



# Co-designing Children's Museum Experiences

An explorative study of how museums can actively involve children in design processes to create more engaging museum experiences

<b>Authors:</b>	Anne-Sophie Madsen (20211928) Saskia Helena Mühlmann (20211927)
<b>Project:</b>	Master Thesis (30 ECTS)
<b>Extent:</b>	February 2023 - May 2023
<b>Title:</b>	Co-designing Children's Museum Experiences An explorative study of how museums can actively involve children in design processes to create more engaging museum experiences
<b>Character count:</b>	226.886 incl. spaces.
<b>Hand-in deadline:</b>	May 25th, 2023
<b>Supervisor:</b>	Amalia de Götzen
<b>Programme:</b>	MSc. in Service Systems Design
<b>University:</b>	Aalborg Universitet, Copenhagen



## ACKNOWLEDGEMENTS

First of all, we would like to thank our supervisor, Amalia de Götzen, for her input, feedback, and the support she has given us throughout our project.

We would also like to thank Maria Vitaller del Olmo for her thoughtful input on child-centered design and valuable feedback on our workshops.

Next, we would like to thank the seven museum professionals who took the time to participate in our interviews, forming our project's basis. The project could not have been realized to the same extent without their participation. In continuation, we would especially like to thank Stefan Bang for allowing us to organize our first workshop at the Glyptotek.

We thank the 4th-grade students at Hvalsø Primary School and their teachers, Anne and Line, for participating in our workshops and for their positive mindset, valuable insights, reflections, and ideas.

Finally, a big thank you goes to the three experts in child-centered design, Sidsel Kirk from Skoletjenesten, Karen Feder from Design School Kolding, and Ditte Hansen from the Mary Elizabeth's Hospital, for their time, knowledge, and advice on how to design with children.



# ABSTRACT

Following a service design approach, this thesis explores how children can be encouraged as experts in their own experiences by participating in design processes. The exploration has been examined in the context of how museums can design more engaging museum experiences for children by actively involving children during their design processes.

Museums approach the design of their exhibitions and activities differently, and most often, these are co-designed with children in passive roles as users or testers at the end of the design process or after the museum opens the exhibition or activity to the public. Through secondary research and interviews with seven museum professionals and three experts in child-centered design, this thesis explores the benefits, opportunities, and challenges museums can encounter when co-designing their experiences with children. The insights gained from the secondary and primary research are tested and evaluated through two co-design workshops with a fourth-grade primary school class. In these workshops, the goal was to test methods for co-designing a museum experience with the children as design partners.

The thesis concludes by suggesting a design process with accompanying methods supporting museums in co-designing child-centered museum experiences with children in active roles.

**Keywords:** Service design, Co-design, Child-centered design, Museum experience design, Design processes.

# TABLE OF CONTENT

<b>Acknowledgements.....</b>	<b>2</b>	<b>5. Case study .....</b>	<b>31</b>
<b>Abstract.....</b>	<b>3</b>	5.1 Discover	32
<b>Thesis introduction.....</b>	<b>6</b>	5.1.1 Interviews with museum professionals	33
1.1 Introduction	7	5.1.2 Museum design process journeys	39
1.2 Learning objectives	7	5.1.3 Mini Service Safari of the Glyptotek	43
1.2.1 Official learning objectives	7	5.1.4 Conclusion to Discover	46
1.2.2 Personal learning objectives	8	5.2 Define	47
1.3 Reading guide	9	5.2.1 Mapping and synthesis of opportunity spaces	48
1.4 Terminology	10	5.2.2 Motivation for involving children in design	49
<b>1. Literature review .....</b>	<b>11</b>	5.2.3 Approaches to involving children in design	51
2.1 The field of service design	12	5.2.4 Challenges when involving children in design	52
2.1.1 The origins of service design	12	5.2.5 Research Question	54
2.1.2 A process-oriented design approach	12	5.2.6 Conclusion to Define	55
2.2 Co-design	13	5.3 Develop	56
2.2.1 Approaches to co-design	13	5.3.1 Approach to co-designed processes in a museum context	57
2.2.2 Children in co-designed processes	14	5.3.1.1 Interviews with three experts in child-centered co-design	57
2.2.2.1 Existing initiatives	17	5.3.1.2 A design process for child-centered co-design in museums	61
2.3 Research focus	18	5.3.1.3 Preparation and design of two workshops	63
<b>3. Project context .....</b>	<b>20</b>	5.3.2 Workshop 1 - Examination of the Glyptotek	67
3.1 Museums	21	5.3.3 Workshop 2 - Ideation at Hvalsø School	74
3.2 The importance of child-centered museum experiences	21	5.3.4 Reflection on the workshop outcomes	79
3.3 Co-designed museum experience	22	5.3.5 Conclusion to Develop	81
3.4 The case organization	24	5.4 Deliver	82
3.4.1 The Ny Carlsberg Glyptotek	24	5.4.1 Pitching child-centered co-design processes to museums	83
3.5 Problem statement	26	5.4.2 A design guide for co-designed museum experiences for children	84
<b>4. Methodology .....</b>	<b>27</b>	5.4.3 Three service proposals for Glyptoteket	85
4.1 Overall research process	28	5.4.4 Conclusion to Deliver	87
4.2 Double Diamond as a framework	29	<b>6. Reflections on the design process .....</b>	<b>88</b>
4.3 Limitations	30	6.1 Reflections on the design process	89
		6.2 Reflections on the learning objectives	90
		6.2.1 Official learning objectives	90
		6.2.2 Personal learning objectives	90
		<b>7. Conclusion .....</b>	<b>91</b>
		<b>8. References .....</b>	<b>93</b>
		<b>9. Appendices .....</b>	<b>97</b>



# TABLE OF FIGURES

Figure 1: Framework of children's design roles [as adapted by Druin, 2001].	16	Figure 28: Outcomes from Empathic Design Challenge [Own creation]	72
Figure 2: Venn diagram of collaboration for museum design experiences [as adapted by Madsen & Yates, 2021]	23	Figure 29: Outcomes from inverse brainstorm [Own creation]	73
Figure 3: Stakeholder map of the Glyptotek's children's museum experiences [own creation]	25	Figure 30: Table of methods from workshop 2 [Own creation]	75
Figure 4: Project Research Process [Own creation]	28	Figure 31: Outcome of Combine & fantasize activity [Own creation]	76
Figure 5: Double Diamond Framework [as adapted by Design Council, 2019]	29	Figure 32: Winning ideas from workshop 2 [Own creation and photos]	77
Figure 6: Interviewed Museum Professionals [Own creation]	33	Figure 33: Service proposal to the Glyptotek [Own creation]	86
Figure 7: Affinity diagram from interview insights [Own creation]	34	Figure 34: Service proposal to the Glyptotek [Own creation]	86
Figure 8: Level of active children's involvement [as adapted by Druin, 2001]	36	Figure 35: Service proposal to the Glyptotek [Own creation]	87
Figure 9: Level of active children's involvement [as adapted by Druin, 2001]	37		
Figure 10: Examples of museums Design Process Journeys [Own creation]	39		
Figure 11: Affinity diagram from design process journeys [Own creation]	40		
Figure 12: Service safari journey [Own creation and photos]	44		
Figure 13: Mapping and Synthesis of Discover insights [Own creation]	48		
Figure 14: Insight Clusters [Own creation]	49		
Figure 15: Motivational matrix for museum co-design [Own creation]	50		
Figure 16: Museums challenges when involving children [Own creation]	53		
Figure 17: Interviewed experts in child-centered design [Own creation]	57		
Figure 18: Quote from interview with Ditte Hansen [Own creation]	58		
Figure 19: Quote from interview with Sidsel Kirk [Own creation]	59		
Figure 20: Quote from interview with Karen Feder [Own creation]	60		
Figure 21: Picture collage of design processes [Own creation]	61		
Figure 22: A child-centered museum co-design process [Own creation]	62		
Figure 23: Consent form sent to the parents [Own creation]	64		
Figure 24: Method Matrix [Own creation]	66		
Figure 25: Table of methods from workshop 1 [Own creation]	68		
Figure 26: Outcomes from Open Your Senses activity [Own creation]	70		
Figure 27: Story of little Eric [Own creation]	71		



# 1. INTRODUCTION

The introduction begins by presenting the thesis's background, purpose, and goal before presenting the official and personal learning objectives prepared to guide the project process. Finally, a reading guide and relevant terminology will be presented to prepare the reader for the further project.



## 1.1 INTRODUCTION

For many years designers and other professionals have designed products, services, and experiences for children, but without involving the children. Often authority figures such as parents, teachers, or other adults related to children are asked to provide inputs or feedback on behalf of the children, acting as representatives of the children's opinions and perspectives. This has been common practice despite research showing that children are creative, imaginative, and independent humans that are fully capable of providing inputs and contributing to design practices, even to the extent that most adults are not capable of, because adults have a more limited imagination and are more restricted by reality. This, along with various research, suggests a great advantage in bringing in children in co-design practices, including them in multiple steps in design processes, and encouraging them to provide active ideas and inputs rather than restricting them to demonstrating abilities and providing feedback.

In the Danish museum industry, there is a great focus on welcoming children into the museums, and user-centered approaches are becoming increasingly common. Nevertheless, museums often hire professionals responsible for designing children's experiences at the museum, thereby asking adults to be responsible for providing the children's perspective. These professionals then choose whether to involve children in their design processes or to design on behalf of the child. The chosen approach varies between museums, just as the extent to which the museum professionals choose to involve children varies greatly.

The research on children's involvement in museum design practice is limited, but research on children's involvement in design practices is broad and in continued development. Some of the earlier research revolves around children's roles in the design of new technology, which has eventually resulted in a framework of children's roles, differentiating between the involvement of children in passive or active roles as users, testers, informants, or design partners. Since its development, this framework has been widely cited in the

field of design but is no longer limited to technology. For this reason, this thesis intends to connect current research on co-designing with children and children's capabilities to the museum industry. The goal is to explore the museum's current design practices and the opportunity spaces herein to propose and contribute to the knowledge of co-designing children's museum experiences with children in active roles.

## 1.2 LEARNING OBJECTIVES

The learning objectives sum up the competencies, skills, and knowledge that are needed to master the profession of service design, and the thesis offers a possibility to demonstrate that the students have acquired these (Study Board of Media Technology, 2020). The learning objectives will reflect both the official learning objectives set forward by the Study Board of Media Technology at Aalborg University and our personal learning goals, reflecting what we identify as crucial to our learning.

### 1.2.1 Official learning objectives

The official learning objectives for the Master's degree in Service Systems Design in 2023 (Study Board of Media Technology, 2020) are as follows:

#### Knowledge

Students who complete the module will obtain the following qualifications:

- Must have knowledge about the possibilities to apply appropriate methodological approaches to specific study areas
- Must have knowledge about design theories and methods that focus on the design of advanced and complex product-service systems
- Account for the scientific foundation, and scientific problem areas, of the specialization
- Describe the state of the art of relevant research in the specialization

## **Skills**

Students who complete the module will obtain the following qualifications:

- Must be able to work independently, to identify major problem areas (analysis) and adequately address problems and opportunities (synthesis).
- Must demonstrate the capability of analyzing, designing and representing innovative solutions.
- Must demonstrate the ability to evaluate and address (synthesis) major organizational and business issues emerging in the design of a product-service system.
- Master the scientific methods and general skills associated with the specialization.
- Produce a project report according to norms of the area, apply correct terminology, document extensive command over relevant literature, communicate and discuss the research-based foundation, problem and results of the project orally, graphically and in writing in a coherent manner
- Critically evaluate the results of the project in relation to relevant literature and established scientific methods and models, evaluate and discuss the project's problem area in a relevant scientific context.
- Evaluate and discuss the project's potential for further development

## **Competences**

Students who complete the module will obtain the following qualifications:

- Must be able to master design and development work in situations that are complex, unpredictable and require new solutions (synthesis)
- Must be able to independently initiate and implement discipline-specific and interdisciplinary cooperation and assume professional responsibility (synthesis)
- Must have the capability to independently take responsibility for own professional development and specialization (synthesis)
- Participate in, and independently carry out, technological development and research, and apply scientific methods in solving complex problems.

- Plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for independently carrying out, potentially cross-disciplinary, collaborations
- Independently assume responsibility for own scientific development and specialization

### **1.2.2 Personal learning objectives**

In addition to the official learning objectives, personal learning objectives have been defined to support the shared motivation related to the thesis topic and process:

- Gain theoretical and practical knowledge and experience around co-designing with children and how this can benefit a design process.
- Gain experience using different service design tools and how these can be adapted to different needs and situations in a design process.
- Gain experience with the many ways in which a service designer can contribute to the field of co-designing with children while testing and improving our motivation and interest in the field for the future.
- Contribute valuable insights and a method tool to Danish museums on designing experiences for children with children.
- Make a research contribution that will inspire more companies to actively include children in design processes and encourage the use of children as design partners in design processes when designing new services.



## 1.3 READING GUIDE

This reading guide will provide an overview of the thesis structure and an introduction to each chapter presented in the thesis.

### **Chapter 2: Literature Review**

This chapter presents the theoretical foundation of the thesis, which will later be used to formulate the project context and problem statement. It introduces the concept and value of service design and discusses the value of co-design in relation to user-centered and participatory design. Moreover, it explores co-designing with children, involving them in passive and active design roles as part of the design process. This chapter concludes by presenting the research focus for the thesis, which will form the foundation for further work.

### **Chapter 3: Project Context**

The project context will introduce the industry in which the case study is carried out. The museum industry will be presented, as well as what museum experiences are and how they are designed. As part of this chapter, Ny Carlsberg Glyptotek will also be introduced as a case organization for practical investigation. The chapter concludes with a problem statement, which initiates the case study.

### **Chapter 4: Methodology**

The methodology chapter will present the thesis's methodological approach and research process. First, an overview of the overall research process is presented. Second, the Double Diamond design process is introduced, providing the framework for the project research and design. Finally, the chapter concludes with the limitations that affected the project.

### **Chapter 5: Case Study**

The case study serves as the foundation for exploring and developing an academic research product. The chapter is divided into the four phases of the Double Diamond methodology; Discover, Define, Develop, and Deliver. The two first phases, Discover and Define, will explore the problem statement more in-depth, concluding with a research question that seeks a solution to the project. The research question will inform the development and delivery of the final service product in the last two phases.

### **Chapter 6: Reflections on the project's design process**

This chapter reflects on the design process during the project and what could have been done differently. In addition, it will assess how well the learning objectives for the thesis were met.

### **Chapter 7: Conclusion**

This chapter concludes the project by summarizing the work carried out, the key findings, and the results derived from these insights related to the research question.

## 1.4 TERMINOLOGY AND ABBREVIATIONS

### Children's museum experiences

The exhibitions or activities within a museum which leave either a positive or negative impression on the children. This thesis focuses on ensuring more inclusive and positive impressions on children.

### Co-design

The intentional purpose and planning behind a design that happens throughout a design process and involves participants not trained in design.

### Design Process

The process a museum goes through when developing and designing a new exhibition or activity at the museum, where there is an opportunity for co-creation with the children. In Chapter 6: Reflection on the project's design process, we refer to our own thesis design process.

### Exhibitions vs. activities

The project focuses on museum exhibitions and activities in the museum in general. Both terms will be used as an overall service offering that must be designed to meet the needs of museum visitors in the best possible way and ensure that the stories and experiences the museum wants to convey are conveyed effectively to the visitors.

### Free children

Children who visit museums outside institutional settings are often called free children. The term refers to children visiting the museum in leisure settings with parents, grandparents, and other adult guardians.

### Museum professional

The term museum professional in this thesis refers to the person in the museum responsible for designing children's museum experiences.

### Abbreviations

As part of this project, the museums below will be mentioned and abbreviated as follows:

Ny Carlsberg Glyptotek: The Glyptotek

The Maritime Museum of Denmark: the Maritime Museum

STORM Museum: STORM Museum

The Art Museum Brandts: Brandts Museum



...nie nagle, na długo. Chcesz go zapytać, co się sta-  
prowadzona od tak dawna wojna wkrótce się nie skończy.  
zapytać, co spotkało go we wnętrzu Ziemi, co takiego wi-  
n albo przeżył, że tak nim wstrząsnęło. Nie pytasz. Jesteś  
kobietą, znasz jednak swoje granice. Nie pytasz. Jesteś  
y umrę, nie zakopuj mnie – szepcze.  
z...

aj mnie Antymonie.  
ona pojawia się nagle, jakby usłyszała swoje imię, i staje  
Patrzysz na nią spode łba, uświadamiając sobie, co to

o nap-  
ona do niego  
172  
y po prostu  
ga zmysłem srebra

tego czegoś – bo przecież  
oślina, chociaż w sposobie jego  
stucznego i mechanicznego – są tak  
podziwia się między nimi żadnego srebra.  
komórki ludzkiego ciała. Układ wnętrza łodygi  
kaliczny, a cząsteczki ułożone są w niewielkie matry-  
dy wcześniej nie widziała w żadnej roślinie ani żywej

lo wnętrza łodygi, Nassun widzi też, że nie ma tam  
Zamiast niego są tam... Nie wie, jak to opisać. Ne-  
zary, które mogą być wypełnione srebrem.  
żnie je bada, zaczyna spostrzegać, że  
wiadomość. W końcu, biorąc głęboki  
ścisku.

co masz zrobić”, powiedział Stal. Powinno

nał obok niej, żeby przywrócić im klawow-  
marszcząc brwi.

też chcesz  
dziwnie pocieszając  
– Alabaster pow-  
biłaś. Ale ja nie ro-  
zumiem też, czego  
ale kto jest tą trzec-  
sposób Pęknięcie.

Nieważne, jak  
że Antymona była  
zbyt wiele: bezru-  
dobiega jej głos.

jak pęd natychmi-  
między komórek je  
go. A tak naprawdę

Ma teraz jedna  
tylko to w jej wnętr-  
do szafiru – a szafir

Alabaster nazywa  
Nassun przyszła na  
zresztą opisywałaś je

Dla Nassun obeli  
silniki – proste urząd-  
ły w Tirimo sfery ge-  
kowane mechanizmy,  
na temat silników jest  
jasne jest, że do pracy

Płynie więc z błęki  
w jej dłoniach wydaje  
choć Nassun sądzi, że  
się szum, a ona widzi,  
lśniącym srebrem i jak

## 2. LITERATURE REVIEW

In this chapter, the theoretical foundation of this thesis is presented to narrow down the research focus. The literature review consists of two sections. The first section explores the field of service design and the transition to a service economy, in which consumers determine the value of a product, and designers seek to meet these expectations. Additionally, the section examines how service design today is a holistic and human-centered approach that draws on other disciplines to best serve users' needs. The second section examines co-creation and co-design and explores how children can play and contribute in different roles when brought into a design process. The chapter concludes with synthesizing learnings from the literature and research, which will pave the way for a further project context.

## 2.1 THE FIELD OF SERVICE DESIGN

### 2.1.1 The origins of service design

Service design is a relatively new field within the design industry. It has slowly evolved in response to various societal changes, and it can be traced back to the discipline of industrial design, which was initiated around the 1920s when designers were primarily responsible for designing tangible products that met society's needs (Polaine et al., 2013). Over time, a new way of seeing goods and services developed, i.e., seeing them as the same integrated thing rather than as two different things (Penin, 2018). Businesses shifted their focus from manufacturing to providing services that met the needs of the changing society (Polaine et al., 2013). As a result, the economy slowly evolved into a service economy, in which the value of a service or product was realized when consumed, as opposed to the traditional belief that value is accumulated during production (Vargo & Lusch, 2004). The shift to a service economy meant a higher potential for growth, and socially, customers started becoming more aware of their own needs, resulting in higher service expectations. This increase in customer expectations towards the services offered also required a shift in design practices. Lynn Shostack (1982) first introduced the service blueprint as a professional tool to design, manage and present the activity and coordinate the sequence of actions involved in a service. This began the comprehension that services can be designed, thus initiating the field of service design.

Today service design is still considered a young and evolving discipline, and the term's meaning is still not wholly agreed upon among industry professionals (Stickdorn et al., 2018). However, Mager (2008, as cited in Steen et al., 2011, p. 53) refers to *service design* as “the process of planning and organizing people, infrastructure, communication and material components of a service, with the goal of improving the service's quality, the interactions between a provider and its customers, and the customers' experiences.” In other words, service design is a holistic, human-centered design approach, which places equal value on the user experience and the business process aiming to create quality user experiences, and seamless service delivery (Practical by Design, n.d.).

An essential aspect of service design is that it goes beyond what is visible to the user by placing equal importance on the people, processes, and resources involved in its delivery, both in terms of creating new services and improving existing services. A company must be structured and aligned with the service it seeks to deliver, as it can otherwise be at the expense of the user experience, and this is where service design comes into play (Designlab, 2022). However, Service design is not only limited to designing user experiences, despite this being its original purpose. Today it is widely recognized as an excellent tool for improving service systems far beyond its original intent. In today's society, service design is both embedded in governmental departments, public services, and voluntary organizations and also deals with complex societal issues, such as an aging population, climate change, and urban developments, to name a few (Bason, 2018). Therefore, service design also benefits from the methods and tools of other disciplines, such as, but not limited to, anthropology, psychology, sociology, and strategic design (Stickdorn & Schneider, 2011). These tools and methods are used to identify challenges and problem spaces and to incorporate the viewpoints and needs of different stakeholders, users, and other factors before designing.

### 2.1.2 A process-oriented design approach

Service design can be seen and understood in many ways (Stickdorn et al., 2018, p. 20). Due to its holistic focus on design and the internal and external needs behind the final design outcome, it can be argued that service design is a process driven by a design mindset, which seeks to find elegant and innovative solutions through continued iteration (ibid.). It can therefore be argued that service design is an iterative process to discover user needs and wants, ensuring value in the final product.

As users are not always aware of their own needs during the service delivery process, it becomes necessary to design services in close collaboration with users and other actors in order to identify and interpret the needs and wants of users, thus designing new offerings (Clatworthy as cited in Lüders et al., 2017). The designer must thus leverage capabilities and work with many different stakeholders to navigate successfully in the complex systems that create services (Stickdorn et al., 2018).

These capabilities are typically a combination of personal capabilities, such as empathy and the ability to understand logical and social contexts, and professional capabilities, such as business and organizational capabilities and sensitivity to aesthetics and form (Morelli et al., 2020). All these must be combined and applied to best rely on the many different stakeholders, both internal and external, to combine the different perspectives to understand both the service's demand side, i.e., users' and customers' needs, and the supply side, i.e., technologies, and processes, to design successful services (Steen et al., 2011). The capabilities of service designers often also reflect in a co-design process, where, e.g., researchers and designers pay extra attention to involving users and customers in design processes, thereby making them the "experts of their experiences" (Steen et al., 2011, p. 53).

In conclusion, service design can be considered a process in which innovative ideas are developed to realize a final design with the involvement of users and other essential stakeholders. The starting point of the service design process comes from the user's perspective, involving an iterative approach based on a flexible toolset borrowed from other areas and includes phases of research, ideation, prototyping, and implementation which transform insights from users' preferences and behavior to new or improved service offerings (Stickdorn et al., 2018).

## 2.2 CO-DESIGN

Designers are becoming more aware of users' needs due to the user-centered nature of service design. Service design often speaks of different design approaches, and co-creation and co-design are frequently addressed. These terms are driven by the belief that people and users are the experts of their own experiences and, thus, should participate and have a voice in creating their own services (Sanders & Stappers, 2008). It is within this belief that these approaches have gained increased recognition as a means of continuously designing in new, unknown, and complex areas (Sevaldson, 2013) and are considered key to ensuring more sustainable and desirable solutions (Sanders & Stappers, 2008).

### 2.2.1 Approaches to co-design

The terms co-creation and co-design are often confused with each other or used as synonyms. There is no official definition of co-creation or co-design, as Sanders and Stappers point out (2008). *Co-creation* is a very broad term, referred to as "any act of collective creativity that is shared between two or more people" (Sanders & Stappers, 2008, p. 6). In service design, this means creating a design outcome through a collaborative approach. Thus the design outcome of co-creation can consider both the holistic approach of people, processes and resources, and user needs, but it can also be without consideration of these. Prahad and Ramaswamy (2004) were the first to put co-creation in a business perspective, where companies created value through co-creation by interacting with users and other stakeholders. They proposed that the meaning of value and the process of value creation are rapidly shifting from a product and company-centric view to a more personalized consumer experience, as also stated in Chapter 2.1.1. This meant they advocated for users to be involved as co-creators and have a say in designing their own experiences and value creation.

Through Prahad and Ramaswamy's (2004) argumentation, it can be argued that they thus also opened up for the term of co-design. This is due to their additional argument for co-creation as a design practice blurring the boundaries between design and research, thus requiring new design tools and methods, as well as new ways to think about and approach how we design, what we design, who designers are, and how data is analyzed (Prahad & Ramaswamy, 2004). This definition is similar to the nature of co-design. *Co-design* is seen in a more narrow sense than co-creation, and is referred to as "collective creativity as it is applied across the whole span of a design process" and "the creativity of designers and people not trained in design working together in the design development process" (Sanders & Stappers, 2008, p. 6), and has a focus on the more intentional purpose or planning that exists behind a design.

Neither co-creation nor co-design is a new phenomenon. The practice of collective creativity in design has been around for nearly 55 years under the



term participatory design (Sanders & Stappers, 2008). According to Sanders and Stappers (2008), designers have moved from designing for their users to designing with their users, particularly in areas where technology plays a role. The trend in research dealing with design has moved from being a user-centered approach to being a more participatory design approach, which has caused a change in the roles of the designer and the user (ibid.). Within the user-centered approach, the designer takes on the role of the expert and sees the user as a passive subject. Researchers and designers observe or interview a broad group of users who perform specific tasks or express their opinions about a product or service designed by others (Sanders & Stappers, 2008). The participatory design approach, however, sees the user more as an active partner. Using a participatory mindset requires designers to engage, understand and collaborate with users in the design process to design innovative concepts based on the users' needs (Manzini & Rizzo, 2011). In a participatory design process, Sanders and Stappers (2008) argue that designers should use their expert knowledge to assist non-designers in expressing their ideas and creativity. As a result, the design process becomes a collaborative process between designer and user, allowing the users to be considered experts in their field and, thus, co-designers.

Today the value of co-designing with users has only increased, as future experiences are being designed for people, communities, and cultures that are now connected and informed to a degree non-imaginable 20 years ago, making the user-centered design approach insufficient (Sanders & Stappers, 2008). Manzini (2015) contributes by comparing user-centered design processes to polite table conversations, which hold only limited activities related to participatory design, giving the users a relatively passive role in designing their own experience (Sanders & Stappers, 2008). However, the social conversation on which the co-design process is based requires more. In co-design, the roles are reversed due to those being designed for also being involved as experts. This empowers people to participate directly in the design process, enabling them to play a more active role (Rizzo, 2010) while eliminating the need for designers to interpret user needs, behaviors, desires, and contexts.

The advantage of co-design is that everyone can contribute regardless of their

level of creativity (Sanders & Stappers, 2008). This approach allows everyone to communicate and work together regardless of their backgrounds (Akoglu, 2016), potentially resulting in more diverse teams and a mix of various skills and knowledge that designers can benefit from (Sanders & Stappers, 2008).

In service design, co-design is essential due to "different perspectives and a productive combination of different perspectives [being] needed to understand both the demand side of a service, i.e., the needs of users, and the supply side, i.e., technologies and processes, in order to develop successful services" (Steen et al., 2011, p. 53). Co-design is, therefore, increasingly recognized in service design as a means of remaining capable of ensuring a more sustainable environment and achieving more desirable and sustainable outcomes for users in the future (Sanders & Stappers, 2008).

Co-design is found to be more relevant and valuable than co-creation in the further work of this thesis due to the differentiation of co-creation and co-design and because co-design more extensively happens throughout a design process while also including people not trained in design.

### **2.2.2 Children in co-designed processes**

When focusing on user-centered and co-designed approaches, it is naturally important to involve the current or potential users of the product or service. In some cases, these users will be children. In the process of designing for children, it is, as with other users, equally important to consider the children's needs and contexts of use as well. When co-designing with children, the objective is to view children as equal stakeholders, allowing them to contribute to the design process as experts of their own experiences (Steen et al., 2011, p. 53). However, in an adult-centered society, it has been common for adults to make the majority of the decisions on behalf of the children and choose what is best for them (Hansen, 2017). Designers often forget that children are not just short adults but an entirely different user group with their own culture, norms, and complexities (Druin, 2001). They have cognitive, social, and emotional intelligence, which is different from adults, and provides them with curiosity and rich imagination, making them highly creative and less restricted by reality (ibid.).

Amongst the most widely cited researchers when it comes to co-designing with children is Druin (1999; 2001). She suggests a framework for understanding the roles that children have historically played in the design of new technologies while also suggesting that children can play a variety of roles in the design process, from solely participating in passive roles as user or tester to being recognized in active roles as an informant or design partner (Druin, 1999). Even though her framework was initially based on the design of new technologies for children, the framework has since been used in many other design fields (Steen et al., 2011; Hansen, 2017; Borum et al., 2015).

When involving children in *passive roles*, i.e., as a user or tester, children are typically asked to use or test new or improved designs, often through observation, videotaping, and evaluative approaches (Druin, 2001). The general reasons for involving children in passive roles are to inform or test to improve or shape future designs and for designers to better understand the learning processes that contribute to future educational practices (ibid.).

The challenges faced when involving children in passive roles include the limited inputs they can contribute. Children have no way of providing inputs when involved as users, as they are simply observed for functionality. As testers, they have the possibility of providing more inputs than as users. However, since testing happens at the end of the design process, adults still decide what is to be designed, just as they decide which changes to bring forward in the design process (ibid.).

The strengths of involving children in passive roles are that it is relatively easy to do in limited time. Research can be done quickly, with much control, and data and insights can be processed quickly (ibid.). Additionally, as testers, the children can feel empowered through adults listening to them, and design outcomes are more likely to be useful and engaging for children rather than ignored or frustrated (ibid.).

When involving children in *active roles*, i.e., as informants or design partners, children play a part in informing the process and can even be involved as so throughout the process. As informants, children are observed or asked for inputs, similar to the passive roles. However, they will be asked to participate

continuously and at various stages, where researchers believe the children can inform them (Druin, 2001). The role of the design partner takes the active role a step further by considering the child as an equal stakeholder (ibid.). Recognizing that a child cannot do everything an adult can is important. However, they should have equal opportunity to contribute in any way they can during the design process (ibid.). Children should be encouraged to contribute with special experiences and viewpoints that can support the design process that other partners might not be capable of contributing (Druin, 1999).

The challenges faced when involving children in active roles include that as informants, inputs are still limited, as the designer has the final say. Thus this role continues to be biased by the designer. In the role of design partner, a challenge is that neither the child nor the designer is in charge, and thus decisions may have to be negotiated. Negotiation can be complex since children are accustomed to following what adults say, and adults are accustomed to being in charge (Druin, 2001). Finally, a challenge can be that it is time-consuming and more problematic to structure, process, and analyze insights gained from sessions where children are involved in active roles (ibid.). Since these roles also require children to provide inputs, resources and time goes into interpreting and translating their ideas into actionable solutions.

The strengths of using children in active roles are that children feel especially empowered, and the experience provides a valuable challenge. It helps them grow and understand that they can make a difference (ibid.). Additionally, both roles allow for great flexibility in where and when activities occur (ibid.).

