testing what aspects work well. The chapter will end with recommendations about interesting directions.



IDEATION

This chapter will be about the ideation process of the concept. The base for the concept was to create an exhibition about sustainability in an electric truck which is very broad. Therefore there were multiple iterations about different aspects of the project. The goal of this section is to give a better overview of where all the information and design decisions came from and the outcome of the sessions.

Ideation steps

1. Creative session design students
2. Analysis and brainstorm with creative session information
3. Museum visit inspiration
4. Camper interior design
5. Creative session Museon
6. Individual brainstorm
7. Individual story brainstorm
8. Sustainable information
9. Creative session on story and interaction
10. Analysis and explore creative session
11. Expert meeting verify and strengthen concept
12. Student feedback
13. Coach feedback
14. 3D model and visualizations of concept
15. Final concept: Wanderlust

Theme

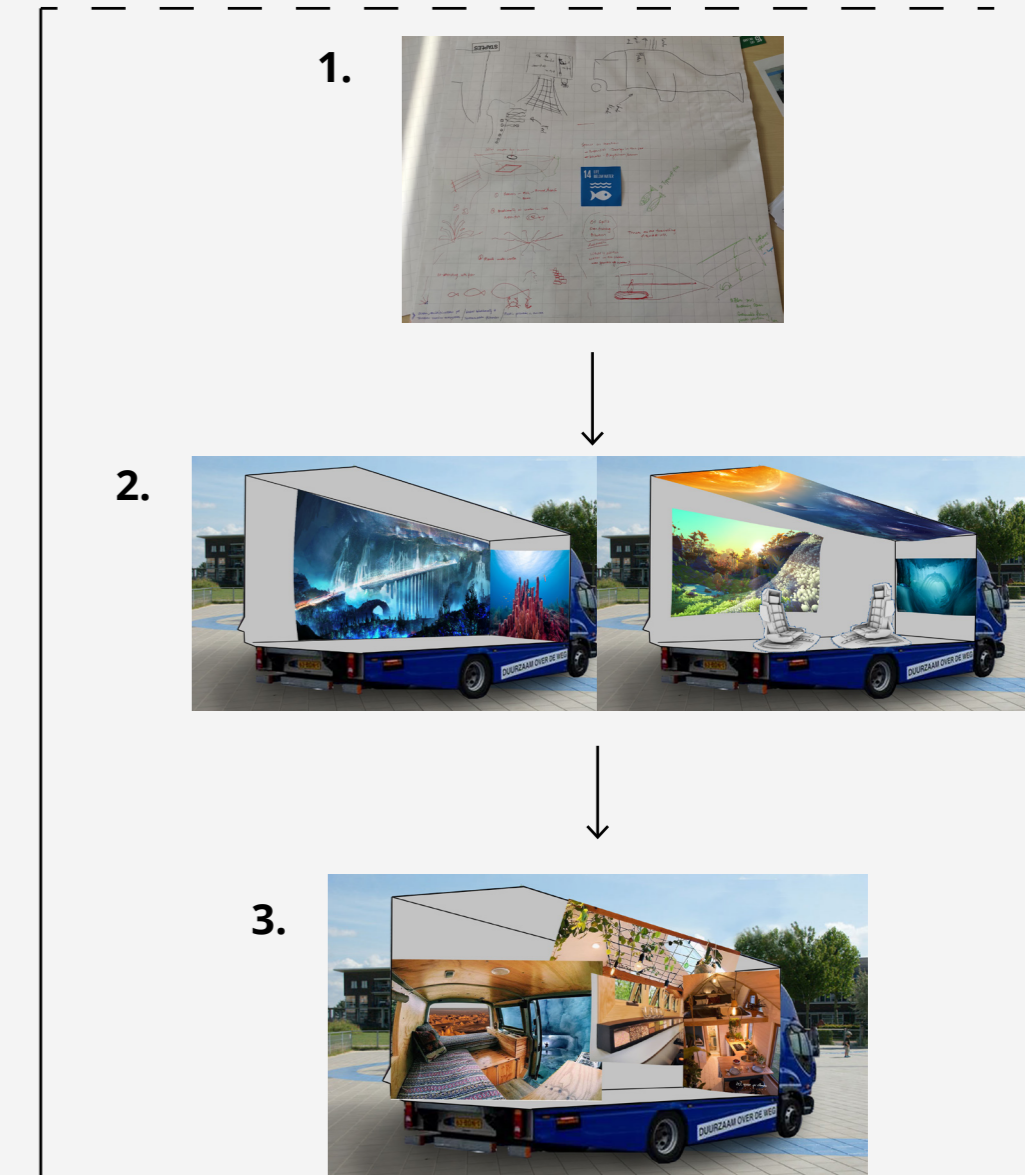
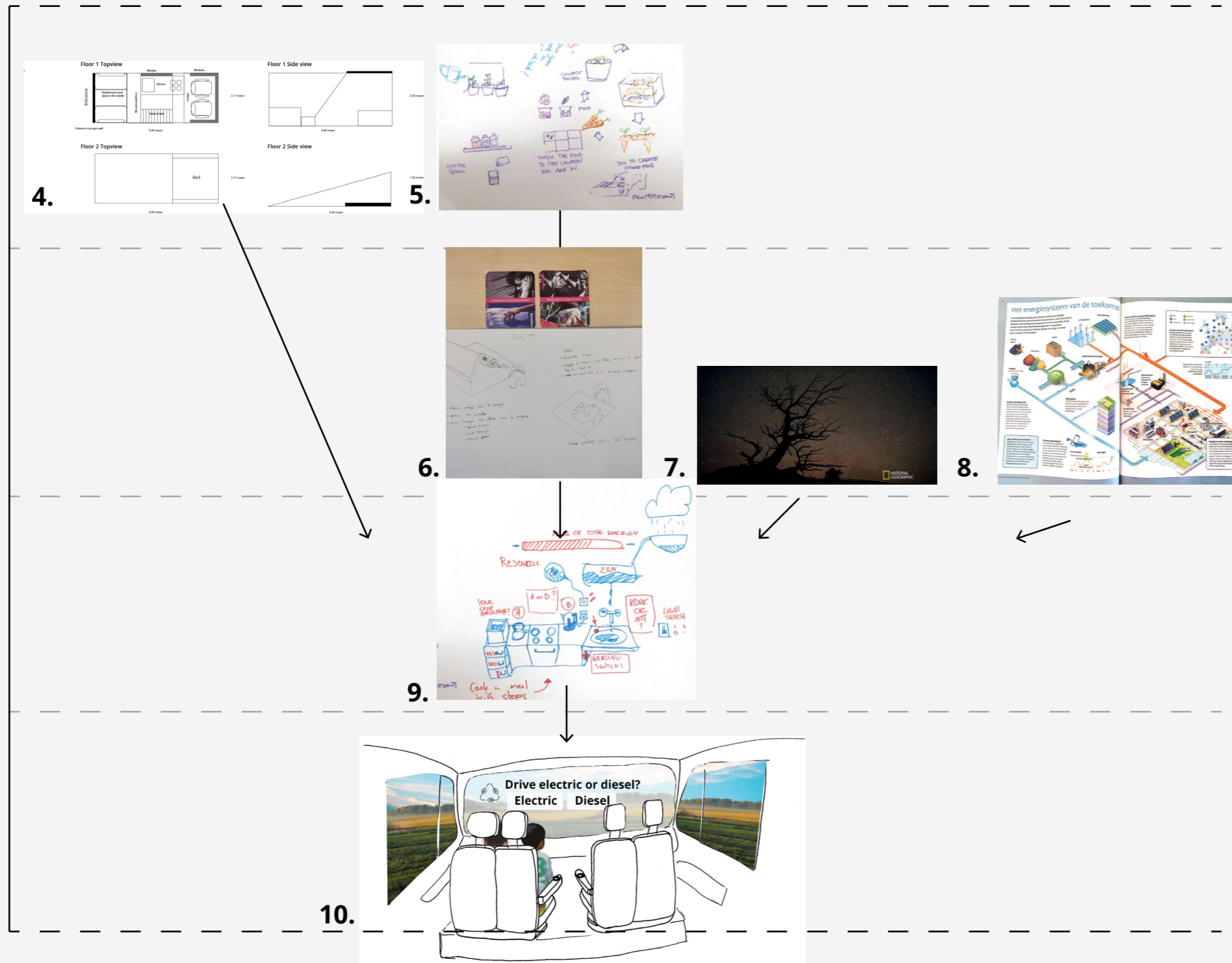


Figure 33: Ideation timeline for theme ideation

Story + interactions



Concept Improvement

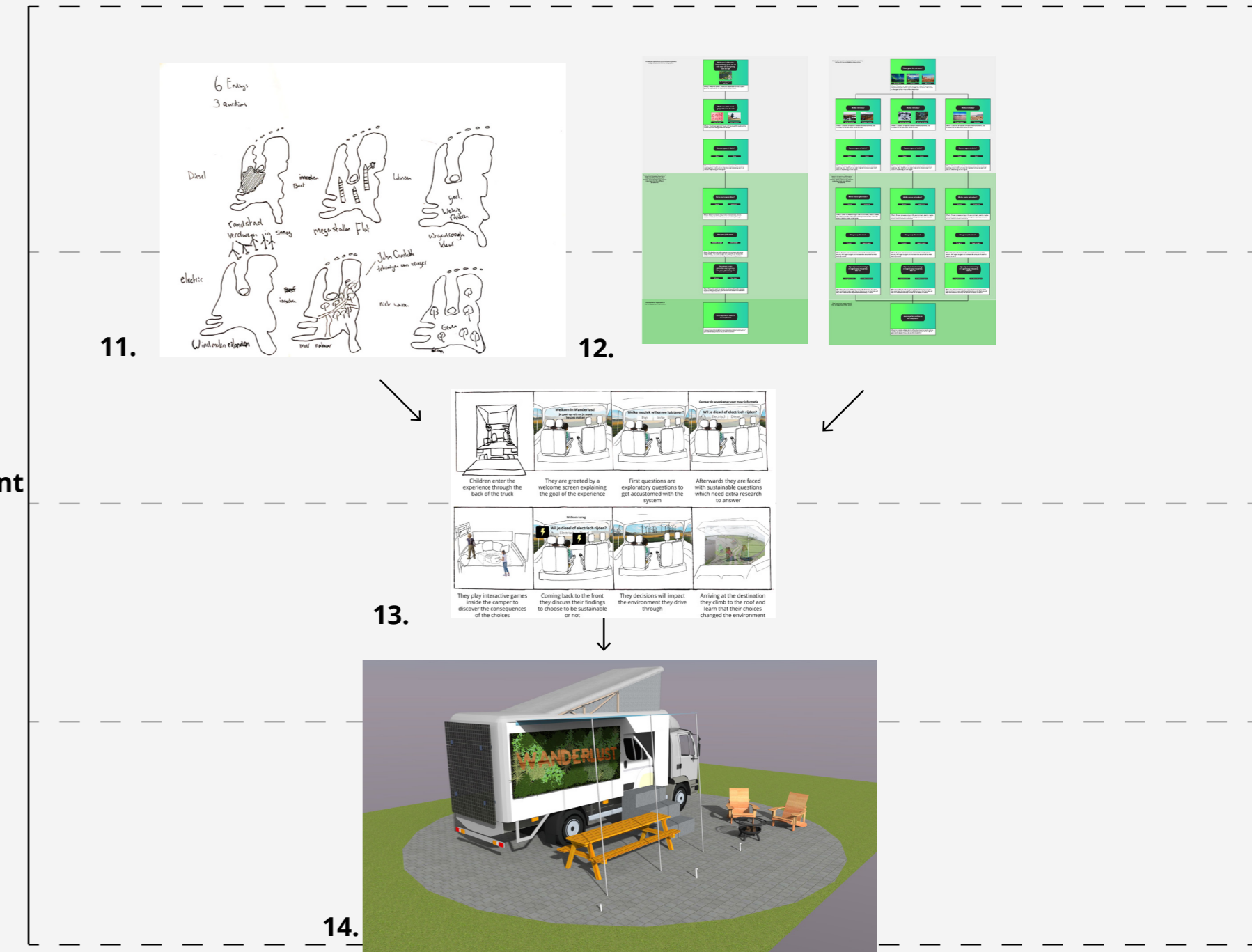


Figure 34: Ideation timeline for story + interaction ideation

Figure 35: Ideation timeline for concept improvement ideation

1: Creative session design students

The ideation started off with a creative session between 3 master design students. The goal of the session was to gain different ideas for inspiration. First there was an introduction with the design goal. The second part consisted of 3 different rounds using different sustainable development goals as guidance for each round. The goals chosen were 13- climate action, 14- life below water, 15- life on land.

Outcome

20+ smaller ideas were being generated during this session. Also, notes were being taken about insight the participants thought would be interesting to show in the exhibition. These results were further analysed with an individual ideation.

2: Analyse and brainstorm with creative session information

The data of the creative session was being analysed by scanning through the brainstorm sheets and notes taken during the session. Some ideas were being worked out further and a small brainstorm was being held to think of more ideas.

Outcome

8 ideas for themes were created. However, the ideas that were created felt generic or out of place for the electric truck location. Another way of inspiration was needed to further ideate.

3: Museum visit inspiration

The goal of the visit was to gain inspiration inside the museum exhibition context. Naturalis in Leiden was visited, and observations were made to see what kind of exhibits engages visitors and how they designed their exhibitions.

Outcome

The rooms of the exhibitions were made to suit the theme of the exhibitions. For instance, the dinosaur exhibition was a very large room which would fit the immense dinosaur skeletons, this really amplified the interesting element about dinosaurs.

During the visit a mother and young daughter were looking at a Japan exhibition. They found a small campervan and the first response of the daughter was to jump in and wanting to close the door to go on a trip. The daughter was engaged with the exhibition experience. The theme inside of the truck should also fit with the truck, this way the

room amplifies the theme. A campervan theme would fit perfect with the truck, campervans use limited space to have everything needed to live inside. This is similar with the limited space of the truck. More about the thematic choice is being explained in the theme chapter. One concept of using a campervan theme was generated during this session.

4: Camper interior design

The idea of designing a camper experience was still quite abstract. An interior design was being made to gain a working base which allowed for guidance when designing the interactions. For this step a meeting with an expert in campervans and tiny houses was being consulted. The expert meeting took 2 hours.

Outcome

A floor plan of the layout was being made with all the areas that are normally included inside a campervan to create a real campervan experience. Possibility of interactions were kept in mind during the design of the layout. Such as a heightened couch which makes it possible to create a discover interaction underneath. A mood board was made to gain inspiration on what the inside of the camper could look like. This is not further explored since going too much into detail

of the interior design would go beyond the project scope.

5: Creative session Museon

A creative session was being held at Museon to gain inspiration for possible interactions and thematic elements inside the campervan. The session was with 6 participants, 5 museum educators of Museon and 1 museum educator intern. There were 2 different brainstorm rounds, the first one was about game interactions inside the camper and the second one about thematic ideas to create a better immersive experience. Notes were being taken as well to gain more expert feedback on exhibition design.

Outcome

30+ thematic and small interactions were generated from the session. To many ideas were too simple or small to be useful, it became clear that even though there is a theme the story of the exhibition is very abstract. The story and sustainable information need to be developed more in order to talk about what interactions are possible. The data of the session can be used as an inspiration of possibilities in the future.

6: Individual interaction brainstorm

During this workshop Plex cards were used. These are playful interactions cards which helps to gain more guidance for brainstorming. This was helpful since the story of the exhibition was still abstract. This made it hard to generate playful interactions.

Outcome

3 detailed playful interactions were generated during this session. These playful interactions were inspired by the Museon brainstorm. However, these had the same problem that they lacked a sense of story element or reason why the children would play these games. These ideas were stored for later inspiration.

7: Individual story brainstorm

The goal of this brainstorm was to create a story which would fit with the camper theme. Brainstorming was done alongside with watching nature documentaries to gain inspiration.

Outcome

3 different story ideas were generated from this session. All concepts felt out of touch with the original camper idea of exploring the world inside the campervan. The project needed a step back to be closer to the original goal.

The story would be exploring the world inside the campervan.

8: Sustainable information

At the same time research was being done to find sustainable information which might be interesting to use in the exhibition. This was done by reading "De duurzame almanac" which is a book for children with all kinds of different topics about sustainability. 7 topics were chosen which had a connection with the campervan.

9: creative session about story and interaction

The goal of this session was to take a step back and gain fresh information and ideas for the exhibition. The session took place with 3 design students and more detailed game interactions were brainstormed for each area of the camper. There were 3 rounds of half an hour.

Outcome

There were 15+ ideas in total about all the areas. More important there were 2 game elements generated that could guide the visitors through the whole exhibition. These game elements were the last pieces needed to bring the whole experience together.

10: analyse and explore creative session

This was the point where all the previous information came back together to form one concept. One of the 2 game elements was chosen based on which suited best with expert interviews and literature research done in the first phase of the project. The concept was built block by block using information from previous sessions.

Outcome

1 concept came out of this session which consist of the theme of session 3, overall game element of session 9, Sustainable information of session 8, game interactions of session 6/9/10, and thematic interaction of session 5.

11: expert meeting verify & strengthen concept

Following up on creating the final concept another meeting with a museum expert was being held to gain feedback on the concept and sustainable information.

Outcome

The decision system gained a whole overhaul to match it better with sustainable information and make it more relevant for children.

12: Student feedback

Another feedback moment was being held to find small mistakes in the concept. The concept was explained with a storyboard and the participants were walked through the decision tree.

Outcome

Some small adjustments to make the story more logical and interesting.

13: Coach Feedback

A concept presentation was being held and afterwards questions were asked about the concept. After the coach meeting a holiday was planned which also helped to let the feedback sink in.

Outcome:

Feedback was gathered and new methods were discovered on how to walk through the concept yourself to make sure if everything was making sense.

14: 3D model and visualizations of concept

Throughout the whole week visualizations of the concept were being made. The visualizations gave a more concrete idea of what the experience would look/feel like. Changes were made to the choice system and the exhibits have been made more detailed.

Outcome

Using Sketchup a 3d model of the camper was being made. Using photoshop and illustrator visualizations of every step of the concept were being made.

15: Final concept

The final concept Wanderlust is made. The next chapter will be explain this concept in more detail using different kinds of museum experience design theory.

Concept proposal

This chapter will explain the concept using the experience journey model. According to Bär and Boshouwers (2018) these nine steps Figure 36 can serve as a blueprint to make the experience a transformational adventure. The steps help to create a story that immerses the user in the experience. The steps don't have to be used as 9 successive steps, but Wanderlust has been using the normal way of the experience journey to avoid complexity. Only the exploration and admiration stage are used intertwined, more about why will be explained during these steps inside the experience journey. Each individual step is designed with the knowledge of user research and literature research from the first phase of the project.

The whole journey will be an educational midday which takes about 2 hours per class. The journey starts with an introduction inside the classroom, followed by experiencing the exhibition, and ending with a lesson to process the information from the experience. The camper truck will be seen as the visit stage Figure 36

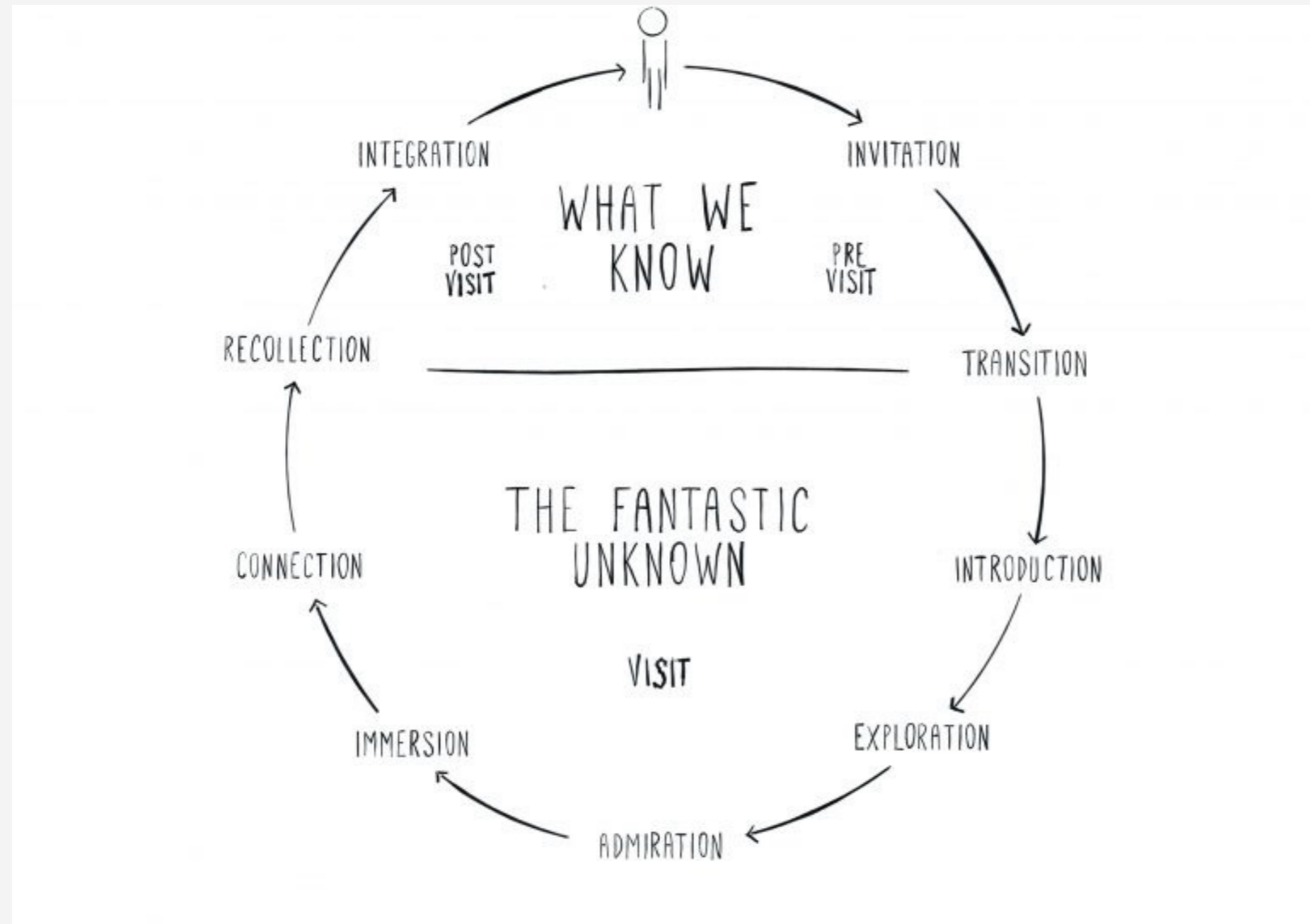
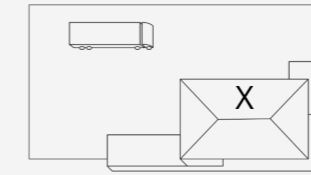


Figure 36: Experience journey model by Bär and Boshouwers (2018)

Invitation

Where: Classroom
Pre-visit stage



According to Bär and Boshouwers (2018) the first step is a call to adventure towards the visitor. It should invite and excite visitors. The invitation is developed in a similar style as the experience to attract visitors to the theme of the exhibition. For the Wanderlust experience a travel brochure has been developed.

Invitation content

The content of the brochure is about the theme, story and time schedule. One of the expert interview insights stated that introductions are important to sensitize the children towards a topic. They need the time to think about what they know about the theme so they can be open minded about new information regarding the topic. The brochure gives an explanation about the experience being about a sustainable trip. It uses recognisable pictures for children of windmills and a map Figure 37 to make it more concrete what a sustainable trip should be about. The landscape images are evocative images that build the story of going on this beautiful adventure.



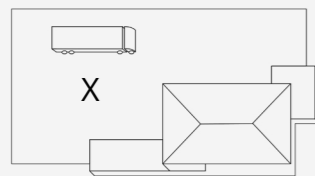
Figure 37: Travel brochure created to introduce visitors

The expert interview stated that children want to know what is going to happen and for how long. This helps them to understand how much longer they need to concentrate, there for a time schedule was added to the brochure.

Origin
The idea of a brochure came from an inspiration session with museum professionals. They found it fitting to have elements from the same theme used throughout the exhibition.

Transition

Where: Outside
Visit stage



According to Bär and Boshouwers (2018) this is the turning point where visitors leave their normal comfortable habitat to embark on their journey. They need to be transitioned in their mind to be ready to go on this journey. The transition stage is also the moment where the rules and practicalities about the visit will be explained.

Transition content

When the children arrive at the exhibition, they first have to wait in the camp area Figure 41 outside the camper. According to Bär an introductory area needs to make use of evocative elements to immerse the user in the journey. The campsite evokes the feeling of traveling and camping in the nature. Evocative elements can be iconic objects that sparks the imagination of the user. During the transition stage the visitor receives 2 iconic traveling objects, a safari hat, and a compass. Figure 44. The safari hat is to make the visitor feel more like travellers and the compass has another reason.

Transition reasoning

The compass is a smart object that is used to guide visitors through the experience. Inside the compass is an NFC tag that needs to be scanned to start every exhibit. This has multiple reasons.

1. After every exhibit the children are asked what kind of sustainable decisions they would make in a hypothetical situation. The consequences of their choices will be showed in the final exhibit. Their choices need to be saved since the final exhibition is personalized, this is done using the compass. More about the choices and reasoning behind will be in the immersion stage section.

2. During school events the group of children will stay together and not wander to different exhibits.

3. During public events multiple people can go inside the camper and save their choices on their compass.

4. The compass itself is an iconic object which suits the purpose of creating

the feeling of entering a wonderful world with your new tools.

The transition stage also serves to organise practicalities. The staff can make sure everyone is in a group of 3/4 children. They explain the rules of the exhibition, how the NFC compass works, and make sure the children are ready for the adventure. Once a group of children is all prepared, they can enter the exhibition through the side of the camper. Figure 38 shows all the exhibits where the compass is needed. Every exhibit is in a fixed order except 3 and 4 where exhibit 4 can be done before 3 if wanted by the visitor.