These roles have been influential in design practices with children for over 20 years and have positively impacted researchers' awareness of children's involvement in design processes (Schepert et al., 2017). Druin (2001) believes that if a child's role in the design process is understood correctly, more informed decisions about research can be made, and design practices can have more lasting effects for the future. Furthermore, it is essential to understand that children can play various roles in every design process. Rather than the child having a single role throughout a process, it is important to realize that each role incorporates elements from those that preceded it (Druin, 2001). In the role of informant, children may be asked to test prototypes, i.e., as testers,

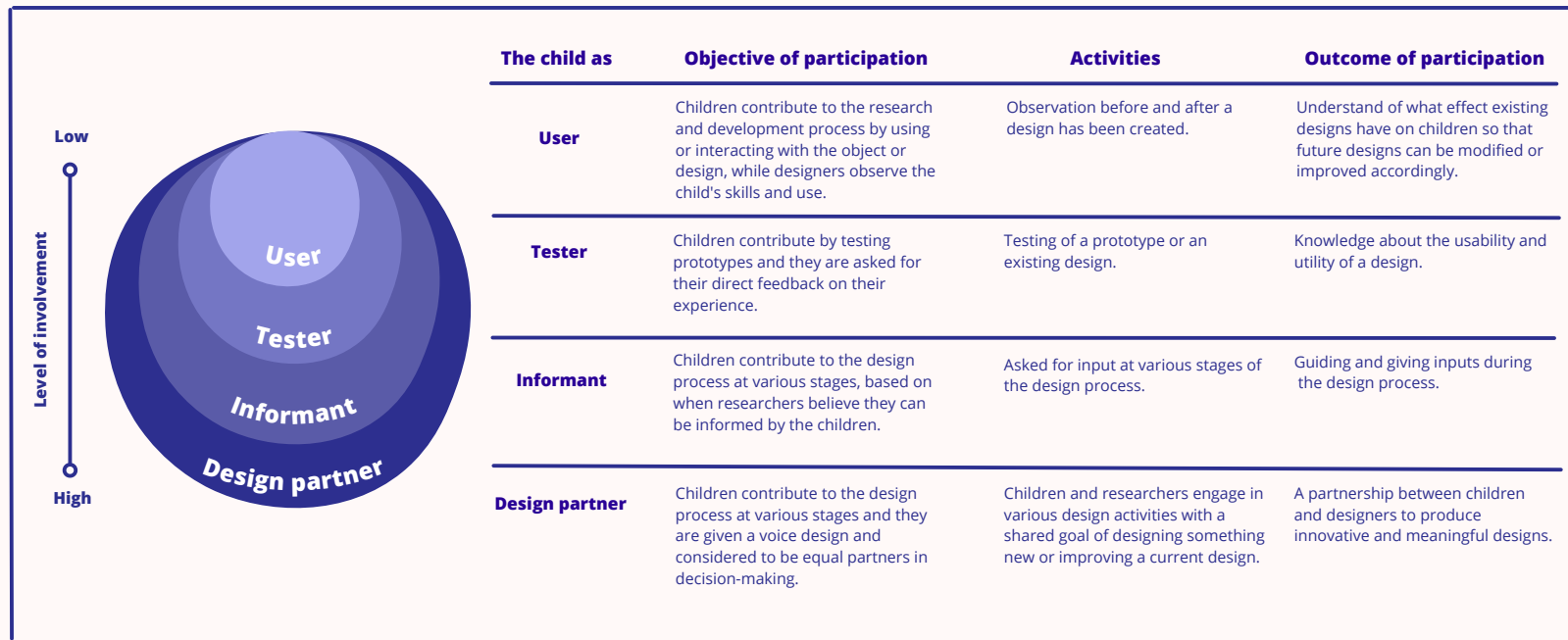


Figure 1: Framework of children's design roles [as adapted by Druin, 2001]

and be observed using existing designs i.e., as users. The roles are, therefore, visualized initially as an onion, where each role encompasses the previous (Figure 1).

Considering these roles also helps designers comprehend how designing for children differs from designing with them. Often when designers design for children, and the children are invited to participate in the design processes, they are usually involved only in isolated, short-term design sessions and are excluded from more important decision-making processes (Read et al., 2016). This refers to a more traditional user-centered approach (ibid.), where designers design from perspectives other than the children's own, usually by asking parents and teachers what they think their children or students may need rather than asking the children directly (Druin, 1999). Therefore, when designing for children, the adults act as the children's representatives and are

responsible for supporting their needs. In this way, the adult has the power, and the design is based on what the adult wants to accomplish with the child's involvement (Feder, 2020). This can be explained by the traditional power structure between the all-knowing adult and the all-learning child (Druin, 2001). It is, therefore, important to recognize children's competencies and provide them with methods to express themselves that encourage comfort and creativity (Druin, 2001).

When designing with children, they are instead involved in the design process, thus directly influencing what is being designed, and most likely, they have a role in decision-making. They are not necessarily in the role of designer, but they can be involved in the entire design process (Druin, 2001), which helps to ensure that the design has a high degree of relevance to the child.

Therefore, co-designing with children is about empowering the children and creating communication channels that are more accessible and tailored to their needs. As a result, they can participate in the process equally with designers and other adults relevant to a project to create a more valuable and sustainable experience. As designers have become increasingly aware of children's value and expertise, a growing body of literature has emerged demonstrating how children can be credible design participants with valuable insights into their world (Druin, 1999).

In her Ph.D. thesis, "Exploring a child-centered design approach - from tools and methods to approach and mindset," Karen Feder (2020) has built on the theory behind Druin's framework and the approach to designing respectively for and with children. She has attempted to strengthen the potential for design practitioners to further design from the children's perspective by developing a new child-centered design approach to help ensure more relevant play designs for children. The child-centered approach is defined as taking the starting point in the child instead of the product (Feder, 2020) and can thus serve as a starting point for practitioners to ensure more relevant designs for children. This approach is based on the children's everyday lives and often brings surprises that challenge the designer's assumptions about childhood. By better understanding the child and their interests, play, needs, and outlook on life, one can better identify what is relevant to design - from the child's perspective instead of assumptions from the adult designer (Feder, 2020).

This approach differs from the more traditional user-centered design process, where children are often involved only at the end, if at all, and the design process is defined by a design brief, a problem or opportunity space for which a specific solution will be developed, and from there the actual design process and method selection begins.

In participatory or child-centered design approaches, children are involved from the beginning of the process, and the brief is not always predefined. Instead, designers must identify what needs to be designed by considering the children's perspectives (Feder, 2002).

The early and consistent involvement of children ensures a greater chance that

the design has real relevance for the children afterward because the design is based on the children and not only tested on them at the end of the process (Druin, 2001). However, the child-centered design approach differs so much from the traditional design approach that the difference hinders designers' use of it (Feder, 2022a). It challenges designers' and companies' established design processes, making the designer enter an unfamiliar process and move into the children's possibly uncertain reality, where they do not know in advance which direction to take or what methods to use (ibid.).

Another major challenge of designing with children is that designers may not always be able to apply the same methods to children as they can to adults (Clark, 2017). Young children have difficulty verbalizing their thoughts, especially when it involves abstract ideas and actions (Piaget, 1971; Piaget, 1973, as cited in Druin, 2001). Merely asking children what they want will not produce the user input needed for the design process. Although children can be extremely honest in their comments and feedback concerning various things, much of what they say must be interpreted in the context of concrete experiences (Druin, 1999). Thus, to gather the desired information, Feder (2020) advises designers to play with children and participate in activities. The designers need to understand the children's language, not the other way around. Therefore, creative methods are needed for interacting with children, through which they can express their interests, needs, and preferences.

### **2.2.2.1 Existing initiatives**

Besides the Ph.D. thesis carried out by Karen Feder (2020) introduced above, an overview of existing initiatives in co-design with children will be presented in this section. The initiatives mentioned in this section have been selected based on their relevance to design with children and to this thesis.

#### ***KidsTeam***

The KidsTeam initiative was established by Allison Druin at the University of Maryland in the Human-Computer Interaction Lab, and the initiative has been running for the past 20 years. The purpose is to investigate and research methods and techniques that can be used for involving children in the design of new

technology for children (Fails, Guha & Druin, 2012). As part of the KidsTeam initiative, adults and children between the ages of 7 to 11 use a wide range of methods to work together during design processes. These methods include Bags-of-stuff, Mixing Ideas, and Layered Elaboration, all tools specifically used when designing with children.

The KidsTeam, Druin's Cooperative Inquiry, and her framework for designing with children strongly focus on mediating the importance of co-designing with children in design processes. Despite the work being carried out in the KidsTeam initiative mainly focusing on technology, it is often drawn upon in other design practices as well and can today be found in play design (Feder, 2020) and other design fields (Steen et al., 2011; Hansen, 2017; Borum et al., 2015). Due to these parallels drawn to other design practices, service design included, there is a connection also to be drawn to this thesis.

### *CoC Playful minds*

The LEGO Foundation and Billund Municipality jointly own CoC Playful Minds, a development organization working to make Billund the Capital of Children, also referred to as CoC (CoC Playful Minds, n.d.). CoC Playful Minds works with three programs based on co-creation: Playful Skills, Playful Spaces, and Playful Innovation. The key word in all three programs is co-creation and creating products for children with children. Billund Municipality has gained a unique position of strength around play, learning, and creativity through the LEGO Group's long-standing presence (CoC Playful Minds, n.d.). CoC Playful Minds builds on this strength by developing a business and knowledge environment supporting synergies between companies, knowledge institutions, and organizations. In their projects, they co-create new forms of learning and urban spaces with children and provide knowledge, methods, and practices for co-creation with children. One of their recent initiatives was the Play User Lab, which ran between 2015 and 2020. The Play User Lab aimed to improve the competitiveness of companies working in the field of play, learning, and creativity. This was done by increasing the companies' ability to innovate and focus on children, thus enabling them to take the lead in shaping the future of play. CoC Playful Minds ran the lab in collaboration with Design School Kolding (Design School Kolding, n.d.) and provided companies the opportunity to

develop and test products, ideas, and concepts together with specialized design consultants and children.

Due to their focus on providing knowledge, methods, and practices on co-creation with children to external stakeholders, they are considered a leader in the industry. Thus they are a great source of inspiration for projects such as this thesis.

## **2.3 RESEARCH FOCUS**

The literature review has been iterative in that the knowledge gathered has led to new areas of research and inspiration, which have then been explored more thoroughly and thus further synthesized into new learning and ideas until sufficient theoretical knowledge has formed the basis for formulating a research focus. The following section will specify how the selected literature has contributed to new knowledge and how the literature contributes to the research focus of this thesis.

Considering how service design has evolved in response to society's changes and how it is a holistic, human-centered discipline, it becomes evident why user participation in design processes is a vital building block of modern service design practices. (Chapter 2.1.1). With its holistic viewpoint and approach, service design seeks to design equally for internal and external stakeholders and processes, acknowledging that this approach leads to the most sustainable and viable solutions. Service design seeks this equality through iterative and collaborative approaches, which thus supports the argument that service design can be considered a process-oriented design approach (Chapter 2.1.2).

Knowing that service design strongly emphasizes collaborative design approaches, it became relevant to explore the approaches of co-creation and co-design. This led to the understanding that co-creation is a broader and more general term used when two or more people create something together. Co-design, on the other hand, is a more narrow approach to co-creation, where the purpose or planning that exists behind a design is approached more intentionally and is driven by the belief that users are experts in their own experiences and, therefore, should participate and have a voice and



responsibility in the process of designing designs. Thus, it was decided that co-design is the more relevant term to focus on during this thesis (Chapter 2.2.1). As a result, it was decided to explore children as users, thus focusing more on how children can be involved in design processes. Children are an exciting user group to investigate due to their diverse opinions on their contributions to design practices. Many designers find it challenging to work with children, and research also indicates that children are only sporadically included in isolated parts of design processes. However, this same research states that children are ideal design partners due to their original and innovative design ideas that adults cannot generate independently. From this, the framework of how children can be involved in active or passive roles was explored. The main goal of the framework is to empower children to provide highly valuable inputs to designers in design processes (Chapter 3.2.2).

From the insights gained in the literature review, looking further into how service design, as a holistic process, can facilitate the inclusion of children in active roles in a design process was interesting. From the literature review, the value of viewing children as experts in their own experiences were realized and giving them a voice in design practices, and thus it is believed that including them throughout design processes, from ideation to problem-solving, testing, and evaluation, carries excellent value to the final design outcome.

Based on these insights, this thesis will examine how children can be involved more actively in design processes, supporting them in being experts in their own experiences.



*People looking at paintings* [Photograph], Linda Kastrup, n.d., Berlingske.  
([https://berlingske.bmcdn.dk/media/cache/resolve/image\\_x\\_large\\_vertical\\_lg/image/144/1446310/23809524-.jpg](https://berlingske.bmcdn.dk/media/cache/resolve/image_x_large_vertical_lg/image/144/1446310/23809524-.jpg))

### 3. PROJECT CONTEXT

The project context will provide an introduction to the context in which this thesis will be scoped around. To best empathize with the value of children's roles in design processes, it is essential to work with a specific project scope in which the thesis research can be conducted. For this thesis, the context will be the Danish museum industry due to the opportunity spaces concerning children being seen as equal stakeholders by the designers and mediators in the field.

The chapter will consist of four sections. The first section explores museums as a context to provide a better understanding of what museums are and the role they play in society. The second section explores the importance of child-centered museum experiences and how the museum should best consider children as visitors. The third section explores the relevance of museum experiences designed collaboratively by museum professionals, design professionals, and children as users. Finally, the fourth section introduces the Glyptotek as the case organization in the project. The chapter concludes with the problem statement on which the case study of the thesis will initiate.

### 3.1 MUSEUMS

Museums are challenging to define due to the vast variation between them. However, a standard description of them is “a building in which objects of historical, scientific, artistic, or cultural interest are stored and exhibited” (Pearsall et al., n.d.). They range in size; from large museums such as Arken or Louisiana to smaller local city museums, as well as in purpose; some with the intent to amuse and others with the intent to preserve the data on which scientific and historical research is based (Ambrose & Paine, 2012, p. 9). They vary in collections, organizational management, and structures, as well as in the public they seek to interest (ibid., p. 9). Over the years, museums have played an essential role in modern society. They have been thought of as a binding societal factor in expanding the space of cultural sharing and enhancing the cultivation of people (Liu & Idris, 2018, p. 1).

As times have changed, so has the focus of museums. Where they used to focus on the representation of information and thus the ‘object,’ they have shifted their focus towards ‘people.’ They now realize the importance of enhancing visitor experiences through various means to motivate potential visitors to visit the museum continuously (Liu & Idris, 2018, p. 1). Thus, the museums assert their valuable role as collectors of memory, seeking to provide an understanding of identity and a sense of connection between the past, the present, and the future (Ambrose & Paine, 2012, p. 7).

Danish museums, in particular, are asserting this role by focusing more on user-centered perspectives and moving towards more collaborative and participatory strategies (Madsen & Yates, 2021). They work with the understanding that they are, when considering the visitor experience, able to inspire people and enhance the quality of their lives (Ambrose & Paine, 2012, p. 13). Museums are essential hubs for learning and provide unique resources for education and informal learning at different levels (ibid.). However, to succeed in doing so, museums need to consider different user needs and meet their visitors at their level, which can be a challenging task. Few museums will be able to meet individual visitor needs, but focusing on main visitor groups can be a place to start. Most museum visits occur in family or social groups (ibid., p. 32). Thus, it can be relevant to focus on the children in these groups, who, in this

project context, will be the visitor with the need for a particular service experience to also benefit from the museum's learning opportunities equally with the adult visitors. Focus on a welcoming environment for the children will thus result in more families visiting, which is essential for museums dependent on increased numbers of visitors.

### 3.2 THE IMPORTANCE OF CHILD-CENTERED MUSEUM EXPERIENCES

Museums can be challenging for children to act in since they are often more quiet places with elderly and vulnerable objects which cannot be engaged with or touched. This makes it difficult for many children to understand how to act as themselves, as children naturally behave as children who should be encouraged to ask questions and talk about the art they see and its effect on them (Gross, 2014).

Although collaborative strategies are becoming more common in museums, recent research suggests that co-creative design in museums still holds much potential for improvement since museums and designers often fail to benefit from each other, making the visitor experiences weaker (Madsen & Yates, 2021). Often, museum professionals who design museum exhibitions and activities are experts in the field of knowledge. However, they have less experience with both design and the perspective of children. This suggests that it is possible to include the children as co-designers in museum experience design to act as experts in their own experiences.

It has been proposed that museum visitor experiences are not necessarily passive (Falk & Dierking, 1992) but that, especially in the physical museum environment, the visitor experience is influenced by both the personal and social context (Falk & Dierking, 2016). This means that it is essential for museums to truly understand the motivation for the visitors to visit the museum and design the experience thereafter in order to meet visitor expectations (Falk, n.d.) and thus provide satisfactory service delivery. In other words, it is not simply enough for the museums to deliver a satisfactory exhibition supported by core services - it must go beyond these.

Much research on museum visitor experience has, of course, been carried out

based on adult visitors. However, young children visitors up until a certain age, who are visiting in their leisure time, are always accompanied by adult visitors. This means that museum visits for younger children are always collaborative, negotiated experiences with, most likely, engaged adults (Jones, 2022). It can be assumed that usually, the museum activity is chosen by the adult, and thus the adult becomes the directing visitor, deciding how the visit will progress. This naturally limits the exploring, open, and self-directed approach in which children are used to learn (ibid.).

For this reason, there is a need also to consider the adult and child visitor needs as parallel user needs in many museum contexts. Children's needs and perspectives should be included in regular museum experiences where children can question, lead and integrate themselves into the exhibition, rather than have a separated child-centered activity or museum exhibition provided for them (ibid.). This is particularly relevant because research shows that exhibitions explicitly designed for children reduce adult engagement. In contrast, a child's presence in regular exhibition settings encourages more adult-child interaction (ibid.).

It has been found that museum visits are a very personal experience that ties to an individual's sense of identity and that what sticks in the visitor's mind as valuable and essential after their visit usually is directly related to the motivations of why they wanted to visit the museum in the first place (Falk, n.d.). With the high focus on creating relevant and engaging museum experiences for the visitors (Madsen & Yates, 2021), children and adults alike, it is essential to look at the role of the adult visitor. Falk (n.d.) proposes that many adults visiting together with a child will likely take on the role of Facilitators, i.e., visiting to be good parents or similar relation to the child. In this case, the museum needs to reinforce this motivation in the adult visitor, directly or indirectly telling the adults that bringing the child visitor to the museum was a positive thing to do since this will make them feel successful and inspire them to visit again (Falk, n.d.). Suppose the interest and excitement of this child are not met. In that case, this will reflect on the adult visitor, providing them with a feeling of not accomplishing their motivation behind the visit, hence why they might not return for future visits, and thus the museum will not have

accomplished their goal to motivate potential visitors to visit the museum continuously (Liu & Idris, 2018, p. 1). Falk (n.d., p. 121) gives an example: "[...] if I am visiting as a facilitator in order to ensure that my son or daughter has a great museum experience, seeing my son or daughter enjoying him-/ herself will light up my limbic system."

When looking at child-centered design concerning museum design experiences, it can be relevant to look into the often separate exhibitions and activity spaces offered for children at museums. Though many families and schools benefit from these spaces, it can be questioned if they are, in fact, the best possible dichotomy between child-specific and regular museum exhibition and activity spaces. Though probably unintentional, these child-specific spaces can send the dual message that children are, on the one hand, welcome, meaningful, and deserving of services that cater to their needs and interests, but on the other hand, that children do not belong in the regular exhibition and activity spaces and therefore need separate spaces to experience culture (Jones, 2022).

### 3.3 CO-DESIGNED MUSEUM EXPERIENCE

Three case studies on Danish museums have been carried out. It was found that there was a potential for improved museum experience design when final design outcomes were based on close collaboration between the user, the museum, and the designer. However, unfortunately, this potential was not realized in any of the three case studies (Madsen & Yates, 2021). Madsen and Yates's (2021) framework illustrates and understands how designers, museum professionals, and museum customers, i.e., visitors, can collaborate to co-create the museum experience (Figure 2). They defined the competencies of each actor as follows:

- The *museum professionals* are the curator of the history and artifacts and are responsible for the museum's *content*.
- The *design professional* specializes in communication, *form*, and user-centered design processes.

- The *users* are, as previously mentioned, experts in their own *experiences* (Madsen & Yates, 2021; Steen et al., 2011).

Madsen and Yates (2021) suggest that these different competencies can be combined to co-design and thus aim to improve museum experiences that meet the expectations and motivations of the visitors:

- Collaboration between a design professional and a museum professional allows *content* and *form* to design reciprocally to ensure the best process.
- Collaboration between a design professional and a user allows for *form* and *experience* to make the best use of materials, spaces, and interactive possibilities, potentials, and limitations of the design.
- Collaboration between a museum professional and a user allows content and experience to work together so the content is best understood and experienced by the user.

Collaborating on *content*, *form*, and *experience* will allow the optimal museum design experience. However, a weak spot identified in this collaborative potential is that users are predominantly invited to join design processes at later stages when basic ideas and concepts have already been established (Madsen & Yates, 2021), which is also often the case when children are involved in design processes. They are often involved when designs are to be tested at the end of the process (Feder, 2022a). Due to this, argumentation can be made for including, especially, child visitors throughout a design process to ensure that content, form, and experiences combine to the best possible museum experiences where children's visitor needs are heard and included in the final design.

Research has shown that children need a more profound, conceptual understanding that connects their abilities and knowledge, i.e., what they already know, to attain new content and facts from different situations (Zosh et al., 2017). Knowing that the primary purpose of museums is education,

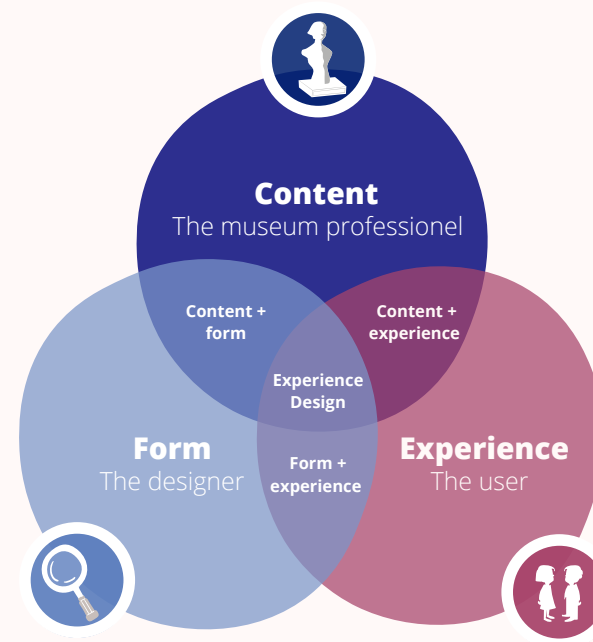


Figure 2: Venn diagram of collaboration for museum design experiences [as adapted by Madsen & Yates, 2021]

knowledge sharing, and information mediation, the research highly supports the need for children to have their current skills and abilities tied to new learning, as children will experience difficulty in attaining the museum learnings without this connection to what they already know. Research has shown that children who achieve knowledge through free investigation and spontaneous effort are better able to retain learning later on because they are natural researchers who can predict outcomes, experiment, and reflect on discoveries (Hewett, 2001; Zosh et al., 2017). Due to this knowledge, it was found highly relevant for children to be involved in the development of the museum content and the production of the exhibition form so the children can experience the best possible learning experience at the museums.



### 3.4 THE CASE ORGANIZATION

It was found relevant to include a practical investigation in the project due to knowing the importance of considering children as equal stakeholders and their capability of actually being part of the regular museum exhibitions through the correct facilitation tools. Therefore, it was chosen to involve a case organization already aware of the importance of considering children's experiences in the museum. This was done to apply the research on how children can be more actively involved in designing their own museum experiences. The intention was that having a main case organization would help provide a common thread throughout the case study, especially when doing practical investigations in physical settings with children later in the project. Therefore, the Ny Carlsberg Glyptotek, also known as the Glyptotek, was selected for this project.

#### 3.4.1 The Ny Carlsberg Glyptotek

The Glyptotek was founded by the Danish brewer Carl Jacobsen, a passionate collector who built his rich collection of art and cultural artifacts from the profits generated by his brewery Ny Carlsberg (Ny Carlsberg Glyptotek, n.d.b). The Glyptotek opened in 1897 and now holds a primary collection of ancient antiquities and Danish and French sculptures and paintings from the 19th century. Carl Jacobsen believed art could beautify, touch and enrich everyone's life, a belief that remains a core value of the Glyptotek. (Ny Carlsberg Glyptotek, n.d.b). When reading the annual reports from the Glyptotek, it is clear that they have a continuous interest in having children and youth represented in their strategy to "excite and educate today's diverse audience in the encounter with the best of millenniums of art and culture" (Ny Carlsberg Glyptotek, 2018, p. 5). In 2019, the Glyptotek expanded its resources to include a permanent teaching and education employee to increase its strategic effort in children, youth, and education (Ny Carlsberg Glyptotek, 2019). Since then, many initiatives have been introduced to make the exhibitions more interactive, as well as a series of new educational tours in new formats and holiday and anniversary activities and material for families visiting the museum (Ny Carlsberg Glyptotek, 2021). The Glyptotek is seen, with the eyes of children, as an imaginative and quirky place that does not look like the spaces that children usually move around in



Arkitektur 0001 Ny Carlsberg Glyptotek [Photograph], Ana Cecilia Gonzalez, 2022, Ny Carlsberg Glyptotek  
<https://media.glyptoteket.dk/sharings/fullscreen?id=15309&token=MWXMq9ro>

(Danielsen, n.d.), and this is also the case for many other regular museum spaces - children have to adapt to the rules in the museum and exhibition topics that might be complex to relate to at first glance (Gross, 2014). The spaces can be overwhelming for the children. Therefore, it is essential to meet the children pedagogically and offer tools and methods to ease that experience for children and support them in their learning at the museum. The Glyptotek is aware of and currently working to accomplish this by building a new tour guide profile with less focus on monologue and more on dialogue with the children (Bang, n.d., as cited in Danielsen, n.d.).

The Glyptotek is a larger organization with many departments divided between eight central departments (Ny Carlsberg Glyptotek, n.d.a). One department is Audience Engagement/Interpretation and Teaching, and within this department is the Interpretation Manager for Children and Young People, Stefan Bang. Stefan Bang was contacted in relation with this project, to inquire about the possibility of using the Glyptotek as a case organization, and the location for the practical investigations in the project were discussed. Stefan was intrigued by the project and agreed to do an interview (Appendix 1.4.1), providing information about how to conduct a practical investigation at the Glyptotek later on (Chapter 5.3.2).

A stakeholder map was created (Figure 3) to better understand Stefan Bang's role in his position at the Glyptotek. Stakeholder maps illustrate various stakeholders involved in an experience by representing different customer groups, frontstage and backstage employees or departments, partner organizations, and other stakeholders that might directly or indirectly impact the experiences (Stickdorn et al., 2018, p. 59).

The stakeholder map is composed around the actors that impact the experiences Stefan designs for children at the museum. Thus, he is noted as the core team of his work. This could be transferred to similar roles in other museums to a certain extent. Around the core team are the stakeholders who are involved and thus have a more direct impact on the final experience. In this section are the remaining part of his team and any designers who might assist with the finishing touches on the experience. Likewise, the children and the

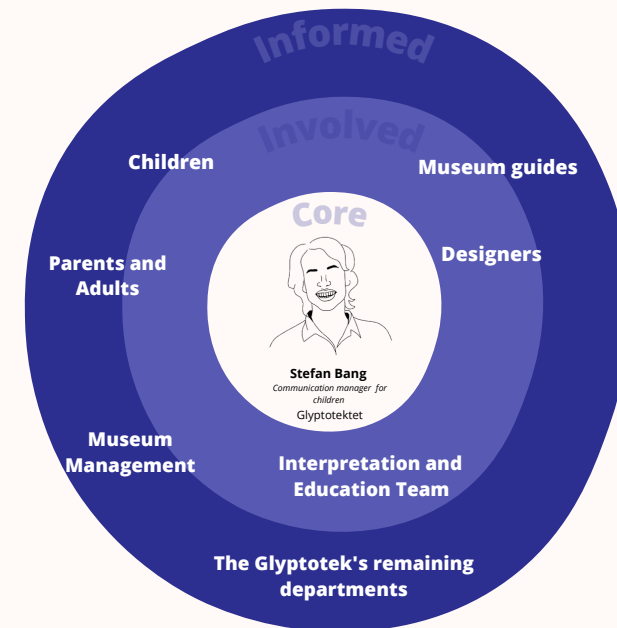


Figure 3: Stakeholder map of the Glyptotek's children's museum experiences [own creation]

guides are noted on the dividing line between involved and informed. The children are noted here because they are not always involved but only informed through their use of the experience. However, Stefan sometimes involves them, and this project also seeks to support him and his industry colleagues in doing this to a greater extent. The guides are placed here, as they are always informed due to facilitation being their job description, but also partly involved due to an assumption that they are considered in the design of new experiences and that they are also encouraged to bring forward proposals and ideas based on their experiences when guiding or observing the children at the museum.

Finally, the section in the outermost circle is the informed stakeholders who participate more indirectly when their inputs or feedback are needed or

requested. This section includes the museum management, the remaining seven departments at the Glyptotek, and parents or other adults related to the children for whom the experience is designed.

As known from the field of service design (Chapter 2.1), it is always important to consider internal processes and stakeholders equally to the user-centered processes to ensure efficient service delivery. Thus a stakeholder map of the Glyptotek organization was considered relevant before moving into the case study exploring co-design processes in the museum industry more thoroughly.

### **3.5 PROBLEM STATEMENT**

In Chapter 2.3. the literature review revealed giving children a voice in design practices carries excellent value to final design outcomes. Thus the research focus was narrowed down to how children can be involved in more active roles during the design process. This led to investigating the context of museums and further showed an industry that is moving towards more participatory design with users, children included, but still with a long way to go. Museums are much dependent on their visitor numbers. Since most museum visits occur in family or social groups, children must be paid special attention when designing museum experiences (Chapter 3.1). The families might not feel successful in visiting the museums since the museum's core service is knowledge sharing and information mediation, which would be part of the purpose for the parents to visit the museum. However, as facilitators for their children, they also need them to have a successful museum visit where they are engaged in the museum experience. Research shows that child-centered museum experiences reduce adult engagement, which is not the case for children. Children are, in fact, capable of engaging and taking in regular exhibitions with the suitable means of mediation. This can thus result in a joint museum experience between parent and child, and thereby a successful experience for all actors (Chapter 3.2).

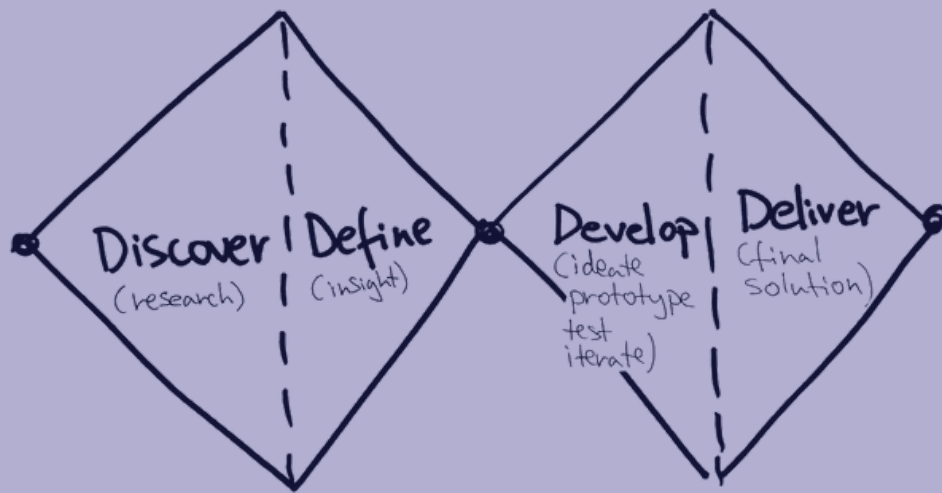
Acknowledging that museum professionals are often experts in their respective field and hence might not have as much experience with design and child-centered user perspective there can be great value in seeking other means to bringing these three factors into unison - to create the ideal museum experience for the children (Chapter 3.3).

From this knowledge and understanding, the intention is to connect the research focus with the context of designed museum experiences and investigate this more in-depth through a case study of Danish museums where the Glyptotek will act as a case organization (Chapter 3.4).

Thus, a constructed problem statement becomes: How children can be experts in their own experiences by participating in the museums' design processes, thus equally designing more engaging experiences for the children.

## 4. METHODOLOGY

This chapter presents the overarching approach and the process to frame the overall project and case study. The chapter is divided into three sections. The first section will introduce the overall research process before exploring the methodological framework that supports the structure and research of the project and concludes by acknowledging certain limitations to the project.



## 4.1 OVERALL RESEARCH PROCESS

The project was carried out over five months in the first half of 2023. The process can be seen in Figure 4. The project is based on extensive secondary research supported by primary data, mainly through qualitative expert interviews. The knowledge and primary data form the foundation for the case study, structured by the Double Diamond methodology framework, which will be presented in Chapter 4.2. All learnings and insights have been synthesized, processed, and presented in this case study using design methods. At the end of the project, two workshop facilitations have provided the foundation for testing and developing a final product design that commences the project.

As a result of the research behind the project, three outcomes are derived from the thesis. First, an academic research contribution. Second, a practical contribution that can support the museum industry in involving children in active roles during design processes. Third and finally, a service proposal for the Glyptotek designed with children in active roles.

Method design and data processing will be presented throughout the case study.

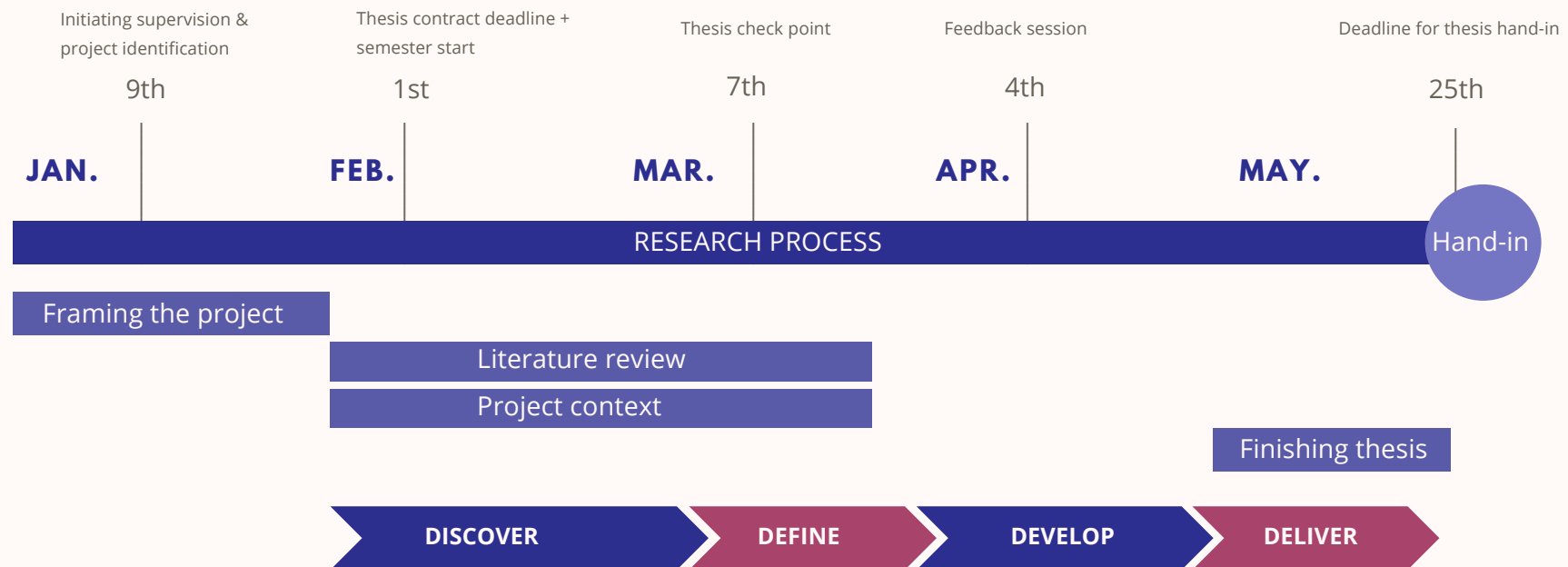


Figure 4: Project Research Process [Own creation]



## 4.2 DOUBLE DIAMOND AS A FRAMEWORK

The problem space framing the case study will be solved through a design process, also called a problem-solving process (Drysdale, n.d.). A design process supports creativity, productivity, and accuracy, and conforms to the designer, rather than the other way around (ibid.). It is sometimes argued that design processes are deliberately designed to ensure that designers are solving the right problem rather than solving the problem right (Stickdorn et al., 2018). The methodological framework, the Double Diamond, will be used to structure the case study presented in this project (Figure 5). The framework conveys a design process in a simplified, structured way through the representation of two diamonds, respectively, a problem and solution space, each encouraging divergent and convergent thinking - four phases in total (Design Council, 2019). During divergent phases, new information and ideas are opened up; in contrast, the focus is on specific solutions during the convergent phases. The argument also emphasizes that a successful design process is an interplay between divergent and convergent phases, the differences being opportunity-seeking versus decision-making (Stickdorn et al., 2018).

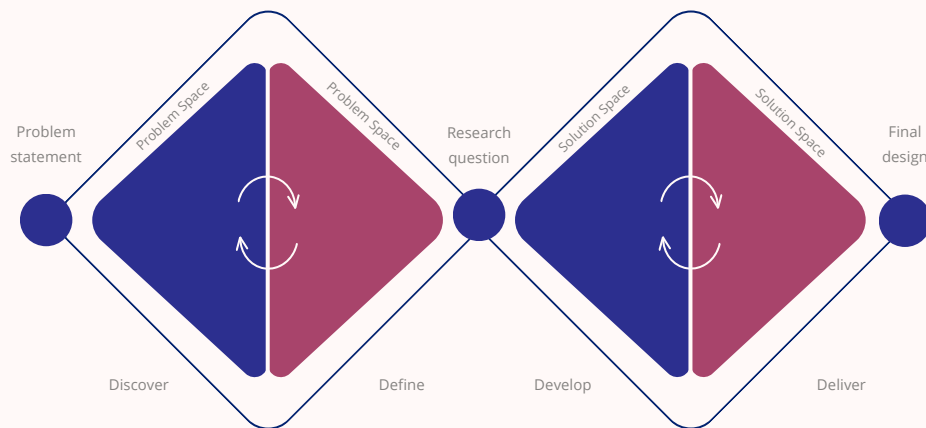


Figure 5: Double Diamond Framework [as adapted by Design Council, 2019]

- **Discover** happens in the first diamond, the problem space, and encourages understanding the problem through divergent thinking, i.e., wider and deeper exploration. Typically this happens through conversation and involvement of people related to the problem. In the case study, Discover will happen through primary data collection based on interviews with museum industry professionals.
- **Define** also happens in the first diamond and encourages convergent thinking, i.e., taking focused action to challenge the definition differently through the insights gathered in the discovery phase. In the case study, Define will happen through mapping and synthesis of insights gained in Discover, aiming to define a research question.
- **Develop** moves the design process into the second diamond, the solution space, and through divergent thinking, encourages the identification of different answers to the problem defined in the define phase. Typically this is done through co-creation and co-design. In this case study, Develop will present a product solution, gain renewed understanding related to the defined research question, and testing and evaluating of product solution elements will happen through co-design with children.
- **Deliver** commences the second diamond and thus the design process through convergent thinking and by testing possible solutions, aiming to reject those that will not be beneficial and improving those that will. In the case study, Deliver will revolve around the argumentation and presentation of the creation of the three final product solutions.

However, despite being a widespread and often used framework in the field of design, the Double Diamond is often met with especially one particular point of critique worth considering.

This point of critique is that the approach follows a linear sequence of phases, starting with problem framing and followed by solution generation, thus indicating that the steps taken during design processes are also linear. It is argued that this linear structure does not always reflect a design process's iterative and non-linear nature since these should always contain continuous feedback loops and iterations rather than a strict sequence of steps (Drew, 2019).

Due to, among other things, this critique, the framework was revised and updated to be now known as the Framework for Innovation (Design Council, 2019). The revised framework considers the general points of critique by including four design principles; 1) put people first, 2) communicate visually and inclusively, 3) collaborate and co-create, and 4) iterate, iterate, iterate (ibid.).

## 2.3 LIMITATIONS

The original ambition with the project was to have a project collaboration company to carry out a practical case. The wish was to, together with the company, frame a case that the project would seek to solve. However, the museums and cultural institutions reached out to at the beginning of the project were all limited on resources and, therefore, could not offer to work as case collaborators helping with framing a research case. Having had a project collaborator could have offered a more in-depth investigation into company structures and processes. Instead, the approach was changed, moving away from looking for a company collaborator to searching more broadly for insights and learnings to gain a more general understanding of the industry, providing the chance to design for and solve a more generic industry problem. Thus, this project's problem statement and case study results from personal identification of an industry challenge, not a challenge directly stated by the industry.

Additionally, the project is based on children as the primary target group due to this being identified as an exciting user group to work with and a user group currently focused on design practices and the museum industry. However, as

writers and designers in the project, we know that our previous experience with and understanding of working with children is limited, so our primary knowledge and insights thus come mainly from secondary research. We acknowledge that more practical experience would be an advantage, just as museum professionals that the project reaches out to will usually have.



Ny Carlsberg Glyptotek Winterhaven [Photograph]. n.b, n.b, Berlinske,  
([https://berlingske.bmcdn.dk/media/cache/resolve/image\\_x\\_large\\_lg/image/108/1083556/22440865-bmr.jpg](https://berlingske.bmcdn.dk/media/cache/resolve/image_x_large_lg/image/108/1083556/22440865-bmr.jpg))

## 5. CASE STUDY

The case study in this project aims to explore the problem statement more in-depth, i.e. how children can participate more actively in the design processes when designing their own experiences. Through this exploration, a product solution will be proposed for museums to design more engaging experiences by involving children. The case study follows the structure of the Double Diamond Framework and thus begins in the problem area of Discover and Define. Discover diverges through interviews with Danish museums that will be conducted to gain a better understanding of how museums work with and involve children in their design process today. Define then converges by synthesizing relevant insights into a more specific research question. The research question then forms the foundation for the solution area of Develop and Deliver. Again, the phase of Develop will diverge by first designing a product solution and then investigating, through workshops, how this product solution can be co-designed with children. Finally, Deliver will converge and round off the case study by designing a product solution that museums can use to actively involve children in museum design processes to design more engaging museum exhibitions.



## 5.1 DISCOVER

The first phase of the case study, Discover, allows the designer to understand, rather than assume, by speaking with and empathizing with stakeholders (Design Council, 2019). The chapter will examine the topic of co-designing with children at museums more in-depth in order to understand current museum practices. The chapter begins with a section on interviews conducted with museum professionals responsible for designing museum experiences for children. The interviews provide a nuanced understanding of how museums approach design processes. This leads to the second section of the chapter, where these design processes will be examined closer to understand how and when children are involved in designing their own experiences in the museums. The third and last section in the chapter introduces a mini-service safari conducted at the Glyptotek to gain a better and more in-depth understanding of this particular museum due to its role as a case organization in the project.



### 5.1.1 INTERVIEWS WITH MUSEUM PROFESSIONALS

To better understand museum design practices and the involvement of children in this process, it was necessary to explore the museums' current approach to designing new exhibitions, activities and services and what value children's involvement adds to the final design. Seven semi-structured interviews with Danish museums were conducted to answer these questions.

#### Interviewed museum professionals

The interviews were meant to interview museum professionals from different types of museums, due to assumptions that different museums work differently and encounter different opportunities and challenges during their design processes. A total of 15 museums were contacted, which led to seven interviews with museums across three different types; three art museums, three cultural-historical museums and one science museum, as outlined in Figure 6. Despite operating across different museum types, the museum professionals interviewed all held similar job titles and job descriptions at their respective museums. All interviewed professionals were employed in mediation and communication roles where their primary responsibility is to bring in, e.g. the perspectives of children in the museum exhibitions and create child-centred activities and services, as well as educational material.

Four of the seven interviews took place in person, i.e., Sorø Museum, the Glyptotek, STORM, and the Maritime Museum. This factor provided the chance to see the museum and thus get a better understanding of the exhibitions and activities (Kvale & Brinkmann, 2015, p. 177). The interviews with the Workers Museum, Brandts Museum, and the Planetarium took place online, which limited the understanding of the museum and exhibitions. Thus diving deeper into the interviews without a reference point could be challenging.

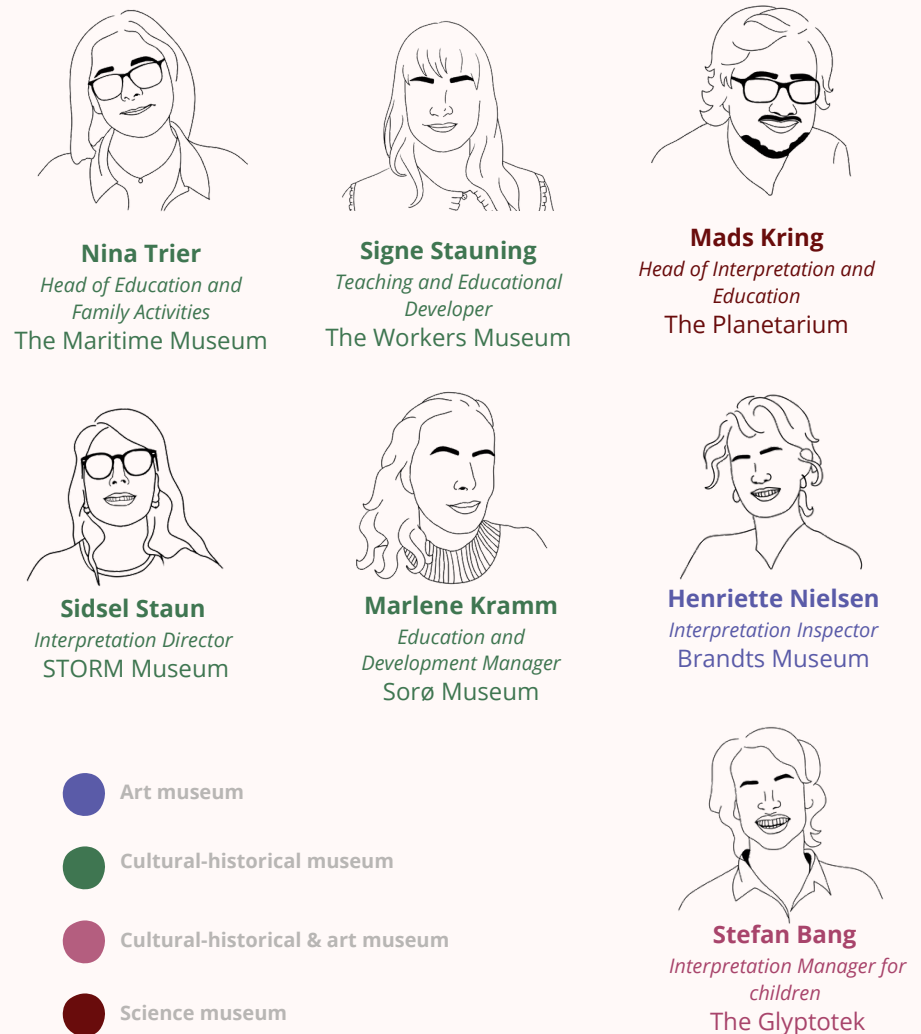


Figure 6: Interviewed Museum Professionals [Own creation]

## Interview guide design and data processing

Due to a limited understanding of museum design processes, semi-structured interviews were chosen as the research approach. According to Brinkmann and Tanggaard (2015, p. 13), *qualitative research* is used "when one is interested in how, where done, said, experienced, appeared or developed," which was fundamentally needed to begin this project. Thus, the semi-structured interviews provided the opportunity to better interpret and understand the described processes and design elements that the participants articulated during the interviews (Kvale & Brinkmann, 2014).

An interview guide (Appendix 1.2) was made before the interviews. The interview guide was meant to guide the conversation with the museum professionals, ensuring all needed questions were answered, but with the consideration that deviations in the conversation were allowed, as it could be relevant to ask questions in continuation of the museum professional's answers (Kvale & Brinkmann, 2015, p. 159).

For the interviews, relevant topics were mapped out. The topics were, e.g., which target group the museums focus on when working with children, what a typical process looks like when designing for or with children, and questions that could later help in identifying which role the children played in their design process. Additionally, the questions in the interview guide were categorized according to whether the museum involved children in the design process. Therefore, questions in the interview guide helped to guide the direction the interviews could take, ensuring the interview was prepared for different outcomes. This approach allowed for comparative answers from the interviewed museum professionals and answers that were only relevant to the museum in question. Finally, some minor adjustments were made prior to each interview. These adjustments were made to ask specific questions to each museum if they had an exhibition or activity that was relevant to explore more thoroughly. The interview with Sorø Museum was transcribed (Appendix 1.3), and the remaining six interviews were recorded (Appendix 1.4).

All learnings and valuable insights from the interviews were noted down and coded into different themes, using an affinity diagram-inspired method, as a way to draw out valuable insights in a structured way (Figure 7). The themes were divided into similar sections as the interview guide, i.e., target group, children involved, children not involved, and processes. Processes will be explored further in Chapter 5.1.2.



Figure 7: Affinity diagram from interview insights [Own creation]

## Insights from museum professionals

**Target Groups.** First, insights about how museums work with and focus on different children's target groups were explored. The majority of the museums focus on all age groups, children included. While museums aim to welcome as broad an audience as possible, they also acknowledge that children, especially those below the age of 10, require different exhibition considerations and often additional activities to make the museum experience enjoyable. The Maritime Museum explains that "the written texts in the exhibitions are intended to be readable by visitors aged 12 and older" (Appendix 1.4.6), thereby explaining that their exhibitions do not communicate directly to the younger target group aged 0 - 11 years old. Likewise, the other museums also explain that they design different means of communication for younger children between the ages of 3 - 10 when designing exhibitions and activities for children's museum experiences. This separation in visitor communication is due to the complex content for younger children since they learn through more hands-on reflection and creation improved learning (Jones, 2022).

As part of their work with children, the museums additionally divide their target groups into two user groups: children visiting as part of an educational context, i.e., school classes, and children visiting in their leisure time, also called 'free children,' as Stefan Bang from the Glyptotek describes them (Appendix 1.4.1). The museums all refer to similar essential differentiations between these two children user groups, which must be made to properly understand how to design the most engaging museum experiences for them. In addition to their peers, school children visit the museum with one or more teachers who know the children and who have a purpose for visiting the museum with them. Sorø Museum explains how it is much easier to design educational activities for school classes since the teacher, sometimes together with the museum guide, serves as a museum mediator, and these adults are used to framing the day and the activities, as well as guiding the children through the exhibits in an engaging manner. Additionally, the children arrive with playmates from their class, making play and equal sparring in the activities more effortless for the children. Without this equal sparring from the other children or the experienced

facilitation through the exhibitions and activities, it becomes the task of, e.g., the parent to facilitate the museum experience for the free child imaginatively and engagingly. Thus the parent will be dependent on the museum for help since not all parents are equally capable of mediating a purposeful learning experience for the child. With this explanation, Sorø Museum points out the increased challenge of facilitating a joint parent-child museum experience where the child's perspective is equally considered in the regular exhibitions. A challenge that was also addressed by Birch (2018), who states that it is rare for children's and adults' experiences to be considered collectively at museums. The other museums do not point out the same challenge but do nevertheless support the statement by clarifying the importance of thinking about the free children visiting as part of a family, where the age groups might vary, depending on whether they visit with parents, grandparents and possibly have siblings in other age groups visiting as well. This means many target groups to reach and mediate for at once.

A clear distinction pointed out by the museums is that, depending on the type of museum, there are different learnings the museum wishes to mediate to its visitors. Cultural-historical and science museums have more factual learning experiences to communicate. In contrast, art museums seek to communicate more abstract learning experiences, mediating the visitors' personal sensing experience. It is, therefore, essential when designing museum experiences to understand what experience needs to be mediated to the visitor and adjust design practices accordingly during design processes.

**Involving children actively.** Next, the insights gained from the museums' experiences with *actively* involving children were explored more in-depth. From the affinity diagram, it became clear that the Workers Museum, Sorø Museum, and STORM Museum are the museums that involve children the most.

This identification of levels of child involvement in museums is visualized in Figure 8.

During the interviews, the conversations would, at times, naturally move in the direction of how the museums found inspiration for methods for including children's perspectives in exhibitions. It became clear that this inspiration is found in different places and that knowledge and experience sharing play a significant role in the industry. Both the Workers Museum and Sorø Museum refer to Skoletjenesten as a place for finding inspiration and sharing experiences. The museums that actively involve children state that much of their inspiration comes from dialogue with the children they design with, but that, especially for education-related activities, they also listen to the needs of the teachers since they are the ones buying many of the educational activities. There were some common denominators when clustering statements concerning the value that bringing children into design processes can provide to the final product. The Workers Museum and the Maritime Museum explain the importance of considering user needs from all target groups from the beginning of designing a new exhibition so no user needs become forced into a final product. In every exhibition, the museum must ensure that the user's needs are met and thus that the most engaging elements for children are incorporated from the beginning. Most museums state that the quality of the final exhibition becomes higher when the design process organically considers all user needs equally along the way. Both Sorø Museum and the Workers Museum also describe how they have initiated a design process with children, thinking they knew what the children would find interesting, but ultimately being proven wrong by the children. This shows that, in practice, children can broaden a designer's horizon through their honesty and imagination (Hagen et al., 2012). In Sorø Museum's case, they brought some current-time artifacts with them to a workshop session, thinking this would make a valuable connection for the children. However, none of the children were interested in the artifact during the test. In another test carried out with children, Sorø Museum found that artifacts she did not think the children would find interesting were of great interest to them. The children created their own imaginative story around the artifacts, and when she added historical accuracy, the children could build on her inputs until the story was created. As a result, she incorporated the

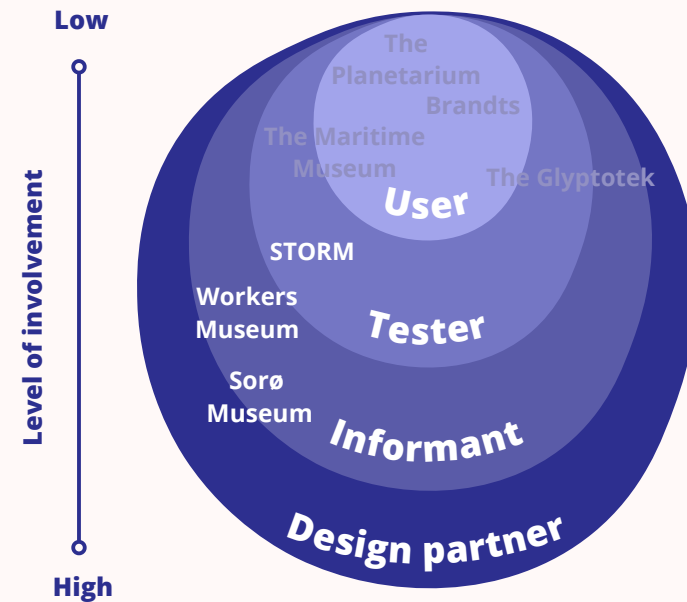


Figure 8: Level of active children's involvement [as adapted by Druin, 2001]

co-designed design into the final exhibition for a more imaginative touch. Both the Workers Museum and the Glyptotek describe similar stories where they successfully apply storytelling to an exercise or activity with the children - one they would typically assume the children would not find interesting.

However, with elements of storytelling around details the children can relate to or find fascinating, they can be engaged and even build further upon inputs. Sorø Museum and STORM Museum mention how markings in the exhibitions from the children's own lives provide the children with elements that make the information more accessible and relatable for children. Thus, additional information can be added, which makes the overall meaning easier to understand for the children. All in all, museums that actively involve children in their design process conclude that the most significant benefit from actively working with children is that it allows them to find a common foundation which

makes the exhibitions and activities more relatable for the children, thus making it easier for the museums to mediate the intended stories and experiences to the children. The Workers Museum summarizes the experience of working with children in the following statement: “It is really time-consuming, but it is invaluable!” (Appendix 1.4.3).

**No involvement of children.** Finally, the section from the affinity diagram that focused on when museums do *not* involve children in their design processes was explored. Once again, a tendency came up; the Glyptotek, Brandts Museum, the Planetarium, and the Maritime Museum were most represented in this section (Figure 9). The four museum professionals explain how they observe children's behaviour to better understand their experiences and journey and how this information can be used to improve current and design future exhibitions. The museum professionals consider themselves experts when new exhibitions are designed to provide their perspectives on how best to include the children's needs in new exhibitions and activities. Meanwhile, these are also the museums who, to some extent, believe that involving the children in the design processes is either too time-consuming or that the museum professional has the needed skills to act as experts on behalf of the children. This can be argued to be an unsustainable approach to design since the value of service is realized when consumed (Vargo & Lusch, 2004), and thus a more long-term and viable means of production would be to ask the users about their needs. When it comes to how these museums find inspiration for how to design and what to incorporate into exhibitions, their answers become more uncertain. Eventually, they respond with explanations such as Nina Trier saying: “Inspiration comes from our own curly brains” (Appendix 1.4.6), Mads Kring saying: “The starting point comes from what they already know and then they add elements that children like, such as planets, superheroes and similar” (Appendix 1.4.5), and Henriette Nielsen saying: “Many from the team has been working at the museum for many years, and thus knows the best ways to design exhibitions for children” (Appendix 1.4.4).

The Workers Museum argues against the last statement by saying that bringing in users and external experts in one joint session is essential to ensure the

design team stays innovative and does not design what the museums currently already have elements of. She continues to explain how they often bring in students from design education, dance education, and other creative fields to join the co-design sessions with the children to challenge the way museums work and to get new and more innovative ways to work with children. Most other museums hire external experts such as design companies to design the exhibitions or play experts to act as ‘critical friends’ who offer perspectives on how to implement the children's needs into exhibitions.

When the museums described their exhibitions targeting children, a tendency appeared. The museums that involve children in their design process focus more on creating educational exhibitions and activities for children. In contrast, those not involving children focus more on creating entertaining activities.

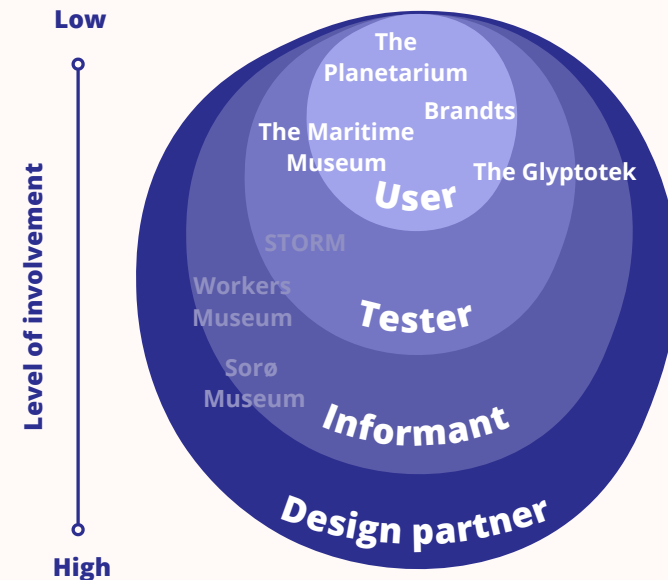


Figure 9: Level of passive children's involvement [as adapted by Druin, 2001]



During the interviews, the museums were asked why they did *not* involve children and the challenges in doing so, and different reasons were provided. Some reasons which occurred continuously were short deadlines, limited financial and human resources, and challenges in inviting the same institution several times for continuous testing since this requires time out of the curriculum for the schools and substitute teachers. The Maritime Museum additionally stated that she “[is] not sure dialogue with young children in design processes always gives the best results.” The Planetarium stated that he “[is] not sure that user involvement will teach [them] anything new, such as what interests users in [the Planetarium’s] field. [They] already know that”. Every interview was rounded off by asking the museum professional what could help and support them in involving children more actively, e.g., a tool or similar. Inputs here were different but included The Glyptotek suggesting a tool to help argue why children’s involvement is essential during design processes and thus worth granting resources for. Also, the Workers Museum wished there was a more standardized guide for user involvement with children at museums: “.. one that of course needs to be adjusted to the need depending on the project, but can be used as a starting point”. Sorø Museum said it would be helpful with a tool to help the museums create innovative ideas, and the Planetarium said that he could use tools to help him discover what interests children.

### Summary of key insights from the museum professional interviews

- Special attention is on the target group of children aged 3 - 10. This is due to their need for different means of mediation to gain knowledge, and thus a learning experience, from their museum visit.
- It is more challenging to facilitate free children visiting with their parents than facilitating school children.
- Where children are actively included, museums use experts to build on top of the co-design session with the children.
- Museums understand the importance of bringing in markings in the exhibitions that the children recognize. This allows the children to connect new learnings to already existing knowledge. These tools can also be used in the design process to create a common ground for the child and the designer and open up dialogue.
- Museums that already involve children agree that involving children in the design process typically results in higher-quality design.
- Reasons for not involving children in design processes include limited resources and short deadlines. These museums still see user inputs as essential, but they gain these around the users through observations and third-person feedback.

## 5.1.2 MUSEUM DESIGN PROCESS JOURNEYS

The interviews also addressed the museums' design processes, and thus it was considered relevant to explore these design processes when museums design *with* or *for* children. This would help identify where in the design processes children are involved, what advantages and disadvantages the museums might experience at different stages, and where there is room for improvement.

### Design process journey design and data processing

A template for mapping a design process journey (Appendix 2.1) was made to be used as a communication tool during the interviews. In service design, *journey maps* are flexible tools that help visualize, understand, and analyze a person's experience over time through a sequence of steps and representation of experiences (Stickdorn et al., 2018, p. 44). The intention was to use these templates as a guide during the interviews to better understand museums' design processes and phases and how and where children are involved. During the interviews, the museum professionals were asked to describe a design process they had undergone, which was subsequently filled in the template. Due to the time available during the interviews, the template was filled out afterwards based on the process described. Examples of the design process journeys can be seen in Figure 10.

Together with processing the interview data, the design process journeys made it clear that there are similarities and differences in the museums' processes, which would be relevant to look into to get a more in-depth understanding. Another affinity diagram was created to give a more holistic perspective on each of the museums' design processes described and to include other processes mentioned during the interviews (Figure 11, p. 40). As a result, it became apparent that the museums follow a relatively basic but similar design process when they design for children.

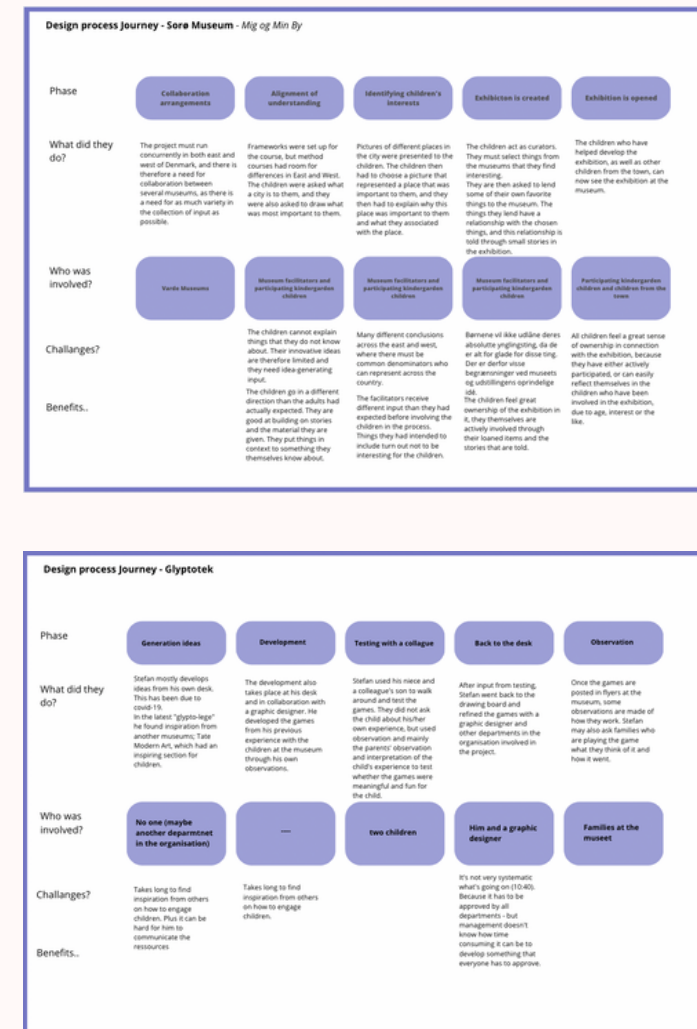


Figure 10: Examples of museums Design Process Journeys [Own creation]

## Insights from museums design process journeys

Based on the affinity diagram of the design processes (Figure 11), it is evident that most museums typically go through three general design process phases, i.e., the *initiating*, the *intermediate*, and the *commencing* phase. In each phase, the museums involve children in the design process or carry out the process without the children. The dashed line depicts whether children are involved. However, the exhibition concept is defined before the museum professional initiates the design process.

**Exhibition concept.** Before the museum professionals begin designing the exhibitions, the museum management briefly explains the concepts, expectations, limitations, etc. In this phase, it was identified that children are generally *not* actively involved in contributing ideas to what exhibitions the museums could design. It is instead typically decided by the management. This is found to be interesting as it has previously been discussed that involving children in decision-making and allowing them to speak on their own behalf make children's experiences more valuable and sustainable (Druin, 2002). After defining the exhibition concept, the museum professional initiates the design process.

**Initiating phase.** The first phase identified was the initiating phase. This revolved around understanding children's perspective on the concept behind the exhibition, i.e., how children understand the topic, what they find interesting related to it, and early ideation around elements to bring into the exhibition. The museums that were identified to *involve children actively* in their initiating phase are STORM Museum, Sorø Museum, and the Workers Museum. According to STORM Museum, their exhibition concepts are planned one to two years in advance. However, as part of creating their latest exhibition on humor, they visited a kindergarten to learn what children today find funny and how to include the children's perspective in the exhibition. Sidsel Staun explains: "We began with a visit to a kindergarten and talked to the children about what they see on TV, what they think is funny, what games they play [...] a bit of fieldwork, to learn more about what children like today" (Appendix 1.4.2). Based on the

children's inputs and their interest in what is referred to as 'fall on your ass'-humor, it became one of the three themes in the new exhibition. This approach allowed the children to provide information on what they find funny and thus participate in the design process as informants (Druin, 2001). However, the extent to which they are actively involved in the design phase can be discussed, as they do not give direct inputs but merely inform on what they find funny. Druin (ibid.) explains how; if children are not part of the initiating phases of a project, then great surprises can occur in the commencing phases - thus making it crucial to involve children as informants early rather than only as testers later in the design process. In a similar project, the Workers Museum talked with around 200 students about the relevant subjects for their exhibition to discover their opinions and emotions and how this could be incorporated into the exhibition.