Origin

A museum visit was done to the maritime museum. They used safety helmets and id cards to transition and guide visitors in the experience. Which inspired to use a travel hat and a compass in the Wanderlust experience.

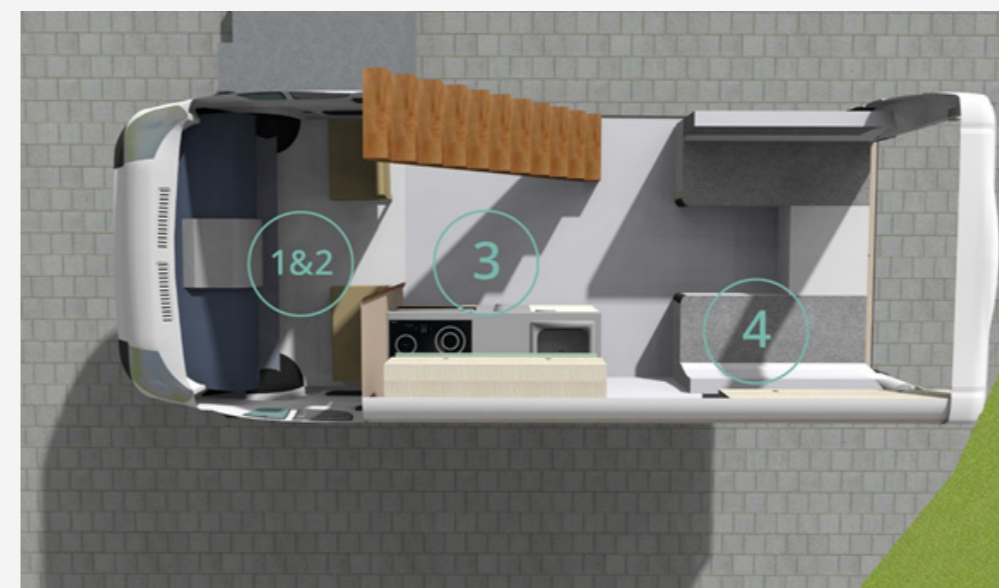


Figure 38: Exhibits on the ground floor. 1- Introduction, 2- motor exhibit, 3- Kitchen exhibit, 4- Water exhibit

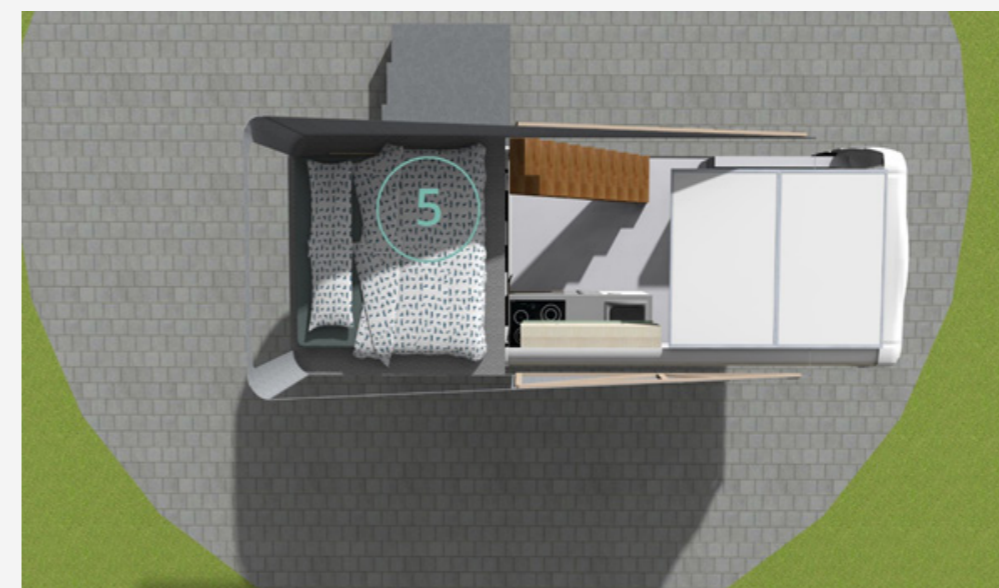


Figure 40: Exhibit on the first floor. 5- Immersion exhibit



Figure 39: Render of open version of Wanderlust and the campsite



Figure 41: Render of normal version of Wanderlust and the campsite



Figure 42: Render of open version of Wanderlust and the campsite



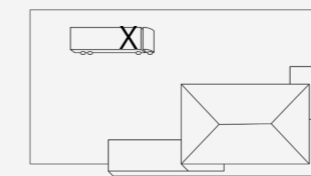
Figure 43: Render of open version of Wanderlust and the campsite



Figure 44: Tools participants bring with them inside the experience. (Travellers hat and NFC compass)

Introduction

Where: Camper
Visit stage



The transition stage is the introduction of rules, the introduction stage is the introduction of the adventure. The adventure has started now, the children take a seat in cockpit of the camper. Screens in the front of the camper Figure 45 will show a Dutch environment which is the starting location of the trip. According to Bär and Boshouwers (2018) the introduction stage is used to introduce the wonderful new world. This stage is important to build up the suspense and credibility of the story. Besides enticing visitors, the introduction stage is also used to brief the visitor. The visitors are not immersed into the context yet and are thus more likely to follow an educational introduction. The goal of the experience and educational information about the theme will be explained during this introduction.

Introduction content

Once the children are settled inside, they are greeted by an introduction screen Figure 45. The introduction screen is used to explain the choice mechanic which is

used throughout the whole exhibition. This has been explained before, but repetition is key to explain important concepts. The choice system is what changes the educational experience to a transformative experience during the recollection stage. In the recollection stage section, more will be explained about the transformative properties of the choice mechanism.

Introduction reasoning

The choices during the introduction are questions everyone should ask themselves when starting the journey on a road trip Figure 48. The choices are designed to fit the experience seeker visitor profile of Falk (2009). The visitors learn more when having fun because they are more engaged, and it helps them to remember information. The choice of choosing rain or sun is a trick question which can only be answered by choosing sun. Choosing the wrong answer could evoke a fun reaction. The experience starts with easy questions because of the following:

Make it more relevant for the visitors. According to Simon and Moscone (2016) making an exhibition more relevant for the visitor can lead to an increase interest from visitors and resulting in them coming back. One of the goals of the exhibition is to serve as an outreach exhibition that can reach less likely museum visitors to bring them this experience and make them more enthusiastic for museum visits.

This relevancy can be created by empathizing with the user and asking them what they want to see during their museum visit. The introduction does this by asking the visitor what kind of music they want to hear. The music will be played throughout the whole experience creating this personal environment.

Accurate owl persona

During the expert interviews it became clear that some children are more likely to wait and see before interacting with tasks, they are the accurate owl persona. The easy questions should make the

threshold lower to interact with the experience. This way they are slowly guided into the exhibition.

Increase immersion

One of the most important aspects of being on a road trip is the ability to create your own choices. The first questions stimulate this feeling by being able to change what they hear and feel. If they want to drive with the windows open, they will feel the wind blowing inside. According to mind, body, heart, and soul theory stimulating multiple senses will increase immersion. More will be explained in a separate chapter about this theory.



Figure 45: Introduction screen, windows are replaced by LED screens

After the first questions they are asked to start the motor. This is the point they will play their first game and continue their journey to the exploration stage. Sidenote: The introduction right now is designed to introduce the world and make the world relevant for the visitor. There is a design possibility in creating an educational video about the sustainability of campervan travellers. The educational video fits this moment in the experience.

Origin

An inspiration session was done with 4 master design students. One of the ideas was to let children make choices on a trip. Because that would be most fitting of a travel theme. During traveling you are always making choices on what to do and where to go



Figure 46: Landscape which is visible during the introduction

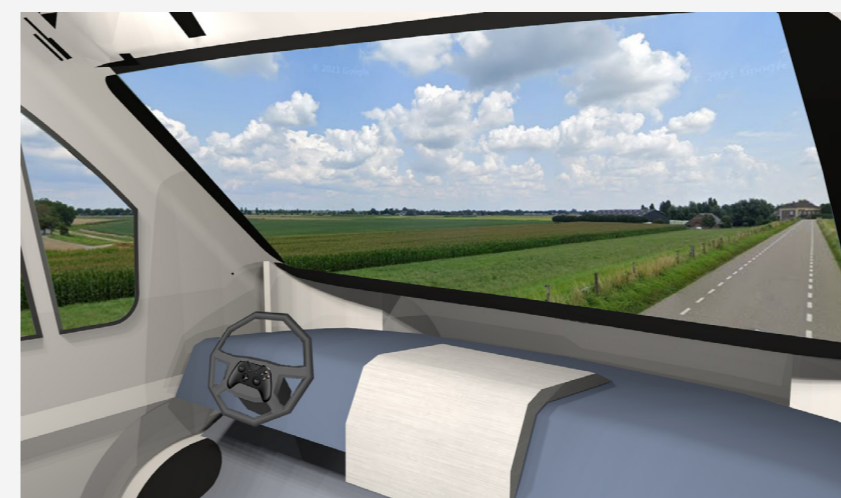


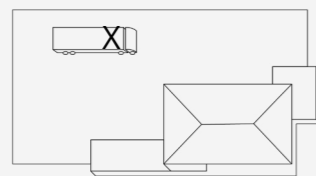
Figure 47: Landscape which is visible during the introduction



Figure 48: Wireframe of introduction questions, start at the top

Exploration/admiration

Where: Camper
Visit stage



The children start the engine, and the road trip begins. According to Bär & Boshouwers(2018) the exploration stage consists of exhibits that playfully enhance the knowledge of visitors. It is important that visitors are educated and actively engaged by the exhibits. The admiration stage is an immersion enhancer. It causes you to admire the world you are in to make sure you keep engaged in the experience. The way to achieve this is by creating an exhibit that creates awe.

The steps in the experience journey are blueprints but should not always be used in a fixed way. The other steps have been used in the normal order to keep the experience journey organised. The admiration and exploration exhibits have been used intertwined. The goal of the admiration stage is to keep people engaged in the exploration. Therefore, the visitors should freely choose if they want to do an explorative exhibit or be drawn to an admiration exhibit. Which means if they still have the interest to

follow the regular route, they should be able to do so. But if they are drawn to the evocative object of the admiration exhibit, they should be able to do it as well. Giving visitors the freedom to go their own way keeps them more engaged within the subject.

Wanderlust consists of 3 exhibits, after every exhibit a question is asked to make children think about what they would do in a hypothetical situation. The goal of the question is to evoke a strong reaction and make them think about different sustainable perspectives. More about this will be explained in the immersion/connection section. The next section will talk about how the exhibits are designed to better fit the visitors and their experience.



Figure 49: Motor exhibit, drive on the highway next to the Rhine

Motor exhibit - exploration

This section will be about the motor exhibit. The motor exhibit is an exploration exhibit meant to be a fun interactive game for the visitors. The game starts right after the introduction and is played in the cockpit of the camper Figure 49. It educates children about alternative energy resources.

Exploration content

The first game is about the solar powered engine that is inside the car. The children receive instructions that the engine is low on electricity, and they must use the solar panels to travel the final bit towards the charging station.



There are 2 different roles. 1 visitor has to drive the camper and the other 3 visitors have to operate the fans.

The blowers have to blow away the clouds so that light can fall on the solar panels on the roof. The fans are powered by a cycling mechanism that the children use with their feet.

The driver has to avoid obstacles on the street. Hitting obstacles will lower the speed of the vehicle.



If the blowers fail to get rid of the clouds the camper will drive slower and the lights in the cockpit will start to flicker.

If they do well the car will speed up and they will arrive their destination faster.

The goal is to travel to an electric car charging station so they can fully charge the camper and continue on their journey.

Figure 51: Storyboard motor exhibit

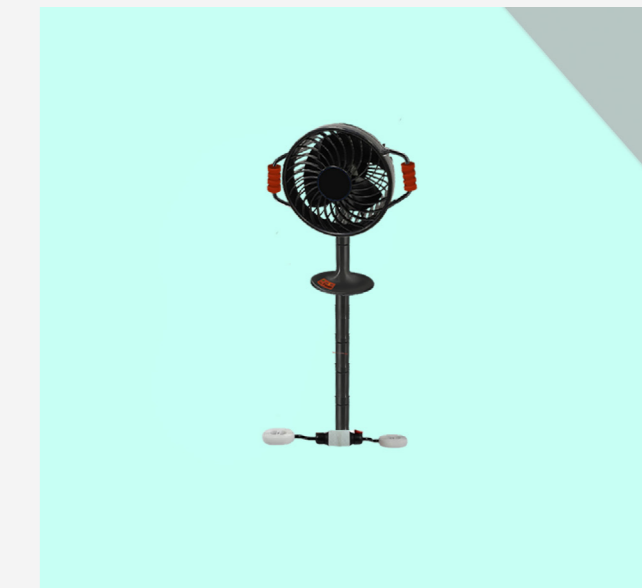


Figure 50: Fan used in the motor exhibit, cycle with your feet in the bottem to power the fans

Sustainable question

The contextmapping research showed children being familiar with positive and negative basic examples of sustainability. The question is about something familiar (gasoline and electric engine) and something new (solar powered engine).

Exploration reasoning

The game is fast paced and energetic and the main goal is to have a fun experience. The sustainable information is mostly providing the concept that a solar powered engine exists but doesn't explain the details. This is to accommodate the experience seekers. So far, they have been experiencing a lot of information while the experience seekers seek an enjoyable experience.

The way the game is played fits the energy monkey persona. This group enjoys active fast paced games where they can use their energy. The speed of the game and having to use your feet to power the fans makes this game more enjoyable for this target group.

Origin

The driving idea comes from the creative session with the camper builder. He found driving is essential to get a traveling feeling.



Figure 52: Sustainable question asked after finishing the game



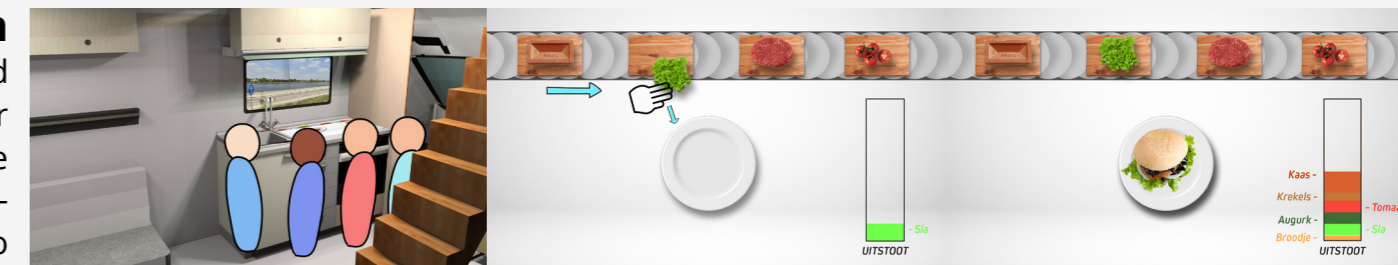
Figure 53: Scenery of the Rhine landscape visible while playing the game

Kitchen exhibit - exploration

This section will be about the food exhibit. This exhibit can be done after the motor exhibit but can also be done as the last exhibit. The exhibit is a task-based puzzle which requires children to search objects. The exhibit is played on a LED screen which is located inside the kitchen countertop Figure 55. It educates children on the impact of different kind of food on the environment.

Exploration content

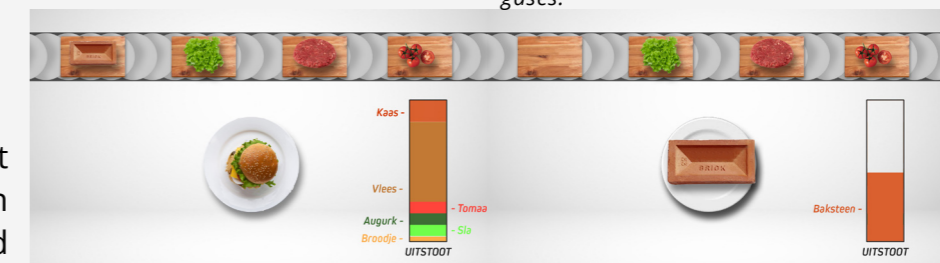
This game is about creating 2 different dishes using a recipe. They gain instruction to open the drawer and find a recipe for a beef burger and a recipe for a burger with crickets. The goal is to make both burgers.



Children arrive at the kitchen and find a recipe for a beefburger and a recipe for a cricket burger

They see the ingredients passing through on a conveyer belt and they have to pick the right ingredients in the right order to make the meal. Whenever they add an ingredient, they see the impact on the environment in grams of greenhouse gases.

When they complete a full meal, they can see how the impact of different ingredients compare.



The beef burger will show a huge difference in impact of the meat ingredient compared to the other ingredients.

Extra objects have been added such as a brick. Making mistakes such as choosing the wrong ingredient will be a fun surprise, but they learn from it as well seeing the impact of the random object.

Figure 54: Storyboard kitchen exhibit



Figure 55: Kitchen exhibit, a LED touchscreen inside the kitchen countertop



Figure 56: LED screen in the window to keep the visitor immersed

Sustainable question

The final question makes use of the cricket burger. The cricket burger is a protein rich alternative; the example is also used in Museon in their exhibit. It will be a recognizable object if children visit the museum after visiting Wanderlust.

Exploration reasoning

The game is a slower paced task-oriented game. The game is designed to fit the accurate owl persona. The accurate owl children are passive children that enjoy getting tasks and following the tasks step by step. They like to discover new information themselves. This exhibit has a clear task list that is represented as a recipe. They discover the new information by finding the right ingredient and learning more about the ingredient.

Origin

The idea comes from the Museon food exhibit. The food exhibit is about making a sustainable recipe. The difference is that in that version you are just clicking through a slideshow. This version you need to discover which ingredient is the right one, that way it fits better the target group. Also, it shows more information about the ingredients.



Figure 57: Sustainable question asked after finishing the game



Figure 58: Kitchen exhibit

Water exhibit - admiration

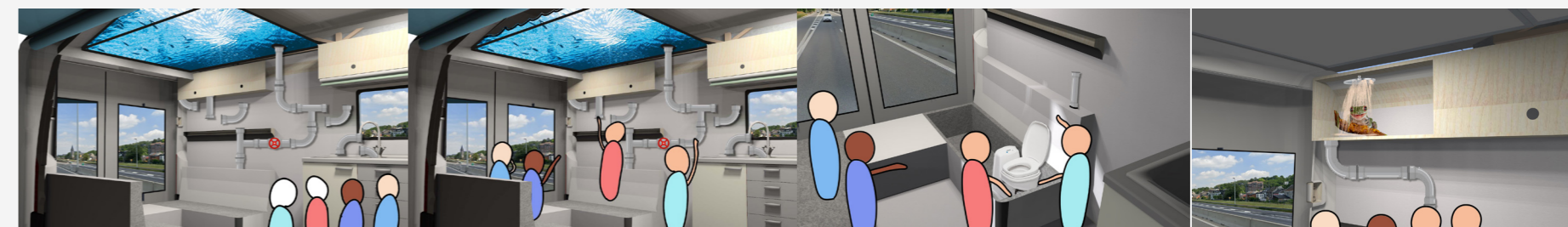
The water exhibit is an exhibit about water usage. It educates the children about how to use water responsibly. The exhibit is a combination of an active and puzzle game. Inside the exhibit is a fish water tank that is used to provide water for the whole camper Figure 59. This fish water tank is part of the admiration stage and is an evocative object, it is meant to evoke an emotional reaction from the visitor.

Admiration content

The game is about solving a pipe puzzle so they can connect the water tank to all the objects that need water. Every time they connect an object the water in the tank will lower leaving little water for the fish to survive. Evoking an emotional reaction of sadness for the fish. During the context mapping session showed high interest in animals, this exhibit makes use of their strong reaction to animals to evoke a strong emotion.



Figure 59: Water exhibit located in the living room, a water reservoir is shown on the top LED screen



When they arrive in the back of the camper, they see a water tank with fish and tubes that can be turned.

They have to turn the tubes to complete the puzzle and connect all the objects to the water tank. The water level will decrease every time they connect an object.

Once they connect an object, they can open the object container and discover what is inside. They will receive more information about the water usage of the object inside.

Some objects are meant as a fun object to surprise the children such as a showering frog.

Figure 60: Storyboard water exhibit

Sustainable question

The children are asked if they want to use more water to wash the camper while they see that the fish have little water left to swim around. The context mapping session showed that they have a strong emotional reaction to animals.

Admiration reasoning

This exhibit is having a lot of elements interesting for the experience seeker profile (Falk, 2009). The toilet, frog, and fish tank are fun surprising elements that help them to remember the information better.

The way the game is played fits the personas of. The game is active in spinning the tubes and reaching for the higher places suiting the energy monkeys. But also has elements for the accurate owl where they have to puzzle. During the expert interview it became clear that discovering information that was hidden before works as a good information transfer method for children.

Origin

The idea of the fish tank and hidden toilet comes from an inspiration session with museum professionals. They stated that it would be surprising and interesting for children, the objects will peak their attention.



Figure 61: Sustainable question asked after finishing the water exhibit

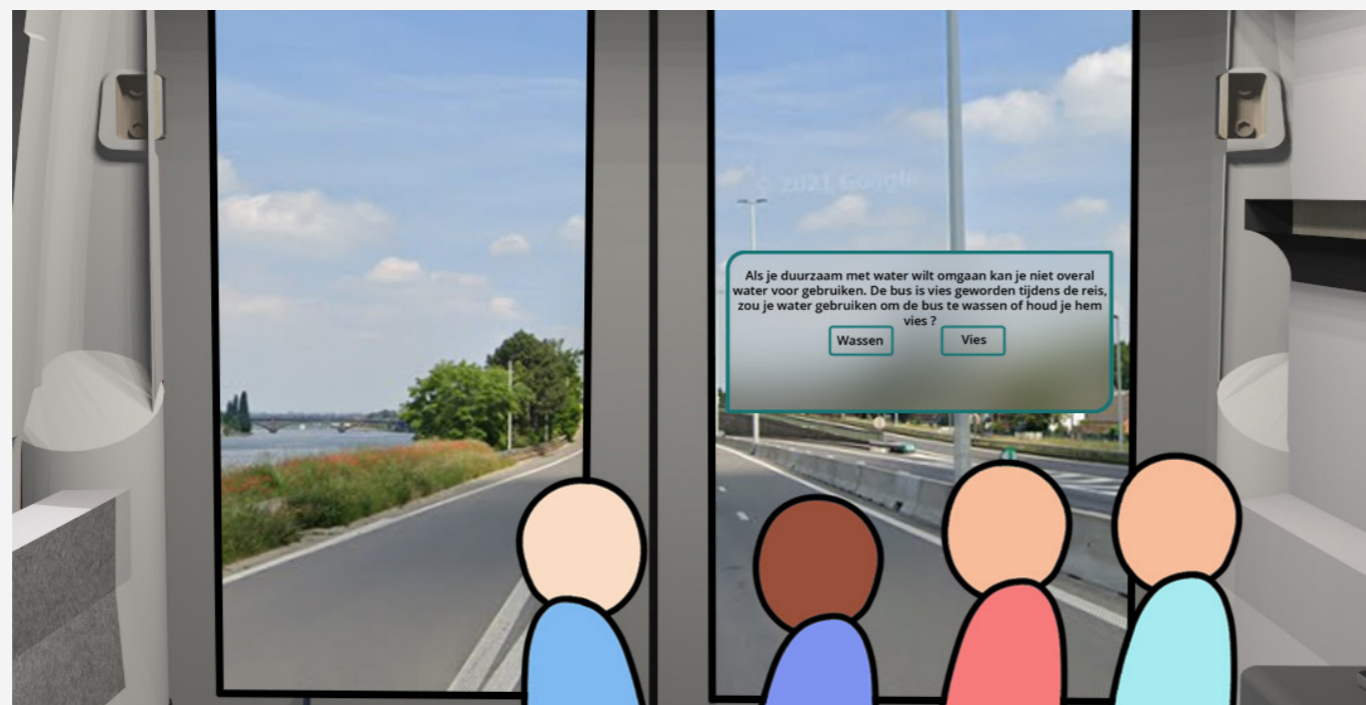
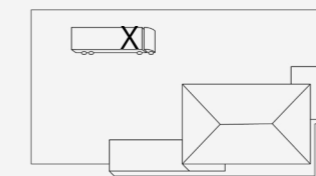


Figure 62: Scenery of the Rhine landscape visible in the back of the truck

Immersion/connection

Where: Roof camper

Visit stage



The immersion/connection stages are the final 2 stages inside the camper. They are located in the roof of the camper and are accessible by a staircase inside the camper. Once the children enter the roof, they are met by a projection of the beautiful scenery of the Rhine landscape Figure 63. They will get an explanation about how their answers would impact the world they are currently travelling in Figure 65.

According to Bär and Boshouwers the immersion stage is a place or a moment where the viewer is completely absorbed in the story, this is often done theatrical in nature. This is the place where the visitor fully experiences the story. In Wanderlust it is the moment where they discover the beauty of travel. The whole trip leading up to being able to watch the beautiful nature.

The connection stage is the moment where the story is connected to people's everyday life. It becomes clear to the visitor what is the underlying moral of the story. This moral is the true insight



Figure 63: Rhine scenery visible as if the truck is parked on a hill

people gather from their visit. This is the reward that the whole story has been building up to.

In Wanderlust the immersion stage and connection stage are intertwined. The scenery is the immersion stage, and the explanation is the connection stage. The

connection stage is experienced while they are fully immersed. They are met with the reasoning while they are most invested in the story, the reasoning should have the most impact there. From now on both of these stages will be seen as the same stage since they happen at the same time.

Immersion content

The children have been answering questions about what they would do in hypothetical situations about sustainability. During the immersion they will get answers on what they have been doing throughout their whole journey. It becomes clear what everything has been leading up to.