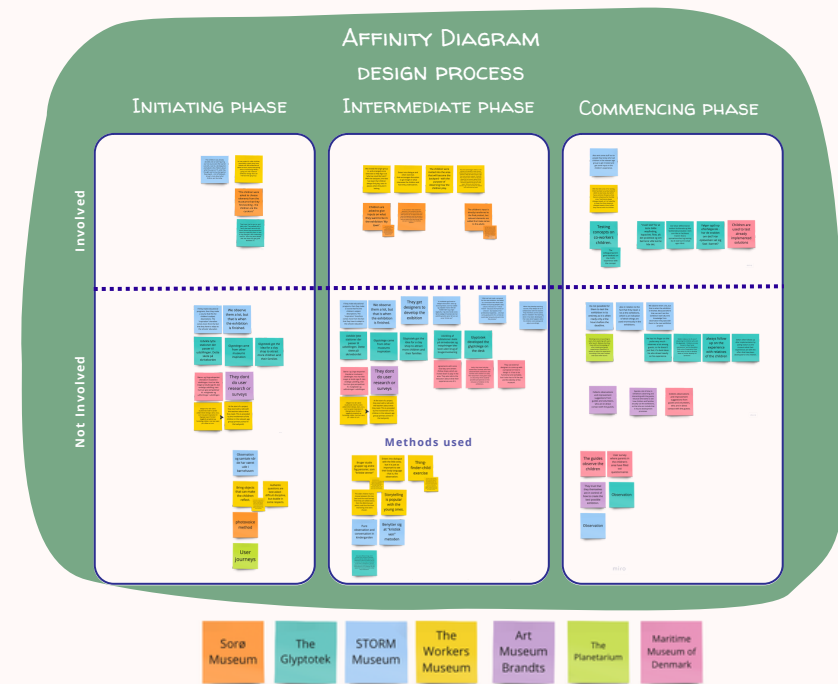


Figure 11: Affinity diagram from design process journeys [Own creation]

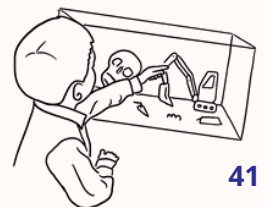
The museum that mainly involved the children in their initiation phase was Sorø Museum. As Marlene Kramm explained, “Before making a new exhibition we were curious to learn what children find interesting from the Middle Ages” (Appendix 1.3). She, therefore, opted for a method called *photovoice*, which involved equipping kindergarten children with cameras to take pictures of the things they found interesting in the museum - a method used to learn what catches children’s interest in a specific setting. In the case of Sorø Museum, their main goal was to collect material that could form the foundation for dialogue with the children afterward. Another example was when they allowed the children to act as curators for the Mig & Min By exhibition. They were asked to list their favorite city parts and then sketch them. The museum continued to involve the children in every step throughout the exhibition design, trying their best to add every input the children suggested. This information was used as the foundation to design the children’s educational material for the exhibition.

The museums identified to *not involve children actively* in their initiation phases are the Glyptotek, Brandts Museum, the Maritime Museum, and the Planetarium. Henriette Nielsen from Brandts Museums says that they can do it on their own: “We believe that, as professionals, we are capable of building a bridge between current knowledge and the children’s world and what is relevant to their education. We believe we can do it on our own.” (Appendix 1.4.4). This is despite the theory stating that designers and researchers always have something to learn, and the children are the ones to provide something valuable to the process (Hansen, 2017). She further explains how they observe how the children behave in and interact with the current exhibitions. They then implement these observations in future exhibitions. Nina Trier adds that: “our museum guides have the most contact with the children and the family audience, so they see a lot, and make many observations.” (Appendix 1.4.6), as well as the fact that they also use their own ‘curly brains’ to come up with ideas (ibid.). This relates to children being in the passive roles of users and testers, with little or no influence on the design process (Druin, 2002), as museum professionals act as experts on behalf of the children.

**Intermediate phase.** The next phase identified was an intermediate phase, where the more specific content of the exhibition is designed. From the museums, which *actively involved the children* in the intermediate phases, it became clear that most exhibitions and activities are designed together with school classes since these are more easily accessible to the museum. At the same time, they also provide the museums with a more significant amount of input. The two museums to involve children in more active roles during the intermediate phase are Sorø Museum and the Workers Museum. They both use a similar approach to what they did in their initiation phase, thus extending the involvement of the children further into the design process. An example of this is provided in the blue box below. In the example, the children are involved as informants (Druin, 2002) since they are more involved in selecting what interests them and what the exhibition or activity should include. Thus, these museums move closer to designing *with* rather than *for* the children because the children contribute with their own perspectives, which the adults cannot always see (Feder, 2022a).

Next, the museums that did *not involve children* in the intermediate phase were explored. The interviews provided an understanding of how museum professionals typically design and develop exhibitions and activities themselves or, in some cases, with the help of third-party actors, such as teachers or external designers and consultants.

Mig & Min By was designed with the assistance of the children. Children were asked to lend some of their favorite toys or items related to museum artifacts. One boy brought his tractor, as he believed this had been used to dig out the craniums by the archaeologists. Combining museum artifacts and toys allowed the children to feel a sense of ownership, both for those who displayed their toys and those who had similar items at home. As a result, the exhibition becomes more relatable for the children.



Both the Workers Museum and STORM Museum collaborate with teachers and pedagogues to tailor their exhibitions to the educational needs of children, making the teachers advocates for the children. Sidsel Staun from STORM Museum explains how the draft design for an exhibition had been created and later sent to a consultant working in children's and young people's play culture, who acted as a 'critical friend' to provide feedback on the design to the museum. In a similar process, the Maritime Museum mentions how: "activities for families with children are *not* designed in cooperation with the children, but rather based on visions of what kind of narratives [the museum] would like to bring into play" (Appendix 1.4.6). In this case, the museum designs *for* rather than *with* the children since the design happens from a perspective different from the child's own. Here the children have no input or influence on what activities the exhibition or the museum will have (Feder, 2022a), thus resulting in a user-centered rather than co-designed design approach. Employing user-centered design is typical in intermediate phases, where children rarely participate in planning, programming, designing, or developing museum exhibitions (Culén et al., 2013).

This presumably is due to the disinterest in some professional design communities, where children are excluded from design processes due to their nonprofessionalism and doubt about their ability to contribute to design processes (Nesset & Large, 2004).

**Commencing phase.** The last phase identified was a commencing phase, where the museums have the children test and evaluate the design, either before or after implementing the design into the museum.

Again, STORM Museum and the Workers Museum are identified to involve children the most. STORM Museum explains how it is challenging to test their exhibitions on children prior to the opening of the exhibition since it is usually not ready until a few hours before launch. She explains how they do not test the actual exhibition but instead bring the chosen artifacts, which will be incorporated into the final exhibition, to the children to receive feedback, i.e., in the passive role of testers (Druin, 2002). Additionally, they keep an eye on how the children use the exhibition after it has been opened to visitors by noticing

wear and tear. This puts the children in more passive roles as users (Druin, 2002), and they are, therefore, not actively involved in testing the exhibition itself.

Similarly, Signe Stauning explains, "The further you come in a design process, the fewer adjustments it is possible to make, which also means the children have less influence. However, if the children have been involved in prior stages, chances of a successful design is bigger." (Appendix 1.4.3). She thus explains how user involvement becomes less active the further along a design process is. However, suppose the children have been involved actively and continuously throughout the design process. In that case, the active involvement is still happening since the children have previously been used as informants, which as a role contains elements of user and tester (Druin, 2002; Hansen, 2017).

However, if the children are not involved prior to the testing phase and thus have not previously been involved as informants, the role of tester will be passive (ibid.). When the museums do not involve children, they use other approaches. Common for all the museums is that they test the exhibitions after it has opened for visitors, and the museums use their observations to evaluate the design. The Maritime Museum has invited external consultants to observe visiting schools and families with children. The consultants then suggested exhibition improvements that would help meet the children's needs. Thus the children are not involved actively in their evaluation. The teachers, as well as the parents or other relatives, also play an essential role for the museums in interpreting and validating the inputs provided by the children to the museum during the design processes. The Maritime Museum tells how they find it beneficial to ask the adults who know the children to assist with interpreting the behavior and inputs from the children. For example, she explains how they sometimes make user surveys and have the museum guides encourage the parents to fill these out based on their children's experiences at the museum.



## Key insights on the museum design process journeys

- From the design process journeys, it became apparent that museums follow a general, but not predefined, design process consisting of three phases: *Initiation, intermediate, and commencing*.
- Children are often involved in the early phases to give the museums an understanding of the children and to give inspiration on how to adapt the pre-established concept to the children's needs.
- Children are also often involved in the later phase to test and evaluate the finished exhibition or activity.
- In general, there is limited user involvement and co-design in the intermediate phases of museums' design processes, leading to a more user-centric design approach rather than a co-designed one - thus designing for children rather than with them.

### 5.1.3 MINI SERVICE SAFARI OF THE GLYPTOTEK

Due to the Glyptotek being the case organization for later practical exploration, conducting a mini-service safari after the interview with Stefan Bang was decided (Figure 12, p. 44). This was to gain a better understanding of the services offered to children. A *service safari* is a research tool that allows designers to get a first-hand understanding of the service experience from an 'in the shoes of the user'-point-of-view before further research investigations (Service Design Tools, n.d.).

## Service safari design and data processing

The service safari template (Appendix 3.1) was designed based on a scenario structured by what was needed to learn more about from the visit to the Glyptotek. A research question and five focus points were created to provide a user perspective and focus area for the service safari. Furthermore, the service safari was divided into pre-visit and the actual visit to ensure that information and initial understanding were gathered before the visit and that relevant services were explored during the visit. No post-visit was explored due to the service safari being conducted in connection with the interview with Stefan Bang. Thus the experience was not a natural visit where all the relevant channels, usually experienced, were experienced. The service safari will be investigated through the TACIT framework: *Touchpoints, Actors, Content, Interaction, and Timing*.



The Clay Workshop [Own photo]

## Insights from the service safari at the Glyptotek

The Glyptotek has much relevant information on its webpage, making it easy for visitors to explore their services targeted at children. Information on their webpage clearly states the nature of the services and where to find access to them.

It was clear that the relevant services for the free children visiting were the Glypto Games, the listening stations, and the Clay Workshop\*. A focus on these was, therefore, of interest. Focusing on learning more about how the children's activities were intertwined with the regular museum exhibitions was particularly interesting since research shows that a child's presence in a regular exhibition setting, not explicitly designed for a young audience, encourages adult-child interaction (Jones, 2022).

The **touchpoints**, the first element in the TACIT framework, will be explored first. The children's activities all entail physical touchpoints to interact with. The Glypto Games were the first encounter on the safari - well hidden in a corner room of the museum, which did not feel like a room children's families would naturally meet unless aware of the room's existence. Additionally, the games were placed in boxes too high to provide a view for children to see the games, adding to the assumption that families would need to be aware of or informed by the museum staff that the games exist. In the boxes were Glypto Games no. 1, 2, 4, and 8, but with no luck finding the remaining four games.

Regarding wayfinding, the navigation to find the right way during, e.g., The Glypto Game 'The tour to Hercules,' was challenging, as the numbering of the rooms was not clear and in an odd order. This can be an adult challenge since children might be more prone to explore to discover, whereas adults might be more likely to follow instructions. Finding the way to the Clay Workshop provided a similar experience. A treasure map guiding the children to the Clay Workshop was placed with the Glypto Games. The route on the map shows a one-way direction from where the map is found, possibly making it challenging to use if someone is standing in a different place at the museum and decides to use it then. Wayfinding through signage, however, makes up for this.

\* Since the service safari was conducted, the Clay Workshop has been closed down.



Figure 12: Service safari journey [Own creation and photos]

Next, the **actors** were explored. Possibly due to the unnatural nature of the visit, there was little contact with the museum staff. Upon arrival, we were well greeted by Stefan Bang, at the entrance, along with a welcoming museum guide who guides the visitors to the wardrobe and ticket sales on the lower level. It is expected that they, along with the ticket sales staff, are responsible for providing initial information for the visitors and thus possibly informing families about the Glypto Games and other activities for children. However, as a natural welcome was not part of the service safari, this cannot be known with certainty.

During the visit, many museum staff guiding the guests and answering questions were also observed, which provided a welcoming atmosphere, and most likely provided good visitor experiences. This was also the case at the Clay Workshop, where visitors are greeted in a friendly manner with beginning instructions and tips on where to find inspiration.

The element of **Content** provided the possibility to observe information and elements at the museum targeted at children.

Stefan Bang explained that the Glypto Games are meant to be intuitive, so he did not provide any information about the games other than their location. The games are made of folded paper with texts, drawings, and activities that guide the visitor around the Glyptotek and encourage awareness and exploration. The text load indicates a need for adult help to carry out the games, which in one way, is a benefit because it facilitates a joint experience between the child and the adult. On the other hand, it hinders the child from taking charge of their own experience since it follows the instructions provided by the adults, which can thus result in shallow memory retention (Zosh et al., 2017). Research shows that children mainly learn through play, which helps them tap into existing knowledge, and to connect and see relations to gain a deeper understanding of complex information (ibid.). It can therefore be argued that information mediation in the regular exhibitions should be provided in creative, imaginative, or playful ways, which places much responsibility on the adults in mediating the stories and experiences to the child. This makes the Glypto Games a children's experience that does not involve the child in the regular exhibition but is, in terms of information

meditation, separate from the rest of the exhibition.

Additionally, the children's listening stations around the museum are mediated clearly and through storytelling.

**Interaction** is a big part of learning experiences for children (Zosh et al., 2017). This also reflects in the intentions behind the children's activities at the museum, mainly through active storytelling.

The Glypto Games encourage the children to interact with the many elements and artifacts at the museum, not by physically touching them but by finding, exploring, and imitating them. One thought that occurred was if the games might not, in all cases, correspond well with the experience of the adult. There are a lot of impressions and sights to see at the museum, and the games can, in some ways, result in a faster movement through the museum, which can be at the expense of the adult's experience. However, in other ways, the games are good tools to spark conversation and take a closer look at the museum artifacts, which can be necessary for a space like this. The atmosphere in the Glyptotek is overwhelming, with big, decorative rooms with many colors, elements, and artifacts. Thus tools, dialogue, and stories are, no doubt, needed to mediate the experience to children.

The activities for children were, in many ways, a supplement to the regular exhibitions. The Glypto Games facilitate a guided tour around the exhibitions for the children, but storytelling is not included until the end of the tour. Additionally, the games provide a very instructive experience. The children are, in this way, not encouraged to explore on their own, stumble upon things that catch their interest, or have this element mediated to them at their own needs. The Clay Workshop is very interactive, with much material to spark inspiration and the possibility for dialogue around what the visitors have experienced at the museum. Additionally, there are many tools to be creative with. Children and adults are welcome in the workspace; they can make their separate artworks or collaborate on one.

One thing also presumed to prevent interaction of a joint experience for the children and the adults was the listening stations for children. They are small, inviting listeners to squat down for the time of the story or sit on the floor. Both options are most likely suitable for the child but possibly inconvenient for the

adult and most likely almost impossible for a grandparent.

The last element in the TACIT framework is timing. As it was not a natural visit, and due to a deadline for another interview, exploring the service safari in a natural time setting was impossible. However, it was the impression that the timing is flexible since the museum is divided into many exhibitions. Therefore not all exhibitions have to be explored on the same day.

Furthermore, the visitors can choose one or two Glypto Games to guide them around the museum and go more in-depth with their experiences. The listening stations are few, four in total for children, and they can be chosen or skipped depending on time and interest. The Clay Workshop can take longer but is also a more active activity, possibly providing renewed energy for the children.

#### Key insights from the mini-service safari at the Glyptotek

- The Glyptotek intends to bring the children into the museum and make them feel welcome, also in the regular museum exhibitions.
- All activities are also designed to encourage a joint experience between the child and their adult.
- Wayfinding can be challenging, and information mediation around artifacts not included in the games or listening stations is limited.
- The games meant to facilitate the guided tour at the museum are well hidden, which also leads to a reflection on the size dimensions of the museum.
- The children's activities at the museum seemed to entertain the children and provide some supporting facilitation during the visit. Nevertheless, the child still depends on an adult to facilitate the experience.
- The activities are not set up in a way that supports a parallel experience for the child, where they have a free choice over which artifacts at the museum they find interesting and wish to explore further.

#### 5.1.4 CONCLUSION TO DISCOVER

Discover aimed to gain an in-depth understanding of the extent to which museums co-design children's museum experiences. This was done through interviews with museum professionals, exploration of museum design process journeys, and a mini-service safari.

The museums are generally interested in welcoming younger children and acknowledge the need for 3 - 10-year-olds to have a different means of mediation than older visitors. For children visiting together with their school, this becomes easy through experienced adults to facilitate the experience. The free children visiting with their parents are, however, more of a challenge to design for, as it becomes the adult's responsibility to facilitate the experience, and the children are, in most cases, dependent on the adult to engage with and have a learning experience at the museum.

The museums are much aware of the value of including the children's perspectives early in the design process, but whether this includes the active involvement of the children is very different between the museums. Some museums practice encouraging the children to be the experts in their own experiences, whereas other museums practice being experts on behalf of the children. Their reason for doing so is related to different challenges and beliefs that children are not well-equipped to be equal co-designers.

When museums include children in the design process, they often do so early on and late in the process to gain inspiration on topics, understand the children, and test and evaluate final designs. However, children are less involved in the middle of the design process when decisions on what to design are made and developed. Thus, a very user-centered design approach is identified in the museums' design processes, where children are often designed *for* instead of *with*.

## 5.2 DEFINE

During the second phase of the case study, Define, insights are gathered from Discover to redefine the challenge (Design Council, 2019). The chapter initiates with a mapping and synthesis of the insights from Discover, from which three thematic clusters will be created. These clusters provide the foundation for further exploration of the actor motivations, the museum design approaches, and the common challenges. The actors' motivations must be understood to create successful initiatives. The design approaches were found relevant to investigate more in-depth, as the museums have much room to involve the children in more active roles throughout the process. Common challenges were essential to identify, as no solution will work in practice if common challenges are not addressed in the final solution. These explorations will conclude the problem phases of the case study.



### 5.2.1 MAPPING AND SYNTHESIS OF OPPORTUNITY SPACES

The Discover phase led to many insights from the interviews with the museum professionals, the design process journeys, and the mini-service safari. In order to gain a more comprehensive understanding of these insights, it was necessary to synthesize the insights and map them into different clusters (Figure 13). The clusters' themes were identified and given a cluster heading which provided the foundation for the process structure of the chapter.

Three themes were identified; 1. Motivations for involving children in design, 2. Approaches to involving children in design, and 3. Challenges when involving children in design. The clusters are clarified further in Figure 14 (p. 49).

The clusters will be elaborated upon and concluded with "How might we..." questions which will later be used to formulate the research question that will form the basis for the remaining part of the project. "How might we...?" questions serve as a useful tool for systematically mapping insights and research findings, allowing for the identification of individual parts and the conversion of these parts into trigger questions (Stickdorn et al., 2018, p. 179).

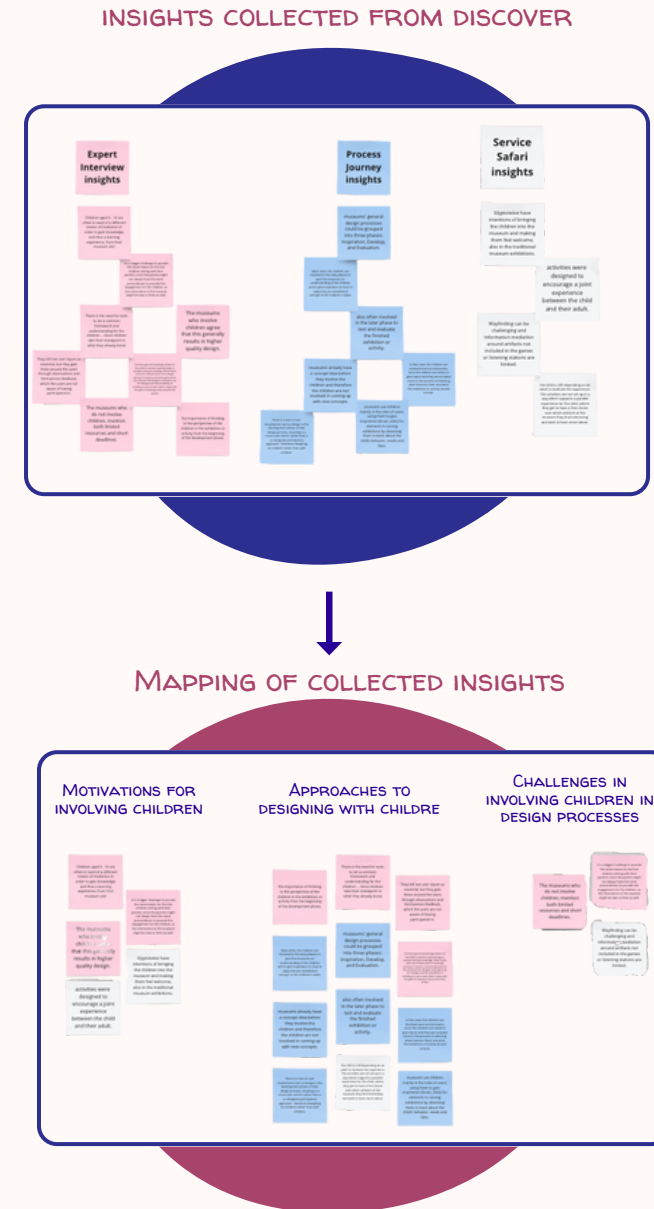


Figure 13: Mapping and Synthesis of Discover insights [Own creation]

## 5.2.2 MOTIVATION FOR INVOLVING CHILDREN IN DESIGN

The first cluster revolves around the needs of the free children and, thus, the motivations for why museums find children's perspectives relevant to represent in the exhibitions and activities at the museum. Due to this, it was found relevant to look into the more specific motivations that each main actor has for actively involving children in the design processes instead of designing on behalf of the children.

### Motivational Matrix of active involvement of children in design

When considering co-design, it is essential to consider each actor's specific role. New production systems, such as the design of new museum concepts targeting children, requires a network of actors. It is essential to understand that these actors might participate in the network for different reasons, i.e., motivations. Cooperation between these actors is an essential condition for a successful initiative, and it is therefore important that the motivation of each actor is identified (Morelli & Tollestrup, 2007). The motivation matrix in Figure 15 (p. 50) identifies the motivations for each main actor to actively co-design museum experiences *for* children *with* children.

All actors are essential to bringing into the matrix when talking about motivations. However, the design of museum experiences is a complex system with many people involved, and the ecosystem behind it is never the same at different museums. In the case of designing better museum experiences for children, the main actors are the child as the main stakeholder, the adult as the one to facilitate the experience for the child (Falk, n.d.), the museum professional as the enabler and designer of the experience, and the museum as the organizational decision-maker who administers the project resources. Despite all four actors being essential to consider when co-designing museum experiences with children, the child and the museum professional are considered the main actors during the design process since they collectively design for the outcome.

#### Cluster 1: Motivations for involving children in design

- Young children require different forms of mediation than older children and adults.
- Free children are co-dependent on their parents to facilitate the museum experience for or with them.
- Children's perspectives should be represented in the regular museum exhibitions to experience the museums as a learning experience.


#### Cluster 2: Approaches to involving children in design

- Museums are aware that children take their standpoint in what they already know.
- Children's inputs are sought to be included, whether it is done directly or indirectly.
- Children are often included in passive roles at the beginning and the end of design processes.

#### Cluster 3: Challenges when involving children in design

- Free children are more challenging to engage than children visiting in educational contexts.
- Museums experience limited resources, obstacles, and short deadlines, which prevent them from involving children.

Figure 14: Insight Clusters [Own creation]



... gives ...	The child	The adult	The museum professional	The museum
<b>The child</b>	The chance to act as expert in own experiences to ensure more immersing learning experiences.	A successful experience in the facilitating role, where the child equally contributes to the adult's experience.	A perspective on how the exhibition or activity should be designed to best consider the perspective of the children for them to get the most out of the mediated learnings.	The proper considerations to best accommodate the need of similar users to give others the best experience.
<b>The adult</b>	The possibility to equally contribute to the experience by also mediating the child's own experience.	Getting to succeed in the role as facilitator for the child and thus having provided a good co-experience.	//	A successful visit which can very likely result in future visits or word of mouth which brings additional visitors to the museum.
<b>The museum professional</b>	A voice in the final exhibition or activity to ensure an engaging experience, which the child will benefit more from.	Reinforcement in their motivation by indirectly telling them that bringing the child to the museum on that day was a good idea.	Ensures that user needs and experiences are properly met in order to mediate the intended story and experience successfully.	Successful exhibitions or activities which meets the needs, expectations and perspectives of the users.
<b>The museum</b>	A chance to leave more knowledgeable and experienced in being an expert in own needs and facilitated experiences.	Reinforcement in their motivation by indirectly telling them that bringing the child to the museum on that day was a good idea.	//	Better user experiences provides a broader knowledge and interest in the museum field and thus returning guests and success.

Figure 15: Motivational matrix for museum co-design [Own creation]

Therefore the main motivations that must be met during the design process are the motivations of the child and the museum professional:

- **The child gives the child** the chance to act as an expert in their own experiences, thus ensuring more immersing experiences for future children visiting the museum.
- **The child gives the museum professional** the best possible perspective on how an exhibition should be designed to best mediate the experience to the child.
- **The museum professional gives the child** a voice in the final exhibition, thus ensuring an engaging experience that will benefit the child.
- **The museum professional gives the museum professional** security that the user needs and experiences are adequately met to mediate the exhibition successfully.

Meeting these motivations will foster essential conditions for successful initiatives at the museum. In order to meet these conditions, the following 'How might we..?' questions are formulated to guide the project toward a research question:

- How might we support children in mediating their experience, needs, and knowledge to the museum professionals to better have their perspectives represented in museum exhibitions and experiences?
- How might we support museum professionals in giving children an active voice in designing new exhibitions and experiences to ensure the museum's purpose is better mediated to the children?

### 5.2.3 APPROACHES TO INVOLVING CHILDREN IN DESIGN

The second cluster revolves around museums' design approach for or with the children. Museums are interested in meeting the children in the museum exhibitions. However, there is little industry structure to how this is best done, and it becomes clear that some museums need methods and support in their design approach to understand the children better and make the best use of the children's inputs. Thus, it is interesting to take a closer look at the museum's design approaches to working with children and compare these to other design approaches.

#### **Moving from user-centered to participatory design processes**

From the museum design process journeys (Chapter 5.1.2), it became apparent that the children are not included throughout the design process, but mainly in the beginning, i.e., the initiation phase, and in the end, i.e., the commencing phase of a concept. Thus, children are primarily involved as passive users and testers (Druin, 2001) who contribute when museum professionals observe them at the museum. This relates to a more user-centered design approach, where the outset is in a design brief or an opportunity space, and children are seen as a 'passive object of study' (Large et al., 2006). Here the museums learn how to adapt their exhibitions or activities by indirectly observing the children. This causes the children to be less active and involved in the design process, and thus that the museums design for the children instead of with them.

Moving from a user-centered design approach towards a more participatory design approach can benefit the museums since participatory approaches do not necessarily take the outset in a previously specified design brief but instead identifies it through engagement with the children (Feder, 2022a). However, still taking into account that the exhibition will be predefined, incorporating the children's perspective can be designed more freely and decided equally with the children. Thus, the museums should not entirely rely on third-party informants, such as parents or teachers, but can instead directly address children, involving them as informants. In this role, the children can help the

museums to discover what the children notice in the museum and how they experience the museum. Based on this knowledge, the designer can plan what to design, alone or with the children's continued help.

It is essential that museum professionals make active efforts to understand children and their conceptual framework before engaging in design activities and that they understand that children need support in their creative expression (Borum et al., 2015). It is, therefore, also essential for the museum professional to consider which role the child will be asked to undertake in the design phase. The roles can change throughout the design process, but the designer should frame the work around the roles to get the best findings, insights, and learnings from the children. In order to involve children at a participatory level, the children should ideally be involved at the level of an informant or higher (Walsh et al., 2013). In the role of informant, the children can provide input and feedback at different stages of the design process, but they are not necessarily asked to equally guide the design process (ibid.). Using children as informants allows the designer to compromise between working with children as full partners. Thus, the museum professional can choose the stages in the design process for the involvement of the children and solely seek input at critical stages (ibid.). This is already done at some museums, e.g., the Workers Museum and Sorø Museum. However, as previously mentioned, they use children mainly as users and testers, occasionally using them as informants.

In the case of Sorø museums, their involvement with children in the design of Mig & Min By was the closest example of active involvement throughout a design process, thus coming close to involving the children as design partners. Due to the age of the children, it was a facilitated process where the children were strongly supported in providing their input. The children's input was directly transferred to the final product. However, relevant elements were added to ensure adult engagement and understanding in the exhibition, e.g., by adding a city square on the activity map, something the children did not find relevant but which most adults understand has historically been a gathering point in most cities. In this way, it becomes an example of children designing

their exhibition - the adults listen, adjust, implement, and add. However, they do not interpret, remove or change what the children have designed. This can also be seen in the fact that what the museum professional initially thought would be relevant in the exhibition is boring and irrelevant to the children.

Looking at the theory behind the participatory design approach and the theory behind children as equal co-designers - a value supported by museums actively working with children - it is found valuable for museums to challenge themselves to work with children more as informants. Involving children as informants also involves them as users and testers, being aware that the role of design partner can be of great value in a design process but acknowledging that this is, to a greater extent, more challenging. The argument can be taken that children should be more active participants in creating their own experiences instead of more passively receiving predefined and structured experiences. Through their active participation in co-designed processes, the children are given an opportunity for meaning-making in the final purposeful exhibition or activity, thus creating a more purposeful museum experience (Madsen, 2019).

From looking at user-centered and participatory design approaches, as well as the value hereof, two “How might we...?” questions are formulated to bring further in the project:

- How might we encourage museums to assign children different roles in design processes to move from a user-centered design approach to a participatory design approach?
- How might we help museums structure their design processes to better involve children in active roles throughout design processes?

## 5.2.4 CHALLENGES WHEN INVOLVING CHILDREN IN DESIGN

The third cluster relates to the challenges museums experience when involving children in design processes. By examining the learnings and insights from Discover, it was possible to gain a preliminary understanding of the challenges museums face when working with children or that prevent them from doing so.

### Identification of common challenges

During the interviews, the museums provided several responses when asked about the challenges they face when involving children or reasons why they do not involve children. As a result, five common challenges were identified (Figure 16 p. 53).

The first challenge is 1) Children find it difficult to express themselves. Here the museums experience that children do not possess the skill to elaborate, think or discuss unfamiliar ideas or topics they do not know, and it is, therefore, essential that the museums become aware of how to interpret within the context of what they involve the children in (Druin, 1999). It is apparent from the museums that they experience a lack of tools or frameworks to help children express themselves freely, without too much influence from the facilitator, as well as how children’s input may be usefully interpreted.

The second challenge, 2) It is challenging to get children to think innovatively, shows that museum professionals face a challenge when it comes to facilitating children's innovative thinking. In a museum, asking children what they want to see can be tricky since they often do not know what is possible or mention something they already know. Children have very backward ways of thinking and tend to refer to previous experiences (Zosh et al., 2017). To achieve new and more innovative inputs, museum professionals need methods that can help them provide inspirational inputs to the children when working creatively in a design context that the children also find enjoyable. Sorø Museum specifically mentioned a need for this during the interviews.