Immersion reasoning

The questioned answered throughout the whole bus have been made appealing for children to choose both answers. One answer is always based on being the good sustainable option, and the other answer is the bad sustainable option but with more comfort for the children.

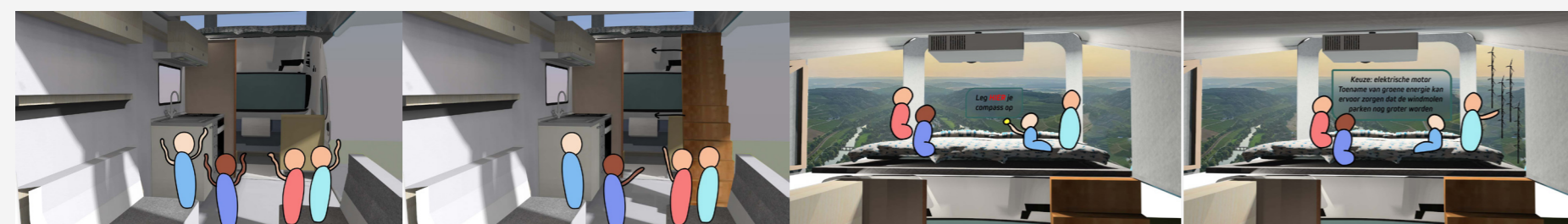
According to Janssen et al. (2019) a way to solve complex societal problems is by adjusting the way education works. He proposes a model where children

learn from different perspectives of people regarding one topic. This way they gain a better understanding of themselves and how the topic relates to the world. Wanderlust teaches children to understand different perspectives but with one extra touch.

According to Roppola (2013) museum exhibitions should educate their visitors by experiencing. People learn by having experienced something in the past and drawing conclusions from that experience. Wanderlust lures the children to choose the comfort side so this way they have truly experienced what it is like to not want to choose the sustainable option. During the context mapping session it became clear that all children were strongly invested in doing the right thing for sustainability, this exhibition makes them experience what it is like to not want to choose the

right sustainable option. This way they can learn from more perspectives. The next step is that it should be logical for the children what consequences mean of the different perspectives. This is where the perspectives really take shape. An animation shows how the landscape would change if everyone was to act on the world based on their chosen perspective. Showing the consequences makes the perspective real and not just a way of preference.

Another reason for showing the consequences is from the context mapping session it was clear that some children were able to recognize positive and negative sustainable examples but failed to recognize the consequences of the examples. Showing during the immersion stage is also an informative reason.



The children finish their final game and hear the brakes of the camper; the camper comes to a full stop, and they have reached their destination.

Stairs open from the side, and they can go upstairs to the final room.

Upstairs they see the beautiful scenery of the Rhine landscape, together with a message to place their compass.

Once they place their compass an animation starts to play that explains how their choices would impact this landscape if everyone would do the same. The choices are bizarre examples of what would happen in real life.

Figure 64: Storyboard immersion exhibit

Origin

The concept of having a special bedroom upstairs came from the creative session with museum experts. The room is perfect to end in a literal high note. The choice system came from a creative session with students during analysing the results it became clear that it fits perfectly with the theory of Janssen et al. (2019).



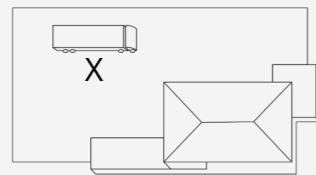
Figure 65: Images of the negative sustainable results, last one doesn't change because household water usage barely affects the environment



Figure 66: Images of the positive sustainable results, last one doesn't change because household water usage barely affects the environment

Recollection

Where: Outside camper
Visit stage



Recollection content

Once the animation of the connection stage is over the children are instructed to deliver their compass back to basecamp outside the camper Figure 41. There they get the opportunity to write a postcard with their personal ending printed on the postcard Figure 67. On the back Figure 68 they can write how their trip has been and what they have learned. Afterwards they can take the postcard with them as a memento to their trip.

Recollection reasoning

According to Bär and Boshouwers (2018) the recollection stage is another transitional stage between the world of wonder and the known world. This time the visitors should gain the opportunity to cool down and slowly reflect on their experience. They get the time to restore again and process what has happened. Reflecting helps if you have something concrete to talk about the experience, it makes it easier to think back on the experience and discuss with your fellow students what they thought of the experience. Therefore the card has images based on what has happened to them.

Origin

The idea of a postcard comes from an early concept presentation where the theme of travelling sparked the idea to use a postcard. The connection that concrete images help you to reflect is from personal experience as a designer.



Figure 67: Frontside of postcard with results from the trip

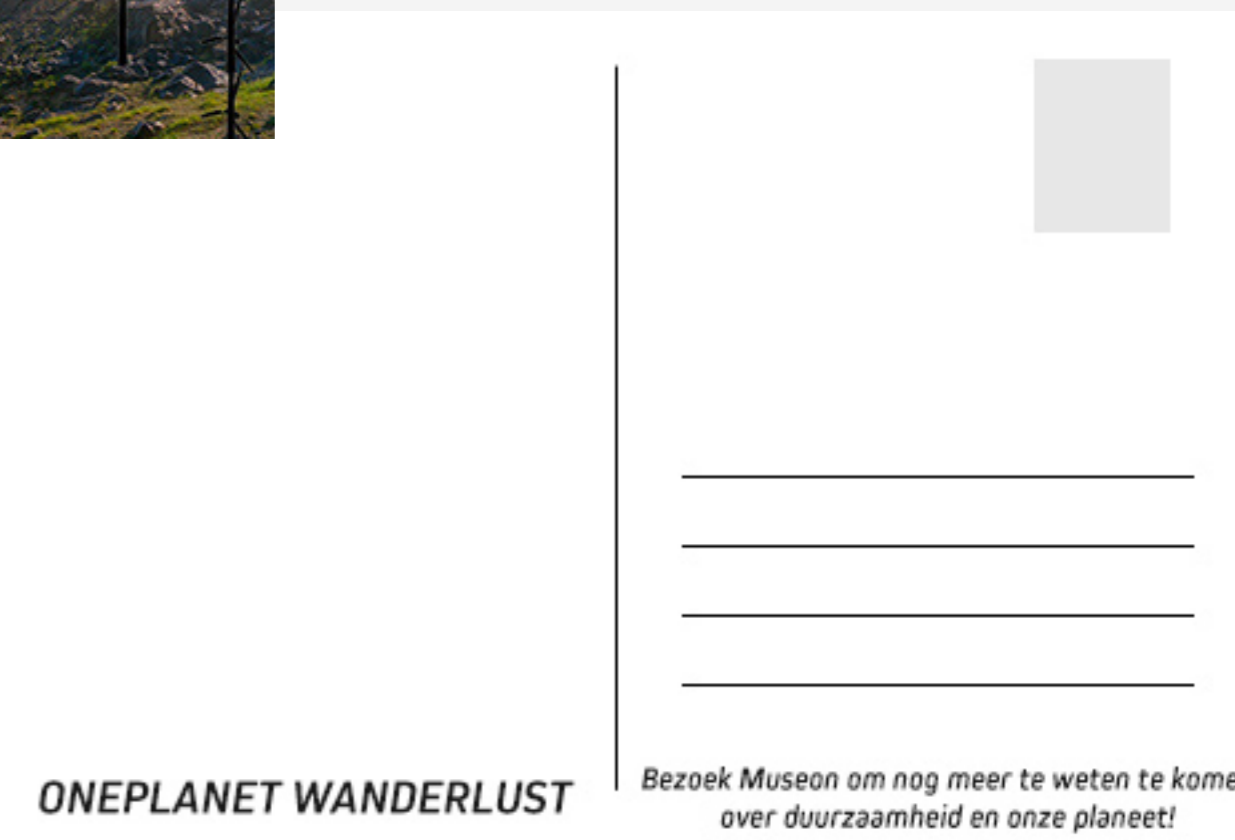
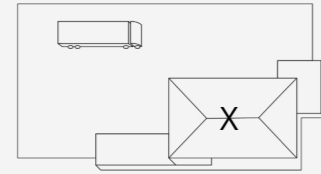


Figure 68: Backside of postcard with an invitation to Museon

Integration

Where: Classroom
Post visit stage



This is the final stage of the experience journey. It is only designed for visitors that visit the experience as a school trip. They will have a lesson about the journey inside the classroom afterwards.

Integration content

Once the journey is over, they take their postcard and go back to the classroom. They will be full of thoughts and ideas about what has happened, and they gain the opportunity in the class to talk about it. The children receive a lesson where they discuss and reflect on what happened. The design of the lesson itself is beyond the project scope however the theme of the lesson will be reflecting on the experience.

Integration reason

According to Bär and Boshouwers (2018) the final stage is about integrating back into the known world with all the new information you collected. This information should be processed into usable information on how to change their behaviour or perspective on the world. For school classes it helps to



Figure 69: Experience can be reflected on in groups in the classroom guided by a teacher

have a lesson where they reflect on the information. This way the teacher can help the children to process the information.

Origin

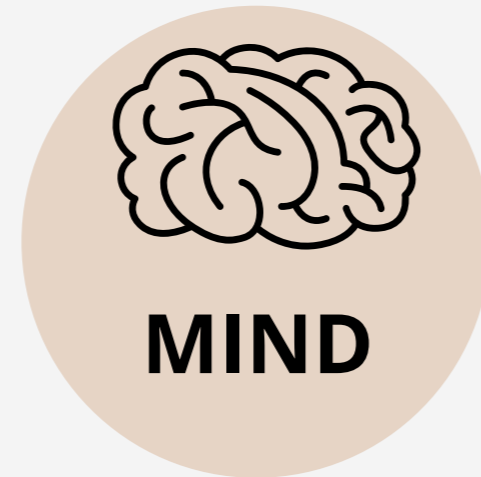
Having a lesson to help children reflect comes from the World of wonder book by Bär and Boshouwers (2018).

MIND BODY HEART SOUL

This section will be about the different experience levels; mind, body, heart, and soul. According to Bär and Boshouwers (2018) visitors need to be stimulated on all those levels in order to open up and experience the exhibition more freely. The exhibition will be a good breeding ground for inspiration if it contains proper stimulation on those experience levels. Which is important since the design goal of the project is to inspire visitors to activate and make them care about sustainability. This section should be read as a meta-analysis how the exhibition stimulates inspiration in general.



This experience level is regarding everything that stimulate the senses. Designing for this experience level causes the visitor to immerse more into the experience. This is an overall theme that comes back in all the interactions. The visitor is stimulated by all senses during the introduction where answering questions changes their environment. Their hearing is stimulated by choosing music, their tactile perception is changed by choosing to travel with open windows and having a fan blow wind inside, and their vision is stimulated by screens making it look like they are traveling on the road. All these senses are stimulated to immerse the visitor into the traveling experience.



The mind is about the content or the story. Activate the visitors to make them eager to discover new information. During this project 5 personas found during expert interviews have been analysed and 4 of them have been kept in mind when designing the experience. They are activated in the following way.

1: The special needs pandas are children with a learning disability which go beyond the project scope

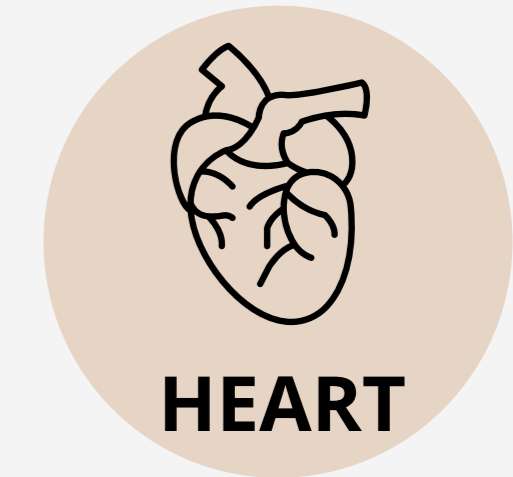
2: Social capibaras are children who are activated by doing social activities together. The exploration and admiration exhibits require the children to work together to complete the tasks. These children are activated by working together.

3: Accurate owls are mostly passive children

who like concrete tasks and puzzles. The food and water exhibit will fit this need.

4: Energy monkey are active children who like fast paced games. The motor exhibit will match them the best.

5: The lone wolf persona is a rare persona that is a natural leader and is independent. They are hands on and are easily activated. Other children tend to follow them, and they can activate those around them. They are activated by leading their group though the experience. The exhibits are designed in such a way that the information transformation is communicated in such a way that it fits their preference.



The heart is about making the story feelable. It is the motional side of the exhibition that moves you. In Wanderlust this is the choices they have to make throughout the whole experience. They are forced to think about wanting comfort or sustainability. During the context mapping research it became very clear that children are invested in caring about the sustainability. They are triggered to make tough decisions about sustainability to evoke an emotional response. More details about how it evokes this emotional reaction is inside the immersion/connection section.



The soul relates to the relevancy of the subject. Why is the information meaningful for the visitor? This experience level does not relate to one specific interaction but more towards the whole exhibition in general. During the context mapping they showed a lot of interest especially towards the examples of nature. Wanderlust focusses on showing a dynamic nature experience about sustainability. Showing the examples of nature is relevant for the children as well as sustainability.

EVALUATION



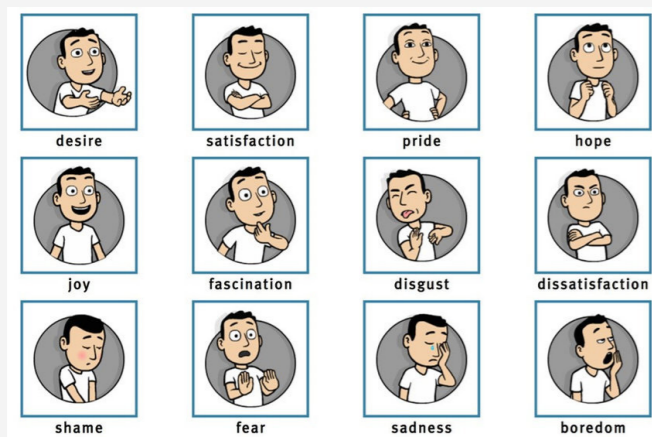


Figure 70: PrEemo tool, all 14 emotions

Introduction

several children were asked to participate in a user test. An interactive paper prototype was being made for the introduction exhibit, Kitchen exhibit, and final exhibit. A storyboard was made to view for the motor exhibit. After every exhibit an interview was being held to understand their thought about the exhibit. The PrEemo tool (Desmet, 2007) was being used as a discussion tool during the interview. The PrEemo tool was being used as pictures cards. Doing so makes it easier for the children to openly discuss their thoughts and feelings regarding the exhibit (Markopoulos et al. 2008). Only the exhibits have been tested out of the whole experience journey since those are the moments the children actively interact with the experience.



Figure 71: Setup of evaluation, private room inside Museon

Research questions:

How do children experience the exhibition?

Sub question:

What emotions do they feel throughout the whole exhibition?

Why do they feel this certain way?

Method

The study was done in 5 separate sessions of 30 minutes with 2/3 children per session, in total 12 children were interviewed. Participants were recruited during their visit of Museon. The study was done in a separate room inside the museum. A small introduction was given using images of the experience to give a base understanding of the theme of the exhibition. Followed by

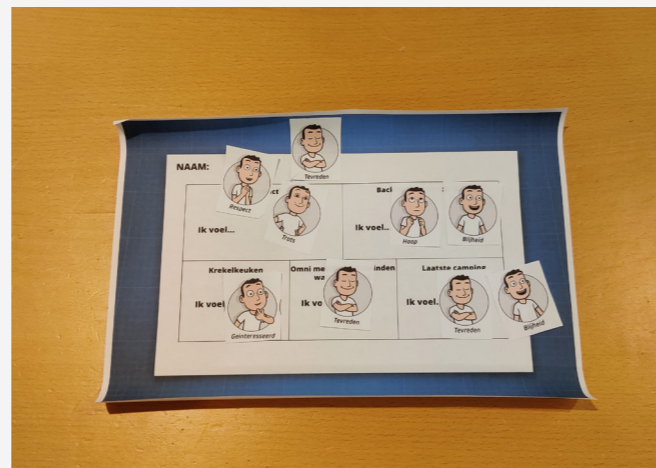


Figure 72: Every child could choose 1 emotion per exhibit

an interactive paper prototype for the Introduction, kitchen, and final exhibits. The motor exhibit was explained using a storyboard. After each exhibit there was a small interview using the PrEemo tool as a discussion tool to learn more about their thoughts regarding the exhibits. The study was being recorded with a recording device set up on the desk. Insights were gathered from the recordings in combination with the PrEemo tool. The setup has been discussed with a museum expert to make sure the user test would go smoothly.

Results

Insights have been gathered about each separate exhibit. Some general insights have been gathered that don't fit to a specific exhibit or are applicable to the experience in general. The PrEemo



Figure 73: Paper prototypes of exhibits

answers have been made into a graph but due to the small sample size it has only been used as a discussion tool for participants to make it easier to talk about the exhibits.

More information about the insights can be found in appendix I

General insights:

Insight: It is difficult to design a basic level because there is always a place where children can get stuck. The puzzle was sometimes too hard, or some kids did not understand the word emission. This shows the importance of having a facilitator who can help the children in these situations.

Insight: The children only discussed their point of view about the questions

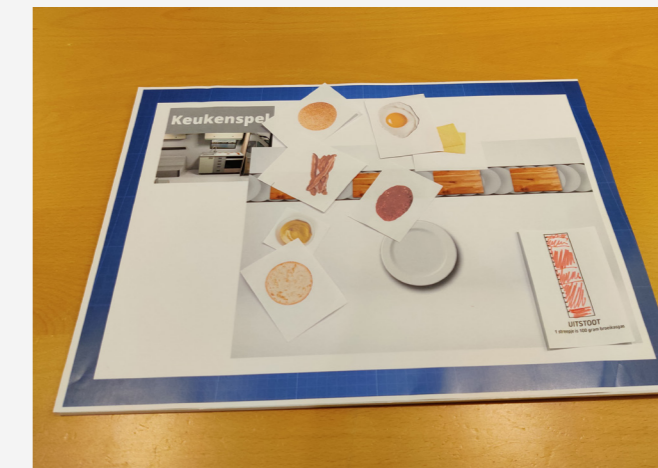


Figure 74: Paper prototypes of kitchen exhibit

when the votes were evenly divided. They used simple reasoning, but they did try to make the other person understand their perspective.

Insights: The topic of traveling is relevant for the children. Even though some of them were not aware of campervans they always relate it to vacation.

TEST RESULTS

INTRODUCTION

Immerse travel feeling
 Participants stated to get a travel feeling from both the music and the window question



Introduction lowers interaction threshold
 Participants were less afraid to speak up after the introduction. The introduction helped them to overcome the interaction threshold.

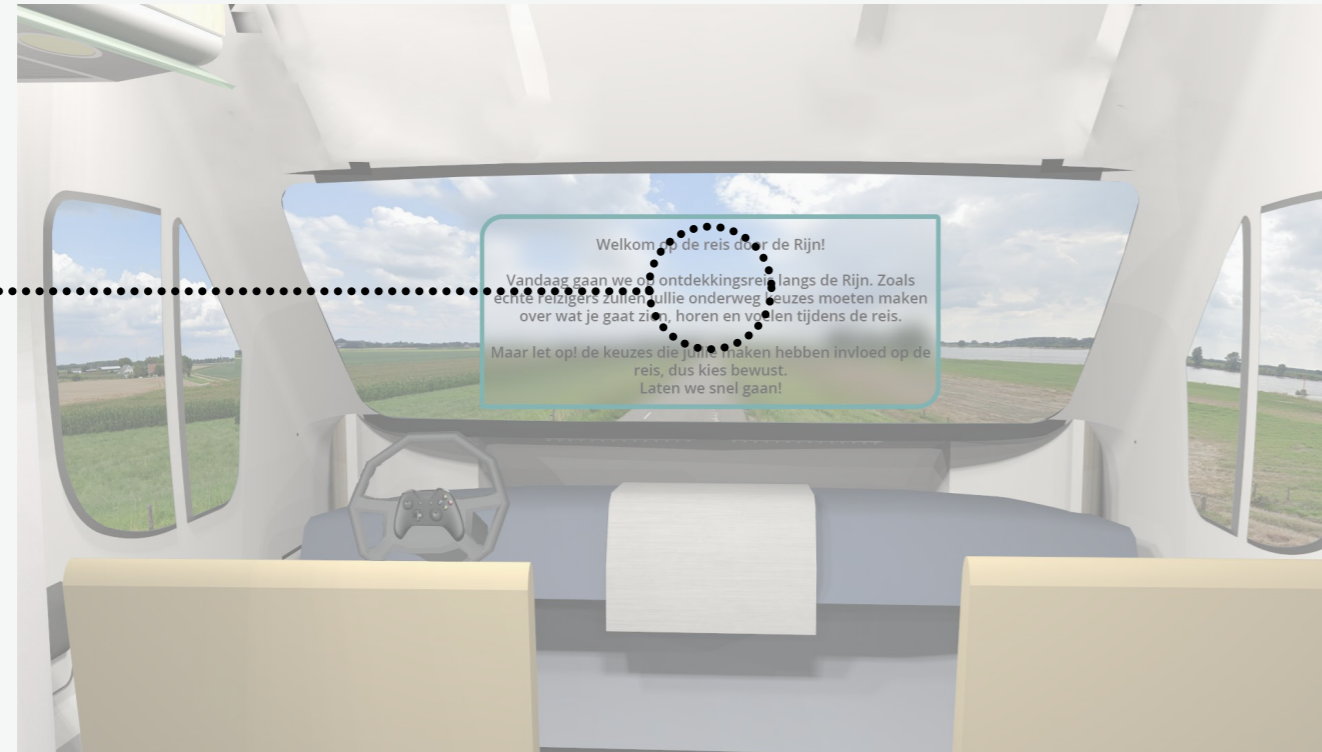
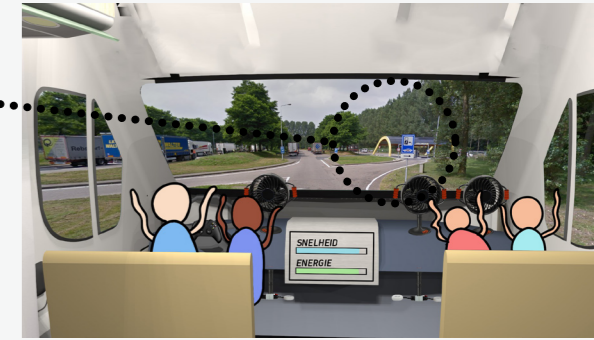


Figure 75: Test results of the introduction

TEST RESULTS

Motor exhibit

Reach the end?
 Not knowing if the participants would reach the end with enough energy was a thrilling experience



Information mismatch
 It confused the participants to question the children about an electric motor while using a solar panel motor in the example

Bizarre example
 The imagination of the children was stimulated by using the bizarre example of blowing away the clouds

Driving is fun
 Participants were enthusiastic about driving in the camper since it is a common experience but never get to do it themselves

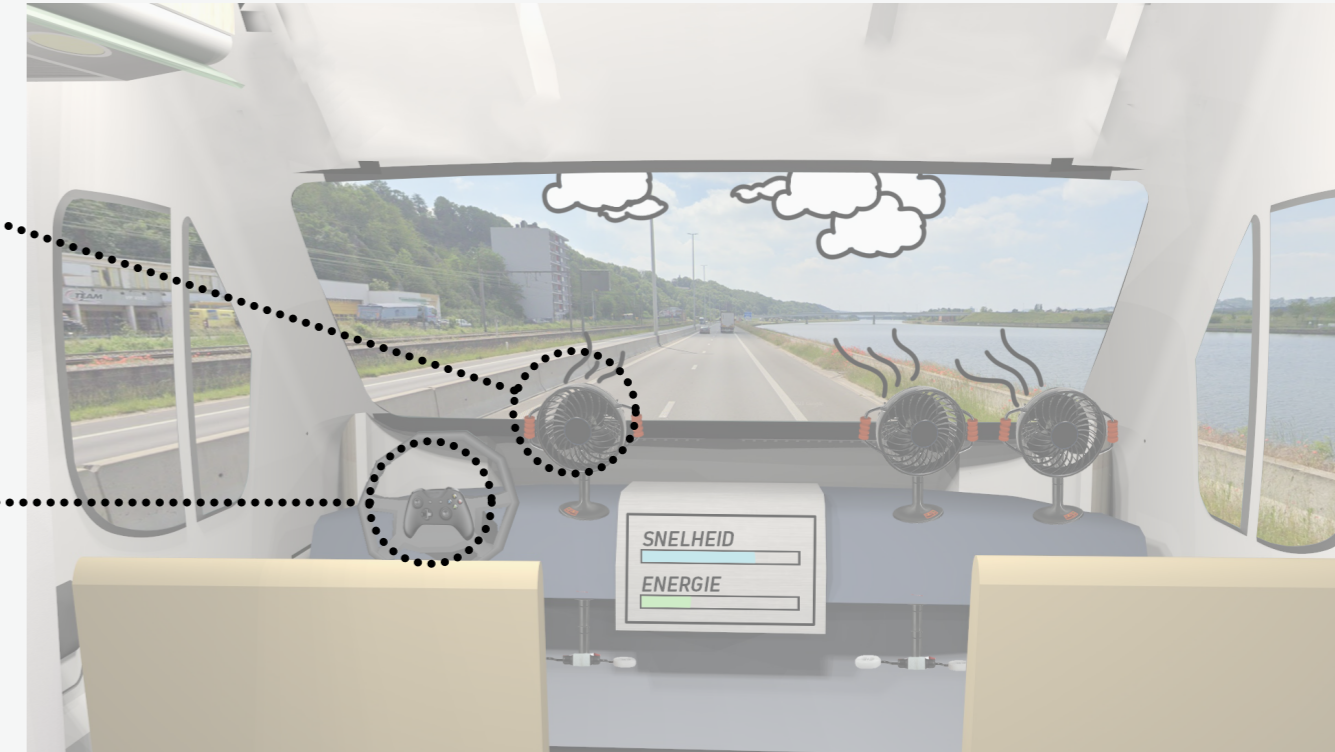


Figure 76: Test results of the motor exhibit

TEST RESULTS

Kitchen exhibit



No option to do good

Not being able to choose ingredients yourself disappointed a participant that he could not change the outcome of the game