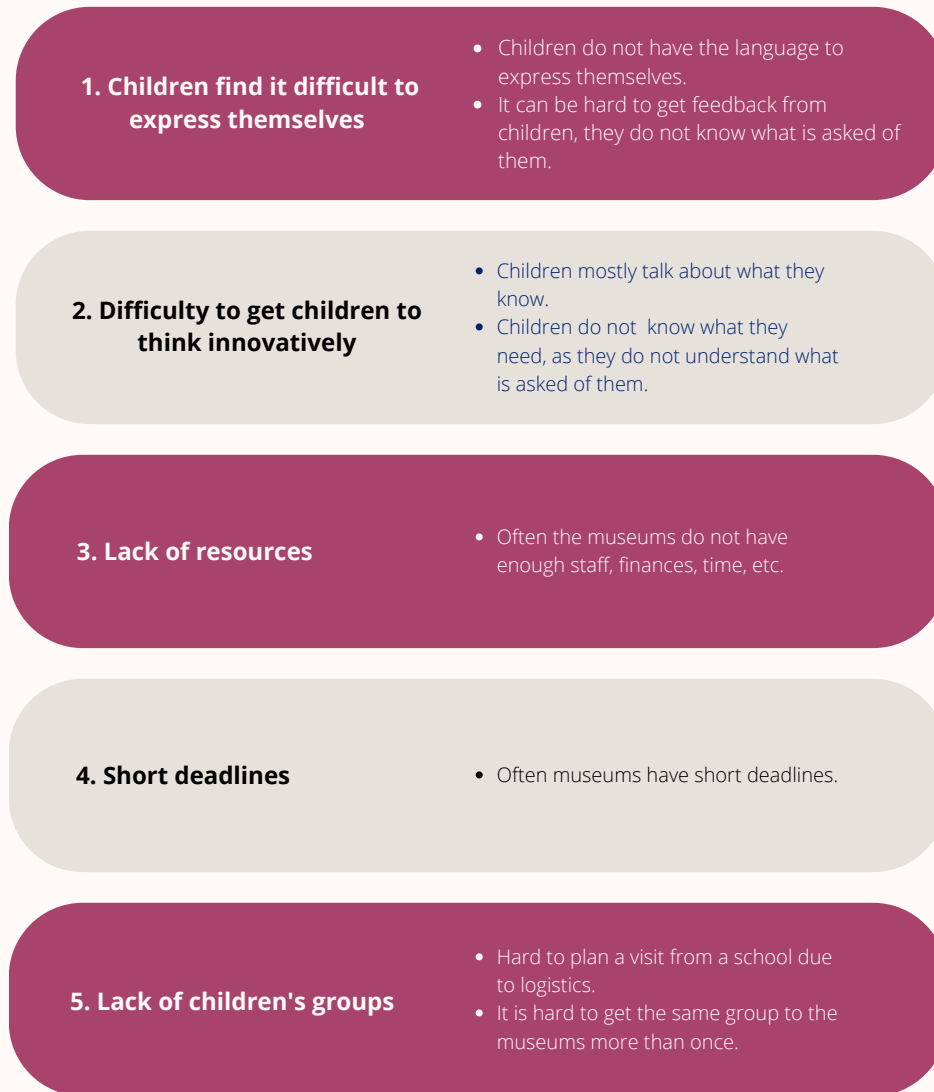


Figure 16: Museums challenges when involving children [Own creation]

The third challenge, 3) Lack of resources, connects to museums expressing their desire to engage in dialog with the target group they design for. However, this is not always possible to the desired extent due to a lack of time, finances, and staff. There are several similarities between this and the fourth challenge, 4) Short deadlines, where museums indicate that their processes are often fast and have short deadlines, making it difficult to schedule meetings with children and change things prior to the deadline since there are numerous steps involved with each group: preparation, execution, collection, and implementation. Other than being a general challenge identified during the interviews, challenge three and four were also explicitly addressed by the Glyptotek; when asked what tools they needed, Stefan Bang replied: "Something that can help argue to the management, why children's involvement in design processes are important. Resources are not always available for this." (Appendix 1.4.1).

The final challenge identified was 5) Lack of children's groups, which demonstrates how it is difficult for museums to find children's groups with the time and the opportunity to participate in their design process. Often, this requires a lot of logistics and practical work, and museums rarely have the chance to repeatedly work with the same group. This is a challenge also acknowledged by Druin (2001) when working with children in design processes.

By looking closer at the challenges, a "How might we...?" question was formulated to ensure further challenges are also considered when phrasing the research question:

- How might we encompass museum challenges that currently prevent museums from actively involving children in the design processes?

### 5.2.5 RESEARCH QUESTION

To better understand what museums need support with to involve children actively in design processes more often, the motivations, the design approaches museums use, and the challenges they face were narrowed down.

From the Motivational Matrix (chapter 5.2.2) two “How might we...?” questions were gathered, respectively:

- How might we support children in mediating their experience, needs, and knowledge to the museum professionals to better have their perspectives represented in museum exhibitions and experiences?
- How might we support museum professionals in giving children an active voice in designing new exhibitions and experiences to ensure the museum’s purpose is better mediated to the children?

From these questions, a need for dual support is identified to ensure that the museums become aware of how to give children a voice and how they can support the children in communicating their needs and wishes. The museums cannot simply ask the children for their opinion; instead, they need to consider the age and prerequisite of the child and adjust and prepare the tools, methods, and framing accordingly (Hansen, 2017), allowing the children to take the lead, but also supporting and guiding the children in best providing their inputs.

From the design approaches (chapter 5.2.3) the questions were gathered:

- How might we encourage museums to assign children different roles in design processes to move from a user-centered design approach to a participatory design approach?
- How might we help museums structure their design processes to better involve children in active roles throughout design processes?

The questions show that museums involve children in user-centered design approaches through more passive roles. However, the involvement of children in participatory approaches and through active roles is more limited. Therefore, museums might need more knowledge and support in working with children in active roles, thus gaining input and feedback from the children (Walsh et al., 2013), which can provide even more value to the design processes. They might also benefit from more structured ways to approach design processes - ways that encourage continuous involvement of children in several phases of the process, not just during one phase (ibid.).

Finally, the challenge clusters provided the question:

- How might we encompass museum challenges that currently prevent museums from actively involving children in the design processes?

From this, it can be understood that for museums to consider involving children more actively in design processes, they must also be met and supported in their challenges. If the challenges remain, the museums will continue to be prevented from the active involvement of the children during design processes.

For the museums to understand more precisely what exactly children can contribute in a design process and how they can best encourage and support the children in order for both the museum professional and the child to benefit from the process, some of the museums need to be challenged in their current perception of what children in different roles can contribute with. Through the “How might we...?” questions, the chapter provided options for a more encompassing research question that were brainstormed, from which the case study could move into its solution space. The research question that was formulated to guide this move was:

**How might we support museum professionals to involve children in active roles during co-designed processes to design more engaging children’s museum experiences?**

**Active roles:** More specifically, how to support the museums to move from using the children as users and testers to using them as informants and, as far as possible, as design partners.

**Co-designed processes:** More specifically, how to support the museums in moving from a more user-centered process, where the children are often only involved at the end, and more towards a participatory process or child-centered process, where the children are involved from the beginning of the process, and the activity or concept designed is based on the children, rather than assumptions.

**Engaging children's museum experiences:** More specifically, how to support museums in establishing more meaningful connections with the children through the exhibitions and activities at the museums to create more profound and more long-lasting experiences.

## 5.2.6 CONCLUSION TO DEFINE

By clarifying insights from Discover and synthesizing them in a way that could be brought forward in the project process, Define aimed to redefine the challenge space. The motivation matrix clarified the essential motivations to focus on to best support the main actors when they are to participate directly or indirectly in co-design processes with the children. These are important to empathize in the theoretical foundation and a final product later in the process. The investigation of design approaches provided insights into how museums can work more collaboratively with the children, as well as identifying some benefits they can gain from more participatory design approaches and involving children in more active roles than they currently are. Finally, the common challenges experienced by the museums when involving children were identified. These will be relevant in the solution space of the project, as these are essential to address in a final product to ensure viability.

Define successfully identified the problem spaces where museums need support and increased understanding of how and why children can be involved in design processes in active roles, which led to the presented research question.

## 5.3 DEVELOP

As the third phase of the case study, Develop, encourages a wider exploration of different answers and solutions to the defined problem (Design Council, 2019). The overall goal of the Develop Phase was to explore ways of how to support museums to involve children in active roles, when designing children's museum experiences.

The chapter will initiate by introducing the product solution chosen to answer the research question before continuing to introduce three interviews with experts on child-centered co-design. This was done to learn about their experiences, methods and advice. Hereafter, a design process suitable for museum design was created to provide museums with a design process that they can follow. Lastly, based on this proposed museum design process, two workshops were carried out at the Glyptotek to explore and test methods for co-designing museum experiences with children. The workshops will simultaneously test and explore methods for co-designing with children, while also presenting how children have been involved in designing a service proposal for the Glyptotek.

### 5.3.1 APPROACH TO CO-DESIGNED PROCESSES IN A MUSEUM CONTEXT

Museum professionals are not necessarily designers and thus might not have design capabilities. However, from theory, it can be seen that combining the capabilities of museum professionals, designers, and users supports the foundation for the optimal museum design experience (Madsen & Yates, 2021). The research question composed in the Define phase (chapter 5.2.5) will be answered by creating a simplified design guide for child-centered co-design, specially designed with museums in mind. A design guide was chosen because it is considered an accessible tool that can address both co-design argumentations and museums' challenges and needs.

#### 5.3.1.1 Interviews with three experts in child-centered co-design

Three interviews were conducted with experts in child-centered co-design to better understand how child-centered design (Figure 17) is being carried out in practice, as well as a way to gain inspiration and inputs that can be relevant for museums to apply to their design processes and recommendations for the design guide.



**Ditte Hansen**  
*Anthropologist*  
Mary Elizabeth's Hospital



**Sidsel Kirk**  
*Educational Development  
Consultant*  
Skoletjenesten



**Karen Feder**  
*PhD and Head of Design for Play*  
Design School Kolding

Figure 17: Interviewed experts in child-centered design [Own creation]



## Ditte Hansen, Anthropologist at Mary Elizabeth's Hospital

The first expert was Ditte Hansen (Figure 17, p. 57), who works with co-designing hospital experiences with children. As the hospital already works with involving children in design processes, the goal of the interview was to learn how they approach co-design with children, which methods they use and roles the children play, and their experiences with child-centered co-design (Appendix 4.2).

The hospital mainly involves children in passive roles as users and testers to observe the children's likes, needs, and behavior. She explained that they use different groups of children to avoid the children becoming too familiar with the designers and becoming too aware of the opportunities and limitations set forward by the designers.

As designers, they are careful to continuously iterate on everything they do to ensure that the children are heard and involved. They also take time between user involvement to ideate, create, and align expectations internally. Ditte explained how, if the feedback and input they seek is linguistic, then many variations in tasks are needed, down to a two-year age interval. In contrast, creative feedback and inputs can be streamlined more across ages. Additionally, they find it necessary to frame the activities for the children, making sure they understand the purpose but never communicating the expected results to them since this causes the children to want to please the adult.

Their approach to finding inspiration for methods is very unstructured. They mainly draw on ideas they get or previous experiences, which they know work well, simply adjusting methods to their current needs. They mainly use the methods as tools for reference and common ground between the designer and the child, as the main goal is often dialogue about what is important or exciting. This drives value and results for the designers, also stated by Feder (2022a), who argues that creative methods are needed for interacting with children so that they can express themselves and their perspectives in the dialogue.

Lastly, her reply on the most significant advantages and disadvantages of co-designing with children can be seen in Figure 18.



Figure 18: Quote from interview with Ditte Hansen [Own creation]

## Sidsel Kirk, Educational Development Consultant at Skoletjenesten

The second interview was with Sidsel Kirk (Figure 17, p. 57), a museum educational consultant. Her experience in educational mediation at museums and working with children provided an opportunity to gain a more comprehensive understanding of the network museums rely on when working with child-centered design processes. The interview guide can be found in Appendix 4.3.

Sidsel elaborated on the complex process of accommodating all stakeholders when designing museum experiences. She often experiences that it is easier to adjust small structures rather than re-creating, as this is often overly demanding regarding resources. She finds that often museum professionals do something which looks to be user involvement but is, in fact, not, and she guesses that many are afraid to give up control in a design process because they have an idea about where the process should go. However, she says that when involving others it is essential to be open to compromise and change the directions towards where the users want to go. This can be a challenging task for many, and she explains how she, through her work, tries to communicate the importance of still giving the children a democratic voice but communicating to the children where in the process, they have this voice and where they do not. A similar challenge is identified when working with children in active roles. Children are honest and sometimes harsh in their feedback, having no issue with saying that they are not fond of a product that has taken many years to develop (Druin, 2001). This can be experienced as hurtful for adults, which at times can be assumed to be a reason to involve children less, but which speaks to the advantage of bringing in children early in the design process, even if this can derail the planned design process with surprising results (ibid.).

She often finds that those designing the regular museum exhibitions are employed in different departments than those who design for the children. This continues to be the case, despite many good examples of how co-creation results in the best designs. Thus, one important goal for Skoletjenesten is to create material that encourages joint reflection between departments.

The topic of children's responsibility in the design process also came up during

the interview, and here Sidsel clarifies (Figure 19), just as Ditte Hansen did, that it is not the responsibility of the children to know about museums. It is their sole responsibility to know about being children. It is the role of the museum professionals and the external experts to know how to create museums, gather collections and exhibit these properly. Thus, it becomes important for museum professionals to stand by their professionalism and create an efficient framework for children's involvement, not simply ask for their immediate opinion.

There are certain structures in the museum industry, in external learning environments and in schools that challenges user involvement, and causes experts to say that user involvement cannot be afforded, but at the same time they cannot afford *not* to involve children

**What are the biggest disadvantages when it comes to user involvement with children?**



**Sidsel Kirk**  
*Educational Development  
Consultant  
Skoletjenesten*

Figure 19: Quote from interview with Sidsel Kirk [Own creation]

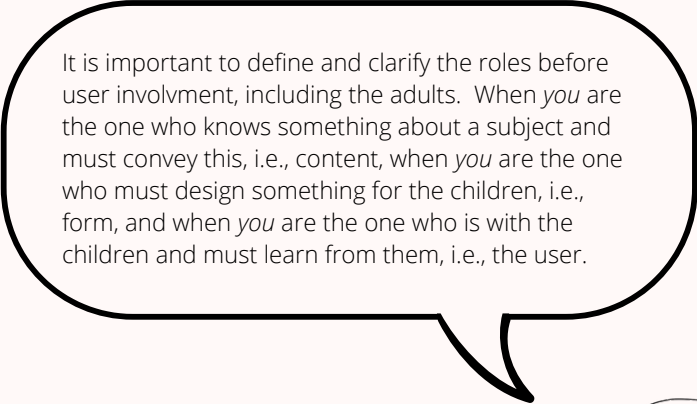
## Karen Feder, PhD and Head of Design for Play at Design School Kolding

The last and final interview was with Karen Feder (Figure 17, p. 57), an expert on child-centered design for play. From the interview with Karen, the goal was to get input on findings, learnings, and ideas, relating these to her expertise, hoping to spark further clarity and possibly new inspiration. The interview guide can be found in Appendix 4.4.

Similar to what Sidsel Kirk and Ditte Hansen told us, Karen begins by clarifying that experts need to remain experts in their fields. However, she adds that this can cause limitations to a design process because it can be difficult for experts, who are very emerging in their field, to place themselves in the shoes of the user that is being mediated to - a pitfall that many experts make. Often children are involved as testers at the end of a design process. However, since it is the end of the process, any mistakes or dislikes discovered can be challenging to correct since all the preparations have already been done. For this reason, she emphasizes that simply getting out and being among the children to learn about them and find out what drives their interest is important. Something that was also articulated by the Workers Museum (Chapter 5.1.1).

Additionally, designers can never place the responsibility on the children, and it never becomes the child's responsibility to design something valuable for other, non-involved children. She says that for this reason, it is also important to understand that the child's preferences cannot simply be asked for but that an effort can be made to understand who they are, what drives them, and how they experience things. Hence, in a co-design process, the designer consistently has responsibility for the translation. To ensure this, she recommends that designers are present at the moment when they are spending time with the children, thus not interviewing, taking notes, or taking pictures of the children in the process, but rather chatting with them, asking them curious questions, and taking pictures with the children. All insights, learnings, and observations for future use can instead be 'downloaded' right after the process. She clarifies that it is usually the surprises that provide the most value. Therefore it also does not make sense to plan a co-design session in detail, as designers must be ready to adjust to the moment. She further suggests that professionals and children

participate in the same co-design processes, possibly facilitated by a third person, as this encourages joint learning, reflection, and ideation between the children and professionals. She tells about how the Scandinavian participatory design approach is for the adults to acknowledge that we need to work the same way as the children and that we cannot expect the opposite, as seen in Figure 20.



It is important to define and clarify the roles before user involvement, including the adults. When *you* are the one who knows something about a subject and must convey this, i.e., content, when *you* are the one who must design something for the children, i.e., form, and when *you* are the one who is with the children and must learn from them, i.e., the user.

**When is it important for the children to decide, and when is it the role of the expert to decide?**



**Karen Feder**  
*PhD and Head of Design for Play*  
Design School Kolding

Figure 20: Quote from interview with Karen Feder [Own creation]

The three interviews with the experts provided much learning about child-centered design in practice and an in-depth understanding of the roles and needs of the professionals. The insights are brought further into the phase of Develop to assist in identifying an approach to support museums in their design processes and involvement of children.

### 5.3.1.2 A design process for child-centered co-design in museums

As part of creating a design guide that can support the museums in their co-designing processes with children, it was decided to propose a more structured approach to co-design in museums. This was done to provide museums with a process more tailored to their needs, procedures, and challenges.

Exploring their current design processes (Chapter 5.1.2) provided an understanding of how museums currently work, i.e., that overall they follow a general, but not defined, design process consisting of the Initiation, Intermediate, and Commencing phases. Furthermore, in Chapter 5.2.3, the discussion of what museums could gain from shifting from user-centered to participatory approaches inspired an ambition to tailor a design process towards a more participatory approach while still giving the museums the freedom to customize the process according to their needs.

In this way, the museums can involve children in the design process or be isolated from it. The museum co-design process was designed using picture collages, brainstorming, and drawing on previous experience and learnings from the project (Figure 21).

A *design process* is a method used to break down a project into manageable parts while supporting creativity, productivity, and accuracy (Drysdale, n.d.). The tool is meant to guide better and more structured processes but should always be conformed to the project rather than the project conforming to it (Drysdale, n.d.). Therefore, every designer or museum professional should modify the process to suit their skills, needs, and purpose.

The design process created as a recommendation for the museums is visualized in figure 22 (p. 62) and will be referred to as the child-centered museum co-design process.

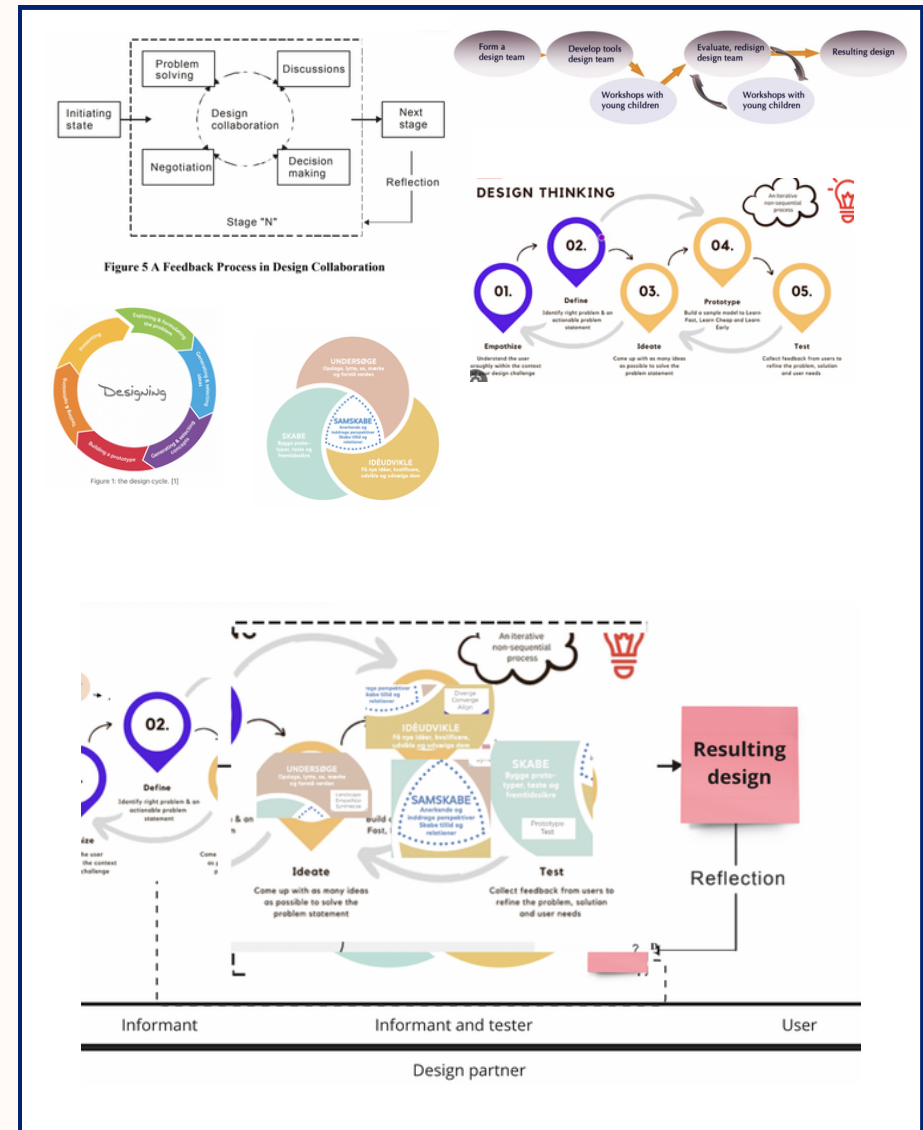


Figure 21: Picture collage of design processes [Own creation]

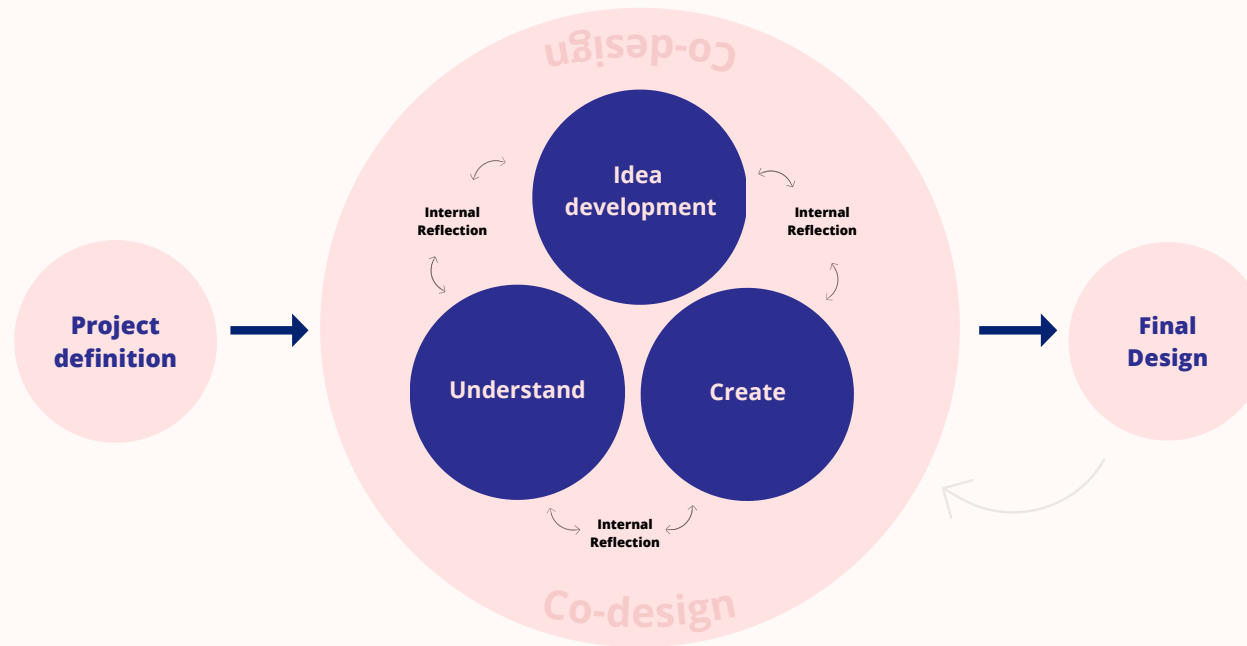


Figure 22: A child-centered museum co-design process [Own creation]

While a design process is never linear, it typically begins in the same place; by defining a problem (Drysdale, n.d.). However, this is not always the case for museums when they are co-designing with children. Three possible starting points were identified:

- The museum's management has already chosen a theme for the exhibition, but the exhibition has not yet been created. Therefore, the museum needs to find out how the children will be represented in the future exhibition.
- There is an existing exhibition, but the children are not represented. Therefore the museum has to develop a way to incorporate the children into the exhibition.
- Something new must be created for the children, e.g., an activity or an exhibition exclusively for the children, but all possibilities are open.

These three possible starting points were joined as the initiating phase in the museum co-design process, named *Project Definition*. During this phase, museums define their starting points based on the museum's assignment. This phase was kept out of the Co-design space, since it is usually an internal process that mainly requires the museum to initiate a new project. The project can, of course, result from a discovery made during co-design processes with children. Nevertheless, it is considered the beginning of a new project to be approved by the management.

In a design process, the next step is typically to empathize, discover, explore, or understand. This relates to the users, the assignment, the museum, the exhibition, or any other elements related to the project. Hence, the Project Definition phase moves into the Co-design space, starting with the phase *Understand*. In this phase, the museum can work with the children to understand their needs, experiences, opportunities, etc.



Once an understanding has been achieved, defining, ideating, choosing, and lo-fi developing. Thus, the Understand phase moves into *Idea Development*, where the museum works with children to generate ideas, explore and choose between ideas, possibly disassemble and merge several ideas, and finally explore different means for development.

Next, a design process typically moves into the building, prototyping, testing, evaluating, and decision-making phases. For this reason, Idea Development moves into the phase of Create. During *Create*, the museums work with the children to explore the best methods for implementation. This should be done through means of prototyping, testing, and evaluating.

A design process is never linear, and rather than following the steps systematically, several jumps back and forth are made (Drysdale, n.d.). It is also advised by Ditte Hansen and Karen Feder never to take notes or process insights while working with the children since this can hinder the process (Appendix 4.2; Appendix 4.4). Therefore, the museum co-design process suggests sub-phases for *Internal Reflection* between or within each main phase where internal reflections and processing is carried out.

The three phases of Understand, Idea Development, and Create and the sub-phases of Internal reflection all take place in the Co-design space. The *Co-design space* focuses on acknowledging and including different perspectives, experiences, and ideas. This should be done together with children in the three main phases and internally with other museum professionals and external experts in the sub-phases for internal reflection.

Once the museum professional considers the project finished or reaches a deadline, the process continues out of the co-design space, and a *Final Design* can be presented. Through the involvement of the children, certainty for a successful museum experience can now be made. However, a common misconception is that following the phases of a design process causes termination at the end (Drysdale, n.d.). This is, however, not the case. Therefore the Final Design should always be open for moving back into the Co-design space, to continuously improve, evaluate or discover new opportunity spaces.

### 5.3.1.3 Preparation and design of two workshops

Two workshops were held to explore how museums can be supported in involving children more actively in the design of children's museum experiences. From the service safari, a hypothesis was formed that the children's experiences could be incorporated more into the existing museum exhibitions than they currently are. The interviews with museum professionals (Chapter 5.1.1) revealed a lack of efficient methods and tools when involving children in the ideation and decision-making phases. Thus, the workshops were designed to test methods and tools considered relevant for designing museum experiences for children. Based on this, two overall objectives for the workshops were made:

1. Gain insights into how the chosen methods would work in a museum context.
2. Gain insights into if the chosen methods support children in active roles.

Due to the project's time frame, it was decided that the two workshops should cover two of the three phases of the child-centered museum co-design process, introduced in Chapter 5.3.1.2, respectively, the phases of Understand and Idea Development. These were the two phases museums expressed as the most challenging and time-consuming to involve children in, which relates to the museum's third challenge: *Short deadlines*. Each workshop was thus assigned approximately two and a half hours to reflect the museum's resources and realistic time constraints and also to explore the general challenge identified when working with children in active roles, i.e., that it is time-consuming and problematic to structure, process, and analyze insight from such sessions (Druin, 2001). As they also expressed in the interviews that it was difficult to get the children into the museum more than once, which related to their fourth challenge: *Lack of children's groups*, and it was therefore decided that the first workshop would take place at the museum, and the second workshop would take place in the children's everyday environment, the classroom. The first workshop addressed the museum's first challenge; *Children find it difficult to express themselves*. Thus the chosen methods are reflective of this. For the

second workshop, their second challenge: *Difficulty getting children to think innovatively*, was addressed. Thus, the chosen methods would be tested regarding children's ability to be innovative when generating ideas for new children's experiences. Between the two workshops, each resembling its own phase in the design process, preparations would be done where the commencing workshop would be reflected upon, and the current workshop would be planned, thus simulating the phases of Internal Reflection. Knowing that the child-centered approach takes its starting points in the child and thus follows an unknown process (Feder, 2022a), only methods for the first workshop were planned, and the second workshop was then planned based on the input gained in workshop 1. This was to stay open and capable of adjusting the methods to the children (ibid.).

The workshops were conducted in the context of the Glyptotek as a case organization. However, as mentioned, the primary purpose was to explore methods and tools for co-design with children; thus, the Glyptotek was used to simulate a real-life scenario. This case scenario was created with the museum starting point: "The museum's management has already chosen a theme for the exhibition, but the exhibition has not yet been created. Therefore, the museum needs to find out how the children will be represented in the future exhibition", as identified in Chapter 5.3.1.2 and were thus set around how children's experiences at the Glyptotek could, to a greater extent, be incorporated into the regular museum experiences. The workshops will simultaneously present how children have been involved in the design of a service proposal for the Glyptotek, a natural by-product of the workshops.

### Workshop participants

Participants were found through a personal network. A teacher at Hvalsø Primary School provided contact to Anne, a teacher in the fourth grade class. It is argued that children aged 7-10 years are the most effective age group for children acting as co-designers due to their more developed communication and reflection skills and their understanding of more abstract ideas while not yet being constrained by preconceived notions of how things 'should be' (Druin, 1999). Having 18 students between 9 and 10 years old made the class a good user group that also connected with the museum's target audience. Before the

workshops, a consent form was sent out to the parents, as this is a required ethical consideration when working with children (D4CR, 2022).

The consent form (Figure 23) informed about the context of the workshops and asked them to inform in advance if they did not want their children to be in any photos taken during the workshop.

Kære forældre,

Vi skriver denne mail, i forbindelse med klassens udflugt til Glyptoteket d. 20 april og et skolebesøg ugen efter.

Vi er to kandidat studerende i Service Design, som er i gang med vores speciale som handler om hvordan museer kan designe services og oplevelser MED børn og ikke FOR børn.

I den forbindelse har vi været så heldige, at kunne tage 4.A med på glyptoteket, hvor vi vil lave 2-3 øvelser med dem, for at få en forståelse af, hvordan de bevæger sig rundt på museet, og hvad børnene bider mest mærke i ved deres besøg. Ugen efter kommer vi på et besøg i klassen, hvor vi vil forsøge at udvikle ideer sammen med dem.

Vi vil selvfølgelig respektere elevernes privatliv, ved at anonymisere vores observationer og elevernes input fra dagen, og det vil ikke blive brugt andre steder end i vores speciale. Vi vil på dagen gerne tage nogle billeder, for at dokumentere aktiviteterne på dagen. Disse vil udelukkende blive brugt i vores opgave, som vil kunne findes i Aalborg Universitets projektbibliotek. Vi sørger naturligvis for, at ingen børn er i direkte fokus på nogle af billederne, og såfremt I ønsker at jeres børn ikke optræder på billederne, sørger vi for dette. Så beder vi blot om besked omkring dette på forhånd.

Hvis I har spørgsmål eller indsigelser vedrørende vores dag på Glyptoteket, kan I kontakte Saskia (oplysninger nedenfor), ellers opfattes denne mail som samtykke.

Vi takker jer for jeres tid og muligheden for at indsamle vigtig data i forbindelse med vores projekt.

Venlig hilsen,  
Anne-Sophie og Saskia

Figure 23: Consent form sent to the parents [Own creation]

## Workshop methods

Relevant literature, design approaches, and other toolkits were reviewed to identify which methods should be tested during the workshops. All methods collected were divided into the three phases in the museum co-design process.

During the writing of this project, different design approaches were met several times. These are popular when working with children, and therefore they were found relevant to explore more in-depth as a foundation for methods to co-design with children in a museum context. Design approaches are multi-method approaches that focus on user involvement.

One of the most encountered approaches was the Cooperative Inquiry, developed by Allison Druin (1999). As a subset of Participatory Design, *Cooperative Inquiry*, unlike other methodologies and approaches, is specifically designed to co-design children's technologies with children but has since been used in design practices outside the world of technologies. It encourages the ongoing involvement of children in the design process to receive children's direct input and thoughts, and it involves adults and children working together to iterate and elaborate technology designs as design partners (Druin, 1999). Furthermore, it is recommended that the co-design process should be educational and fun, incorporating specially modified activities that encourage children and allow them to feel ownership right at the beginning (Druin, 1999). Three of the most commonly used methods in this approach involve *bags-of-stuff*; involving the use of craft materials for low-tech prototyping, *sticky notes*; allowing team members to critique both existing technology and prototypes for future refinement by analyzing frequency, and *mixing ideas*; disassembling individual ideas to be mixed with other ideas to create one big idea (Guha et al., 2013).