Lacked game element

One participant felt like something was missing. The game element was too simple or lacking

Focus on emission

Not being able to control the ingredients put a lot of focus on the emission. The participants were anticipating the increase of emission every time an ingredient got added



Teamwork

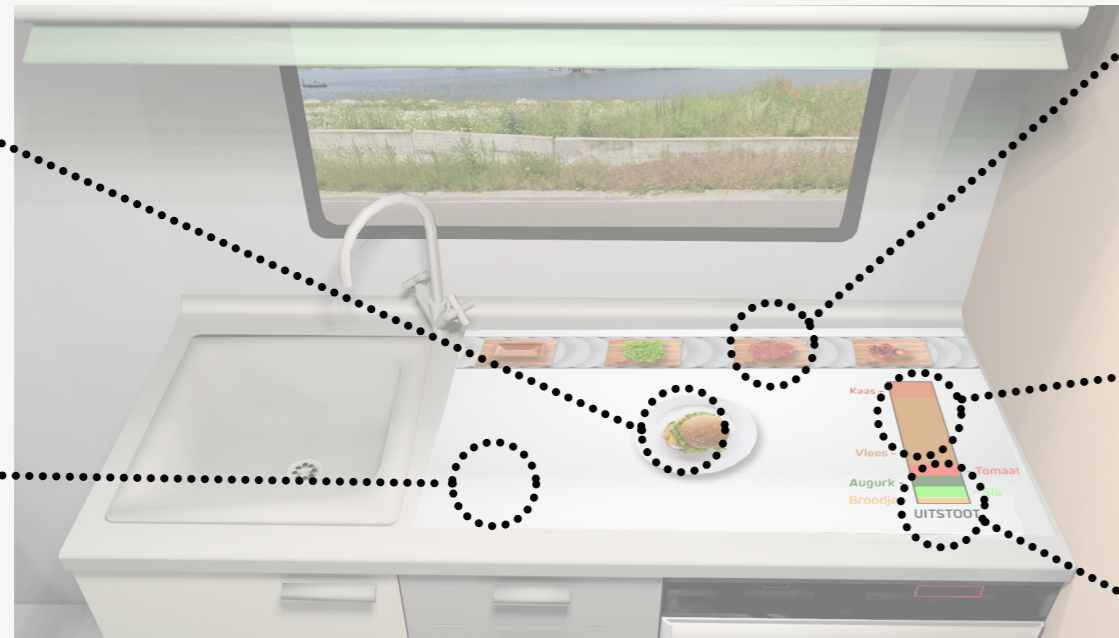
Searching for the ingredients and looking at the recipe made it possible for multiple children to play the game at the same time and required them to work together

Concrete visualization

The emission bar was clear and easy for children to understand the difference of emission in ingredients

Anticipating emission

Children liked to guess how much emission every ingredient caused before being revealed



Relevant game

The kitchen exhibit was relevant for the children, the act of cooking and the examples used were common in their direct environment

Distracted by game

Participants were often too immersed in the game to notice the change in emission. They only noticed the final state of the emission bar

Educational information

Emission was still a vague concept for children, there should be additional information explaining what it exactly means

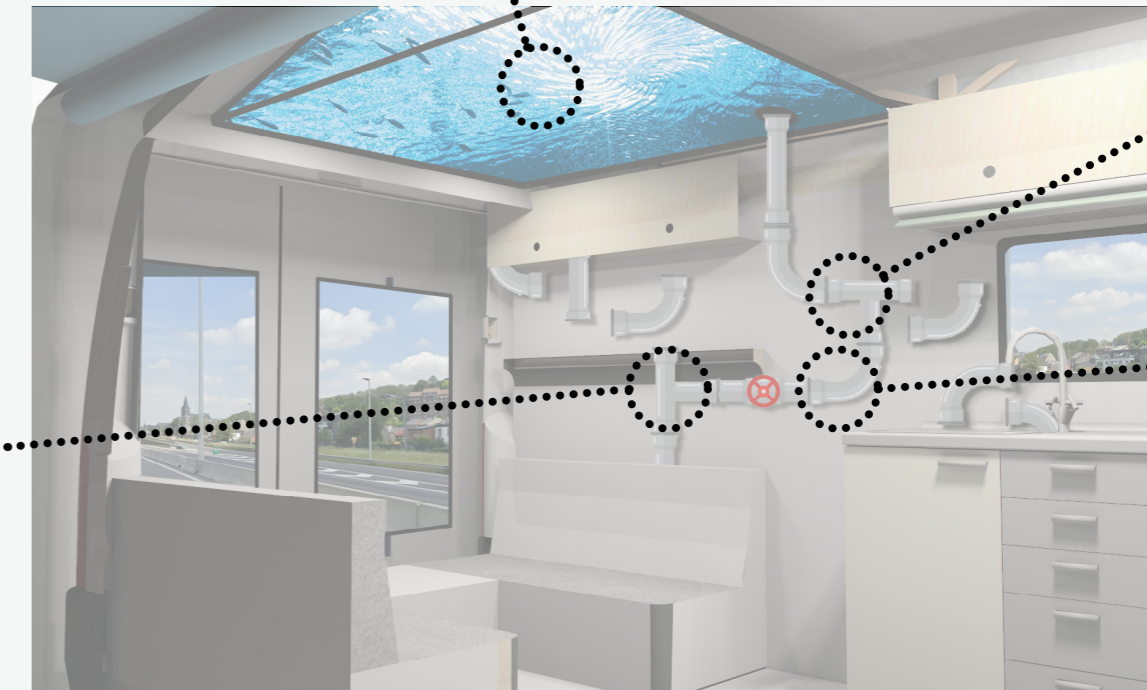
Figure 77: Test results of the kitchen exhibit

TEST RESULTS

Water exhibit

Focus on animal life

The message of using water sparingly because of the environment is not conveyed because the focus is on saving the water for the fish



Proud of achievement

The participants were proud when they solved the whole puzzle. It was a fun achievement for them.

Emotional choice

Reasoning behind the water choice wasn't a sustainable reason but more an emotional practical one. This makes the final exhibit less meaningful.



Distracted by game

Participants were too immersed in the puzzle to notice a change in the water level

Enjoyable puzzle

Solving the puzzle was an enjoyable game element for the participants. Turning the pipes was an intuitive game for them.

Figure 78: Test results of the water exhibit

TEST RESULTS

Final exhibit

Build up to reveal

Revealing the choices one after the other created excitement on what is going to be next. They knew if their choice was good or bad but they were very curious on what is going to happen. This way the tension was build up slowly.

Educating about effects

Children were aware of the positive sustainable choices but were interested/ surprised by how their choices effected the environment

Example is too nice

The farms were not seen as a problem enough to show as a consequence for eating hamburgers.

Shocking example

Showing the animals suffering inside the farm could be a shocking enough consequence. But might be too shocking.

Show difference

Showing the alternative option made it more interesting for the children to see what their choice meant

Not offended

Participants didn't feel offended when choosing the "wrong" options

Second thoughts

Showing how their choices effect the environment made the children think they should have chosen differently

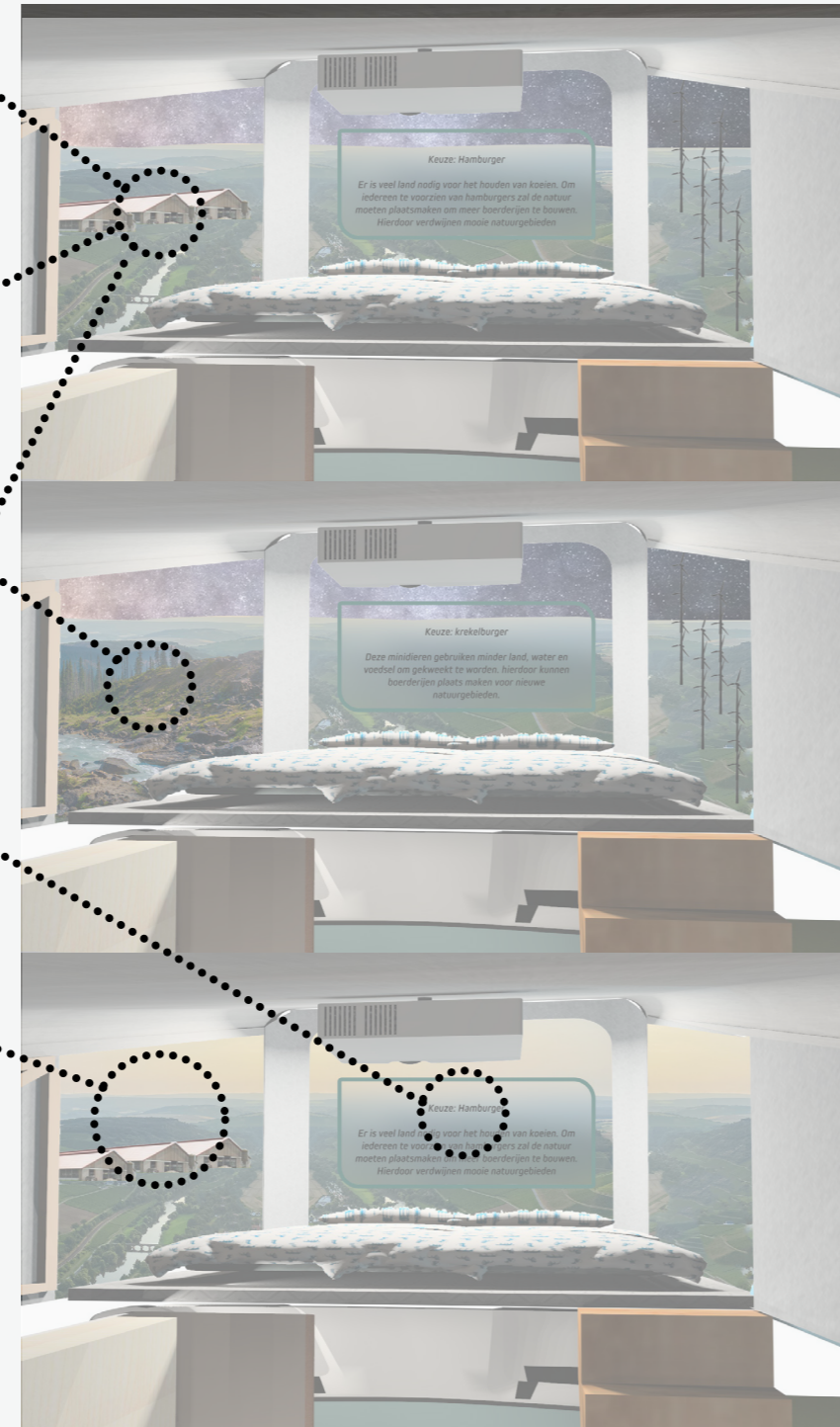


Figure 79: Test results of the final exhibit

Conclusion

In general, the exhibits were perceived as enjoyable by the participants since almost all emotions chosen were positive. Although, this is could be heavily biased based on the fact children want to please other people. The exhibits could be improved in the following directions:

Introduction exhibit

The introduction was working well and succeeded it task to immerse the users in the experience. Participants stated to gain a holiday feeling from the music and window questions and 2 participants who were shy in the beginning found it easy to interact with the questions making the threshold lower.

Motor exhibit

The motor exhibit was difficult to test since there was no interactive prototype. It is hard to experience how you would

feel during an exhibit just from reading a storyboard. However, the children were quite excited for the exhibit and were laughing and jumping up and down when hearing about it. The participants stated the game was relevant for them since they are always seeing their parents driving but are never able to drive the car themselves. Creating relevancy (Simon & Moscone, 2016) helps the visitors engage in the experience and thus makes this a good first game.

Kitchen exhibit

This exhibit was perceived different by participants. 3 participants stated to either miss some game element or felt annoyed by having no influence on the emission when doing the tasks. The other participants were actively participating in the game and were fascinated by the emission of the recipes. They either saw the result when finishing the recipe

or were actively watching what would happen every time, they added an ingredient. It was expected from the personas that some children have a different preference in game style and thus no further iterations should be made to the style of the game.

The focus of the game should be on the emission bar, 5 children answered it to be fascinating to learn about the difference in emission per recipe/ingredients. Not being able to be in control made them focus more on the emission bar and were anticipating what would happen if they added the ingredient. Sometimes the children were focussed on finding the ingredients and forget to watch the emission bar, further improvements can be made using visualizations or sound design to put more attention on the emission bar.

Water exhibit

The puzzle element of the water exhibit was enjoyable by the participants. 3 participants stated to be satisfied by completing the challenge. The game was intuitive for them as a turning pipe game was common for the children.

Improvement could be made in the fish part of the exhibit, the game itself was too distracting to notice and changes in the water and choice afterwards wasn't made because of sustainable reasons. The choice in the end forces the children to think about what they have done during the game and how to use this information on the real world when making sustainable choices. They were motivated to save the life of the fish by preserving water and thus making an emotional choice. This led to them not

thinking about how this could affect them in the real world. The example should suit a sustainable water dilemma that could happen to the participants in real life.

Final exhibit

All participants were positive all positive about the result even though some bad sustainable decisions have been made. They stated that they choose either good for the environment or good for comfort showing a small of how different perspectives work when making sustainable decisions. The lesson during the integration stage should follow up on these specific perspectives. Some children stated to have seconds thoughts and want to change their answer after seeing the results. It could also be interesting to include in the integration

stage on how to be reflective on your own perspective and how to change a perspective. Making children aware that no bad choices are permanent.

Showing the real-life examples was informative for the participants. They were surprised by the consequences and were eagerly anticipating what would happen to the environment. The content of the consequences could use some improvements though. The example of the farm was too normal for the children to see it as a problem. Also, the participants were curious about the result of the alternative consequence. This helped them better to relate how their decision was good or bad for the environment.



RECOMMENDATIONS

This chapter will be about unexplored valuable design directions and how the project holds up to the design framework from the research phase.

Inspiring exhibiton

Overall, the children during the user test had an easy time understanding the exhibits and how the games would work, they only got stuck during the test when they found the puzzle too difficult. However, with the current prototype they are not immersed inside the whole story and experience. This is important since it is needed to understand if the children are inspired by sustainability. The next iteration should include the feedback from the user test in a more advanced prototype which immerses the participants. A more detailed experience should be made which can be experienced independently by 4 children and a facilitator. The current evaluation provides understanding on how the children feel about the concept and the next iteration should be about the transformative values of the exhibition.

Sound design

One problem that came up several times during the user test was that the participant was distracted by the game. They were too immersed to notice change happening beyond the game. They sometimes missed the change in the emission bar during the kitchen exhibit, or the water level change during the water exhibit. Sound design could offer a solution to make the changes more noticeable by the visitors.

Sound design could also increase immersion in general. Make the children feel more like being on a trip inside a campervan but also increase anticipation during the reveal of the consequences in the final exhibit.

Educational sustainable information

There were several moments when the sustainable information was lacking or didn't feel quite right.

- Information mismatch (Electro motor/solar panel motor)
- Extra information explaining concepts (emission)
- Final exhibit needs to be more scientifically correct and examples that feel like a big problem for children.

A future iteration should include an expert about sustainability communication for children who can help with examples and how to include extra information. Currently, the concept is mostly focussed on the interaction of the experience. Sustainable information during this project was gather from De Bosatlas van de Duurzaamheid (Dutch Edition),(2019) however the information was sometimes still limited.

Design framework

This is the final section of the report and will evaluate if the experience is successful based on the design principles created after the research phase. There is an explanation why some principles are successfully incorporated but also give insight in the ones that should be improved or are left out.

- **Success: 1, 2, 3, 4, 5, 6, 7, 11, 12**
- **Adjust: 8, 9, 10**



Principle 1

The content of the introduction should be about the theme and the story of the exhibition

Principle 2

Children should be free to choose the sequence of the exhibits

Principle 3

The information transfer process should be interesting on itself. Creating fun exhibits leads to a better information transfer.

Principle 4

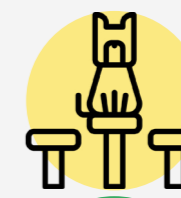
The exhibits should be designed by thinking about different types of playfulness. The experience should include enjoyment that matches the different personas.

Principle 5

When inside the experience the time spend for a teacher to explain information should be kept to a minimum of 10 minutes and preferably less.

Principle 6

The theme and information should be about the Netherlands and common sustainable topics.



Principle 7

Don't use toddler voices when explaining something to children. Give them some credit, don't be afraid to make it a bit challenging.

Principle 8

Give them roles and give them separate tasks for their roles. But give them an opportunity to switch if they detest their role.

Principle 9

Create an easy and a difficult way to experience the information inside the exhibition.

Principle 10

Use animals to evoke reactions from the children. Don't let it distract them though.

Principle 11

Use concepts such as electric cars instead of brands such as Tesla.

Principle 12

Make it easy for children to understand how sustainable behaviours affect the environment

Principles that need to be adjusted are 8,9,10. Principle 9,10 need to be improved and principle 8 became irrelevant because of the direction of the project.

Adjust

8. Principle 8 became irrelevant as it would make the experience too complex. It is an interesting way of creating teamwork but is not required as the current exhibition proved to create teamwork amongst the participants.

9. Principle 9 is something that should be improved which became clear during the user test. There should be more detailed information available during the kitchen and water game for children who have advanced knowledge about sustainability. This can be additional information in the form of text next to the exhibit.

10. For Principle 10, fish were used during the water exhibit. The fish used evokes the wrong reaction from the children. It did evoke a reaction from the children that they wanted to save the fish. Improvements can be made by either changing the meaning of the water exhibit to better fit the total experience or not using the fish.

Success

Principles that were successful were 1, 2, 3, 4, 5, 6, 7, 11, 12. Principle 1, 3, 4, 6, 7, 12 came back as successful feedback during the user test and principles 2, 5, 11 are incorporated in the concept but there was no feedback received about these principles.

1. Principle 1 is incorporated in the introduction exhibit. It introduces the theme and the choice system which is

used throughout Wanderlust. During the user test participants stated to gain a holiday feeling from the introduction.

2. Principle 2 is included in the concept however on a small level. The children are free to choose if they want to do the water exhibit or kitchen exhibit first. But the rest of the exhibits are still in a fixed order. This is done because having the motor exhibit after the introduction creates a better flow through the experience, they are sitting in the front, and you always start your trip with starting the motor.

3. The feedback of the user test was mostly positive. All kids stated that they would enjoy the games they would have to play during the exhibits. This makes principle 3 successful

4. Wanderlust is designed such a way to suit principle 4. During the user test it became apparent that some children enjoyed the kitchen exhibit more than others, with 3 children stating to miss something during the kitchen exhibit. However, they did enjoy the other exhibits. This confirms the principle that there are different exhibits that match different personas.

5. Principle 5 is incorporated in the design since children can go through the whole experience by themselves with just supervision of a teacher.

6. Principle 6 is used in the design by having the trip being about the Rijn. Also, it was found during the user test that the introduction, motor, and kitchen exhibit all included an element that was relevant for the children.

7. Principle 7 is best found in the motor and water exhibit. During the user test it became clear that the puzzle of the water exhibit was challenging but solvable for the children. The motor exhibit was interesting for them since they were kids who could drive a car.

11. Principle 11 is successful based on how the experience is designed. All concept used throughout the experience are general understandable concepts instead of brands which are only known to a few children.

12. Principle 12 is the final principle but probably the most incorporated principle. The main goal of the exhibition is to make children understand different perspectives. Children choose comfort or sustainability during the experience and will see the effects on the environment

based on their decisions. They experience the choices themselves which makes it easier to understand how these systems work.

Acknowledgements

Thanks for all the people who helped me make this project possible.

Special thanks to my coaches Arnold Vermeeren and Mathieu Gielen for having insightful and enjoyable meetings. Also, for enduring my writing by keep giving my feedback on how to improve it.

Special thanks to Friso Visser for reminding me to keep designing things that feels like Thomas. It gave a special spark to the project.

Last, I want to thank my friends and family for giving me feedback when I needed it and keeping me mentally sane.

Personally, i think this concept is really cool. When i look at it, i want to hop on and experience the real thing.

-Thomas



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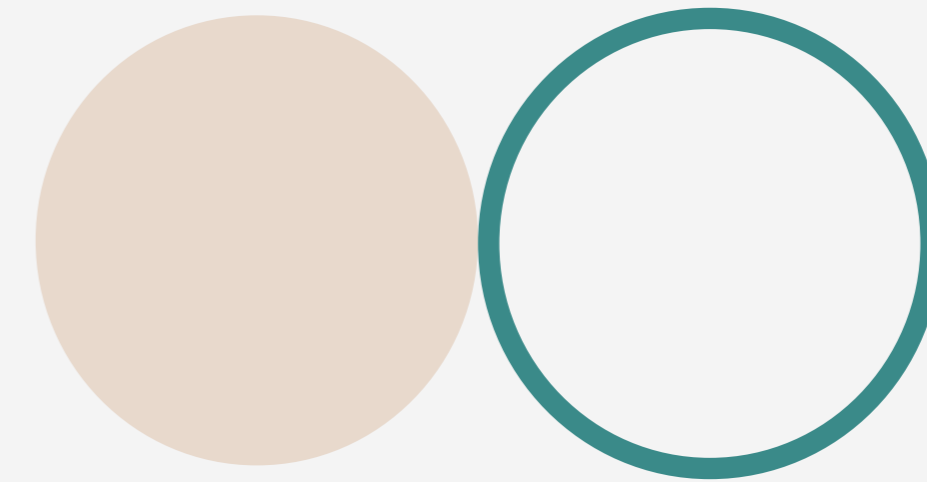
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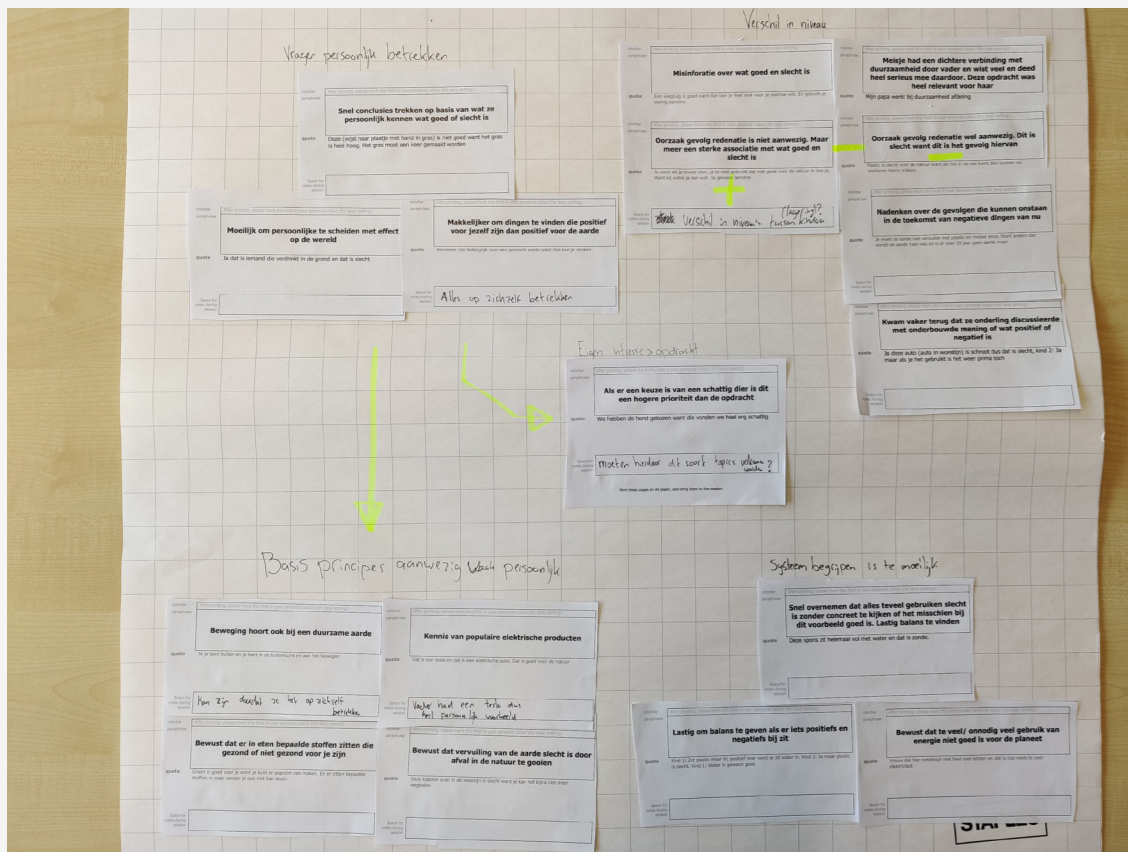
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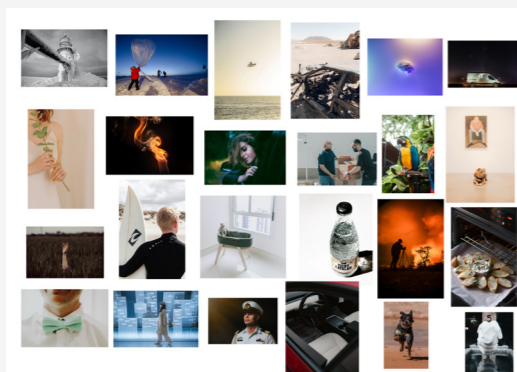
APPENDIX



Appendix A - contextmapping



RUIMTE	Delen	Vriend	V e r	Vertrouwen	Slim
Krachtig	Gelijk	Open	Limonade?	Computer	Sinds
Blij	Water	Geluk	Spelen	Zacht	IK
Contact	Waarus!!	Nu	Familie	Auto	Schudden
DENKEN...	Geheugen	Gebouw	Actie	Koud	Kijken
Warm	SLAAP	Fluisteren	Jaloeus	Afstand	AAAH!!
Wachtbij	Versaag	Moeilijk	THUIS	Lachen	Praten
Niks	BOOS	Vriendelijk	Goed	Speciaal	Veilig
Creatief	Inspiratie	Verdrietig	Geek	Start	Dag
Sterk	HOOP	Droom	Oké	Weg	Vechten
in	Serius	Bewegen	Tijd	Morgen	Geluid
Ogen	Druk	INTERESSANT	Helpen	Voor	Stepen
Samen	Gevoel	Moe	Dichtbij	Rommel	Wie
Tijdens	Later	Zon	HARD	ENERGIE	Geschiedenis



colobar paraphrase: After printing, please mark this field in your personal colour (for easy sorting)

Oorzaak gevolg redentatie is niet aanwezig. Maar meer een sterke associatie met wat goed en slecht is

quote: Ja want als je teveel ehm, ja te veel gebruikt dat niet goed voor de natuur is dan ja. Want bij autos ja dan euh. Ja gewoon benzine

colobar paraphrase: After printing, please mark this field in your personal colour (for easy sorting)

Oorzaak gevolg redentatie wel aanwezig. Dit is slecht want dit is het gevolg hiervan

quote: Plastic is slecht voor de natuur want als het in de zee komt dan kunnen de zeedieren hierin stikken.

colobar paraphrase: After printing, please mark this field in your personal colour (for easy sorting)

Lastig om balans te geven als er iets positiefs en negatiefs bij zit

quote: Kind 1: Zet plastic maar bij positief neer want er zit water in. Kind 2: Ja maar plastic is slecht. Kind 1: Water is gewoon goed

paraphrase: **Misinforatie over wat goed en slecht is**

quote: Een vliegtuig is goed want dan ben je heel snel waar je naartoe wilt. En gebruik je weinig benzine.

colobar paraphrase: After printing, please mark this field in your personal colour (for easy sorting)

Kwam vaker terug dat ze onderling discussieerde met onderbouwde mening of wat positief of negatief is

quote: Ja deze auto (auto in woestijn) is schroot dus dat is slecht, kind 2: Ja maar als je het gebruikt is het weer prima toch

colobar paraphrase: After printing, please mark this field in your personal colour (for easy sorting)

Meisje had een dichtere verbinding met duurzaamheid door vader en wist veel en deed heel serieus mee daardoor. Deze opdracht was heel relevant voor haar

quote: Mijn papa werkt bij duurzaamheid afdeling

paraphrase: **Moeilijk om persoonlijke te scheiden met effect op de wereld**

quote: Ja dat is iemand die verdrinkt in de grond en dat is slecht

colobar paraphrase: After printing, please mark this field in your personal colour (for easy sorting)

Kennis van populaire elektrische producten

quote: Dat is een tesla en dat is een elektrische auto. Dat is goed voor de natuur

paraphrase

Bewust dat vervuiling van de aarde slecht is door afval in de natuur te gooien

quote Deze kapotte auto in de woestijn is slecht want je kan het bijna niet meer weghalen.

colorbar
paraphrase After printing, please mark this field in your personal colour (for easy sorting)

Beweging hoort ook bij een duurzame aarde

quote Ja je bent buiten en je bent in de buitenlucht en aan het bewegen

colorbar
paraphrase After printing, please mark this field in your personal colour (for easy sorting)

Bewust dat er in eten bepaalde stoffen zitten die gezond of niet gezond voor je zijn

quote Graan is goed voor je want je kunt er popcorn van maken. En er zitten bepaalde stoffen in waar zonder je ook niet kan leven

paraphrase

Snel conclusies trekken op basis van wat ze persoonlijk kennen wat goed of slecht is

quote Deze (wijst naar plaatje met hand in gras) is niet goed want het gras is heel hoog. Het gras moet een keer gemaaid worden

paraphrase

Als er een keuze is van een schattig dier is dit een hogere prioriteit dan de opdracht

quote We hebben de hond gekozen want die vonden we heel erg schattig

paraphrase

Nadenken over de gevolgen die kunnen ontstaan in de toekomst van negatieve dingen van nu

quote Je moet de aarde niet vervuilen met plastic en metaal enzo. Want anders dan wordd de aarde heel vies en is er over 50 jaar geen aarde meer

colorbar
paraphrase After printing, please mark this field in your personal colour (for easy sorting)

Makkelijker om dingen te vinden die positief voor jezelf zijn dan positief voor de aarde

quote Hersenen zijn belangrijk voor een gezonde aarde want dan kan je denken

colorbar
paraphrase After printing, please mark this field in your personal colour (for easy sorting)

Bewust dat te veel/ onnodig veel gebruik van energie niet goed is voor de planeet

quote Vrouw die hier rondloopt met heel veel lichten en dat is dus veels te veel elektriciteit

colorbar
paraphrase After printing, please mark this field in your personal colour (for easy sorting)

Snel overnemen dat alles teveel gebruiken slecht is zonder concreet te kijken of het misschien bij dit voorbeeld goed is. Lastig balans te vinden

quote Deze spons zit helemaal vol met water en dat is zonde.

Appendix B - Expert interviews

Open questions

Introduction:

Hallo en leuk dat je mij wilt helpen met mijn project.

Mijn project gaat over een zijtak exhibition te maken van de nieuwe oneplanet exhibition. Het word een exhibition in de laadruimte van een elektrische vrachtwagen met als doel dat het rondgereden kan worden in omgeving den haag en voor scholen kan worden gehouden voor een dag event.

De doelgroep zijn kinderen rond de 8-12 jaar. Wat nog open staat is de groote van de groep.

Het doel van dit interview is om meer te weten te komen over hoe kinderen museum bezoeken ervaren. Wat voor soort types kinderen je tegenkomt, en wat kinderen drijft om te ontdekken.

Informed consent form

<https://forms.gle/Gh6kphQHG1vZtKLeA>

Questions

Introduction

1. Kan je iets over jezelf vertellen en wat je doet bij Museon?
2. Kan je iets vertellen over de laatste keer dat je een les hebt gedaan voor kinderen of op een andere manier iets educatiefs voor kinderen hebt gedaan?

3. Wat is je leukste herinnering van een les die je hebt gegeven?
4. Wat is een mindere herinnering van een les die je hebt gegeven?

Kinderen

5. Wat voor soort topics zijn de kinderen vaak het enthousiasts over?
6. Wat voor soort acties/ handeling vinden kinderen vaak het leukst om te doen?
7. Wat voor soort topics vinden kinderen vaak het minst interessant?
8. Wat voor soort acties/ handelingen vinden kinderen vaak het minst leuk om te doen?
9. Stel je voor dat je last minutes tips moet geven aan een student die een klas gaat begeleiden, wat zijn een paar do's en don'ts?

Miro assignments

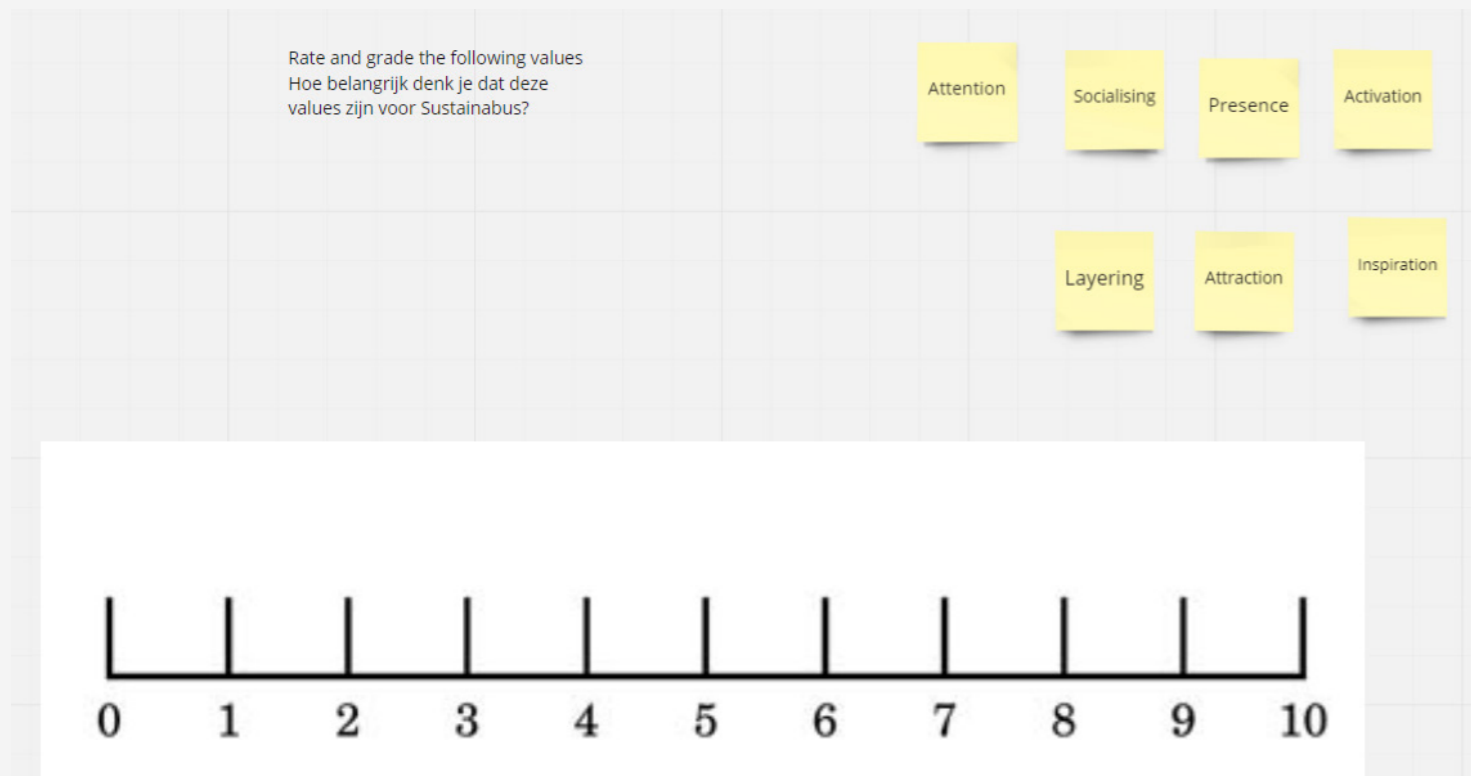
Les doorlopen

Begin contact kinderen

Einde contact kinderen

Stel je voor er zitten 8 kinderen in de klas, probeer een woord te verzinnen dat typisch een kind kenmerkt die in de klas zit.

Probeer terug te denken aan de laatste keer dat je les hebt gegeven.



Notes for all the expert meetings

Expert meeting: Sandra

Introduction:

Hallo en leuk dat je mij wilt helpen met mijn project.

Mijn project gaat over een zijtak exhibition te maken van de nieuwe oneplanet exhibition. Het word een exhibition in de laadruimte van een elektrische vrachtwagen met als doel dat het rondgereden kan worden in omgeving den haag en voor scholen kan worden gehouden voor een dag event.

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Het doel van dit interview is om meer te weten te komen over hoe kinderen museum bezoeken ervaren. Wat voor soort types kinderen je tegenkomt, en wat kinderen drijft om te ontdekken.

Informed consent form

<https://forms.gle/Gh6kphQHG1vZtKLeA>

Questions

Introduction

1. Kan je iets over jezelf vertellen en wat je doet bij Museon?

Werk een jaar of 6 bij museon, senior educator. Kleuters van 6 tot vwo maar ook daarna. Aadrijkskunde docent geweest.

Kwaliteits bewaking.

Tentoonstellingen.

Maak lessen

Leraren opleiding aadrijkskunde

2. Kan je iets vertellen over de laatste keer dat je een les hebt gedaan voor kinderen of op een andere manier iets educatiefs voor kinderen hebt gedaan?

Laatste na de zomervakantie.

3. Wat is je leukste herinnering van een les die je hebt gegeven?

4. Wat is een mindere herinnering van een les die je hebt gegeven?

Kinderen

5. Wat voor soort topics zijn de kinderen vaak het enthousiasts over?

Natuurrampen, dinos fosielen, dieren. Alles wat met ruimte te maken heeft.

Heeft iets te maken met dood, ze vinden het spannend. Het is iets wat hun niet overkomt. Maar het spreekt heel erg tot de verbeelding. Dinos is heel spannend heel leven voordat wij er waren.

Heel veel kinder boeken in die themas. Elke kleuter weet wat een vulkaan is of een dino is.

6. Wat voor soort acties/ handeling vinden kinderen vaak het leukst om te doen?

Goed verhaal. Goed verhaal kan vertellen. Meer empatisch. Over dinos kan je het wat meer teatraal maken.

Vinden het ook leuk om zelf wat meer de te doen. Dino bot en Lavasteen. Het is dan tastbaar dus daarom is het echter. Het is ook vaak iets wat ze thuis ook niet hebben.

Zeker als ze het zelf nog een beetje kunnen onderzoeken. Lol onderzoekend en ontdekkend leren.

Het een is niet beter dan het andere. Sommige kinderen reageren beter op het verhaal en sommige kinderen reageren beter op iets anders.

Ligt per leraar aan wat zijn eigen stijl is . sommige doen meer plaatjes en sommige doen meer verhaaltjes.

7. Wat voor soort topics vinden kinderen vaak het minst interessant?

Kinderen staan heel erg open, dus als je iets interessants brengt. Alleen bij sommige themas moet je iets meer nadenken over hoe je het cool maakt.

Het is minder leuk als het dingen zijn die minder voorstelbaar zijn.

Bij groep 5/6 hebben ze een piek over het zorgen voor de natuur.

Stel waterverontreiniging. Iets wat je niet precies kan zien.

Een heel technische process

8. Wat voor soort acties/ handelingen vinden kinderen vaak het minst leuk om te doen?

Je hebt altijd een deel van de kinderen die het wel leuk vinden. Basischool kinderen zijn een makkelijk doelgroep omdat.

Boekje voor een uur rondlopen en vragen beantwoorden die erop staan.

Heel lang luisteren naar iets

Verhaal dat niet interactief is

Samenhangt met de vorm,

Je moet net de goeie dingen weten. Om ze enthousiast te maken. Zandmaffia.

Onderzoek doe je in: iedereen die hier werkt heeft een bepaalde educatie achtergrond. Iedereen heeft al een beetje voorkennis. Je weet vaak wel in welke leuke hoek je verhalen kunt halen. Meestal een combi tussen eigen kennis + zoeken naar waar de exhibition over moet gaan. Je gaat wel kijken wat de hot topics zijn binnen een bepaald thema. Mensen vinden het leuk als je het oprecht gemaakt hebt, of oprecht overbrengt van een bepaalde passie.

9. Stel je voor dat je last minutes tips moet geven aan een student die een klas gaat begeleiden, wat zijn een paar do's en don'ts?

Maken:

Doel voor ogen houd en dat je het echt formuleert in een main doel en subdoelen. Helpt om alle andere dingen die je verzint weg te filteren. Dat het wat puurder blijft en de main en subdoelen uitlegt. Alles moet bijdragen aan het lesdoel.

Kijk telkens terug op dit doel.

30 min

Zorgt dat je formulering helemaal strak is. Niet meer tekst gebruiken dan echt noodzakelijk.

Gebruik echte objecten.

Zorg dat je aansluit bij de leefwereld = wat ze kennen, dingen van thuis of op school

Belevenis wereld= bijv Harry potter, iets wat ze dagelijks over dromen

Niet te lang aan het woord

Geven:

Wees heel duidelijk in je instructies wat wil je wel wat wil je niet

Niet straffen maar complimenteren

Afstemmen met de docent, en de docent actief te laten participeren als ze er bij zijn

Stereo types die in je taalgebruik komen. Bijvoorbeeld bij betatheorie niet zeggen dat het lastig is. Dit is lastig, dit is voor stoere jongens, je kan dit ook positief gebruiken. Bijvoorbeeld wie kan er heel nauwkeurig werken? Probeer wel altijd dingen te kiezen die niet positief of negatief zijn.

Optijd stoppen, soms merk je dat een klas dat de aandacht wat verslapt of dat ze vervelend worden. Aanpassen aan de vybe van de groep, zorg dat je extra verhalen en weetjes achter de hand hebt.

Je moet in je les belans hebben in verschillende werkvormen dat iedereen aan het bod komt.

Samen les doorlopen

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ljULaR

Miro board placing children

<https://miro.com/welcomeonboard/SdYVdVXJkfM0NBac8tjfcfnWgMWJQJrZ4unrwXiTSJQgfWwvSltye7motV-ljULaR>

ljULaR

Rate values:

<https://miro.com/welcomeonboard/SdYVdVXJkfM0NBac8tjfcfnWgMWJQJrZ4unrwXiTSJQgfWwvSltye7motV-ljULaR>

ljULaR

Attraction (hoe interactief en teatraal het moet zijn)

Attention (de aandacht van de gebruikers behouden voor langere duur)

Presence (bringing the place to life)

Activation

Inspiration

Layering (Verschillende lagen informatie overbrengen)

Socialising (samenwerken en relaties verbeteren door de ervaring)

Expert meeting: Carin

Introduction:
Hallo en leuk dat je mij wilt helpen met mijn project.
Mijn project gaat over een zigtak exhibition te maken van de nieuwe oneplanet exhibition. Het word een exhibition in de laadruimte van een elektrische vrachtwagen met als doel dat het rondgereden kan worden in omgeving den haag en voor scholen kan worden gehouden voor een dag event.
De doelgroep zijn kinderen rond de 8-12 jaar. Wat nog open staat is de groote van de groep.

8 tot 12 jaar zijn groepjes van 4 prima. Grotere bron van creativiteit met zn 4en. Kunnen ze ook aan elkaar vragen.
Groepje die direct aan de slag gaat
Groepje die alleen aan het ruizen
Het doel van dit interview is om meer te weten te komen over hoe kinderen museum bezoeken ervaren. Wat voor soort types kinderen je tegenkomt, en wat kinderen drijft om te ontdekken.

Informed consent form
https://forms.gle/Gh6kphQHG1vZtKLeA
Questions
Introduction
1. Kan je iets over jezelf vertellen en wat je doet bij Museon?
Ik ontwikkel activiteiten en lessen, ik geef ook activiteiten en lessen. Voor lessen is het doelgroep jonge kind. Voor activiteiten families.
Tot er met een jaar of 9.
2. Kan je iets vertellen over de laatste keer dat je een les hebt gedaan voor kinderen of op een andere manier iets educatiefs voor kinderen hebt gedaan?

Wereldfoto is voor kinderen van 10/11 jaar.
3. Wat is je leukste herinnering van een les die je hebt gegeven?
4. Wat is een mindere herinnering van een les die je hebt gegeven?

Kinderen
5. Wat voor soort topics zijn de kinderen vaak het enthousiasts over?
Eigenlijk is het heel breed. Het zijn nog steeds sponen. Het hangt er van af hoe de stof gegeven word.
6. Wat voor soort acties/ handeling vinden kinderen vaak het leukst om te doen?
Het doen vinden ze heel leuk. In het begin maximaal 10 minuten een praatje houden en dan moeten ze weer iets doen.
Het is de afwisseling. Het is ook het handigste om ze zelf iets te laten ontdekken. Dat onderzoekend ontdekkend leren.
Bij jongere kinderen niet omdat ze vaak de voorkennis niet hebben.

De verassing is belangrijk, verassing in die zin van wat is dit? Hun nieuwsgierig moet geprikkeld worden.
7. Wat voor soort topics vinden kinderen vaak het minst interessant?
Theoretisch, zouden misschien dingen zoals vulkanen en aardbevingen, nja misschien. Geographie zit hun belangstelling niet echt. Maar dat moet ook weer leuk opnieuw aangeboden worden.
Als ze bij ons zitten en ze voelen een aardbeving dat vinden ze weer wel leuk en dat spreekt tot de verbeelding.
8. Wat voor soort acties/ handelingen vinden kinderen vaak het minst leuk om te doen?
Boekjes invullen minst leuk om te doen. Hier is een boekje en een potloodje. Het lezen schrikt ze af om te doen.
20:55
Afhankelijk van de school vinden ze samenwerken heel moeilijk. De witte scholen hebben meer problemen met samenwerken dan de zwarte scholen.
Bij de witte scholen zitten veel meer individuen, en ze zijn gewend dat ze vaker hun zin hebben.
Juist omdat ze zwrte scholen meer gedacht word dat ze ondersteuning nodig hebben word er vanaf jongs aan meer mee geoefend.
9. Stel je voor dat je last minutes tips moet geven aan een student die een klas gaat begeleiden, wat zijn een paar do’s en don’ts?
Elke keer afhankelijk van een individu.
Weet wat je zwakke punten zijn en anticipeer daar op. Kan ook worden gebruikt bij de zwakke punten van een mobile exhibition.
Vooral veel plezier hebben.
Samen les doorlopen

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Rate values:
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Attraction (hoe interactief en teatraal het moet zijn)
Attention (de aandacht van de gebruikers behouden voor langere duur)
Presence (bringing the place to life)
Activation
Inspiration
Layering (Verschillende lagen informatie overbrengen)
Socialising (samenwerken en relaties verbeteren door de ervaring)

Expert meeting:
Cilia
Introduction:
Hallo en leuk dat je mij wilt helpen met mijn project.
Mijn project gaat over een zigtak exhibition te maken van de nieuwe oneplanet exhibition. Het word een exhibition in de laadruimte van een elektrische vrachtwagen met als doel dat het rondgereden kan worden in omgeving den haag en voor scholen kan worden gehouden voor een dag event.
De doelgroep zijn kinderen rond de 8-12 jaar. Wat nog open staat is de groote van de groep.
Het doel van dit interview is om meer te weten te komen over hoe kinderen museum bezoeken ervaren. Wat voor soort types kinderen je tegenkomt, en wat kinderen drijft om te ontdekken.
Informed consent form
https://forms.gle/Gh6kphQHG1vZtKLeA
Questions
Introduction
1. Kan je iets over jezelf vertellen en wat je doet bij Museon?
Technische achtergrond. Werk 2 jaar als educator geologie. Geef lessen over het gebied van de aarde.
Eerste jaar vooral veel met lesgeven bezig geweest.
Daarna ook gerold in het ontwikkelen van lessen.
Veel lessen aan voortgezegt onderwijs.
Puber leeftijd dan hebben ze allemaal geen zin meer. Pas vanaf 14.
2. Kan je iets vertellen over de laatste keer dat je een les hebt gedaan voor kinderen of op een andere manier iets educatiefs voor kinderen hebt gedaan?
13:22
Les gegeven in zomerschool, leskisten ontwikkelen om naar scholen toe te gaan.
Met het idee om collectie te tonen. 3 klimaten uitgelicht en voorwerpen meegenomen.
Wat vreemdere voorwerpen ook en wat is dit. Om de kinderen te prikkelen door middel van objecten. De objecten maken veel uit. De objecten gaven de meeste meerwaarde in de les. Het was hetgene wat het meeste is bijgebleven bij de kinderen.
Vooral dat ze ze mochten aanraken en aantreken. We hadden bijv ook die slipper die van een autoband is gemaakt.

Niet heel makkelijk om mee te nemen omdat we een collectie hebben, we hebben stukken die minder waard zijn die makkelijker zijn om mee te nemen.

Kinderen
3. Wat voor soort topics zijn de kinderen vaak het enthousiasts over?
Zit sterk aan de adrijkskundige kant. Wat veel indrukken maken zijn vooral echte dingen, echt vulkaan uitbarstingen. Dingen die dicht bij hun komen. Ook dieren. Als dingen dicht bij hun komen begint het heel interessant te worden, bijv als het vertelt word door een ander kind.
Voor hun is duurzaamheid en natuur licht het dicht bij elkaar. Natuur is iets wat eraan gekoppeld word. Het prikkelt kidneren omdat ze bijv een konijn leuk vinden of een olifant.

22min
4. Wat voor soort acties/ handeling vinden kinderen vaak het leukst om te doen?
Zelf doen, zelf uitvinden. Het liefst samen werkend. Zelf expirmentjes doen is altijd een succes. Verkleden. Dingen mogen aanraken, dingen mogen opzetten.
Heel veel handson vooral dat.
5. Wat voor soort topics vinden kinderen vaak het minst interessant?
Dingen die wij zelf ook een beetje saai vinden, droog werk, theoretische uitleg. Zijn wel een paar ertussen die dat wel interessant vinden. Je kunt dan wel weer de aandacht krijgen door een flmpje van een vulkaan erin te stoppen.
Als ze zelf stenen mogen detimineren,
Als je ze kwijt bent kan je ze terugkrijgen?
Ligt aan de klas en aan de docent. Soms is de energie in de klas zo dramatisch. Ligt een beetje aan hun week en hoe ze er naartoe zijn gegaan. Soms hebben ze heel lang in de bus gezeten en zijn ze hongerig.
Bij de vrachtwagen zullen ze Al zeer enthousiast zijn omdat de vrachtwagen zelf iets nieuws al is
27min
6. Wat voor soort acties/ handelingen vinden kinderen vaak het minst leuk om te doen?
Als ze een video luisteren en daarover informatie moeten beantwoorden. Als ze een spel mogen doen en halen daar informatie uit haalt is het veel leuker.
7. Stel je voor dat je last minutes tips moet geven aan een student die een klas gaat begeleiden, wat zijn een paar do’s en don’ts?
Een hele praktische is heel laag praten. Omdat de stemmen heel hoog zijn van de kinderen, dan kan je makkelijk erover heen gaan.

De docent erbij betrekken, als de docent ziet dat er ingegrepen moet worden. De docent kent de dynamiek beter.
Persoonlijk contact te maken met de klass zodat je niet koud begint.
Beginnen met een soort vragen rondje. Introductie is belangrijk.
Kan je ze zelf aan de slag laten maar ligt eraan hoe dat geintroduceert word. Bijv dat de docent zegt van jullie gaan dit en dit doen vandaag. Introductie is belangrijk.