Another approach that was found relevant to look at was the Mosaic Approach (Clark, 2005). The *Mosaic Approach* seeks to promote a meaningful exchange of views between children and adult designers. By combining children's photos, tours, and maps with talking and observing, this multi-method approach can

help designers gain a deeper understanding of children's perspectives about early childhood settings (Clark, 2005). An example of a method is the photovoice method, which was introduced in Chapter 5.1.2.

Additionally, methods from the Contextual Mapping approach (Gielen, 2013) were encountered. *Contextual mapping* is an approach initially made for adult participants, aiming to create context awareness by gathering emotional responses from participants, such as concerns, memories, feelings, and experiences related to these contexts (Sleeswijk Visser et al., 2005, as cited in Gielen, 2013). However, in recent years some methods have been adjusted for children. Contextual mapping recognizes the user as the expert in their own experiences (Gielen, 2013). A method found within this approach was *Mission from Mars*, where children are involved in the first phases of identifying everyday contexts of product use. It is suited to help designers explore children's world and how they see it and can provide inspiration even before deciding which product to develop. This gives the adult designer valuable insight into what the children value and their use of products.

Finally, Karen Feder's (2020) child-centered approach recommends methods supporting designers in working with children. One of these methods is *Internship as a Child*, a teaching approach for design students and design practitioners as an intuitive and quick way to understand children and their everyday lives better (Feder, 2022b).

The methods highlighted from the four design approaches are only a selection of the methods identified in the literature and the method toolkits explored. Some of the identified methods were brought into the workshops to be tested in a museum context, while others were brought directly into the final design guide, as they are already documented for child-centered co-design to such an extent that they were deemed applicable in a museum context. The method matrix in Figure 24 (p. 66) presents an overview of identified, relevant methods in a child-centered museum co-design context, allowing for a quick understanding of their purpose, activities, and what roles the children have in this method. As previously mentioned, adapting a method to fit specific project contexts can still

be relevant. The method matrix illustrates how the methods are divided into the three design process phases: Understanding, Idea Development, and Create, as well as the objectives and activities of each method.

		Metode											
		Empathize	Observe children	Encourage new ideas	Understand trends & interests	Subject for common ground	Evaluate	Narrative	Lo-fi prototype	Photographs	Dialogue	Experiencing	Drawing
		Objective						Activities					
Understand	Internship as a child												
	Open your senses												
	Photovoice												
	Similarities and differences												
	Mission from Mars												
Idea Development	Combine & fantasize												
	Empathic Design Challenge												
	Mixing Ideas												
	Sticky notes												
Create	Bags-of-stuff												
	Storyboarding												

Figure 24: Method Matrix [Own creation]

### 5.3.2 WORKSHOP 1 - UNDERSTANDING THE GLYPTOTEK

#### Preparation of workshop 1

The first workshop was, as mentioned, arranged to illustrate the first phase of the child-centered museum co-design process, Understand. In this phase, the children would be introduced to the Glyptotek and provided with an understanding of the contents and purpose of the museum. It aimed to test exploration methods with the children by having them discover, sense, and understand the museum while also allowing us to understand the children's experience and behavior during the visit. This is because children who acquire knowledge through free investigation and spontaneous effort are more likely to retain their knowledge later on since they are natural researchers who can predict outcomes, experiment, and reflect upon discoveries (Hewett, 2001; Zosh et al., 2017). As mentioned, the workshop focused on the cultural and historical part of the museum, more precisely, rooms 44, 8, and 6, as well as the Winter Garden and the Central Hall.

Some learning objectives were identified when preparing for the workshop to frame and focus on the desired goals. The objectives were:

1. Gain insights into how children experience the Glyptotek and what captures their attention the most.
2. Identify two - three problem areas that can be brought into workshop 2.

The two and a half hours set aside for the workshop allowed briefings, a guided tour, a lunch break, and a brainstorming activity to round off the day.

Before the workshop execution, a feedback session was arranged with Maria Vitaller del Olmo, Play Designer, and Ph.D. Fellow at Aalborg University to review the workshop details and get feedback on the workshop agenda.

All methods from Workshop 1 are accounted for in the summary of methods later in the section.

#### Execution and reflection of Workshop 1

The workshop took place on Thursday, 20th of April, from 10:00 to 12:45 at the Glyptotek. The participants were 14 students and two teachers. The workshop began by giving the students a welcome briefing.

The briefing focused on the project, and the goal of the workshop to provide the students with an understanding of why they were there and their role in the project. It was emphasized that we were not affiliated with the museum and that it could, therefore, not be guaranteed that we were capable of answering all their questions, but that we would do our best and that we would all be learning new things together. Finally, they were informed about the rules at the museum and how to move around to be respectful of other visitors, but most importantly, without the risk of damaging the museum artifacts.

The schedule ran smoothly, but the workshop was cut short to accommodate the children's wishes to see an exhibition about mummies. The day ended with a debriefing for the children, thanking them for being so kind and helpful during the day and giving them a recap of what had been gathered from their inputs and what would be done with those inputs before meeting with them for workshop 2. The workshop was rounded off by asking if they had fun during the workshop and if they liked the museum. To this, all the children agreed that they liked the museum a lot and hoped they could return with their parents later.



Empathic Design Challenge [Own photo]



The schedule was kept surprisingly well, and in theory, the original agenda for the day could have been kept. However, other elements had not been considered to enough extent. The museum was, as is also known from the interview with Stefan Bang (Appendix 1.4.1), an overwhelming experience for the children, and they were distracted and wanted to spend more time in the exhibitions they found to be the most interesting. The children also lacked energy after some time, and they wanted to explore independently.

When looking back on the goals set for the workshop, it was found that the choice of methods to generally be of success when wanting to learn about what interests the children and what catches their attention. The methods both allowed for observation of the children, i.e., in passive roles, while encouraging the children to provide inputs, feedback, and questions, i.e., in active roles, which also provided important learnings to build upon. The general learning from this workshop was that children enjoy being provided with information through listening experiences - which proves excellent value for the listening stations at the Glyptotek. They were eager to learn more about things they already knew. This relates to how children learn new content and facts from different situations and need to develop a deeper conceptual understanding that connects their current abilities and knowledge (Zosh et al., 2017). They were also eager to learn more about things they did not fully understand or things that stood out from the general exhibition. Likewise, they are attracted to interactive elements in their learning experiences.

### Summary of methods from Workshop 1

Each chosen method laid the foundation for an activity that would be carried out together with the children. The methods worked with during Workshop 1 are summed up in Figure 25, and below, it is elaborated on how activities are formed based on the methods.

Method	Goal	Time and Location
<b>Guided Tour</b> (CoC Playful Minds, 2020).	Observe places of interest through curious questions to sense and feel what the children are experiencing.	45 minutes, including other methods, in Room 44, 8 and 10.
<b>Open Your senses</b> (TU Delft, 2021).	Explore the environment using their senses; hearing, smelling, seeing.	15 minutes in room 44, a decorative room exhibiting myths and ideals.
<b>Empathic Design Challenge</b> (TU Delft, 2021).	Create a design goal or solution to a user's challenge through empathy.	15 minutes in room 8, a room exhibiting Greek Gods and heroes Sculptures in Roman versions.
<b>Inverse Brainstorm</b> (TU Delft, 2021).	Invert current situations to come up with unusual ideas.	15 minutes in the Winter Garden.

Figure 25: Table of methods from workshop 1 [Own creation]

## Guided Tour

**Preparation:** The guided tour was designed to include three activities, respectively Open Your Senses, Empathic Design Challenge, and an Inverse Brainstorm.

During the guided tour, the students were encouraged to look around and talk about the exhibitions while we asked questions and told them some stories about the artifacts in the room. Maria pointed out the challenge of gathering the children after an activity before moving on to the next activity. Thus she advised that the observation activity was kept as a backup activity which could be done if time allowed (Vitaller del Olmo, personal communication, April 18, 2023).

**Execution:** It was learned that the children were interested in having their own experience at the museum and that they wanted to be part of the regular museum exhibition, which is known to also be possible for children in this age group due to their capability of understanding complex content (Jones, 2022). Through the tour, it became visible that things that stand out in exhibitions catch the children's attention, such as the colored artifact replicas in room 10.



The children in the Winter Garden [Own photo]

## Open Your senses

**Preparation:** The children would be guided through a session where they had to use their senses to explore the room and note what they had experienced, as the method usually describes. It was added to the method that they would hereafter be encouraged to take some moments to explore the room and note down the thing in the room they found to be the most interesting, something they would like to know more about or something they did not understand.

**Execution:** The original idea was to ask the students to note down their answers individually to save time and avoid the children being influenced by their peers. Eventually, their experiences were discussed out loud since pens were not allowed in the museum. As a result, it was discovered that the children influenced each other's answers. Thus, it is believed to be of great importance to provide the children with methods that allow them to note down individual answers before presenting and talking about them together.



Open Your Senses activity [Own photo]

The activity provided a good understanding of what caught the children's interest, and the children also expressed eagerness during the activity. The methods showed that the children find interest in things they already know the story about or notice things they do not understand. The outcomes from the activity are summed up in Figure 26.

### HEARING:

PEOPLE WALKING, TALKING, WHISPERING.  
ECHOES, ECHO. MUSIC, WIND AND WATER.

### SMELLING:

DUSTY STONES, PERFUME, DATES, PLANTS FROM THE  
WINTER GARDEN, PEE, OLD.

### SEEING:

CEILING PAINTINGS, FIGURES AND DECORATIONS,  
STATUES OF THE GRIM REAPER, JESUS, AND ADAM &  
EVE, THE COLOURS IN THE ROOM, QUOTES ON THE  
WALLS.

### MOST NOTICEABLE:

POSITIVE: RECOGNISABLE ARTIFACTS (SIRENS, KNIVES,  
MAN WITH CHILDREN ON HIS LAP).

NEGATIVE: STRANGE WITH ANIMAL STATUES, WHITE AND  
GREY, AND BRONZE STATUES, SOME BROKEN, DO NOT  
UNDERSTAND WHAT THE STATUE IS DOING.

Figure 26: Outcomes from Open Your Senses activity [Own creation]



## Empathic Design Challenge

**Preparation:** A story was written about a young boy visiting the Glyptotek with his mom and younger sister (Figure 27). Upon hearing the story, students would be asked to look around the room and suggest ways it could be improved to meet the needs of the young boy in the story. During the feedback session, Maria indicated concern that the children could perhaps not empathize with the little boy in the story since this can be challenging for children (Vitaller del Olmo, personal communication, April 18, 2023). However, since the main focus is getting familiar with the methods, it was chosen to keep the method without changes.

Little Eric is visiting the museum with his mum and younger sister. He has been told that in this room there are some Greek gods that he knows from his favourite film Hercules. He is therefore excited to see the room and the exciting gods. The gods that Erik would like to see include Hermes, Zeus and Hercules, who you may also know. They are known for:

**Zeus** is the greatest and most powerful of the Greek gods. Zeus is the king of the gods in Greek mythology and the god of heaven and thunder.

**Hermes** is known to be a Greek God and the messenger of the gods and the guide of souls. He is often seen wearing winged shoes.

**Hercules**, as you probably know, is half god and half man. He is the son of Zeus and the god of strength and heroes.

Erik really wants to find these statues and learn more about them, but he finds it hard to find them in space and he finds it hard to learn more about them. So how do you think the Glyptotek can make it easier for little Erik to learn more about his favourite gods?

Figure 27: Story of little Eric [Own creation]

**Execution:** The children could empathize with the little boy mentioned in the story. They were even capable of empathizing further, thinking of both younger children and older visitors and visitors who might experience challenges, e.g., dyslexia. This was very interesting and something found to be of great value since this means children can translate their own needs into the needs of others and show great empathy.

The method provided many concrete ideas from the children and thus was an effective method for a quick and efficient ideation session when the museum is possibly short on time or resources. The outcomes from the activity are summed up in Figure 28.



Empathic Design Challenge activity [Own photo]

- 1 HEADPHONES NEXT TO ALL STATUES – GOOD FOR VERY YOUNG CHILDREN AND PEOPLE WITH READING DISABILITIES.
- 2 PAPER FOR DRAWING NEXT TO STATUES SO YOUNGER CHILDREN CAN COLOR WHILE ADULTS LOOK AROUND THE ROOM, E.G. HERCULES IN BLUE UNDERPANTS.
- 3 ONE LONG LANDSCAPE POSTER BEHIND THE STATUES, TELLING THE STORIES OF THE CHARACTERS AND STATUES.
- 4 FOOTPRINTS BETWEEN FAMOUS STATUE CHARACTERS, SO THAT CHILDREN CAN BE GUIDED TO THE MOST EXCITING PLACES.
- 5 COUNTDOWN CLOCK AT SELECTED STATUES, WHICH COUNTS DOWN FROM 30 SECONDS. THE CHILD CAN THEN, E.G., GUESS WHO THE STATUE IS, MAKING IT A GAME.
- 6 MORE STORIES TOLD AT SOME OF THE STATUES, SO THE CHILDREN CAN GET THE MYTHS OR THE STATUE'S STORIES TOLD – USE CHILDREN'S "LANGUAGE".

- 7 A PEDIGREE CHART ON THE WALL – WHO ARE GODS, WHO ARE HUMANS, AND DO THEY HAVE A RELATIONSHIP? (ADULT SUGGESTION).
- 8 MORE COLOURS AND DECORATIONS LIKE IN ROOM 44.
- 9 THE STATUES SHOULD HAVE ALL THEIR BODY PARTS OR INFORMATION ON WHY THEY DO NOT HAVE THEM. (CAN BE TOLD ON PAPER FOR THE CHILDREN)
- 10 A LETTER HUNT, WHERE SMALL ACTIVITIES ARE GIVEN IN EACH ROOM, THE CHILD SOLVES THE ACTIVITY AND IS PROVIDED A LETTER, WHICH EVENTUALLY FORMS A WORD OR SENTENCE. THIS CAN BE PROVIDED AT THE INFORMATION COUNTER, WHERE THE CHILD RECEIVES A PRIZE. MAYBE A LOLLIPOP OR A DIPLOMA. (AN EXAMPLE OF AN ACTIVITY COULD BE COUNTING HOW MANY STATUES HAVE LOST THEIR NOSES, THE NUMBER SHOWS A LETTER IN THE BOOKLET, AND WHEN YOU HAVE SOLVED SEVERAL TASKS, YOU HAVE A WORD YOU CAN GIVE IN THE INFORMATION CENTER TO COLLECT THE PRIZE).

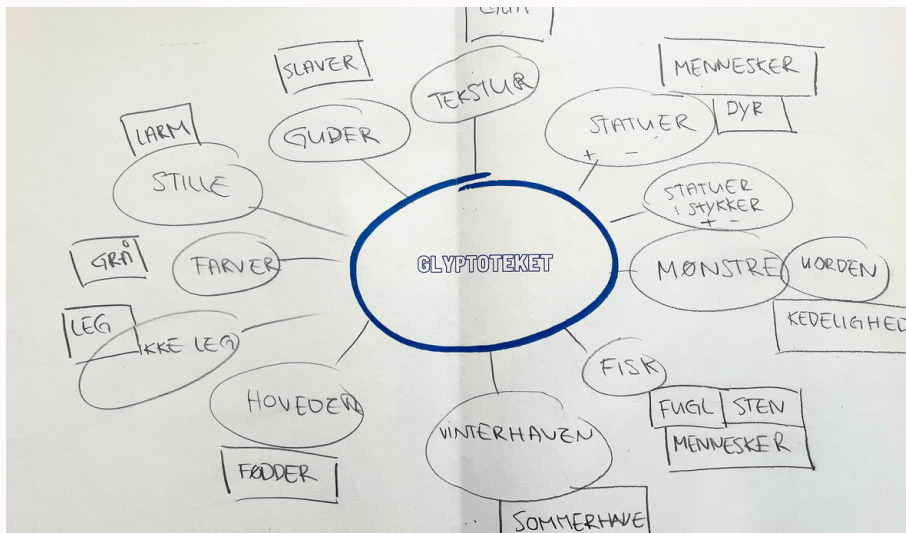
Figure 28: Outcomes from Empathic Design Challenge [Own creation]



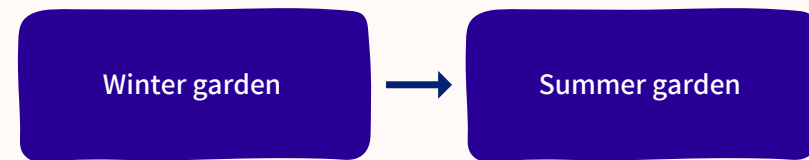
## Inverse Brainstorm

**Preparation:** In an inverse brainstorm, participants come up with a list of words, which they then have to inverse, and based on this, they come up with new ideas. It was decided to have the children point out their favorite things from the museum visit, come up with the opposite of that thing, and then make an idea about how this could be implemented into the museum.

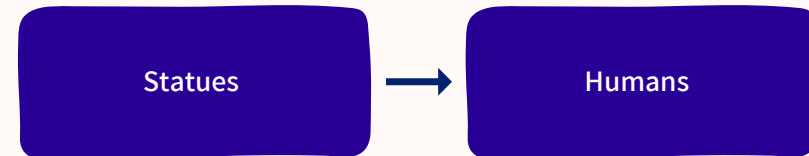
**Execution:** The children were divided into two groups to brainstorm in smaller groups, where all children could provide their input. When all the children finished sharing their favorite things from the museum (noted in the circled words in the picture below), they were asked to come up with the opposite of what they had shared before (noted in the squared words in the picture below) coming up with ideas about how to incorporate these into the museum. The method was eventually too abstract and complex for the children to grasp and benefit from. In retrospect, it is believed the activity should have been framed differently, choosing the artifacts or elements that should have been inverted prior to the activity. Instead, it was decided to attempt a different approach to the method in Workshop 2. Examples of outcomes are shown in Figure 29.



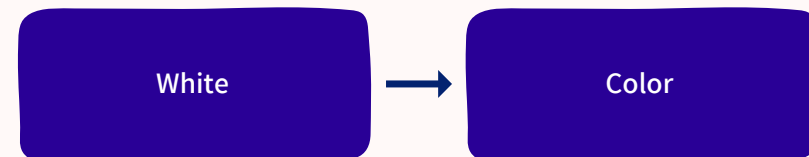
Inverse brainstorm activity [Own photo]



Idea: birds, butterflies and other small animals in the garden.



**Idea.** The statues could be real humans that can move and be dressed as people would be dressed back then. **More realistically**, this idea turned into plateaus next to the statues where visitors could go up to mimic the statues and then you could have your photo taken together with the statue.



**Idea:** You could colour all the statues in the original colour, they had in roman times or draw on the statues. **More realistically**, make a copy of the statue or a miniture statue, that children can draw on.

Figure 29: Outcomes from inverse brainstorm [Own creation]

### 5.3.3 WORKSHOP 2 - IDEA DEVELOPMENT AT HVALSØ SCHOOL

#### Preparation of workshop 2

The second workshop was arranged to take place in the phase of Idea Development, where the children would be encouraged to develop different ideas that could have improved their experience at Glyptoteket. The workshop also had elements of lo-fi prototyping to make the ideas more tangible and thus easier to discuss with the children's groups. The workshop was arranged to build upon the inputs and ideas the children had developed in Workshop 1. The following objectives were set for the second workshop to ensure its success:

1. Gain insights into how the chosen methods support children's ideation and further development of design ideas.
2. Develop three realistic ideas that can be implemented at the Glyptotek and presented to them.

Workshop 2 allowed for an ideation activity and a lo-fi prototyping session before presenting group ideas to the class and voting to find a winning idea. All methods from Workshop 2 are accounted for in the summary of methods later in the section.

#### Execution and reflection of Workshop 2

The workshop took place on Thursday, 27th of April, from 9:00 to 11:20 at Hvalsø Primary School. The workshop was held with 12 students who had participated in Workshop 1 the week prior and one teacher. The 12 students were divided into three random groups and assigned to different workspaces in the classroom. They were given a brief overview of the planned activities in the morning and explained that the day was about creativity and the development of new ideas for how the Glyptotek can make its experience more enjoyable and exciting for the children.

The workshop was rounded off by asking if they had fun during the two workshops, if they had found it funny to be part of a design process, and how it felt knowing they might have participated in designing something that could

one day be experienced in real life, and if they would be interested in doing it again another time. To this, all the children said yes and showed great excitement about the whole process, saying they would definitely do it again another time.

Because the children had to work more creatively in workshop 2, time management was more of a challenge during this workshop. Since the workshop took place at their school, the breaks also followed their usual timings, sometimes causing abrupt breaks in activities that were dragged out because it was experienced what Maria had warned prior to workshop 2 - that children can be challenging to gather after activities, because they are distracted or immersed in an activity (Vitaller del Olmo, personal communication, April 18, 2023). This caused the workshop day to end rushed, e.g., because there was no time to carry out the dot voting session as initially planned, and instead, the children were asked to simply place a vote on their favorite idea. They ended up mainly voting on their own ideas due to encouragement from their peers.

When looking back on the goals set for the workshop, the choice of methods was generally found to be successful. The methods helped the children to put together different elements in different ways to create ideas, and thus they worked well in supporting the children in ideation and idea development. However, minor amendments would be advised for better outcomes, as the children experienced some challenges. These will be elaborated on in the summary of methods.

## Summary of methods from workshop 2

The methods worked with during Workshop 2 are summed up in Figure 30 and below it is elaborated how activities are formed based on the methods.

Method	Goal	Time and Location
<b>Combine &amp; fantasise</b> (TU Delft, 2021).	Brainstorm and discuss their initial ideas.	20 minutes in classroom
<b>Bags-of-stuff</b> (Druin, 2013)	Further develop and visualize their ideas.	45 minutes in classroom
<b>Story Boarding</b> (Coc Playful Minds, 2019)	Further elaborate and understand details of the design idea.	15 minutter in classroom

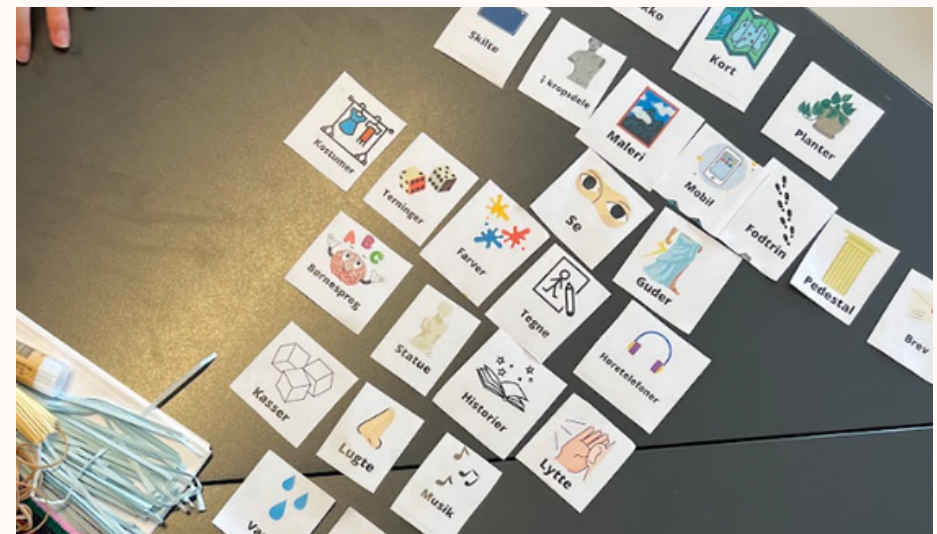
Figure 30: Table of methods from workshop 2 [Own creation]

## Combine & fantasize

**Preparation:** The first activity was *Combine & Fantasize*, where participants were encouraged to combine different objects to create imaginary situations (TU Delft, 2021). From experience gained from the Inverse Brainstorm method in workshop 1, the intention was to test a different method to begin this workshop with new ideas to be elaborated on. The method was inspired to test whether physical cards could make it easier for children to put together elements that could be used to create new ideas. The cards were made based on the children's input from Workshop 1, with pictures of things they highlighted in the

museum, impressions they got from their senses in the Open Your Senses activity, and elements from their own ideas. The purpose was to have the children develop a new activity at the museum that could make it more fun for them to go through the museum and see the different exhibitions and better understand the exhibitions. The cards can be seen in Appendix 5.1

**Execution:** The children immediately got into the task without any signs of problems and started to choose different cards. Each group approached the activity differently, some by choosing the cards they found exciting and combining them into an idea, others by using all the cards and putting them together in different ways to use each card for one idea. The activity showed that it was easier for the children to use physical and visual cards to ideate from instead of coming up with their own things as they had to do in Workshop 1. Outcomes from the activity can be seen in Figure 31 (p. 76).



Combine & fantasize activity [Own photo]

- 1 APP THAT SHOWS FOOTPRINTS TO THE STATUES.
- 2 A LISTENING STATION WHERE THINGS ARE DESCRIBED AND YOU CAN DRAW WHAT YOU HEAR.
- 3 A KAHOOT QUIZ AT THE MUSEUM
- 4 ROLL A PAIR OF DICE. THE EYES ON THE DICE SHOWS WHICH STATUE YOU ARE GOING TO NEXT.
- 5 ON PAPER DRAWINGS, CHILDREN CAN DRAW CLOTHES ON THE STATUES, POSSIBLY BY ROLLING A DICE THAT SHOWS WHAT CLOTHES THEY SHOULD WEAR.
- 6 A HUNT FOR THE RIGHT ARTIFACTS. SCAN PAINTINGS OR STATUES DURING THE TOUR AROUND THE MUSEUM. IF YOU FIND AND SCAN ALL THE RIGHT PAINTINGS, YOU GET A PRIZE AT THE END.
- 7 LETTER HUNT
- 8 FILM TREASURE HUNT
- 9 EGG HUNT IN THE CONSERVATORY FOR EASTER.

Figure 31: Outcome of Combine & fantasize activity [Own creation]

## Bags-of-stuff

**Preparation:** The second activity built on the ideas developed in the combine and fantasize activity. Bags-of-stuff is a low-tech prototyping technique that transforms ideas into something tangible (Druin, 1999) through bags filled with different creativity tools.

**Execution:** The children were asked to choose their favorite idea from the previous activity, then build on it. A limitation provided was that the Glyptotek would have to be able to implement the activities into the current exhibitions, and no new spaces or statues could be created. A challenge experienced with the framing of the activity was that the children were given the tools before having chosen an idea to build, and due to excitement around some materials, e.g., play dough, they ended up choosing ideas that would be easy to build out of the most exciting materials. In hindsight, the groups should have each had one chosen idea to build instead of the other way around.

Additionally, a sense of ownership of the ideas in the groups was observed. Not everyone was equally adept at letting go and sharing the building tasks. Thus, a facilitator must be aware of ways to ensure all children get to participate with their ideas and skills.

Each group contributed with separate ideas, as seen in Figure 32 (p. 77).



Bags-of-stuff activity [Own photo]

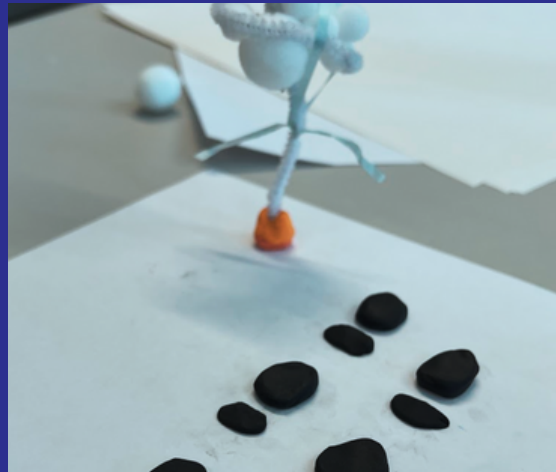




### WINNING IDEA



A PYRAMID, IN THE EGYPTIAN EXHIBITION, THAT CHILDREN CAN GO INTO, PUT ON EARPHONES AND WATCH A VIDEO THAT TELLS THE STORY OF DIFFERENT THINGS IN THE EXHIBITION. THE PYRAMID SHOULD BE COSY WITH PILLOWS, ETC.



### 2ND PLACE



AN APP WHERE CHILDREN CAN SCAN THE ROOM. FOOTPRINTS IN THE APP WILL SHOW YOU WHERE TO GO (WAYFINDING), AND AT THE STATUE OR PAINTING THE APP WILL THEN PROVIDE EITHER A STORY, VIDEO, TASK OR SIMILAR FOR THE CHILDREN TO SOLVE. IF THE CHILDREN FINISH ALL THE TASKS, THEY CAN COLLECT A PRIZE OR A DIPLOMA FROM THE INFORMATION CENTER. CAN BE MADE LESS WAY-FINDING FOR YOUNGER CHILDREN, AND CAN BE MADE MORE DIFFICULT FOR ADULTS.



### 3ND PLACE



A KIND OF KAHOOT QUIZ WHERE CHILDREN WALK AROUND IN THE MUSEUM, WATCHING VIDEOS IN DIFFERENT EXHIBITION ROOMS AND THEN ANSWER A QUIZ ALONG THE WAY – IF YOU GET ENOUGH RIGHT YOU CAN COLLECT A PRIZE AT THE INFORMATION DESK

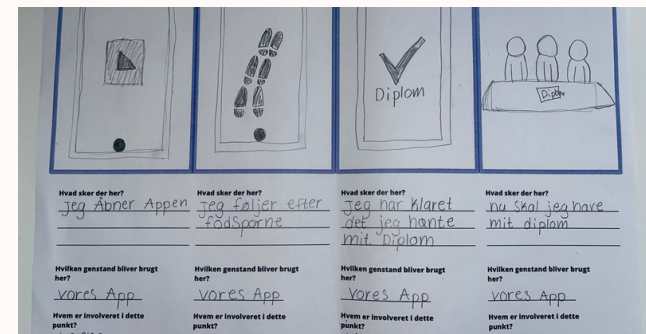
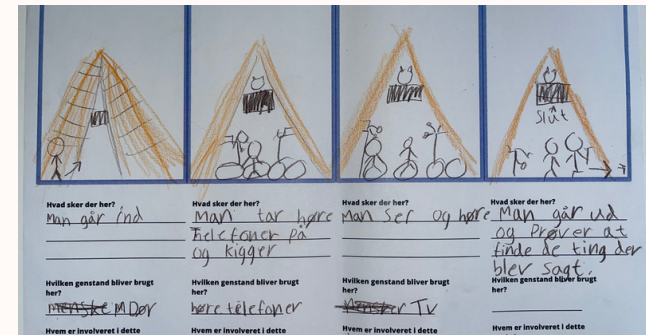
Figure 32: Winning ideas from workshop 2 [Own creation and photos]



## Storyboarding

**Preparation:** A storyboard is used to mediate, gain an overview and understand the system behind how a product or service is used (CoC Playful Minds, 2019). A user journey structure inspired the storyboards, and the goal was to see if children could draw their own storyboards based on their ideas and how they think they would interact with the proposed activity. For this activity, a template was prepared on a large piece of paper, with four boxes to draw the steps and three questions underneath that could identify what happens in their drawing, what objects are included in this step, and who is involved in this interaction. The template can be seen in Appendix 5.2.

**Execution:** This activity was done after the groups had presented their ideas from the bags of stuff to each other. Some approached it enthusiastically, put in much work, and made an effort. Others did not fully understand the task, found it challenging, or were too tired or impatient to develop something to draw. The storyboards were good at getting the children to reflect further on their ideas because they now had to think about where their idea began, what happened, and when the activity ended. It was a great help for the children to attach words to each drawing, as some drawings could be challenging to decipher. A tendency that emerged in the completed storyboards is that the children have written the same object throughout their activity; this can be both because if their idea has been about an app, then the phone will be the main object to emphasize, but also because the children were not necessarily briefed well enough on what is meant by the object. The most significant learning here is that this kind of activity requires the children to be familiarized with a storyboard, how an object can be involved etc. An approach could have been to break the journey down into steps and go through the method together. Compared to the bags-of-stuff method, it was concluded that they could somewhat replace each other, as it is two ways to develop the same thing. Thus they are good tools for museums to use based on available resources.



Outcome of Storyboarding activity [Own photos]

### 5.3.4 REFLECTION ON THE WORKSHOP OUTCOMES

Both workshops exceeded expectations regarding outcome, time, and the children's ability to develop creative and valuable ideas. Each workshop was reflected upon immediately after the individual workshops, and this section presents the learnings and insights gained.

#### Workshop objectives

The overall goal of the workshops was to test tools and methods with children in a museum context, and two objectives were set for the overall workshops: 1) Gain insights into how the chosen methods would work in a museum context, and 2) Gain insights into if the chosen methods can support children in active roles. Both objectives were successful since the chosen methods encouraged and supported the children in co-designing a new service for Glyptotek. The methods were easy to adjust to museum contexts since it comes down to the framing of the individual methods. They can easily be adjusted through the questions and activities given to the children.