Stel je flexible op, dat je kan aanpassen op hoe de kinderen erin staan. Dat je extra onderdelen hebt voor kinderen die snel zijn
Samen les doorlopen
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40min ongeveer

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Attraction (hoe interactief en teatraal het moet zijn)
Attention (de aandacht van de gebruikers behouden voor langere duur)
Presence (bringing the place to life)
Activation
Inspiration
Layering (Verschillende lagen informatie overbrengen)
Socialising (samenwerken en relaties verbeteren door de ervaring)

Expert meeting: Hienke
Introduction: <div>Hallo en leuk dat je mij wilt helpen met mijn project. Mijn project gaat over een zijkak exhibition te maken van de nieuwe oneplanet exhibition. Het word een exhibition in de laadruimte van een elektrische vrachtwagen met als doel dat het rondgereden kan worden in omgeving den haag en voor scholen kan worden gehouden voor een dag event. De doelgroep zijn kinderen rond de 8-12 jaar. Wat nog open staat is de groote van de groep. Het doel van dit interview is om meer te weten te komen over hoe kinderen museum bezoeken ervaren. Wat voor soort types kinderen je tegenkomt, en wat kinderen drijft om te ontdekken. Informed consent form https://forms.gle/Gh6kphQHG1vZtKLeA</div> <div>Questions</div> <div>Introduction</div> <div> <ol style="list-style-type: none">Kan je iets over jezelf vertellen en wat je doet bij Museon? Culturele en maatschappelijke ordening gedaan met museum educatie. Mijn functie in museon is medewerker jonge bezoekers. Geef lessen en maak lessen. Geef activiteiten en maak activeiten met andere. 3 tot er met 12 in de activiteiten. Kan je iets vertellen over de laatste keer dat je een les hebt gedaan voor kinderen of op een andere manier iets educatiefs voor kinderen hebt gedaan?</div>

Laatste les was wereld op je bord. Was een les aan groep 5/6, 9-10 jaar oud. Les gaat over het eten over heel de wereld. Waarbij we ook veel collectie gebruiken en veel zintuigen. Ze worden wereldchefs en ze moeten gerechten maken voor het museum. Ze verzamelen magneetjes en die plakken ze in hun cocosnoot. Het zijn gekke ingrediënten (zebrapathe, koffieboontjessaus)
Het gaat erom dat ze verder gaan kijken dan wat je normaal eet.
Dit was oktober.
We zijn weer bezig met nieuwe plannen te bedenken en alternatieven. In bakfiets naar de scholen toe.

Kinderen
3. <div>Wat voor soort topics zijn de kinderen vaak het enthousiasts over? Zelf dingen doen en ontdekken. Een leuke inleiding met collectie. Verrassings elementen je kan een pan open maken en dat zijn dan gekke dingen uit een ander land. Ze willen ontdekken. Zoeken. We hebben een opdrachtje in een les dat je de kikkertjes moeten gaan zoeken. 23:00 Soms werken elementen voor jongere kinderen ook goed voor oudere kinderen. Zelfde handelingen maar je stelt gewoon andere vragen. Weetjes doen het ook altijd goed. interessant</div> <div> <ol style="list-style-type: none">Wat voor soort acties/ handeling vinden kinderen vaak het leukst om te doen?</div>

De inleidingen moeten goed zijn, de 8 jaarige raken een beetje in paniek van wat moet ik doen. De 12 jarige willen graag door. Je moet heel erg inspelen op wat de kinderen zelf willen. Wat is de behoefte binnen elk kind. Groep 5/6 zijn heel jong en nieuwsgierig en ze willen veel doen en ontdekken. Ze hebben vaak opdrachtjes gedaan en dan zijn ze af en toe vergeten wat ze hebben gedaan. Sommige kinderen gaan het meer doen voor jou zonder dat ze beseffen dat ze weten waarom ze dat doen. 30:00 Tijdens het leuke wat ze aan het doen zijn leren ze alles. Probeer ze eerst mee te nemen in het verhaal. Ze zijn heel eager om alles op te zoeken tijdens het verhaal. 5. Wat voor soort topics vinden kinderen vaak het minst interessant? Jonge kinderen vinden eigenlijk bijna alles leuk. Soms is dat ook bij 5/6 maar het intereessant om ze juist dan. Sommige lessen hebben weinig collectie van het museum. Dat vind ik zelf heel erg jammer, want we zijn natuurlijk een museum. Het word ook niet altijd erg gevonden volgens mij. Kern collectie mag niet mee naar een andere school Gebruikers collectie mag in handen van kinderen en dat mag mee. 36:00
6. <div>Wat voor soort acties/ handelingen vinden kinderen vaak het minst leuk om te doen?</div>

Lang zitten luisteren naar een verhaal. We stoppen even het verhaal en dan gaan we wat doen. Bij kleuterles laten we de kinderen zelf iets pakken. Geld voor theoretisch en ook empathisch verhaal. Als je het te lang doet. Empa-thisch helpt om je verhaal zeker leuker te maken maar hoe het zo kort mogelijk.
Meestal zijn de inleidingen een half uur, dat is best pittig, dan half uur onderzoeken. En dan nog een kwartiertje afsluiting.

7.
Stel je voor dat je last minutes tips moet geven aan een student die een klas gaat begeleiden, wat zijn een

paar do's en don'ts? Beneden al, dat je al kan kijken van hoe komt een groep binnen. Wat voor soort groep heb je? Maak je verhaal interessant als het maar waar is. Veel verschillende doe opdrachten, soms heb je allemaal dezelfde opdrachten en dat verveel ook. Verschillende opdrachtjes dat je ze geboeid houdt. Stel voor jezelf een doel vast, waarom wil ik dat ze dit weten of dat ze dit doen. Allerbelangrijkste een leuke tijd geven. Je bent gastvrouw/heer de docent blijft verantwoordelijk. Je zorgt voor een goeie sfeer. Samen les doorlopen https://miro.com/welcomeonboard/SdYVdVXJkfm0NBac8tjfcfnWgMWJQJrZ4unrwxiTsjQgfWwvSltye7motV-ljULaR

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Rate values: https://miro.com/welcomeonboard/SdYVdVXJkfm0NBac8tjfcfnWgMWJQJrZ4unrwxiTsjQgfWwvSltye7motV-ljULaR
Attraction (hoe interactief en theatraal het moet zijn) Attention (de aandacht van de gebruikers behouden voor langere duur) Presence (bringing the place to life) Activation Inspiration Layering (Verschillende lagen informatie overbrengen) Socialising (samenwerken en relaties verbeteren door de ervaring)

Expert meeting: Mayan
Introduction: <div>Hallo en leuk dat je mij wilt helpen met mijn project. Mijn project gaat over een zijkak exhibition te maken van de nieuwe oneplanet exhibition. Het word een exhibition in de laadruimte van een elektrische vrachtwagen met als doel dat het rondgereden kan worden in omgeving den haag en voor scholen kan worden gehouden voor een dag event. De doelgroep zijn kinderen rond de 8-12 jaar. Wat nog open staat is de groote van de groep. 8 jaar is een leerling die al zelf kan schrijven en zelfstandig opdrachten kan lezen. Zodra je met kleuters kan werken dan heb je mondelingen instructies, of figurative instructie en daar ben je van verlost. Bij een vrachtwagen zit geen toilet in. Als je die leeftijd pakt dan ziet je niet de hele tijd met klassen en persoonlijke begeleiding. Het doel van dit interview is om meer te weten te komen over hoe kinderen museum bezoeken ervaren. Wat voor soort types kinderen je tegenkomt, en wat kinderen drijft om te ontdekken. Informed consent form https://forms.gle/Gh6kphQHG1vZtKLeA</div> <div>Questions</div> <div>Introduction</div> <div> <ol style="list-style-type: none">Kan je iets over jezelf vertellen en wat je doet bij Museon? Ik werk vanaf 1994 bij museon aangenomen als educator. In de tijd dat ik in het museon ben gaan werken waren er nog geen kleuterlessen. Ben ik gestart. Waren we de eerste mee, nu word het meer gedaan. Digitale lesverwerking 4 tot er met 12 jaar oud Kan je iets vertellen over de laatste keer dat je een les hebt gedaan voor kinderen of op een andere manier iets educatiefs voor kinderen hebt gedaan? Wat is je leukste herinnering van een les die je hebt gegeven? Wat is een mindere herinnering van een les die je hebt gegeven?</div>

Kinderen
5. <div>Wat voor soort topics zijn de kinderen vaak het enthousiasts over? Knuffelige dieren, schattige dieren. Word ook veel aangevraagd, als wij een dolfinnen les maken dan weten we dat we een succes nummer hebben. Maar dat doen we tegenwoordig niet meer. Want we willen een les maken die wat meer doet verwonderen. Een drol van een dino, een groot blok lava. Voorheen hadden we 5 collecties, biologie, geschiedenis, geofysieka, vogelkunde. De zalen waren ook zo ingedeelt. Allemaal losse afdelingen die niet samenwerkte. Allemaal hun eigen kamer inrichten die ze zelf belangrijk vonden. Educatie en presentatie onstaan emp. Samenwerking gedwongen tussen 5 collecties. Educatie werd meer verantwoordelijk voor de inhoud. Dus een koppelend een geheel thema werd daardoor belangrijker. Tussen mens en nevelvlek, aarde laten zien. Er zijn meer verschilende zalen gemaakt om meer bewust wording te creeëren Bewust wording voor jongere kinderen zit meer in de lessen. De leidraad is de sdg's de sustainable development goals.</div> <div> <ol style="list-style-type: none">Wat voor soort acties/ handeling vinden kinderen vaak het leukst om te doen? Verhaal vorm vinden ze heel interessant. Van gbegin tot een eind. Met een uitdaging erin. Dat ze iets zelfstandig mogen uitvinden. Dat ze dingen in handen mogen houden. Sorteren. Ze zijn redelijk competatief en ze willen graag de beste zijn. Dan is het leuk om een opdracht te geven waar ieder-een goed kan scoren. Dat ze persoonlijk iets toevoegen dat ze hebben begedragen aan het geheel. Bijv in vorm bijdrage Maar ook dat een kind een bepaalde kennis heeft die jij niet hebt. Of ideeën die je totaal niet zelf had bedacht. Wat voor soort topics vinden kinderen vaak het minst interessant? Dat is er eigenlijk niet, dat is maar hoe je het brengt. De manier is essentieel hoe interessatn iets is. Er is geen topic die niet Wat voor soort acties/ handelingen vinden kinderen vaak het minst leuk om te doen? Alleen maar zenden. En verwachten dat het word opgenomen En je verwacht dat de kinderen gaan ontvangen. Maar de kinderen staan nog niet op opvangen. Ik denk dat je altijd aan het begin moet vertellen wat je van ze verwacht. Om ze duidelijk te maken dat je een begin punt hebt en een eindpunt. Je moet ze uitleggen dat ze een doel hebben in het begin. 31:00 Zon escape room zou ook interessant zijn voor zon vrachtwagen. Maar je zou ze goed moeten primen hiermee.</div>

Vooral leuke hiervan is is het samenwerken. Verplicht om samen een knop in te drukken. De eene aan de enee kant en de andere aan de andere kant. Hierdoor krijg je de verschillende types kinderen andere gevoelens naar elkaar. De baasjes merken dat ze de andere kinderen bijvoorbeeld ook nodig hebben. Daar heb je geen uitgangspunt want daar moet je gewoon gaan zoeken. Maar bij een lessituatie dan is het belangrijk want dan is het vaak goed.
9. <div>Stel je voor dat je last minutes tips moet geven aan een student die een klas gaat begeleiden, wat zijn een paar do's en don'ts? Vooral veel voorwerpen bij elkaar zoeken. Vooral veel laten zien. Dit doen want dan heb je het verhaal, het voorwerp en de interactie met de kinderen. Kinderen zijn eigenlijk helemaal niet anders als volwassenen. Kinderen zijn opstaande mensen. Met volwassenen heb je meningen en gedachtes en oordelen waardoor hun absorbtie vermogen voor nieuwe kennis wat lastiger. Bij kinderen is dat niet het geval. Geld ook voor kleuters dit. 38:52 Kinderen voelen zich al groot, ze hebben al zo een enorme leerweg achter de rug. Als je naar kidneren kijkt en je ziet wat moet je nog veel leren dat klopt. Maar ze hebben juist al superveel geleerd. Ze moeten stap voor stap leren. 41:00 Oneplanet is een heel groot verhaal maar je moet het een klein stapje maken. Maar maak een doel voor jezelf dat haalbaar is voor de kinderen.</div>

Samen les doorlopen https://miro.com/welcomeonboard/SdYVdVXJkfm0NBac8tjfcfnWgMWJQJrZ4unrwxiTsjQgfWwvSltye7motV-ljULaR
Miro board placing children https://miro.com/welcomeonboard/SdYVdVXJkfm0NBac8tjfcfnWgMWJQJrZ4unrwxiTsjQgfWwvSltye7motV-ljULaR
Rate values: 1:05 https://miro.com/welcomeonboard/SdYVdVXJkfm0NBac8tjfcfnWgMWJQJrZ4unrwxiTsjQgfWwvSltye7motV-ljULaR
Attraction (hoe interactief en theatraal het moet zijn) Attention (de aandacht van de gebruikers behouden voor langere duur) Presence (bringing the place to life) Activation Inspiration Layering (Verschillende lagen informatie overbrengen) Socialising (samenwerken en relaties verbeteren door de ervaring)

Vooral ga veel samenwerken en haal je informatie bij mensen die al veel ervaring hebben met tentoonstelling maken.
Bij de internationale school hebben ze heel lang een raket voor de deur gehad van de ESA. Een film en een onder-zoek.
Contacteren om te kijken of je een kijkje kan nemen.
Tips en tricks bij hun vragen.

Expert meeting: Richard
 Introduction:
 Hallo en leuk dat je mij wilt helpen met mijn project.
 Mijn project gaat over een zijtak exhibition te maken van de nieuwe oneplanet exhibition. Het word een exhibition in de laadruimte van een elektrische vrachtwagen met als doel dat het rondgereden kan worden in omgeving den haag en voor scholen kan worden gehouden voor een dag event.
 De doelgroep zijn kinderen rond de 8-12 jaar. Wat nog open staat is de grootte van de groep.
 Het doel van dit interview is om meer te weten te komen over hoe kinderen museum bezoeken ervaren. Wat voor soort types kinderen je tegenkomt, en wat kinderen drijft om te ontdekken.
 Informed consent form
<https://forms.gle/Gh6kphQHG1vZtKLeA>

Questions
 Introduction
 1. Kan je iets over jezelf vertellen en wat je doet bij Museon?
 Werkt jaar of 2.5 bij museon als science educator. Bezig houden met de inhoud wat alles betreft de sciences. Werkzaamheden bestaan vooral uit inhoud van schoollessen, en tentoonstellingen. Samenwerken met externe in de vorm van lezingen en workshops.
 Iedereen in de afdeling heeft enige ervaring met lesgeving.
 Geef zelf ook les.
 2. Kan je iets vertellen over de laatste keer dat je een les hebt gedaan voor kinderen of op een andere manier iets educatief voor kinderen hebt gedaan?
 Laatste les was.
 Kinderen

3. Wat voor soort topics zijn de kinderen vaak het enthousiast over?
 Heel erg van de leeftijd hangt dit af. Geef zelf les aan kids tussen de 5-15, endat is een gigantisch verschil. Het gaat niet zo zeer over het onderwerp. Hoevel het zeker helpt. Dingen zoals dinos doen het altijd goed. Op het moment dat kinderen zelf actief kunnen gaan helpt het veel meer.
 Jonge kinderen hebben nog heel erg de nieuwsgirigheid en de waarom vraag. Stereotype 6 jarige dat vraagt waarom. Kinderen die ouder zijn willen vooral dingen horen die over hunzelf te maken hebben.
 Behalve als ze echt geïntereserd erin zijn omdat ze het later zelf iets mee willen doen (elektrischeit)
 Deze cutoff is te merken bij 9-10 jaar. Ze zijn dan echt hun eigen identiteit aan het ontwikkelen en maken zich zorgen over wat de andere over hun denkt.
 Ze vinden alles van autoriteit niet interessant omdat het niet cool is. Alles wat je op school leert is niet cool het is een verplichting 15min

4. Wat voor soort acties/ handeling vinden kinderen vaak het leukst om te doen?
 Wat ik merk is dat de meeste het leuk vinden om zelf iets te mogen doen. Iets fysiek te mogen doen. Dat geld voor alle leeftijden.
 Als ze zelf aan de slag mogen dan is het enthousiasme veel hoger. Veel lezen word niemand blij van.
 De boekenworpjes vinden het fysieke ook nog steeds wel leuk. Maar staan meer open voor stap voor stap handleidingen. Sommige leerlingen vinden het echt heel fijn om die stap voor stap te hebben. Andere vinden het prettig om zelf te kunnen ontdekken.
 Niet het idee dat het stap voor stap uit onzekerheid komt. Leerlingen die met onzekerheid te maken hebben komen vaak sneller naar de docent toe.
 Diegene die het wat rustiger doornemen zijn emotioneel wat oudere kinderen die wat meer geduld kunnen opbrengen. Ze zijn gewend van thuis uit om dit mee te nemen. Het zit meer in hun milieu en natuur. Gedeelte karakter en deel opvoeding.

5. Wat voor soort topics vinden kinderen vaak het minst interessant?
 Heele abstracte dingen. Hoewel dat niet zo zeer te maken heeft met interesse maar meer het niveau van begrip. Voorbeeld: de les die ik geef aan groep 3/4 electriciteit. Zolang het praktisch is dan snappen ze het.
 Als puber, vinden ze het interessanter om te weten wat het onderwerp invloed op jou heeft. Bijv. Binnen mijn eigen vakgebied bijvoorbeeld energie en duurzaamheid. De interesse is een stuk hoger dan als je het hebt over ontwikkelingen die hier plaatsvinden. Bijv watermanagement in nederland. Wat hebben de ontwikkelingen elders op invloed in nederland.
 De wat oudere doelgroep vind nederland een beetje saai. Culturele identiteit kan door iedereen geadopteerd te vinden. Dus dat vinden ze interessant omdat ze anders zijn.
 Onderscheid maken tussen dat je in nederland woont. En de cultuur die jezelf aanneemt. Dus dat het gevolgen heeft op je leefomgeving.
 Voor cultiriteit is het heel verschillend dus het is heel lastig om daar voor te ontwerpen.

26:30
 6. Wat voor soort acties/ handelingen vinden kinderen vaak het minst leuk om te doen?
 Lezen.
 Mogelijk dat het te maken heeft op de doelgroep die wij vaak trekken. Omdat we in de randstad zitten hebben we

een soort leerlingen dat altijd komt.
 Niet zo zeer teksten. Maar meer heel veel tekst en dat ze het zelf niet kunnen doen.
 Slechts
 A4tje geven
 A4tje voorlezen
 Punten geven om te lezen
 Of om dingen zelf te laten ontdekken.
 7. Stel je voor dat je last minutes tips moet geven aan een student die een klas gaat begeleiden, wat zijn een paar do's en don'ts?
 Behandel de leerlingen met respect. Behandel ook jonge kinderen niet als babies. Behandel ze niet jonger dan ze zijn

Maak je niet te druk over de exacte inhoud van de presentatie. Zolang je geen foute informatie geeft.
 Maak gebruik van de docent. Vooral als het neerkomt op klassenmanagement. Hier is de klas heel goed in.
 Aanrader om ongeveer een vierkante meter nodig hebt per persoon. Stuk of 10, + enig toezicht
 Met groepsdynamiek hangt het af van de docent. Niet met zn alle tegelijkertijd in een groep samen te laten werken.
 Stel je hebt individuele stations kan je ze 1 tot 2 groot alles langslaten lopen.
 Stel je hebt een ervaring dan kan 4-6 wel interessant zijn maar moet je met de docent afstemmen.
 Expert groepen. Groep van 30 word opgedeeld door 6 groepen van 5. Dat iedereen heel erg hun eigen rol krijgt.
 Vooral dat iedereen ook iets te doen heeft. Het feit dat je zometeen expert bent over een bepaald vlak geeft je de noodzaak om op te letten en iets te laten doen
 Tip: Het is belangrijk om de gaten te blijven houden wat het doel word en waar je de bus of vrachtwagen gaaat inzetten. Is het om scholen langs te gaan of is het een aandrchttreker voor het museum. Of word het een aandaht-strekker voor oneplanet en duurzaamheid.
 Samen les doorlopen

Miro board placing children
<https://miro.com/welcomeonboard/SdYVdVXJkfm0NBac8tjfcfnWgMWJQJrZ4unrwXiTSJQgfWwvSltye7motV-ljULaR>
 38:00

Rate values:
<https://miro.com/welcomeonboard/SdYVdVXJkfm0NBac8tjfcfnWgMWJQJrZ4unrwXiTSJQgfWwvSltye7motV-ljULaR>

Attraction (hoe interactief en teatraal het moet zijn)
 Attention (de aandacht van de gebruikers behouden voor langere duur)
 Presence (bringing the place to life)
 Activation
 Inspiration
 Layering (Verschillende lagen informatie overbrengen)
 Socialising (samenwerken en relaties verbeteren door de ervaring)

Appendix C - Camper interior

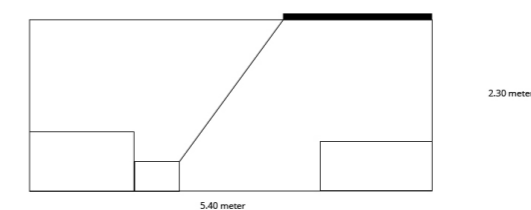


Moodboard Truck interior

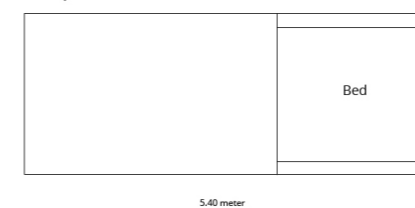
Floor 1 Topview



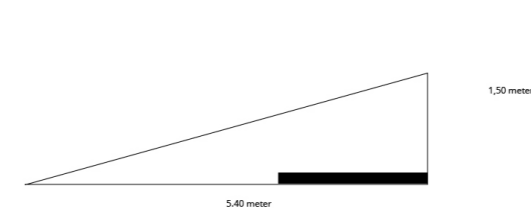
Floor 1 Side view



Floor 2 Topview



Floor 2 Side view



Appendix D - Theme direction

Ideas that came from the brainstorm of appendix E



Appendix E - Theme brainstorm

Prompts used in case the brainstorm got stuck. Ideas can be thought up that match these issues

<p>TARGET 13.1 STRENGTHEN RESILIENCE AND ADAPTIVE CAPACITY TO CLIMATE RELATED DISASTERS Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.</p>	<p>TARGET 13.2 INTEGRATE CLIMATE CHANGE MEASURES INTO POLICIES AND PLANNING Integrate climate change measures into national policies, strategies and planning.</p>	<p>TARGET 15.1 CONSERVE AND RESTORE TERRESTRIAL AND FRESHWATER ECOSYSTEMS By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.</p>	<p>TARGET 15.2 END DEFORESTATION AND RESTORE DEGRADED FORESTS By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.</p>
<p>TARGET 13.3 BUILD KNOWLEDGE AND CAPACITY TO MEET CLIMATE CHANGE Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.</p>	<p>TARGET 13.A IMPLEMENT THE UN FRAMEWORK CONVENTION ON CLIMATE CHANGE Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.</p>	<p>TARGET 15.3 END DESERTIFICATION AND RESTORE DEGRADED LAND By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.</p>	<p>TARGET 15.4 ENSURE CONSERVATION OF MOUNTAIN ECOSYSTEMS By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.</p>
<p>TARGET 14.1 REDUCE MARINE POLLUTION By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.</p>	<p>TARGET 14.2 PROTECT AND RESTORE ECOSYSTEMS By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p>	<p>TARGET 15.5 PROTECT BIODIVERSITY AND NATURAL HABITATS Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.</p>	<p>TARGET 15.6 PROMOTE ACCESS TO GENETIC RESOURCES AND FAIR SHARING OF THE BENEFITS Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.</p>
<p>TARGET 14.3 REDUCE OCEAN ACIDIFICATION Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.</p>	<p>TARGET 14.4 SUSTAINABLE FISHING By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.</p>	<p>TARGET 15.7 ELIMINATE POACHING AND TRAFFICKING OF PROTECTED SPECIES Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.</p>	<p>TARGET 15.8 PREVENT INVASIVE ALIEN SPECIES ON LAND AND IN WATER ECOSYSTEMS By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species.</p>
<p>TARGET 14.5 CONSERVE COASTAL AND MARINE AREAS By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.</p>	<p>TARGET 14.6 END SUBSIDIES CONTRIBUTING TO OVERFISHING By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.</p>	<p>TARGET 15.9 INTEGRATE ECOSYSTEM AND BIODIVERSITY IN GOVERNMENTAL PLANNING By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.</p>	<p>TARGET 15.A INCREASE FINANCIAL RESOURCES TO CONSERVE AND SUSTAINABLY USE ECOSYSTEM AND BIODIVERSITY Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.</p>
<p>TARGET 14.7 INCREASE THE ECONOMIC BENEFITS FROM SUSTAINABLE USE OF MARINE RESOURCES By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.</p>	<p>TARGET 14.A INCREASE SCIENTIFIC KNOWLEDGE, RESEARCH AND TECHNOLOGY FOR OCEAN HEALTH Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.</p>	<p>TARGET 15.B FINANCE AND INCENTIVIZE SUSTAINABLE FOREST MANAGEMENT Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.</p>	<p>TARGET 15.C COMBAT GLOBAL POACHING AND TRAFFICKING Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.</p>

Sustainable development goals. The brainstorm was scoped by only thinking of ideas that match these goals.



SDGs for interactions



SDGs for theme

Appendix F - Museon brainstorm

Results from the Museon brainstorm. ideas are grouped in interarctions ideas and thematic ideas

Brainstorm Museon

Snacks meenemen

Intro

Uitleg over het thema en het verhaal

Uitleg over wat soort interacties ik zoek

Interacties

Leuke speelse interacties zonder verhaal

Interacties dat kinderen iets kunnen bijdragen aan de exhibition

Interacties dat de kinderen een eindboodschap word meegegeven/ iets mee naar huis te nemen

Verhaal

Thematische objecten

Interacties met verhaal (je komt een stam in afrika tegen en je moet daarvoor een maaltijd koken)

Verhaal ideeën

Brainstorm

1 uur brainstorm over interacties in de explorers bus

1 uur brainstorm over thematische objecten/ thematische verhaal (reisstickers/ Woestijn met ijsschotsen)

Results:

Interactions

Veel ontdekvakjes en lades (collectie hierin)

Sterren + andereplaneten kijken door een dakluikje

In de wc voelen voor iets

Op bed liggen en kijken naar scherm boven je

Laag bij de grond iets kijken & opzoeken

Game controller om een tv scherm te bedienen

Radio aanzetten en luisteren naar iets

Binnenkant van douche gordijn iets lezen

Voordeur aanbellen (ring.com) en naar binnen kijken

Hangende plantenbakken aan de buitenkant en daar info bij

Luik openmaken in de vloeg (opslag)

Onderwater wereld in de vloer (schermen in de vloer net als in tentoonstelling)

Dierenoversteek spel (zoals bij de expositie boven)

Kinect-spel (zoals bij sdg14 waarbij je koraal wegduwt) maar dan korter

Verrekijkers waarmee je naar buiten kan kijken

Op de foto met jezelf, foto naar jezelf mailen (dit kan op de wc)

Iets met ansichtkaart schrijven en die achterlaten op prikbord in de bus

Ijspegels vangen

Toptelefoons met geluid (bijv dieren natuur geluiden)

Potjes in de kijken waaraan ze kunnen ruiken of eten

Extra uitschuif dak kan gebruikt worden om boven de bomen uit te kijken. Kan in een regenwoud zijn en als ze boven de bomen uitkijken zien ze dat veel gekapt is. En de natuur daar verdwenen is.

Uitschuif trap naar de bovenste verdieping

Kinderen horen op het gegeven moment geen geluiden meer van de natuur, er word gevraagd om naar boven te gaan en te kijken wat er aan de hand is. Ze zien dan dat alle bomen zijn gekapt.

Thematic

Echte aarde gebruiken voor klimaat (Sneeuw, water, lucht, bomen, dieren, wolken, landschappen, weer/klimaat)

Radio muziek van land of nieuwsbericht

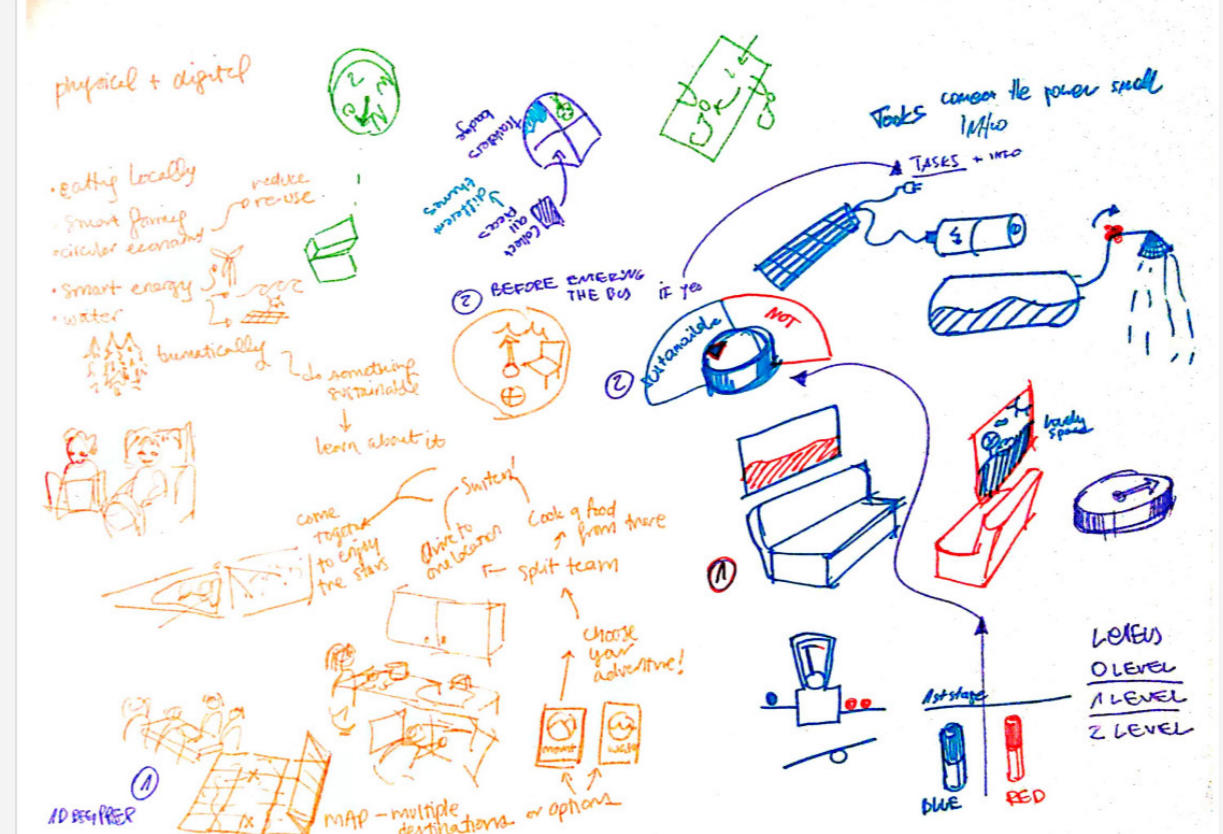
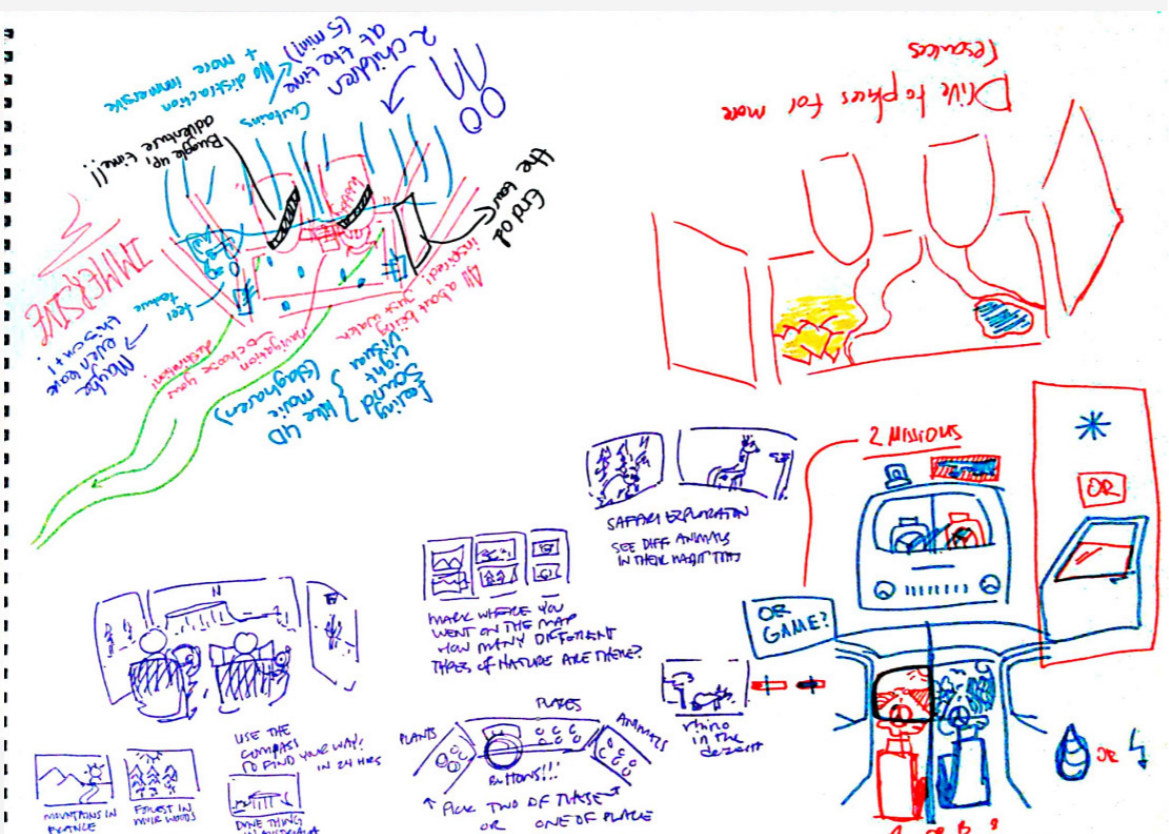
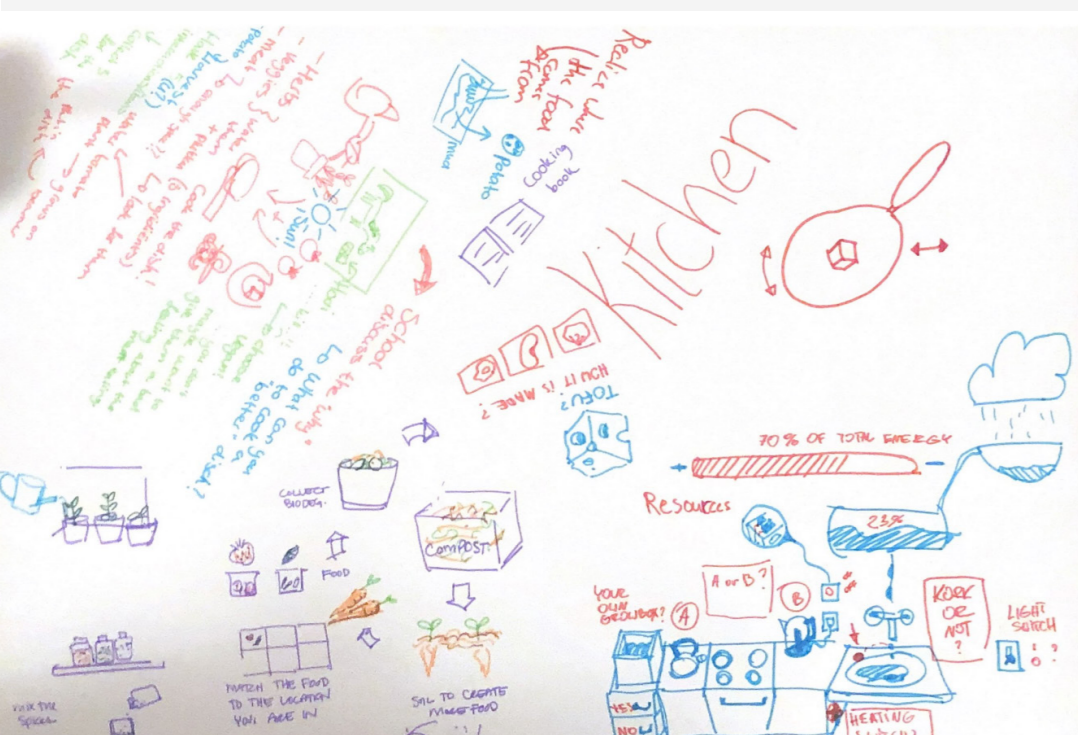
Licht gaat uit per land en dan komt er muziek op van een nieuw land/klimaat

Roadtrip muziek

Other

Appendix G - Creative session designers

These are the brainstorm sheets generated during the creative session with designers. a brainstorm was done for each location of the camper. Kitchen, Motor, Living room



Appendix H - Sustainable information

Sustainable information gathered which is relevant to the final exhibition

Interessante themas duurzaamheids almanac	is dat voor een rit korter dan 50km. Maar als je een keer ver weg wilt, duurt opladen lang. De actieradius van nieuwe modellen word snel groter.
Nederland is nummer 1 in de landbouw duurzaamheids doel (geen honger) Energiesysteem van de toekomst 42-43 Naar een circulaire economie 54-55 Aquathermie 84-85 Minder voedsel verspillen 106/107 (op reis voedsel inslaan) Gezond en duurzaam eten (op scherm laten zien wat de verschillende maaltijd keuzes impact hebben) 108-109 Elektrisch rijden 116-117	Nederland heeft de grootste laadpalen dichtheid ter wereld laadpunten per 100km Nederland: 19,3 China: 3.4 VK: 3 Duitsland: 2.8 Zweden: 1.9 Rusland 0.1
Duurzaamheids information to use: Food question: Debate: Elk voedsel zorgt voor uitstoot van broeikasgassen. Een gevarieerd dieet is essentieel voor een gezonde levensstijl. Maar gezond is misschien niet altijd even lekker. De afweging nemen tussen een gerecht dat weinig uitstoot en misschien minder lekker is of iets dat heel lekker is maar heel slecht voor het milieu. Of is er dan nog een extra alternatief, misschien kies je meestal de optie die goed voor het milieu is en dan eet je 1 keer de minder goede versie.	Actieradius: Tesla Model 3 Long range: 560km Volkswagen E-UP: 100 Elektrisch rijden is schooner dan rijden op benzine of diesel doordat het geen uitlaatgas oplevert met fijnstof en stikstofoxide. En ook de CO2 uitstoot is lager, vooral bij gebruik van groene stroom. Vandaar dat veel landen elektrisch rijden stimuleren.
Redenen dat mensen teveel eten koken: Product smaakt niet goed meer Houdbaarheidsdatum is verlopen Te veel gekookt Veranderde planning Te veel gekocht	Uitstoot elektrisch versus fossiel: CO2 uitstoot van een auto van productie tot einde levensduur Elektrisch: Productie:10.200 Accu: 5200 Gebruik:14.400 Totaal: 29.800
Ongeveer 40% van de uitstoot van broeikassen van voedsel is toe te schrijven aan de consumptie van vlees, en in mindere mate aan die van vis. Met zuivel en eieren erbij, loopt dit percentage op tot meer dan 60%. Milieu impact van producten Per 100 gram product, uitstoot is grammen in broeikasgas Aardappelen: 80gr Volkorenbrood: 110gr Eieren: 300gr Vegatarische burger: 320gr Tofu: 340gr Kip: 780gr Biefstuk: 5300gr	Fossiel brandstof Productie: 10.200 Gebruik: 48.400 Totaal: 58.600 Berekend voor een middenklasser, een gebruiksduur van 220.000 kilometer en gebruik van gijs-groene stroommix in Nederland Road question: Debate: Steeds meer word ontbost en gekapt voor bouw en productie, is dit wel allemaal nodig, kunnen we van sommige dingen niet op een andere manier genieten? Take images and sounds of now and back in the days
Hoeveel mag en kun je eten per dag om gezond te blijven: Groente: 250 gram Ei: 14-21g 2-3 stuks per week	
Motor question: Debate: Een elektrische auto heeft voor de helft uitstoot vergeleken met een fossiele brandstof auto. Het nadeel voor nu is dat de accu nog niet zo goed is dat je ver kan reizen. Als je op reis bent met een camper kies je dan elektrisch met het risico dat je niet ver komt of fossiele brandstof dat je wel de helft meer uitstoot Met een benzineauto rijd je op een volle tank al gauw 700km, met een diesel zelfs 1000km. Elektrische autos rijden op hun accu minder ver. Gemiddeld heeft een middenklasse-e-auto een actieradius van 200 kilometer; een duurdere auto komt twee keer zo ver. Meestal is dat genoeg: 90% van de keren dat iemand in de auto stapt,	

Appendix I - Evaluation results & content

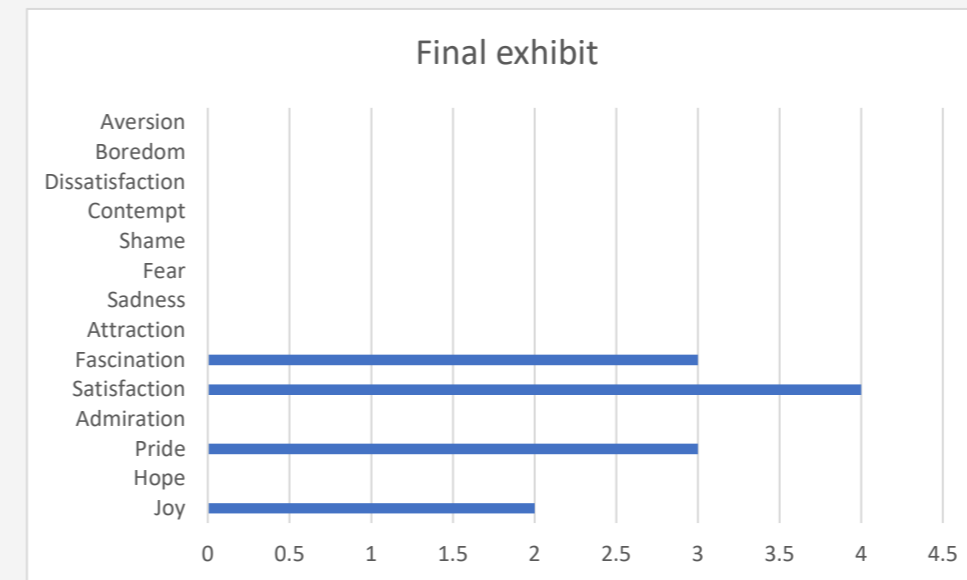
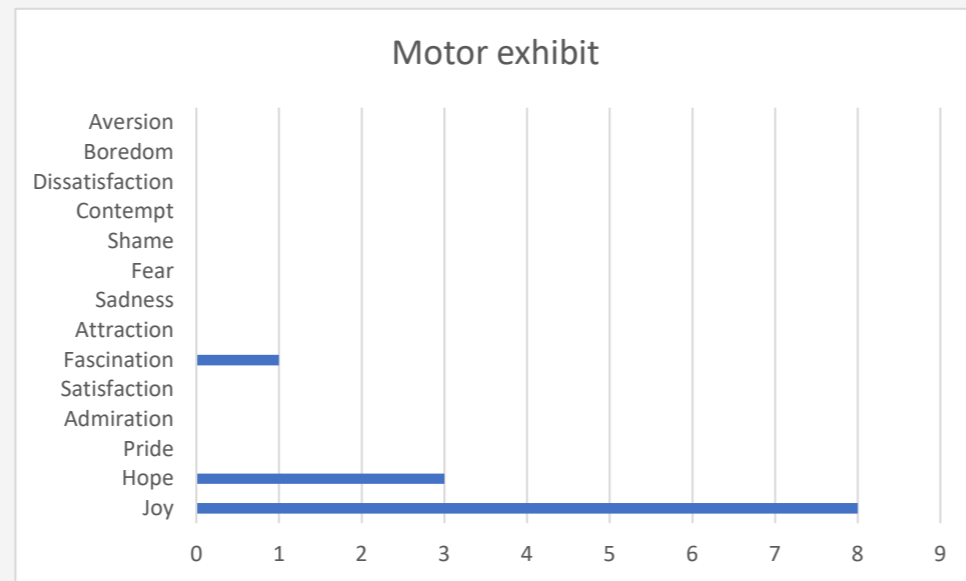
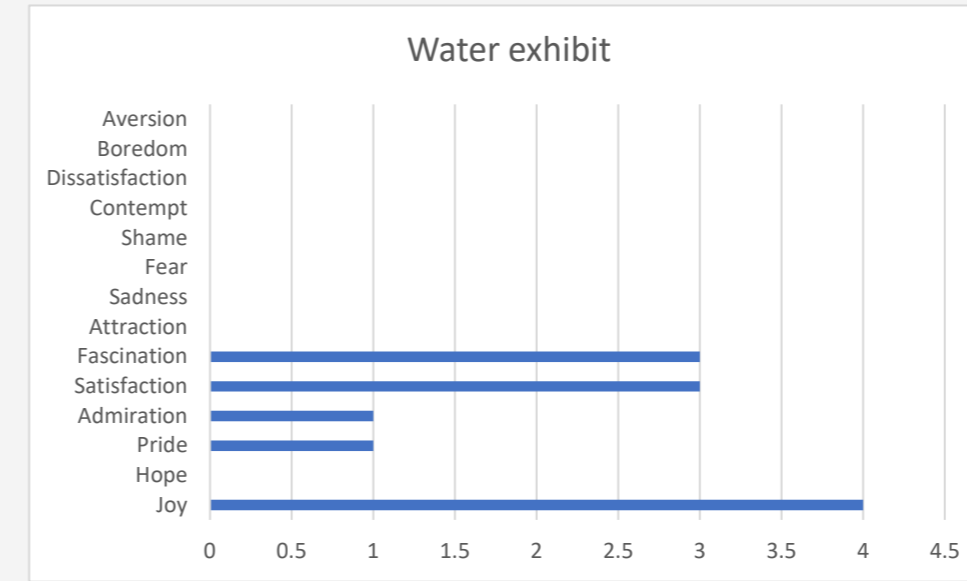
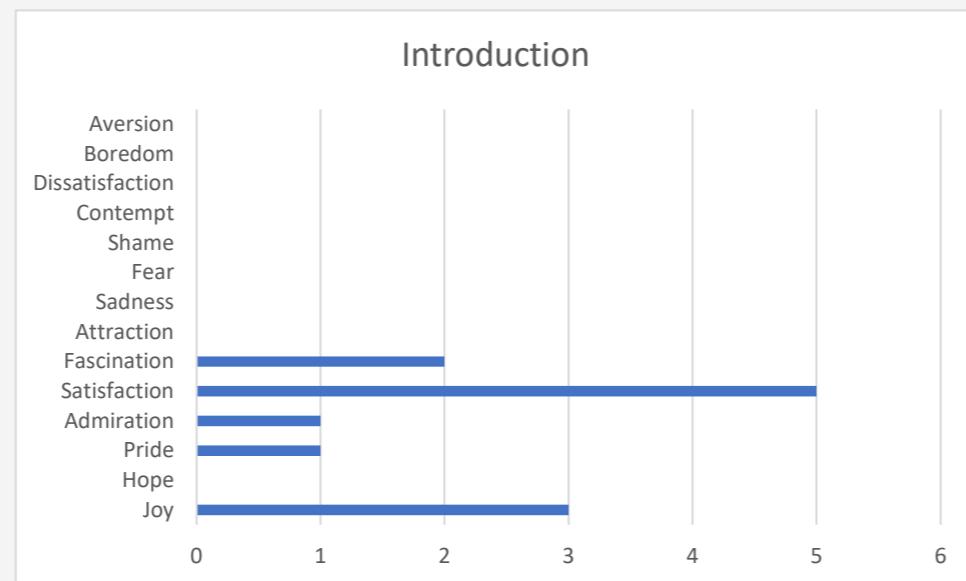
All insights from the evaluation