The methods chosen were, by nature, encouraging children to be involved in active roles, as the methods do not encourage passive involvement because they support idea development through empathy, fantasy, and impressions.

#### Museum knowledge

It was uncertain how the limited museum knowledge would affect the workshops. During the conversations with Sidsel Kirk from Skoletjenesten (Appendix 4.3) and Karen Feder (Appendix 4.2.), they both emphasized the benefit of not having the museum professional facilitate co-designing with children directly, as their knowledge can be biased and influence the children's experience. However, from Madsen and Yates (2021), it is known that the best museum experience designs happen when museum professionals, designers, and users all participate with their expertise in the design process. Thus, a limitation of the workshops is a lack of the point-of-view and knowledge of the museum professional, only knowing what had been communicated during interviews or what was learned through secondary research. In hindsight, a disadvantage can also be identified in the limited knowledge of the museum

since it was impossible to provide the children with more in-depth knowledge of museum resources and boundaries. With a deeper understanding of this, the children could have been given a stronger foundation for their ideas, allowing more sparring to be a reality.

#### Time management

It was of particular interest to see how the planned schedule would go since it is known that working with children can be time-consuming. It can be challenging to move them from one activity to the next (Vitalier del Olmo, personal communication, April 18, 2023). However, it turned out that there was plenty of time to go through all the activities, and the children were highly cooperative and honest when asked about their own experiences at the museum. In the second workshop, this was also evident, although children needed more time to be creative, and since some of the methods required immersion, a good structure and adherence to time were needed for this type of workshop.

#### Methods and tools

The methods turned out effective in supporting the children in the design processes and in a museum context. The children were able to verbalize and provide insight into how they experienced the museum and come up with ideas for making different spaces and exhibitions more engaging and interactive. This gave a good understanding of what the children found exciting and what opportunities the Glyptotek had to make the exhibitions more engaging for the children.

As for the second workshop, the goal was to test if the chosen methods could help the children be innovative and come up with creative and possible ideas from which the Glyptotek could benefit. By combining the chosen methods, the children produced different outputs, such as drawings and low-fidelity prototypes, and by adding personal observations, this resulted in rich iterative design ideas. While some ideas were creative and good, others were too creative and unrealistic regarding what is possible in the museum. Nevertheless, these ideas were helpful because they made it possible to further ask for the children's ideas and gain a deeper understanding of their perspectives, needs, and interests. It was experienced that the children could

not provide wholly new and innovative ideas since, as is already known from the literature, children draw on current abilities and knowledge (Zosh et al., 2017).

### **Idea generation from the children**

An observation made was that the children's ideas were often things they were familiar with - something fun they had tried recently, such as, e.g., a Kahoot that the class had recently tried. Additionally, some of the children had difficulty letting go of their own ideas. In workshop 1, one student devised an idea to organize a letter hunt at the Glyptotek, with questions in each room that must be answered to form the right word. This idea was referred to again in Workshop 2, and it was difficult for the student to develop other ideas.

The goal of the workshops was to involve the children in active roles, and we argue that this was done successfully, even to the extent of involving the children in the role of design partner. We argue this because the children were involved in several phases, they provided input and ideas, and they decided the course on which ideas were good enough to bring forward. Since the children were involved in active roles, it was deemed appropriate to sit down with the groups during the different activities and have a dialogue with them while they brainstormed and created their prototypes. As a result, the children's creative ideas and wishes could be transformed into something more realistic and possible while still keeping the essence of the idea and meeting their needs.

### **The role of the facilitator and the child**

Ideating with the children triggered reflection on what the role of the facilitators and designers was in this workshop and what the role of the museum professional should be. Through the workshops, it became visible that the facilitator's role was translating the children's inputs. Children are specific in their ideas and inputs, e.g., when the children refer specifically to the statues showing Jesus, the Grim Reaper, and Adam and Eve as the most exciting statues, it becomes possible to see the bigger picture in their ideas and thus understanding that they focus on elements they recognize and that this is the reason why they highlight these (Druin, 1999; Zosh et al., 2017). Another discovery, which was also mentioned by Ditte Hansen (Appendix 4.2) and Karen

Feder (Appendix 4.4; Karen, 2020), is that during workshops with children, the primary purpose of the methods is to create a common ground for dialogue around the ideas the children have. The methods provide observation, narration, and visual support, ensuring the children can verbalize their ideas and that designers understand them. Idea generation and elaboration begin when a group member, adult or child, shares an idea with the group, and from this idea, a new thought or direction can be inspired by another adult or child (Druin, 2013). This was something that could be recognized by the children at the workshops. It is, therefore, essential that all workshop members, children, and facilitators participate in the process so that all points of view are considered. In this way, it is the dialogue during the activities that is the most important. As Feder (2022a, p. 243) also mentions, "creative methods are needed that are suitable for interacting with children through which they can express their interests, needs and preferences".

A primary goal of the research question is to involve the children in active roles. However, involving children in active roles comes with certain limitations, and these were thus reflected in the methods to be sure they are considered as well. In the role of informant, children can still only provide limited inputs, and the designer thus has the final say. For this reason, it was made sure to encourage the children and take note of all their ideas. When preparing for workshop 2, we, as facilitators, did not choose which ideas and inputs to bring forward. Instead, the ideas that were mentioned most often were chosen, thus trying to give the children what Sidsel Kirk refers to as a *democratic voice* (Appendix 4.3), where they are informed where they have a voice and where they do not - in this case that their voice was as experts in their own experiences. Thus, this approach to conducting the workshops also addressed the challenge of neither the child nor the designer being in charge when children are involved as design partners, causing a need for decision negotiations. It was therefore clarified for the children that we decided the process and methods and guided their inputs on what is realistic, but the children decided the inputs and what they found to be the best ones.

## Children's comprehension

Another observation and reflection was that the children initially struggled to understand what a service is. This was especially evident in the activity where the children had to make storyboards and needed examples and more elaboration on what a service consists of. During the process, it would have been beneficial to explain what a service or experience is to give the children a better understanding of what should be created and how to draw the experience.

It would also be beneficial to spend more time educating the children on the different methods, teaching them the purpose behind the method, so they would better understand their role and the influence the outcome would have on the design process. This argument is also put forward by Druin (2001), who states that when involving children in active roles, designers must make the time to also educate the children in design practices.

## Museum challenges

Finally, it was reflected on whether the two workshops of two and a half hours were enough to give the Glyptotek valuable insights, ideas, and inspiration for what they could implement at the museum. In the total of five hours spent with the children, both in the museum and the classroom, it was possible to co-design three service proposals for the Glyptotek, showing that children are capable of participating in active roles and providing useful outputs, even when museums are working with short deadlines. Additionally, few resources were used during the workshops, showing that co-design processes can be carried out despite having limited resources. We believe both workshops meet the museums' time resources, available staff, and financial resources, as both workshops were carried out with minimal resources and only two facilitators. Therefore, it was concluded that the five hours between the two workshops is enough for museums to get something useful from the children.

An important reflection is also that the children's ideas may not necessarily be fun for them since it was not impossible to test the final three ideas in practice with them. Thus it cannot be known how the children would experience their own ideas. Ideally, a third workshop had taken place to create prototypes of the

ideas so that the children could experience the outcomes of their own ideas. Instead, this will be a notion for Stefan Bang when the final service proposal is handed over to him.

## 5.3.5 CONCLUSION TO DEVELOP

Develop initiated the solution space of the case study by aiming to answer the research question formulated at the end of Define. During the first two phases of the case study, the museum professionals identified many inputs and needs. Thus, based on these, it was decided to create a design guide specifically to support the museums in involving children more actively in their design processes.

Three interviews were conducted with experts in child-centered co-design to understand best practices, which could be leaned on and used as inspiration in the solution space. Insights from these were used throughout Develop but will also be brought forward to Deliver as supporting insights to the creation of the design guide. Additionally, a child-centered museum co-design process was created as the initial tool to support museums in their design processes. This design guide was tested in the workshops and will provide the basic structure of the design guide.

Finally, two workshops were conducted to simulate practicing the design process as a co-design process, relying on children in active roles to design an experience for themselves at the Glyptotek. The workshops both provided the opportunity to try the theory in practice and test the functionality of specific methods as tools for co-design with children. Knowledge and experience gained at these workshops will also be brought forward to the design guide. Since the workshops resulted in a natural by-product of a service solution, this will also be presented as a deliverable in the next phase.

## 5.4 DELIVER

The fourth and final phase of the case study is Deliver. Deliver takes focused action through convergent thinking and usually involves small-scale testing of different solutions to reject or improve the ones that may work (Design Council, 2019). The aim of Deliver will, in this case, be slightly adjusted, as it will focus less on testing and more on identifying and designing the final deliverables.

The chapter will be divided into three parts, each presenting a deliverable resulting from the case study. The first deliverable will be the contribution that this project provides. It will be delivered through a pitch that argues for the benefits museums can experience through co-design with children in active roles throughout their design processes. The following deliverable will present the reason for creating the design guide, which has been designed to support museums in their co-design processes with children. Finally, the last deliverable presents a natural by-product of the workshops - a service proposal for the Glyptotek, co-designed with the children in the fourth grade at Hvalsø Primary School.



### 5.4.1 PITCHING CHILD-CENTERED CO-DESIGN PROCESSES TO MUSEUMS

The pitch sums up gained knowledge and learnings, and contributes to the original research focus on co-design with children, seeking to add to what is already known in academic research, but taking it a step further by addressing it in relation to the problem statement: *How children can be experts in their own experiences by participating in the museums' design processes, thus equally designing more engaging experiences for the children.* It does, as such, not focus on the research question since this is answered through the design guide, which will be presented in the following section.

#### The Importance of Children's Active Involvement in Museum Design Processes

This section introduces the value it can bring museums to involve children in their design processes so that the children can be experts in their own experiences, and together museums and children can design more engaging, entertaining, and educational experiences targeted toward children.

Many museums struggle with embracing children into regular museum exhibitions or designing engaging museum experiences for young children since children below 12 often require different means of mediation than older visitors.

In today's society, museums play a binding factor in expanding the space of cultural sharing and enhancing the cultivation of people. They are important hubs for learning and provide unique resources for education and informal learning at different levels. For this reason, museums must embrace children in the exhibitions to have equal accessibility to the resources, learnings, and experiences at the core of museums' role.

Museums must actively involve children in designing the museum experiences to provide more engaging museum experiences where children are embraced. Many institutions and professionals design on behalf of the children, believing they have the experience to create equally engaging experiences for the children. Other museums use parents and teachers as experts on behalf of their

children or even external consultants or designers but rarely are the children asked. However, the museums that ask the children report that children regularly dismiss the ideas they, as professionals, would think are of interest to them. Similarly, museum professionals say that ideas they thought the children would not be interested in turn out to be of great excitement for the children. Again, this argues for the involvement of children in design processes: to continuously be informed of children's perceptions and point-of-view, which can surprise the professional and take the design process in a new, more beneficial direction.

Involving children in design processes can benefit the final design outcome. These benefits include, but are not limited to:

**Authentic and relevant museum experiences:** Children have a unique perspective on the world. As a result, they draw on their own authentic experiences, interests, and desires. Working with children ensures museum exhibitions and activities are relevant and meaningful to them.

**Empowerment and ownership in the museum experiences:** Children involved in designing their own experiences are empowered to take ownership. Equally, this shines through for other children in a final design. This creates a sense of belonging and responsibility in the children.

**Creative and reflective museum experiences:** Children are naturally curious, imaginative, and creative. By participating in design processes, children can explore this creativity and their abilities to predict and reflect on outcomes. This breaks with museums' usual approach to working, resulting in new museum experiences.

**Enhanced learning museum experiences:** By actively involving children in museum design processes, experiences can be designed to be more interactive, based on playful and free investigations, which supports children's approach to learning.

Many challenges are perceived to be part of co-designing with children. However, involving children in smaller steps throughout a design process can gather many learnings and insights, which already lays a strong foundation for sustainable and viable design outcomes - involving children results in a better understanding of them, their needs, and their abilities. This can help museums continuously be aware of the progression of children's interests while also supporting the museums in reinventing their exhibitions, activities, and service offerings. By inviting children to participate in the museum's design processes in active roles, museums can open a world of opportunities and benefits. Through authenticity, empowerment, creativity, and enhanced learning experiences, museums transform themselves, providing even more engaging education and inclusive museum experiences for children.

#### 5.4.2 A DESIGN GUIDE FOR CO-DESIGNED MUSEUM EXPERIENCES FOR CHILDREN

As presented early in the phase of Develop (Chapter 5.3.1), it was decided that a design guide for the museums would be the best way to answer the research question: *How might we support museum professionals to involve children in active roles during co-designed processes to design more engaging children's museum experiences?*

Typically, product reports are used to present insight and learning outcomes of a thesis. But instead, it was chosen to present the insights and knowledge acquired in this thesis in the shape of the resulting design guide. The design guide replaces the product report and is written in an informal tone as it acts as a product for museum professionals. It summarizes all the insights and learnings from the project in a structure that makes it useful and easily accessible to the reader, almost like a reference book.

This accommodates the more informal audience of museum professionals, who need an actionable guide rather than an academic report to support their work. The workshops with Hvalsø Primary School allowed further exploration and a first-hand understanding of how museums can co-design children's museum experiences with children. Experience from the workshops, as well as the remaining learnings and insights gained through the case study and the

secondary research initiating the project, will in this section be used to design the museum design guide. Research suggests that children can understand complex information (Jones, 2022) as long as it is mediated to them in a way that allows them to connect the new knowledge to their current knowledge (Zosh et al., 2017). Research also shows that a child's presence in regular exhibitions encourages adult-child interaction, whereas an adult's presence in exhibitions designed for children reduces adult engagement (Jones, 2022). The aim of the design guide is thus to encourage museums to incorporate children's perspectives and experiences more into the regular exhibitions. However, the guide can also be used to explicitly design supporting exhibition spaces or activities targeted at children.

The structure of the design guide will be presented below in a page-by-page format, and can be seen in Appendix 6.1.

**Page 1: Background of this design guide**, introduces to the reader that the design guide is an outcome of this thesis. It also introduces the background of the research and the guide's intention so museums understand what the guide seeks to do.

**Page 3: What is this guide?**, The design guide initiates by presenting the 5 W's of Who, What, When, Where, and Why. To present who the guide is targeted towards, who can benefit from it, what it can be used for and when it can be used, etc. This will help summarize the complete story and is considered highly relevant for a report to be considered complete (Adobe Communications Team, 2018).

**Page 4: The Importance of Children's Active Involvement in Museum Design Processes**, presents the argumentation for why museums should bring children into their design processes. This page builds on the arguments from the pitch presented in Chapter 5.4.1 of the thesis.

**Page 5: Tips to get started**, presents the museum professionals with

suggestions and what to be aware of when starting a co-design process with children. These are based on literature and our experiences in the workshops held at the Glyptotek.

**Page 6: Common challenges when co-designing with children**, breaks down the challenges identified that typically prevent museums from co-designing museum experiences with children. The challenges have been described throughout the project. However, the challenges mentioned here are based on the challenges identified in the literature review in Chapter 2.2.2 and Chapter 5.2.4 in the Define phase. Additionally, each challenge is supported with tips for the reader, which draws on personal learnings from the primary research.

**Page 8: A child-centered museum co-design process**, introduces the proposed co-design process. The page introduces a design process and how it can support museum professionals in co-designing museum experiences with children.

**Page 10: Children's role in design processes**, introduces the roles children can be assigned in a design process. Hence, the reader understands the opportunities and limitations of the respective roles and can plan this into their design process accordingly. The information on the page draws on the literature review in Chapter 2.2.2 and primary research from the case study.

**Page 12: Methods for co-designing with children**, introduces the methods recommended to museums when designing engaging museum experiences for children in collaboration with children. These are presented in a method matrix and with the encouragement that the methods should be tailored to the unique needs of the museum project and act as a source of inspiration.

**Page 13: Phases and methods elaborated**, the methods in the guide are divided into 3 phases, Understand, Idea Development and Create. Each phase is introduced, explaining what it is about, what role children play in this phase,

and what the museum professional's role and mindset should be. Following that, each method will be explained and introduced.

**Page 23: Our co-design experience**, summarizes the experience from this case study where Hvalsø Primary School participated in two co-design workshops (Chapter 5.3.2 and Chapter 5.3.3) and provided three ideas for a service proposal to implement at the Glyptotek. The service proposal will be elaborated on in detail in the following chapter, as this is the deliverable provided to Stefan Bang from the Glyptotek. In this design guide section, the experience will be summarized, anonymized, and presented to the readers as a source of inspiration for the advantages of co-designed museum experiences. The example is anonymized without mentioning specific outcomes, as this is intended to be exclusive to the Glyptotek.

### 5.4.3 THREE SERVICE PROPOSALS FOR THE GLYPTOTEK

As identified when preparing for the workshops in Chapter 5.3.1.3, they would result in a natural by-product of a service proposal for the Glyptotek. Therefore, this by-product was synthesized into a service proposal which would be handed over to Stefan Bang from the Glyptotek. The proposal introduces the process for the workshops and the immediate insights gained about the children's experience at the Glyptotek. It can be seen in Figures 33 and 34 (p. 86), and 35 (p. 87).

## A CO-DESIGNED MUSEUM EXPERIENCE AT THE GLYPTOTEK

We created this proposal for you as a thank-you for your hospitality at the museum. It summarizes and presents the insight we gained from the children during our two co-design workshops, one of which took place at the Glyptotek, and both revolved around the Glyptotek as a case.

First, we will provide some information on the practicalities and resources behind the workshops. 14 participants between the ages 9 - 10 from Hvalsø Primary School attended the workshops. The second workshop took place at Hvalsø School one week after the workshop at the Glyptotek. We spent 2,5 hours with the children at each workshop, and our main objective was to test methods for co-designing in a museum context with children. Still, since the testing imitated a hypothetical case from the museum, we also received much input and ideas that the children believed could inspire you. We focused only on rooms 8, 10, and 44, the Winter Garden, and the Central Hall.

The first workshop at Glyptoteket focused on the children's experience and some easy and immediate ideas for how the museum could better accommodate children's perspectives and experiences in the exhibitions. The children were particularly amazed by room 44, which they found to be beautiful, detailed, and engaging, with many recognizable artifacts, but also some that made them wonder, some they found boring, and even some that were scary. The children were curious to hear the history behind the things they recognized, such as the statues of Jesus, the Grim Reaper, and Adam and Eve. They would like more explanations behind artifacts they did not understand, such as the few smaller bronze and larger grey statues and why they differed from the rest. Artifacts and statues that they could not recognize or that blended in with the exhibition were not of much interest to them.

In room 8, the children were asked to come up with ideas on how the story and information behind the statues could be better communicated to children their age, who might recognize some characters from the Disney movie Hercules. Later they were also asked to brainstorm and come up with new ideas that could, in general, be interesting to implement at the museum.

Additionally, the learning stations were a big hit with the children. They loved learning through stories and listening experiences - which shines through in their ideas. The Winter Garden and the exhibitions with the mummies were also a big hit with the children, and many of them stated that they just had to return with their parents.

In the second workshop at the school, we combined their many inputs and ideas into more ideas and explored the possibility of merging the ideas into more extensive ideas. This resulted in three service proposals that the children believe could help to improve children's general learning experiences in the museum.

We have attached all ideas for you on the following pages, and if any of them are of interest to you, you are, of course, welcome to make adjustments and draw elements from them as you wish.

Figure 33: Service proposal to the Glyptotek [Own creation]

## THE QUICK AND EASY IDEAS

### Storytelling

- More history at some of the statues, so the children can be told the myths or the statue's stories - use children's language. Signs, headphones, an app, or a landscape poster wall behind the statues that tells the stories, myths, and other facts about the statues in the room.
- A listening station where things are described and you can draw what you hear.
- Give the statues their body parts back or provide explanations on why they do not have them.

### Wayfinding

- Footprints between recognizable statues and artifacts so children can be guided to the most exciting stories. Physical footprints or scan the floor with your phone, and the footprints are on the phone.
- A letter hunt, where small activities are given in each room, the child solves the activity and is provided a letter, which eventually forms a word or sentence. This can be provided at the information counter, where the child receives a prize. Maybe a lollipop or a diploma. A game could be counting how many statues have lost their noses, the number shows a letter in the booklet, and when you have solved several tasks, you have a word you can give in the information center to get the prize.
- A hunt for the right artifacts. Scan paintings or statues during the tour around the museum. You get a prize if you find and scan all the right paintings.
- Roll a pair of dice. The eyes on the dice show which statue you should go to next.

### Games and activities

- Drawings of the statues which the younger children can color while adults look around the room, e.g., Hercules in blue underpants.
- On Paper drawings, children can draw clothes on the statues, possibly by rolling a dice that shows what clothes they should wear.
- Countdown timer at selected statues, which counts down from 30 seconds - the child can guess who the statue is or similar, so it becomes a small game.
- A Kahoot quiz at the museum.

### Other

- More colors and decorations, like there were in room 44.
- Birds, butterflies, and other small animals in the garden.
- The museum guards can be dressed in costumes resembling the clothing worn back then.
- Egg hunt in the Winter Garden for Easter.
- The statues could be real humans that can move and be dressed as people would be dressed back then. More realistically, this idea turned into plateaus next to the statues where visitors could go up to mimic the statues, and then you could have your photo taken together with the statue.
- You could color all the statues in the original color they had in Roman times or draw on the statues. More realistically, make a copy of the statue or a miniature statue that children can draw on.

Figure 34: Service proposal to the Glyptotek [Own creation]

## THE THREE WINNING IDEAS

### WINNING IDEA

A PYRAMID, IN THE EGYPTIAN EXHIBITION, THAT CHILDREN CAN GO INTO, PUT ON EARPHONES AND WATCH A VIDEO THAT TELLS THE STORY OF DIFFERENT THINGS IN THE EXHIBITION. THE PYRAMID SHOULD BE COSY WITH PILLOWS, ETC.

### 2ND PLACE

AN APP WHERE CHILDREN CAN SCAN THE ROOM. FOOTPRINTS IN THE APP WILL SHOW YOU WHERE TO GO (WAYFINDING), AND AT THE STATUE OR PAINTING THE APP WILL THEN PROVIDE EITHER A STORY, VIDEO, TASK OR SIMILAR FOR THE CHILDREN TO SOLVE. IF THE CHILDREN FINISH ALL THE TASKS, THEY CAN COLLECT A PRIZE OR A DIPLOMA FROM THE INFORMATION CENTER. CAN BE MADE LESS WAY-FINDING FOR YOUNGER CHILDREN, AND CAN BE MADE MORE DIFFICULT FOR ADULTS.

### 3RD PLACE

A KIND OF KAHOOT QUIZ WHERE CHILDREN WALK AROUND IN THE MUSEUM, WATCHING VIDEOS IN DIFFERENT EXHIBITION ROOMS AND THEN ANSWER A QUIZ ALONG THE WAY – IF YOU GET ENOUGH RIGHT YOU CAN COLLECT A PRIZE AT THE INFORMATION DESK.



## 5.4.4 CONCLUSION TO DELIVER

Deliver commences the solution space of the case study by identifying and designing the final deliverable that contributes to answering the problem statement identified in Chapter 3.5 and the research question identified in Chapter 5.2.5.

Three deliverables were presented. The pitch provides argumentation for co-design processes in the museum industry. After identifying the many user-centered design approaches in the industry, the intention is to encourage a move towards more active and participatory design approaches. The design guide provides actionable design approaches to support museums' in co-designing with children. The guide intends to make the more active and participatory design approaches easily approachable and accessible for museum professionals. Finally, the service proposal presented the many outcomes two co-design workshops with children can provide. The proposal intends to show these possibilities, thus encouraging museum professionals to use the design guide, so the museums can benefit from the advantages presented through argumentation in the pitch.

Figure 35: Service proposal to the Glyptotek [Own creation]





Room 44 at Glyptoteket [Own photo]

## 6. REFLECTIONS ON THE PROJECT'S DESIGN PROCESS

The reflections will explore the design process behind the thesis, investigating how different approaches might have provided further insights or how specific approaches have caused limitations to the project outcome. Additionally, the learning objectives set forward at the beginning of the project will be reflected upon.

## 6.1 REFLECTIONS ON THE DESIGN PROCESS

The design process in this project was, from the beginning, an exploratory project to discover how museums can improve co-design practices with children and what approaches and methods are suitable for this. The primary part of the project that caused reflection on the process happened in the phase of Develop, which also, to a great extent, laid the foundation for the design guide.

Due to the project's timeframe, it was decided to focus the two workshops on the phases the museums have expressed the most challenges with involving children, i.e., in the phases corresponding to Understanding and Idea Development. These challenges included getting the children's perspective and coming up with and creating new ideas with the children. In the workshops, the children outlined and provided ideas on how the museum could make the children's visit to the Glyptotek more enjoyable and inclusive. In light of this, it is important to reflect on whether the focus in the workshop and the absence of a workshop in the final design process phase, i.e., corresponding to Create, where tests could have been carried out with the children would have added value to the outcome of the design guide. Throughout the project and from the secondary research, the value of involving the children throughout the whole design process is repeatedly mentioned to ensure that the design meets the children's expectations and requirements and is valuable to the children. The absence of this final testing workshop, aiming to learn if the children would like their ideas or if what they created were simply fun to design, is an important part to consider. Equally, due to the limited knowledge of what is, in fact, possible within a museum, it is uncertain whether the final ideas designed by the children are realistic. It would have been ideal to have a final feedback session with Stefan Bang to learn about the museum's viewpoint on the ideas, as well as a usability test with the children on how successful their ideas would be when carried into reality.

Furthermore, it was considered whether additional workshops at another museum could have provided different knowledge about the use of the methods and the practice of co-design with children in a museum context

compared to those held at the Glyptotek. This could have affected the viability of the tested and recommended methods in different museum contexts. The methods used at the Glyptotek were selected, among other things, based on relevance to the museum's exhibitions. The workshops were largely based on elements of impression and mediation due to the Glyptotek relying heavily on impressionistic and factual mediated experiences, at least in the part of the museum where the workshops took place. This raises the question of whether the methods would have the same output as at the Glyptotek if the workshops had focused more on mediating abstract and subjective experiences. The project asserts, however, that it is the facilitator's responsibility to adapt the methods to the project context and purpose and the children's abilities. The methods should, therefore, still be useful to other museum contexts as sources of inspiration.

The involvement of children from institutions can provide many insights at once, as they are usually a larger group. However, it is important to consider that children in a school class may have different prerequisites. Some children may have more or less experience going to museums, which may influence their ability to develop new ideas for the particular museum. This also relates to the theory that children may find it difficult to relate to things they are not familiar with. The involvement of children through, e.g., focus groups formed around children accustomed to museums can give different co-design experiences, as these children have different backgrounds, experiences, and knowledge of the museum or museums in general. And this can impact their ideas and approach to museum experiences. Therefore, the museum professional must be aware of this when planning their project and desired outcome.

## **6.2 REFLECTIONS ON THE LEARNING OBJECTIVES**

### **6.2.1 Official learning objectives**

The thesis provided the opportunity to explore, test, and demonstrate the learnings, skills, and experiences gained throughout the MSc. in Service Systems Design.

The nature of the project supported the application of a methodological approach to explore user-centered design theories. Through methods common in service design, it became a realization to explore the use of these in an industry not commonly using design principles, but that can greatly benefit from the use of these.

The context of service design strengthened the work relating to dealing with complex content and insights, as well as facilitating participatory methods which served the project process. Additionally, service design provided the foundational approach for the final deliverable created, which is the thesis's contribution.

The thesis further provided the opportunity to explore the adaptability of design approaches in different contexts. Eventually, it allowed for an evaluation of how design processes and methods can be adjusted to a needed context.

### **6.2.2 Personal learning objectives**

A main goal at the beginning of the thesis was to develop and contribute with a tool that could support companies in working more actively with children in design processes, preferably as design partners. This is considered accomplished due to the design guide built on solid investigations that indicates a need for additional tools in the explored industry. Through service design tools and methods, it became possible to explore, investigate and design this tool for the museum industry while confirming its relevance of the tool. Through the objectives originally put forward, it also became possible to explore the functionality of different design methods in practice and work with the adaptability of these in the given context, aiming to pass these on as a specific approach to contribute to the field of co-design with children.





Room 8 at Glyptoteket [Own photo]

## 7. CONCLUSION

The research focus and problem statement proposed at the beginning of the project are built on top of each other. The research focus of the thesis was to explore the active involvement of children in design processes as an approach to enabling them to be experts in their own experiences. Further, the problem statement identified museum experience design as a context to explore this due to museums' important role in knowledge sharing in society.

The secondary research that formed the project foundation sparked the wonder of whether museums work with the active involvement of children when designing children's experiences or if they act as experts on behalf of the children, and depending on the approach, what effect it will have on museum design practices.

Through interviews with museum professionals, whose main responsibility is to design children's museum experiences, it became clear that many museums believe that children cannot understand regular museum exhibitions and need a different form of mediation, which was supported by secondary research. Already from the early phases of the project, it was clear that children are creative, imaginative, and independent individuals who can provide perspectives that adults are not capable of providing. They also possess the ability to fully comprehend complex information, which even contributes to increased adult museum engagement, which is not the case for exhibitions and activities designed explicitly for children.

When exploring this further, a specific limitation occurred: both secondary research regarding the connection between children and museums and the interviews with the museum professionals and the experts in child-centered design provided the understanding that children require different forms of mediation than older museum visitors. Eventually, this was tested in the workshops, which provided a further understanding that mediation in museums is simply not explicit enough toward children's current knowledge, making them unaware of much of the information mediated at the museums. This came as no surprise, as the interviews with museum professionals had already provided the knowledge that mediation in museums is targeted at an

older audience. Nevertheless, from seeing and hearing about the museums' exhibitions and children's activities during the interviews, it became clear that museum professionals often design on behalf of children, that this results in designs that are entertaining rather than educational, and that many children's museum experiences and activities are explicitly for children. The interviews with the professionals confirmed the insights from the secondary research: that museum professionals tend to design without the involvement of the children, at least until commencing phases, because they assert their capability of designing as equally engaging experiences as they could with the involvement of the children. Museum professionals consider themselves capable of doing so. At the same time, the research states that adults should not design on behalf of children since they are not fully aware of what children need and, thus, most likely will not design something to the child's satisfaction.

From these comprehensions came the conclusion that designing museum experiences with the children may support museums' design of more engaging children's experiences. Due to this recognition, it became an ambition to support museums in designing these experiences. Thus the research question focused on how museum professionals can be supported in involving children in active roles during co-designed processes. The research question focused on active roles due to an assumption that a focus on involving children as design partners would be too resource-demanding for the museums and, therefore, not likely to be realistic. Nevertheless, through two co-design workshops with 14 children between the ages of 9 and 10, it was identified that involving children as design partners in a museum context is, in fact, plausible and can, despite the statements from secondary research and the perception of the museum professionals, be done within restricted timeframes and without too many resources.

Eventually, the two co-design workshops identified that involving children as design partners from the early phases of the design process provides numerous ideas and inputs upon which museum professionals can build the further design process and, in time, have a children's experience designed by children for children, allowing for engagement, empowerment and recognition from other children as well. Based on this discovery, the design guide was created. It allowed for a synthesized collection of all insights and learnings gained throughout the thesis. The structure and presentation of the design guide contribute to the museum industry and the field of co-designing

with children by making the learnings easily accessible and by providing an approach to co-design with children, which professionals with expertise outside the field of design can rely on to gain the valuable benefits that design practices can provide final design outcomes, such as children's museum experiences.