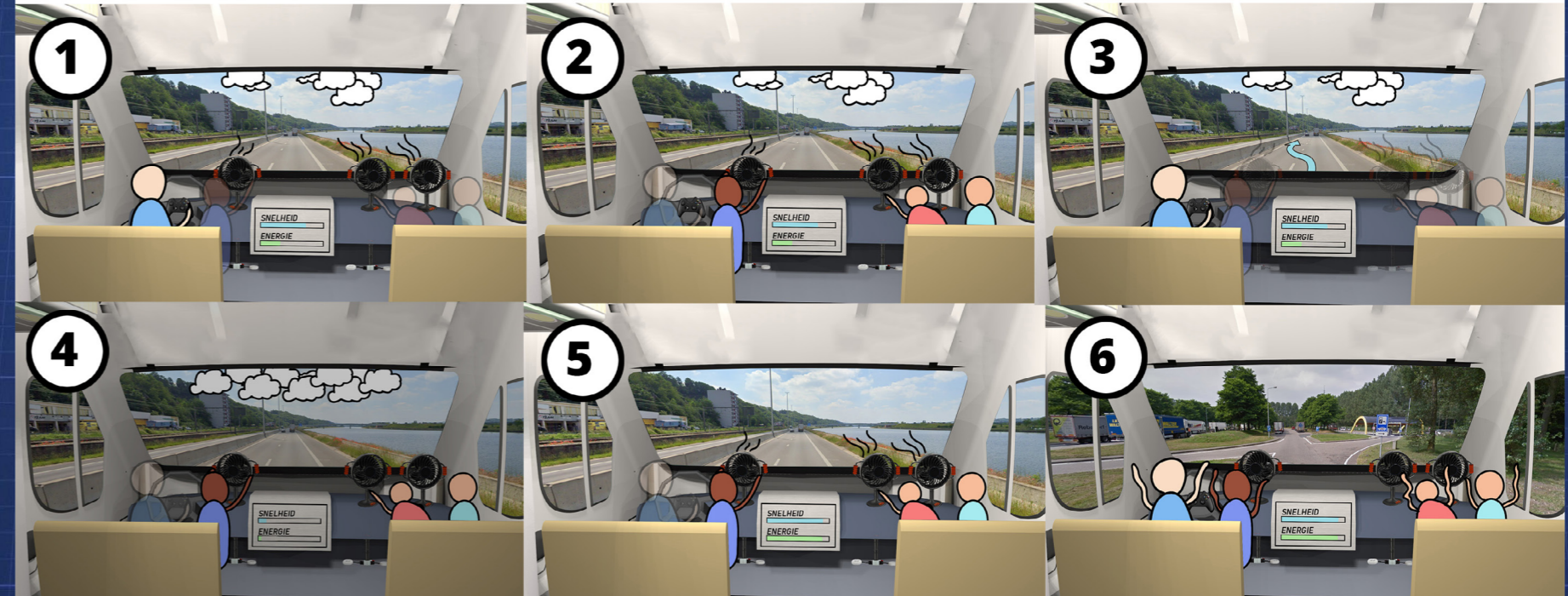
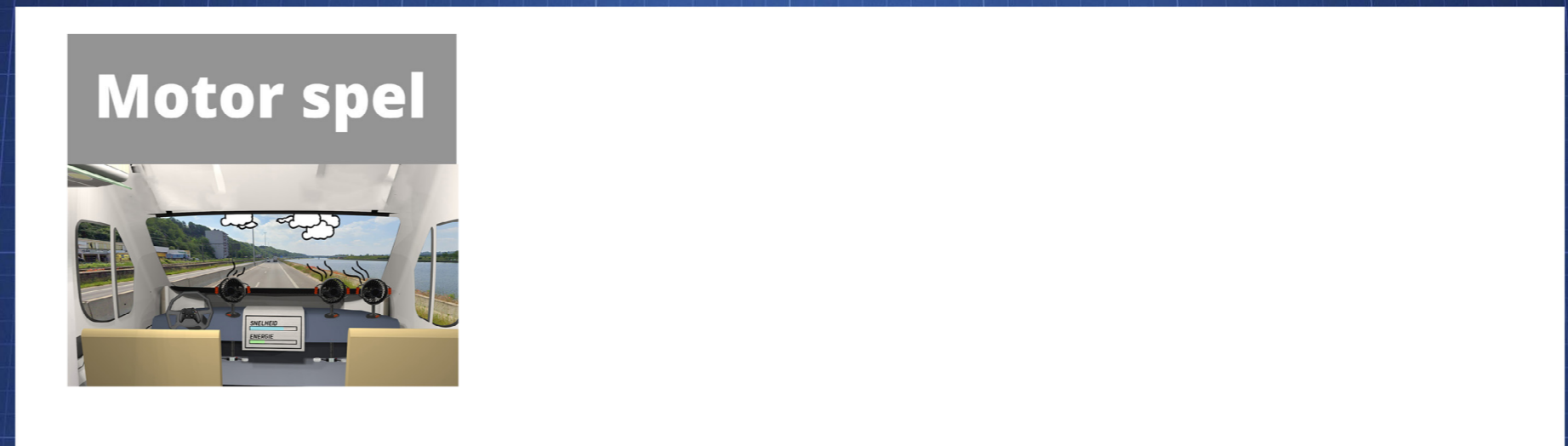
Insights: Introduction Insight: The window question during the introduction immersed the participants into the travel feeling. Quote: Bij de raampjes open zou ik trots zijn, omdat je dan echt het vakantie gevoel zou krijgen. Insight: The music questions during the introduction immersed the participant into the travel feeling. Quote: Ja zon muziekje past heel goed bij zon reis Insight: participants were less afraid to speak up after the introduction. The introduction helped them to overcome the interaction threshold.	Quote: Ja ik vond het wel interessant omdat ik niet wist dat een hamburger zo slecht was voor de natuur.
Motor exhibit Insight: Children were enthusiastic to drive the car in the car exhibit because it's a common experience to them but new when doing it themselves. Quote: Autorijden zou ik leuk vinden omdat ik het nooit doe Insight: Question afterwards was confusing to some children since the game was about solar panels instead of an electric car Quote: Electrisch gaat dat over de zonnepanelen of over een elektrische auto die je oplaad. Insight: Driving on the road and having the anticipation if you would make it or not was very exhilarating for the participants Quote – Hoop zou ik kiezen want ik hoop dat we het gaan halen, hopelijk, hopelijk! Insight: Using the fans to blow away the sun was found interesting and stimulated the imagination because it was a bizarre example. Quote: Ik word er blij van want het is fantasy xxl. Hoe kan je nou de wolken wegblazen??	Water exhibit Insight: The participants were immersed in the game too much to notice changes in the water level of the fish. Insight: The children enjoyed the puzzle element during the water exhibit Quote: Ja het is leuk want je moet goed kijken welke buizen je op welke manier je moet draaien Quote: Ja die moet daar, ja nee die daar, ja nu hebben we er een aangesloten (interviewer haalt een water strookje weg, en geen reactie) Insight: Reasoning behind the water choice wasn't a sustainable reasoning but more an emotional practical one. This makes the final exhibit results less meaningful. Quote: Ik wil de bus vies houden want dan hebben de vissen nog water en de bus word toch wel schoon van de regen. Insight: The message of using water sparingly is not conveyed because the focus is on the fish. Quote: Al het water overhouden en dan heb je de vissen voor niks gekocht, dan kan je beter geld overhouden om meer water te kopen Insight: Children enjoyed the exhibit in general and turning the pipes was an intuitive game for them. Quote: Het was leuk om te doen en het lijkt me ook grappig om dit in het echt te mogen doen. Insight: The children were proud of their achievement when they completed the game Quote: Tevreden omdat je alles hebt aangesloten en anders kun je geen water gebruiken. Tevreden dat ik het goed heb gedaan.
Kitchen exhibit Insight: The task-based exhibit lacked a game element and felt a bit boring Quote: Ja er mist nog wel iets in het spel, het spel zo is opzich wel leuk maar er mist nog iets. Insight: Not being able to control the ingredients created a better realisation of how bad some ingredients were. They were afraid of the emission bar being to big and paid a lot of attention towards it. Quote: nu het spek (Kind schrikt), ohjee en nu het eitje (Kind schrikt weer) Insight: Good teamwork during the kitchen game, can be done with multiple children Quote: Lees jij alles voor dan pak ik alles om erop te leggen Insight: Children likes to guess how much emission every ingredient caused Quote: ohoh ik denk dat het spek heel veel is! (Happy tone) Insight: One participant felt a bit disappointed that you cannot choose the ingredients yourself so that he could create a recipe that had the minimal pollution Quote- Ja maar als je een andere volgorde kiest dan krijg je altijd veel uitstoot Insight: There could be more educational information that explains what is happening during the exhibits. Quote: Moeder: Volgens mij zijn dit heel veel moeilijke woorden die de kinderen niet snappen. Uitstoot en broeikasgassen. Insight: Some participants were too invested in the game to notice the change of emission. They only noticed the final bar of the finished recipe. Quote: Kaas, ei, bacon ja en nu het broodje. (Ignored the emission bar) Insight: Showing the emission per ingredient made it for the children clear and easy to understand how bad the ingredients are compared to each other. Quote: Ik ben wel geïnteresseerd omdat ik het interesssant vind dat het zoveel verschil uitmaakt. Insight: The kitchen exhibit is relevant for the participants Quote: Ik vind het interessant want ik hou van koken. Quote: Jammie jammie, hamburger kom maar hier Insight: The game is interesting because it shows the difference in emission very clear	Final exhibit Insight: The farms were not seen as a problem enough to show as consequences for eating hamburgers. Quote: Ik vind het wel mooi een paar boederijen op mijn uitzicht. Insights: Showing the animals inside the farm could be a shocking enough consequence. But might be too shocking. Dieren die vetgemest worden en afgeslacht lijkt me wat minder om naar te kijken. Insight: Showing the alternative option made it more interesting for the children to see what their choice meant Quote: (Interviewer) want als jullie voor de elektrische optie hadden gekozen dan had het er zo uitgezien. (participant) Oohhhhhhhhh Insight: Participants didn't feel offended when choosing the “wrong” options Quote: Ik ben wel tevreden want we hebben wel alle fijne dingen gekozen. Insight: The participants were very anticipated to the reveal of the choices. It stimulated their curiosity to reveal the results after each other. Quote: Oei oei oei oei die hamburger zometeen. Insight: Showing how their choices changes the environment makes the children think about their decisions Quote: Misschien had ik toch de vegatarische burger moeten kiezen maar die was echt niet lekker.
General remarks Insight: Children knew the reasons for choosing the right options but were surprised by the results of the final exhibit Quote – elektrische auto want dat is beter voor de natuur Quote: Geïnteresseerd want je kan goed zien hoe de wereld eruit zou zien als je meer van dit pakt of minder van dat. Insight: Terms such as emission was too difficult for some children to understand, this shows the importance of having a facilitator to explain the basic level if children do not understand.	

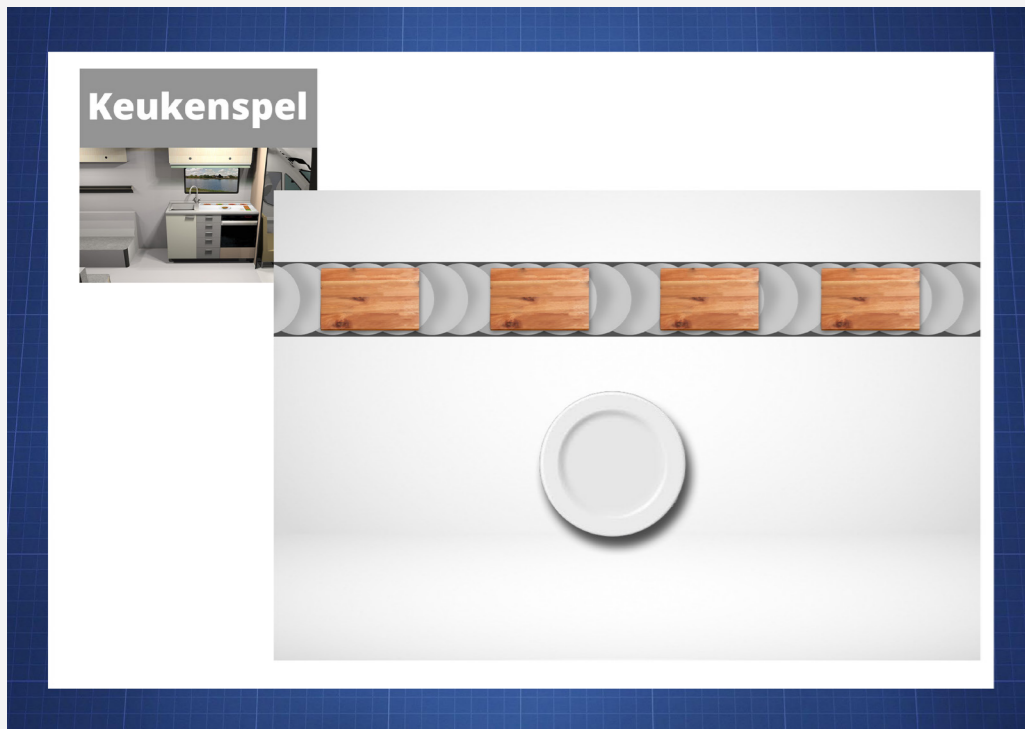
Quote: Moeder: Volgens mij zijn dit heel veel moeilijke woorden die de kinderen niet snappen. Uitstoot en broeikasgassen.
 Insight: The children will discuss their perspectives when the votes are evenly divided, and they need to make a choice.
 Quote: Ja als je benzine hebt hoeft je de auto niet op te laden en kan je altijd door blijven rijden. Ja maar elektrisch is beter voor het milieu.
 Insights: The topic of traveling is relevant for the children
 Quote: tevreden, Want als je op vakantie gaat heb je echt een yess gevoel

Insight: Participants sometimes got stuck at the puzzle and got frustrated when they did not get help/tips.
 Quote: Ik snap het niet, (stem verheffend) Deze puzzel is echt heel erg moeilijk!

PrEmo results of every exhibit







Recept voor een krekelburger

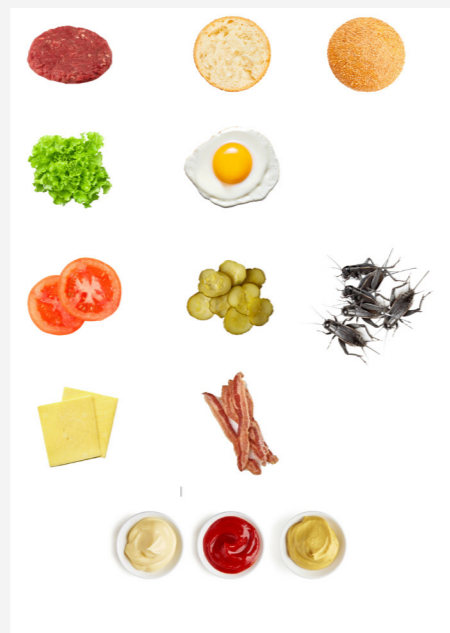
Ingrediënten moeten gepakt worden in de volgende volgorde

1. Brood
2. Mayonaise
3. Sla
4. Tomaat
5. Krekels
6. Ketchup
7. Augurken
8. Brood

Recept voor een hamburger

Ingrediënten moeten gepakt worden in de volgende volgorde

1. Brood
2. Mosterd
3. Hamburger
4. Kaas
5. Ei
6. Spek
7. Brood



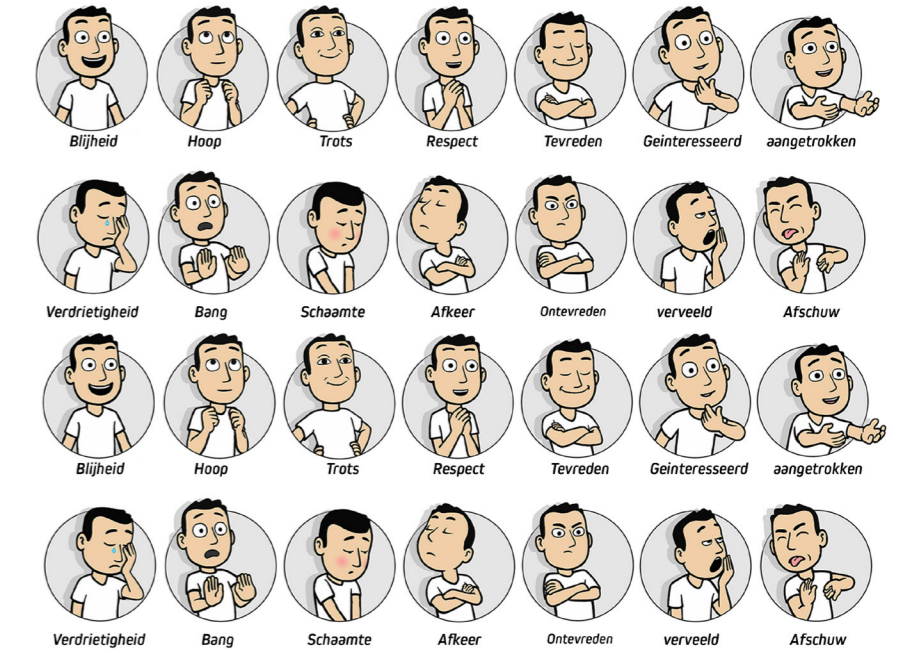
All choices made for the final exhibit



PrEmo tool

NAAM:

Introductie		Backup zonnemotor spel	
Ik voel...		Ik voel...	
Krekelkeuken	Omni meerdere doeleinden watervoorraad	Laatste camping	
Ik voel...	Ik voel...	Ik voel...	



Appendix J- Design brief



Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF

To be filled in by the chair of the supervisory team.

chair Arnold Vermeeren date 14 - 04 - 2021 signature

CHECK STUDY PROGRESS

To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair. The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: 30 EC YES all 1st year master courses passed

Of which, taking the conditional requirements into account, can be part of the exam programme: 30 EC NO missing 1st year master courses are:

List of electives obtained before the third semester without approval of the BoE

J. J. de Bruin name J. J. de Bruin date 20-04-2021 signature JdB

FORMAL APPROVAL GRADUATION PROJECT

To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **. Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)? APPROVED NOT APPROVED

Is the level of the project challenging enough for a MSc IDE graduating student? APPROVED NOT APPROVED

Is the project expected to be doable within 100 working days/20 weeks? APPROVED NOT APPROVED

Does the composition of the supervisory team comply with the regulations and fit the assignment? APPROVED NOT APPROVED

comments

name Monique von Morgen date 28/4/2021 signature _____

IDE TU Delft - E&SA Department /// Graduation project brief & study overview /// 2018-01 v30 Page 2 of 7

Initials & Name T.I. Imhoff Student number 4948696

Title of Project A mobile interactive exhibition about sustainability for children

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME

Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy". Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1!

family name Imhoff Your master programme (only select the options that apply to you):
 IDE master(s): IPD Dfl SPD
 initials T.I. given name Thomas 2nd non-IDE master: _____
 student number 4948696 individual programme: _____ (give date of approval)
 street & no. _____ honours programme: Honours Programme Master
 zipcode & city _____ specialisation / annotation: Medisign
 country _____ Tech. in Sustainable Design
 phone _____ Entrepreneurship
 email _____

SUPERVISORY TEAM **

Fill in the required data for the supervisory team members. Please check the instructions on the right!

** chair Arnold Vermeeren dept. / section: HCD/HCID
 ** mentor Mathieu Gielen dept. / section: HCD/DCC
 2nd mentor Friso Visser
 organisation: Museon
 city: The Hague country: Netherlands

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v.

Second mentor only applies in case the assignment is hosted by an external organisation.

Carin de Dulk (Museon) will act as company advisor, with her specific expertise on the target user of Museon

Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.



Personal Project Brief - IDE Master Graduation

A mobile interactive exhibition about sustainability for children _____ project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 24 - 03 - 2021 19 - 08 - 2021 end date

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

The main stakeholder of the project is Museon. Museon is an interactive science museum that focuses on children to explore the world interactively. The stakeholder is opening a new exhibition called 'Expofestival' which is about the 17 sustainable development goals of the UN. Also, the museum wants to create a mobile exhibition inside an electric truck (figure 1) to be able to offer a mini version of the exhibition at pop up locations. These locations are at elementary schools or secondary school and targeted to provide an event for multiple children at the same time.

The main target audience of Museon are children (age 8-14). The children either visit the museum with their school to get a lesson from the museum or in their free time with a guardian because they are interested. In most occasions the guardian or school decides for the children that they are visiting Museon.

Museon exhibits different themes about topics in the world. Some topics are history, anthropology, nature. The way the visitors experience the museum is by either following a lesson where children can get information from a teacher and in a fun way answer questions. Or interact by themselves with exhibitions, the exhibitions have a focus on interacting and discovering.

'Expofestival' (figure 1) is a new theme about the 17 sustainable development goals of the UN. The theme is divided in multiple smaller exhibitions such as: Fashion and clothes, people and nature, construction and living, food and drinks, sport and play, and dream and do. Children experience and learn about these sustainable development goals by playing with interactive exhibitions. At 'Expofestival' children can interact with playful assignments to explore, learn and experience sustainability. One core value of 'Expofestival' is 'shaping a better future together'. Co-creation is therefore involved in many of those exhibitions. The visitors are asked to share their thoughts and ideas.

The look and feel of the exhibition is designed to add to the sustainable experience. The ground is made of recycled car tires, the wood used for structures is made of recycled wood, etc. This promotes the idea that the exhibition itself values sustainability and is perceived sustainable.

Important stakeholders for the pop up location exhibition are school staff and school children. The children experience the exhibition and should gain insights from it. The school staff books the electric truck exhibition when they think the exhibition is valuable enough for their students.

space available for images / figures on next page

IDE TU Delft - E&SA Department /// Graduation project brief & study overview /// 2018-01 v30 Page 3 of 7

Initials & Name T.I. Imhoff Student number 4948696

Title of Project A mobile interactive exhibition about sustainability for children

Personal Project Brief - IDE Master Graduation

introduction (continued): space for images

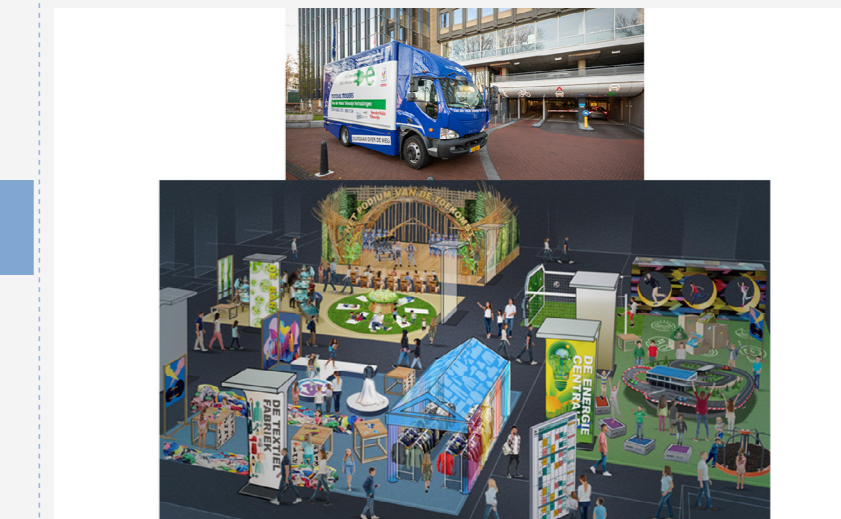


image / figure 1: Picture of electrical truck available and impression of the expofestival

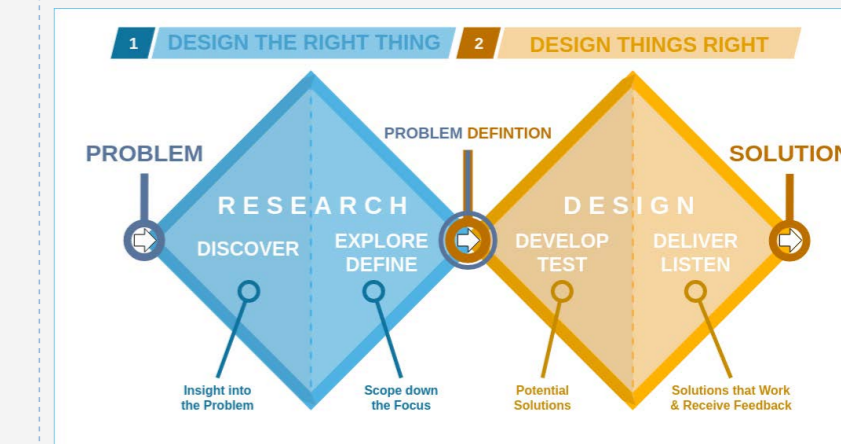


image / figure 2: Double diamond design process model

IDE TU Delft - E&SA Department /// Graduation project brief & study overview /// 2018-01 v30 Page 4 of 7

Initials & Name T.I. Imhoff Student number 4948696

Title of Project A mobile interactive exhibition about sustainability for children

PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

Museon sees an opportunity to use the mobile exhibition to reach audiences that are less likely to visit the museum due to mobility or economic reasons. This also increases the reach of the museum and improves the accessibility of their knowledge. Which is in line with the vision of The Hague to make culture more accessible to all of its citizens.

Museon highly values user research and always works to create new creative interactive exhibitions. Museon normally hires design bureaus that already have established ideas on how people experience exhibitions, this can limit the creative potential of a project. Using contextmapping generates inspiring information which strongly represents the user. This information can be used for fresh and out-of-the-box ideas to create more a more creative concept.

Another valuable method for Museon is prototype user tests. Immersive experiences need to be experienced in order to imagine how it is going to look and feel. The message of the exhibition can fail to be conveyed if the exhibit triggers an experience that is very different from what was intended. Most users find it hard to imagine how an exhibition experience is going to feel just from reading about it on paper. This makes it more difficult for them to provide good feedback on the concepts. Doing prototype user tests will create better feedback on the experience and thus a better final concept.

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, ... In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

Design an interactive experience inside an electric truck for Museon for pop-up locations aimed at groups of young people aged 8-14 to inform and make them care about a selection of sustainable developments. The design is experienced when schools or other youngster organizations hire the mobile exhibition of Museon for a day event.

Research will be done to understand the important design values of Museon, to understand which direction of sustainability could be interesting for the target group, and what type of experience is appealing for the target group. Following will be an iterative design process to test different concepts. This process will consist of short explorative iterations to find the more creative and interesting concepts.

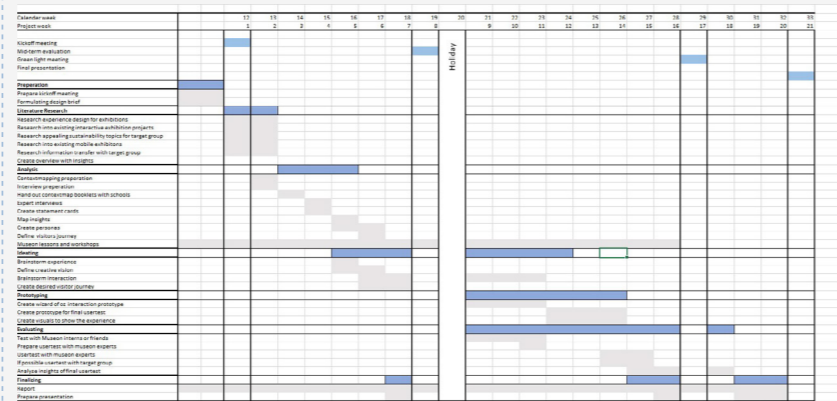
The end result will be visuals of the concept. The goal of Museon is to use this project to gain funding for doing a project inside the electric truck. This project can show the potential of an exhibition inside an electric truck. Thus, the end result should be understandable and visually appealing.

A limitation could be that the project exceeds the feasibility of a graduation project. To fully design the interior of an electric truck is a big task and might pose a problem if the electric truck is going to be filled with several concepts. The solution is to focus on one concept which uses the space of the electrical truck to its advantage. This way it is possible to design something that will fit the truck without having to design too many concepts for the time of the project.

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date 24 - 3 - 2021 end date 19 - 8 - 2021



A week holiday is planned after the mid term week. Some public holidays are 2/4, 5/4, 27/4, 5/5, 13/5, 24/5 which add up to 6 extra days. Because of this the planning is planned out for 21 weeks and the extra project week is added between the mid term and green light meeting.

After the mid term 3 weeks are planned to do ideating, prototyping and evaluating. These weeks are for short iterations on different aspects of the concept. After these short iterations a more elaborate user test will be done, this should provide a more comprehensive proof of concept.

Deliverables for mid term:
 Insights into requirements and wishes of Museon
 Literature insights
 Target audience insights
 Creative vision and concept experience

Deliverables for Green light:
 Preliminary insights of user test
 Proof of concept
 70% of report

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, Stick to no more than five ambitions.

My motivation for the project is to understand and use the transformative strengths of experience design. I think good experience design is something that can change your thoughts about the world and shape your future. Therefore it is the ideal medium to tackle big societal issues.

My past projects were focused on creating enjoyable experiences for the users or changing their behavior. I think the knowledge from these projects can come together to create an enjoyable experience that can change your behavior.

Something I want to learn in this project is to gain more experience with experience design. I think there is a lot of knowledge regarding this topic about how to understand the exhibition visitors better or how to keep the attention of the visitor. The project team and the opportunity of this project are the perfect way to learn more about this.

FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