# REFERENCES

- Adler, C. (2009, October). How to develop a Youth Forum in your museum A toolkit of ideas. 41.
- Adobe Communications Team. (2018, May 7). *5 Ws (and 1 H) To Be Asked of Every Project* | Adobe Workfront. Adobe Experience Cloud. Retrieved May 9, 2023, from <https://business.adobe.com/blog/basics/project-management-101-the-5-ws-and-1-h-that-should-be-asked-of-every-project>
- Akoglu, C. (2016). *Co-Creation In Service Design Practice*. 11th EAD Conference Procee- dings: The Value Of Design Research. European Academy of Design Conference Procee- dings 2015. <https://doi.org/10.7190/ead/2015/32>
- Ambrose, T., & Paine, C. (2012). *Museum Basics* (Third ed.). Routledge.
- Bason, C. (2018). *Co-creating for a Better Society* (Second Edition ed.). Policy Press.
- Birch, J. (2017, June). Museum spaces and experiences for children – ambiguity and uncertainty in defining the space, the child and the experience. *Young children's museum geographies: spatial, material and bodily ways of knowing, Volume 16*(Issue 5), 12. <https://doi.org/10.1080/14733285.2018.1447088>
- Borum, N., Brooks, E. P., & Brooks, A. L. (2015, August). Designing with Young Children: Lessons Learned from a Co-creation of a Technology-Enhanced Playful Learning Environment. *Design, User Experience, and Usability: Interactive Experience Design Lecture Notes in Computer Science, 4th International Conference*, 11. DOI: 10.1007/978-3-319-20889-3\_14
- Brandt, E. (2006). *Designing Exploratory Design Games a framework for participation in participatory design?* Proceedings Participatory Design Conference 2006. Copyright 2006ACM.
- Brinkmann, S., & Tanggaard, L. (2015). *Kvalitative metoder: en grundbog*. Hans Reitzel.
- Clark, A. (2005). *Listening to and involving young children: a review of research and practice*. <https://doi.org/10.1080/03004430500131288>
- Clark, A. (2017). *Listening to Young Children: A Guide to Understanding and Using the Mosaic Approach*. Jessica Kingsley Publishers.
- CoC Playful Minds. (n.d.). *Our organisation*. CoC Playful Minds. Retrieved May 15, 2023, from <https://www.cocplayfulminds.org/>
- CoC Playful Minds. (2019). *Co-create: Samskabelse med børn i fokus*. CoC Playful Minds. Retrieved May 17, 2023, from [https://www.cocplayfulminds.org/media/c54ln1kx/coc\\_playful-minds\\_tools.pdf](https://www.cocplayfulminds.org/media/c54ln1kx/coc_playful-minds_tools.pdf)
- CoC Playful Minds. (2020). *Co-create: Samskabelse med 3 - 100 årige*. CoC Playful Minds. Retrieved April 1, 2023, from [https://www.cocplayfulminds.org/media/cp4pw2cq/2020\\_coc-playful-minds\\_tools\\_cocreation\\_3-100-a-r.pdf](https://www.cocplayfulminds.org/media/cp4pw2cq/2020_coc-playful-minds_tools_cocreation_3-100-a-r.pdf)
- Culén, A.L., Bratteteig, T., Pandey, S., & Srivastava, S. (2013). *The Child-To-Child (C2C) method: Participatory design for, with and by children in a children's museum* (11(2)). IADIS International Journal on WWW/Internet.
- D4CR. (2022, July 12). *D4CR Design Principles*. [childrensdesignguide.org](https://childrensdesignguide.org). Retrieved May 17, 2023, from <https://childrensdesignguide.org/wp-content/uploads/2022/07/D4CR-Design-Principles-2.0-2022-07-12.pdf>
- Danielsen, S. (n.d.). *Hvad kan vi lære af Glyptoteket? – Kan det leges? – Børn i kirken*. Børn i kirken. Retrieved March 15, 2023, from <https://bornikirken.dk/hvad-kan-vi-laere-af-glyptoteket-kan-det-leges/>
- Design Council. (2019, May). *Framework for Innovation*. Design Council. Retrieved April 19, 2023, from <https://www.designcouncil.org.uk/our-work/skills-learning/tools-frameworks/framework-for-innovation-design-councils-evolved-double-diamond/>
- Designlab. (2022, February 10). *Service Design 101 | What is Service Design*. Designlab. Retrieved February 28, 2023, from <https://designlab.com/blog/what-is-service-design/>
- Design School Kolding. (n.d.). *Play User Lab*. Designskolen Kolding. Retrieved May 15, 2023, from <https://www.designskolenkolding.dk/en/node/1632>

- Drew, C. (2019, September 3). *The Double Diamond: 15 years on*. Design Council. Retrieved May 13, 2023, from <https://www.designcouncil.org.uk/our-resources/archive/articles/double-diamond-15-years/>
- Druin, A. (1999). *Cooperative inquiry: developing new technologies for children with children*. n Proceedings of the SIGCHI conference on Human Factors in Computing Systems (CHI '99). Association for Computing Machinery, New York, NY, USA. <https://doi.org/10.1145/302979.303166>
- Druin, A. (2001). *The role of children in the design of new technology*. [Co-Design with Children Technology]. doi:10.1080/01449290110108659
- Drysdale, J. (n.d.). *Design Process*. Design Process - Design Guides - Proximity School of Design. Retrieved May 2, 2023, from <https://proximityschool.com/learn/design-process/>
- Falk, J. H. (n.d.). *Understanding Museum Visitors' Motivations and Learning*.
- Falk, J. H., & Dierking, L. D. (2016). *The Museum Experience*. Taylor & Francis.
- Feder, K. (2020). *Exploring a Child-Centred Design Approach: From tools and methods to approach and mindset*.
- Feder, K. (2022a). Børnecentreret design af legeoplevelser – til børn, for børn eller med børn. BUKS – Tidsskrift for Børne- og Ungdomskultur, (66).
- Feder, K. (2022b, June 16). Internship as a child: What designers can learn through play with children. DRS2022: Bilbao. <https://doi.org/10.21606/drs.2022.337>
- Fischer, G. (2003, March). Meta-Design: Beyond User-Centered and Participatory Design. *Human-Computer Interaction: Theory and Practice*, 1(1), 5.
- Gielen, M. (2013). *MAPPING CHILDREN'S EXPERIENCES: ADAPTING CONTEXTMAPPING TOOLS TO CHILD PARTICIPANTS*. Nordic Design Research Conference.
- Gross, R. (2014, August 8). *Preparing Children for Art Museums*. National Endowment for the Arts. Retrieved April 13, 2023, from <https://www.arts.gov/stories/blog/2014/preparing-children-art-museums>
- Guha, Druin, & Fails. (2013). *Cooperative Inquiry revisited: Reflections of the past and guidelines for the future of intergenerational co-design*. <https://doi.org/10.1016/j.ijcci.2012.08.003>
- Hagen, E. S., Røsvik, S. M., Høiseth, M., & Boks, C. (2012, August). Co-Designing with children: Collecting and structuring methods. *NordDesign 2012*, 8.
- Hansen, A. S. (2017). *How to best communicate with and encourage children during a design process*.
- Hewett, V. M. (2001, Winter). Examining the Reggio Emilia Approach to Early Childhood Education. *Early Childhood Education Journal*, Vol. 29(2), 6. DOI:1082-3301/01/1200-0095\$19.50/0
- Interaction Design Foundation. (n.d.). *What is Service Design?* | IxDF. Interaction Design Foundation. Retrieved February 1, 2023, from <https://www.interaction-design.org/literature/topics/service-design>
- Iversen, O. S., Smith, R. C., & Dindler, C. (2017, June). Child as Protagonist: Expanding the Role of Children in Participatory Design. *Conference on Interaction Design and Children*, IDC '17, 10. <https://doi.org/10.1145/3078072.3079725>
- Jones, H. (2022, January 31). *Children in the Museum vs. Museums for Children – CAS*. Contemporary Art Stavanger. Retrieved March 15, 2023, from <https://www.contemporaryartstavanger.no/children-in-the-museum-vs-museums-for-children/>
- Kvale, S., & Brinkmann, S. (2014). *Interview: det kvalitative forskningsinterview som håndværk*. Hans Reitzel.
- Large, A., Nettet, V., Beheshti, J. & Bowler, L., 2006. "Bonded Design": A novel approach to intergenerational information technology design. *Library & Information Science Research*, 28, 64-82.
- Liu, S., & Idris, M. Z. (2018, July). Constructing a framework of user experience for museum based on gamification and service design. *MATEC Web Conf., Volume 176*(2018 6th International Forum on Industrial Design (IFID 201)), 5. <https://doi.org/10.1051/mateconf/201817604007>
- Lüders, M., Clatworthy, S., Andreassen, T. W., & Hillestad, T. (Eds.). (2017). *Innovating for Trust*. Edward Elgar Publishing Limited.
- Madsen, K. M. (2019). *Explorative Museum Experiences: a collaborative experience design process for explorative museum exhibitions*. Aalborg Universitetsforlag.

- Madsen, K. M., & Yates, M. F. (2021). *Mapping and understanding the potentials of co-creative efforts in museum experience design processes*. Academic Quarter Journal for humanistic research.
- Manzini, E. (2015). *Design, when Everybody Designs*. (R. Coad, Trans.). Cambridge, Massachusetts, London, England: MIT Press. Chapter 2, Design in a Connected World.
- Manzini, E., & Rizzo, F. (2011). *Small projects/large changes: Participatory design as an open participated process*. DOI: 10.1080/15710882.2011.630472
- Morelli, N., de Götzen, A., & Simeone, L. (2020). *Service Design Capabilities*. Springer International Publishing.
- Morelli, N., & Tollestrup, C. (2007). New Representation Techniques for Designing in a Systemic Perspective. *Design Inquiries, Nordes 07 Conference*.
- Neset, V., and Large A. (2004). *Children in the information technology design process: A review of theories and their applications*. Library Inf. Sci.
- Ny Carlsberg Glyptotek. (n.d.a). *Om museet - Hvad er Glyptoteket og hvad betyder navnet?* Glyptoteket. Retrieved May 9, 2023, from <https://glyptoteket.dk/om-museet/>
- Ny Carlsberg Glyptotek. (n.d.b). *What is the Glyptotek? A blend of art and magnificent architecture*. The Glyptotek. Retrieved March 15, 2023, from <https://www.glyptoteket.com/about-the-museum/what-is-the-glyptotek/>
- Ny Carlsberg Glyptotek. (2018). *Ny Carlsberg Glyptotek Årsberetning 2018*. Ny Carlsberg Glyptotek.
- Ny Carlsberg Glyptotek. (2019). *Ny Carlsberg Glyptotek Årsberetning 2019*. Ny Carlsberg Glyptotek.
- Ny Carlsberg Glyptotek. (2021). *Ny Carlsberg Glyptotek Årsberetning 2021*. Ny Carlsberg Glyptotek.
- Pearsall, J., Hanks, P., & Stevenson, A. (n.d.). Museum. *Oxford Dictionary of English* (Third ed.). Oxford University Press.
- Penin, L. (2018). *An Introduction to Service Design: Designing the Invisible*. Bloomsbury Publishing.
- Polaine, A., Løvlie, L., & Reason, B. (2013). *Service Design: From Insight to Implementation* (1st ed.). Rosenfeld Media.
- Practical by Design. (n.d.). *Service Design 101*. Practical by Design. Retrieved February 28, 2023, from <https://www.practicalbydesign.co/service-design-101>
- Prahad, C. K., & Ramaswamy, V. (2004). *Co-creating unique value with customers* (VOL. 32 NO. 3 ed.). Strategy & Leadership.
- Read, J. C., Fitton, D., Sim, G., & Horton, M. (2016). How Ideas make it through to Designs: Process and Practice. *In Proceedings of the 9th Nordic Conference on Human-Computer Interaction*, (Nordi- CHI '16), 10. <https://doi.org/10.1145/2971485.2971560>
- Rizzo, F. (2010). *Co-design versus User Centred Design: Framing the Differences*. Notes on Doctoral Research in Design: Contributions from the Politecnico di Milano, ed. Luca Guerrini.
- Sanders, E. (2002, April). From user-centered to participatory design approaches. *Design and the Social Sciences*, 7. DOI:10.1201/9780203301302.ch1
- Sanders, E., & Stappers, P. (2008). Co-creation and the new landscapes of design. In *Co-design*. <https://doi.org/10.1080/15710880701875068>
- Schepert, S., Dressen, K., & Zaman, B. (2017). *Rethinking children's roles in Participatory Design: The child as a process designer*. (16). International Journal of Child-Computer Interaction. <https://doi.org/10.1016/j.ijcci.2017.12.001>
- Service Design Tools. (n.d.). *Service Safari*. Service Design Tools. Retrieved March 23, 2023, from <https://servicedesigntools.org/tools/service-safari>
- Sevaldson, B. (2013). Systems Oriented Design: The emergence and development of a designerly approach to address complexity.
- Shostack, L. (1982). How to Design a Service. *European Journal of Marketing*, 16(1), 49-63. <https://doi.org/10.1108/EUM00000000004799>
- Skoletjenesten. (n.d.). *Organisation*. Skoletjenesten. Retrieved March 21, 2023, from <https://skoletjenesten.dk/om-skoletjenesten/organisation>
- Steen, M., Manschot, M., & De Koning, N. (2011). *Benefits of co-design in service design projects*. *International Journal of Design*.
- Stickdorn, M., Lawrence, A., Hormess, M., & Schneider, J. (2018). *This is Service Design Doing: Applying Service Design Thinking in the Real World : a Practitioner's Handbook*. O'Reilly Media, Incorporated.

Study Board of Media Technology. (2020). Studieordning for kandidatuddannelsen i Service System Design. Aalborg Universitet.

TU Delft. (2021, February). Your Turn for the Teacher - Guidebook. *Co-design with kids – a toolkit for designers*, 124.  
<https://studiolab.ide.tudelft.nl/studiolab/codesignwithkids/files/Your-Turn-for-the-teacher-Guidebook.pdf>

Vargo, S. L., & Lusch, R. (2004, January). Evolving to a New Dominant Logic. *Journal of Marketing*, 17. 10.1509/jmkg.68.1.1.24036

Walsh, G., Foss, E., Yip, J., & Druen, A. (2013, April). FACIT PD: A Framework for Analysis and Creation of Intergenerational Techniques for Participatory Design. *CHI 2013: Changing Perspectives*, 10.  
<https://doi.org/10.1145/2470654.2481400>

Zosh, J. N., Hopkins, E. J., Jensen, H., Liu, C., Neale, D., Hirsh-Pasek, K., Solis, S. L., & Whitebread, D. (2017). *Learning Through Play: A Review of the Evidence*. LEGO Fonden.

## PICTURE REFERENCES

Ny Carlsberg Glyptotek Vinterhaven. (n.b). [Photograph]. Carlsbergfondet.  
[https://www.carlsbergfondet.dk/~media/Carlsbergfondet/Billeder/CF-Familien/Ny-Carlsberg-glyptotek/Vinterhaven\\_topSpot.jpg?h=900&la=da&w=1600](https://www.carlsbergfondet.dk/~media/Carlsbergfondet/Billeder/CF-Familien/Ny-Carlsberg-glyptotek/Vinterhaven_topSpot.jpg?h=900&la=da&w=1600)

Ana Cecilia Gonzalez. (2019). *Arkitektur 0052 Ny Carlsberg Glyptotek* [Photograph]. Ny Carlsberg Glyptotek.  
<https://media.glyptoteket.dk/sharings/fullscreen?id=10516&token=Lgf82otM>

Katrina. S. (n.d). *Canva Stock image*. [Photograph]. Canva.

Linda Kastrup. (n.d.) *People looking at paintings* [Photograph]. Berlingske.  
[https://berlingske.bmcdn.dk/media/cache/resolve/image\\_x\\_large\\_vertical\\_lg/image/144/1446310/23809524-.jpg](https://berlingske.bmcdn.dk/media/cache/resolve/image_x_large_vertical_lg/image/144/1446310/23809524-.jpg)

Ana Cecilia Gonzalez. (2022). *Arkitektur 0001, Ny Carlsberg Glyptotek* [Photograph]. Glyptoteket.  
<https://media.glyptoteket.dk/sharings/fullscreenid=15309&token=MWXMq9ro>

Sophie Stirling. (n.d.). *Double Diamond* [Photograph]. Sophie Stirling.  
<https://images.squarespacecdn.com/content/v1/56e44e08d51cd48392d811dc/1525192612525-LX4AFEI2UF8K1L25B2W5/Double-Diamond-Sketch.jpg?format=2500w>

Ny Carlsberg Glyptotek Vinterhaven. (n.b). [Photograph]. Berlingske.  
[https://berlingske.bmcdn.dk/media/cache/resolve/image\\_x\\_large\\_lg/image/108/1083556/22440865-bmr.jpg](https://berlingske.bmcdn.dk/media/cache/resolve/image_x_large_lg/image/108/1083556/22440865-bmr.jpg)





Room 8 at Glyptoteket [Own photo]

# APPENDICES

## 1. Interviews with museum professionals

1.1 Information about museum professional interviews	102
1.2 Interview guide for museum professionals	102
1.3 Transcription of interview with Sorø Museum	103
1.4 Links to interview recordings	105
1.4.1 Interview with Stefan Bang from the Glyptotek	
1.4.2 Interview with Sidsel Staun from STORM Museum	
1.4.3 Interview with Signe Stauning from the Workers Museum	
1.4.4 Interview with Henriette Nielsen from Brandts Museum	
1.4.5 Interview with Mads Kring from the Planetarium	
1.4.6 Interview with Nina Trier from the Maritime Museum	

## 2. Design Process Journey

2.1 Template for Design Process Journey	106
---	-----

## 3. Mini Service Safari

3.1 Template for mini service safari	107
--------------------------------------	-----

## 4. Interviews with experts in child-centred co-design

4.1 Information about expert interviews	108
4.2 Interview guide for Ditte Hansen, Mary Elizabeth's Hospital	108
4.3 Interview guide for Sidsel Kirk, Skoletjenesten	109
4.4 Interview guide for Karen Feder, Head of Design for Play	109
4.5 Links to interview recordings	110

## 5. Workshop templates

5.1 Cards for Combine & Fantasize	110
5.2 Storyboard template	111

## 6. Final Design Guide

6.1 Design Guide	111
------------------	-----



# 1. INTERVIEWS WITH MUSEUM PROFESSIONALS

## 1.1 INFORMATION ABOUT MUSEUM PROFESSIONAL INTERVIEWS

	Expert and contact	Title	Museum affiliation	Venue and date
1	Marlene Kramm, mar@vestmuseum.dk	Education and Development Manager	Sorø Museum	Sorø Museum on Wednesday, February 22nd at 9:00
2	Stefan Bang, sreba@glyptoteket.dk	Interpretation Manager for children	Glyptoteket	Glyptoteket on Thursday, February 23rd at 10:00
3	Sidsel Staun, srs@frederiksborgmuseum.dk	Interpretation Director	Frederiksborg Museerne (STORM)	STORM Museum on Monday, February 27th at 9:00
4	Signe Stauning, sst@arbejdermuseet.dk	Teaching and Educational Developer	Arbejdermuseet	Online on Teams on Tuesday, February 28th, at 8:00
5	Henriette Nielsen, henriette.nielsen@brandts.dk	Interpretation Inspector	Kunstmuseum Brandts	Kunstmuseum Brandts on Wednesday, March 1st at 13:00
6	Mads Krings, Chef, mkr@planetarium.dk	Head of Interpretation and Education	Planetarium	Online on Teams on Friday, March 3rd at 8:30
7	Nina Trier, nina@mfs.dk	Head of Education and Family Activities	Søfartsmuseet	M/S Museet for Søfart on Friday, March 10th at 13:00 <sup>10</sup>

## 1.2 INTERVIEW GUIDE FOR MUSEUM PROFESSIONALS

### Interview guide for Museum Professionals

#### Introduction

As mentioned, we study Service Design. A discipline that deals with planning and organizing all parts of a service to improve quality. This means that we are very focused on the users' journeys and on facilitating as good and user-friendly experiences in various contexts as possible.

In our thesis, we would like to find out how children's user journeys in various museum contexts can be improved by actively involving the children in the development process when a new service or activity is to be created in connection with new exhibitions at the museum.

The interview will follow a semi-structured format, and our questions are therefore only meant as a guidance to the conversation.

#### The questions

##### 1. Target groups

1.1 Which target groups related to children do you work with?

1.2 Do you work actively to involve several different target groups?

##### 2. The development process:

2.1 How do you get inspiration for new concepts, exhibitions, and activities for children?

2.2 Would you describe to us, using an example, what a process typically looks like when you have to come up with something new to design or develop something new for the children? Thoughts, consideration, etc.?

#### If children are actively involved in the development process:

##### 3. The development process - continued:

3.1 If a typical development process is idea development, solution development, and testing of the solution,

where in the process do you involve the children?

3.2 Do you involve different target groups in different phases of the process? Where and why?

3.3 If yes, are there different considerations you take or ways you develop, depending on the children's age

groups? Or is the procedure the same across age groups?

3.4 What kinds of exercises or methods have you previously done with the children?

3.5. Where do you find inspiration for methods when you have to actively involve children in the development phase?

3.6. How do you ensure that you have interpreted the children's input correctly so that you are sure of getting the right solution in the end?

##### 4. The roles:

4.1 Which statement(s) fit best with how you involve children in the process?

- User: You observe the children using implemented exhibits or activities.
- Tester: You ask the children questions about the functionality and experience with the exhibitions and activities, with the aim of getting feedback.

- Informant: You ask the children what they think of the exhibitions and activities, and what they would like for future exhibitions or activities.
- Partner: You involve the children in a way where they help to brainstorm new activities, and in collaboration, you build on the input, after which the children are also involved in testing the final solution.

#### 4.1.1 Possible comments on the roles:

4.2 Are there any ways in which you would like to involve the children more actively, but do not do so because

you experience challenges with it?

4.3 What value and benefits does it give you to involve the children in this way in the process?

4.4 What do you experience as the biggest challenges in working with children?

If children are **not** actively involved in the development process:

#### 5. The development process - continued:

5.1 How is it that you do not involve the children actively in the development process?

5.2 How do you ensure that what you develop creates value for the children?

5.4 Are there different considerations you take or ways you develop, depending on the children's age groups? Or

is the procedure the same across age groups?

#### 6. The roles:

6.1 Which statement(s) fit best with how you involve children in the process?

- User: You observe the children using implemented exhibits or activities.
- Tester: You ask the children questions about the functionality and experience with the exhibitions and activities, with the aim of getting feedback.
- Informant: You ask the children what they think of the exhibitions and activities, and what they would like for future exhibitions or activities.
- Partner: You involve the children in a way where they help to brainstorm new activities, and in collaboration, you build on the input, after which the children are also involved in testing the final solution.

#### 6.1.1 Possible comments on the roles:

6.2 What value do you think it would give you to involve the children in this way in the process?

#### 7. Follow up questions:

7.1 What are your thoughts on a more comprehensive method toolkit that can be used to actively involve

children in a development phase when services or activities for a new exhibition are to be developed?

7.2 Is there a particular tool or method you would like in this toolbox?

7.3 Do you have any comments or feedback for us? Possibly, something that you think might be interesting for us to investigate more deeply or pay attention to?

## 1.3 TRANSCRIPTION OF INTERVIEW WITH SORØ MUSEUM

### 22.02.23 - Interview with Marlene Kramm from Sorø Museum

#### Contact person:

Marlene Kramm

Educational and Development Manager

[mar@vestmuseum.dk](mailto:mar@vestmuseum.dk)

Date: Wednesday the 22nd of February at 9:00 - 10:00 at Sorø Museum

#### 1.1 Which target groups related to children do you work with?

Fokus på dette projekt (mig og min by) har været på børnehavebørn - de har ikke nogen erfaring med børnehavebørn før. Vi har en bred målgruppe (børnehave, grundskole, gymnasium og uni). Vores primære fokus er på grundskole- og børnehavebørn.

#### 1.2 Do you work actively to involve several different target groups?

På forskellige måder ja. Forskelligt fra projekt til projekt, og der bliver kigget på, hvilken aldersgruppe, man mener er mest relevant for projektet, som skal stables på benene. Det kan være efter, hvem der er mest tilgængelig i den periode, hvor projektet skal forløbe, f.eks. børnehavebørn til Mig og Min By projektet, og de 10-årige til projektet om en tidskapsel i forbindelse med Vestsjællands Museernes 10-års jubilæum.

#### 3.1 If a typical development process is idea development, solution development, and testing of the solution, where in the process do you involve the children?

I tilfældet med Mig og Min by var der et samarbejde med Varde Museerne. Rammer blev sat op for forløbet, men metoder blev ikke afstemt fuldstændigt, da det skulle tilpasses individuelle rammer som passede børnenes forståelse og hverdag.

I Marlenes tilfælde satte de nogle faciliterende rammer op, som kunne støtte børnene i forløbet, men som ikke ville begrænse eller guide børnene for meget i deres input. De startede med at spørge børnene, hvad en by var for dem. Det havde børnene svært ved at svare på. Børnene blev bedt om at tegne dét, der var vigtigst for dem i deres by, og der tegnede næsten alle børnene deres eget hus og deres familier, hvilket kom bag på Marlene. Da de blev spurgt yderligere ind til det, blev der nævnt kloak/gade riste, 112, brandbiler o.l., og var lidt mere "dystert" end Marlene havde forventet.

Børnene blev også vist billeder af forskellige steder (butikker, kirker, statuer, e.l.) fra byen, hvor de skulle vælge et billede som repræsenterede noget, der var vigtigt for dem. Her valgte mange overraskende nok kirken, fordi de relaterer det til f.eks. begravelse for bedsteforældre, kødsøvs-aftener de havde været til med deres familie i kirken, eller døde kæledyr.

Børnene blev bedt om at vælge elementer fra museerne, som de synes er spændende - børnene er kuratorerne, og bagefter blev børnene bedt om at udlåne nogle af deres yndlingsting, som kunne relatere til museumsgenstandene. Disse skulle så udstilles sammen, hvilket facilitere en form for ejerforbudsoplevelse for børnene. Både dem der udstiller deres ting, og dermed "bliver en del af udstillingen", men også børnene, som har lignende genstande derhjemme, og som kan læse sig til at et barn på samme alder som dem selv har udlånt genstanden til museet, og der er skrevet en historie om barnet og genstanden, som

andre børn kan spejle sig i, og dermed gør udstillingen mere levende for børnene. Marlene og museet i Varde havde forskellige resultater, f.eks. var børnene meget begejstret for kirken på Sjælland, hvor de i Varde havde mere fokus på spisesteder. Her blev museerne nødt til at finde nogle fællesnævner, som repræsenterede alle børnene, da udstillingen skulle være ens på tværs af alle deltagende byer.

**3.2 Do you involve different target groups in different phases of the process? Where and why?**  
Det er individuelt fra projekt til projekt.

**3.3 If yes, are there different considerations you take or ways you develop, depending on the children's age groups? Or is the procedure the same across age groups?**

Det er forskelligt. Det handler om at møde børnene på deres mentale niveau og hvordan de kan komme med input i processen.

In relation to the use of the photovoice method used in Lille Valdemars Eventyr:

Photovoice metoden kom fra Skoletjenesten. Ellers så har inspiration kommer fra de møder med projektledere, som er indblandet i projektet (fra de forskellige byer). Metoderne har dog ikke været ens i byerne - både fordi byerne ikke er ens, men fordi børns fokus på byen har været forskellig.

**3.5. Where do you find inspiration for methods when you have to actively involve children in the development phase?**

Kommer ofte fra pædagogiske projektledere i Skoletjenesten, som ikke har hænderne så meget i det praktiske, men som kigger mere på inddragelse og teoretisk arbejde med børn.

**3.6. How do you ensure that you have interpreted the children's input correctly so that you are sure of getting the right solution in the end?**

I Mig og Min By tolkede de ikke, men har faktisk være ret konkrete. Marlene og co. har givet børnene det de nævnte i de forskellige øvelser de havde med dem. fx. har børnene nævnt at de har krokodiller i byen, og derfor har Rasmus tegnet en krokodille i bogens by. Det samme med regnbuer, da børnene var meget optaget af regnbuer.

I lille Valdemars eventyr har udstillingen været præget af hvad børnene har taget billeder af. De genstande der er blevet taget billeder af og senere vist sig at være dem der var mest spændende, er blevet inddraget - mens de genstande som var 'kedelige' er udeblevet.

**4.1 Which statement(s) fit best with how you involve children in the process?**

- **User:** You observe the children using implemented exhibits or activities.
- **Tester:** You ask the children questions about the functionality and experience with the exhibitions and activities, with the aim of getting feedback.
- **Informant:** You ask the children what they think of the exhibitions and activities, and what they would like for future exhibitions or activities.
- **Partner:** You involve the children in a way where they help to brainstorm new activities, and in collaboration, you build on the input, after which the children are also involved in testing the final solution.

**4.1.1 Possible comments on the roles:**

Observation i stedet for feedback og samtaler. Marlene mener, at de bruger user og partner, men ikke tester og informant, fordi at det er svært at få feedback og innovative input fra børnene. Hendes erfaring er, at børn siger, hvad de voksne vil høre, de giver feedback på mere

individuelle dele af et forløb, og de er "kun" innovative indenfor de rammer, som de voksne sætter op. F.eks. da børnene blev bedt om at beskrive deres ideelle by, men de ikke kunne beskrive dette fordi de ikke kunne forestille sig det. Da Marlene så siger "rumraketter", sagde en lille dreng "flyvende biler", fordi han kan tage hendes input og omdanne til noget mere konkret, som passer ind i hans "verdensforståelse".

**4.3 What value and benefits does it give you to involve the children in this way in the process?**  
Det er to delt:

- 1) Kvaliteten er højere når de er med til at udvikle. Voksne tror børnene vil en ting, men de ender med noget helt andet efter børnenes input.
- 2) Børn får mere ejerskab. Børn føler sig mere repræsenteret og føler sig set og hørt. De interagerer med genstande og montren på en anden måde.

**4.3 What do you experience as the biggest challenges in working with children?**

Mange forskellige udfordringer, næsten altid, og på mange forskellige måder alt efter projektet. Når et projekt har en længere forløbsperiode, er det lettere at indtænke forskellige metoder og inddrage børnene på flere forskellige måder og i flere dele af processen, men når et projekt har en kort forløbsperiode, bliver museet nødt til at 'hive noget op af hatten', og har derfor mere begrænset mulighed for at inddrage børnene i en innovativ process. Feedback er svært. Børnene skal have nogle rammer og hjælpemidler, som hjælper dem med at formidle deres tanker og input, da de har udfordringer med at komme med innovative input. Det er lettere at arbejde med børnene i længere perioder, når man er udenfor. Der sker noget med børn, når de er i et lokale indenfor. De vil gerne lege med bl.a. udstillingerne, hvilket let kan distrahere dem. Generelt hedder det omkring en time indenfor, men et par timer, når man arbejder med dem udenfor.

**7.1 What are your thoughts on a more comprehensive method toolkit that can be used to actively involve children in a development phase when services or activities for a new exhibition are to be developed?**

Vil super gerne se den!

**7.2 Is there a particular tool or method you would like in this toolbox?**

Hvordan klæder vi børn på til at være mere innovative.

**7.3 Do you have any comments or feedback for us? Possibly, something that you think might be interesting for us to investigate more deeply or pay attention to?**

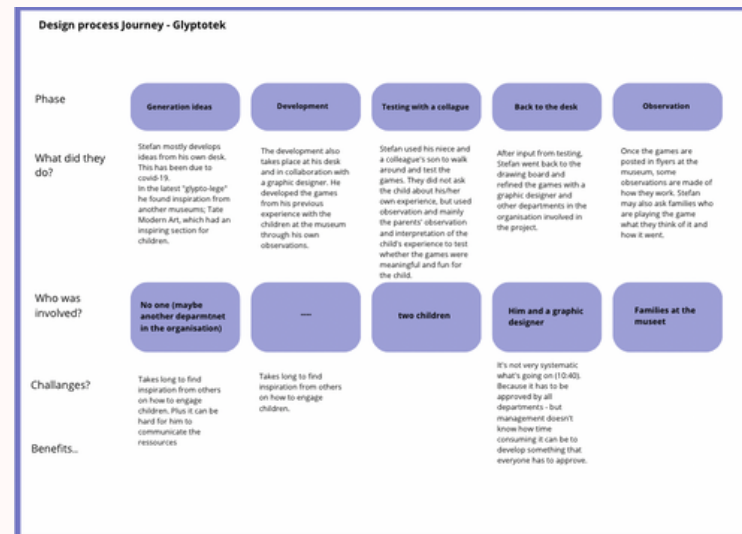
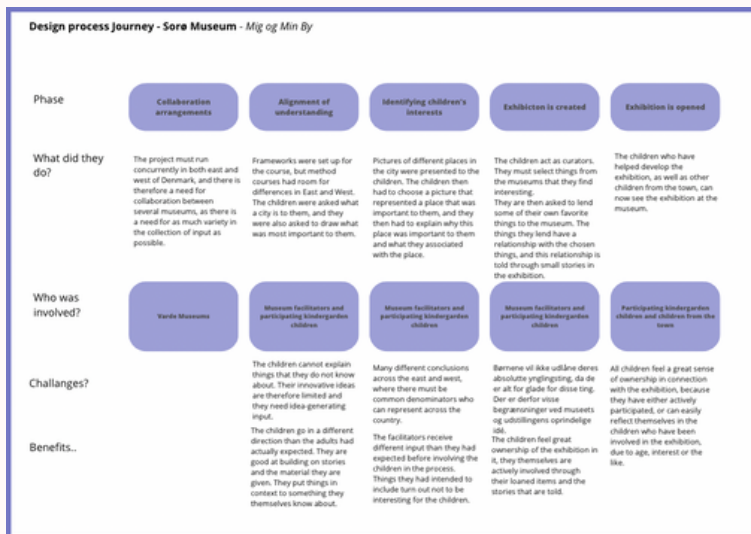
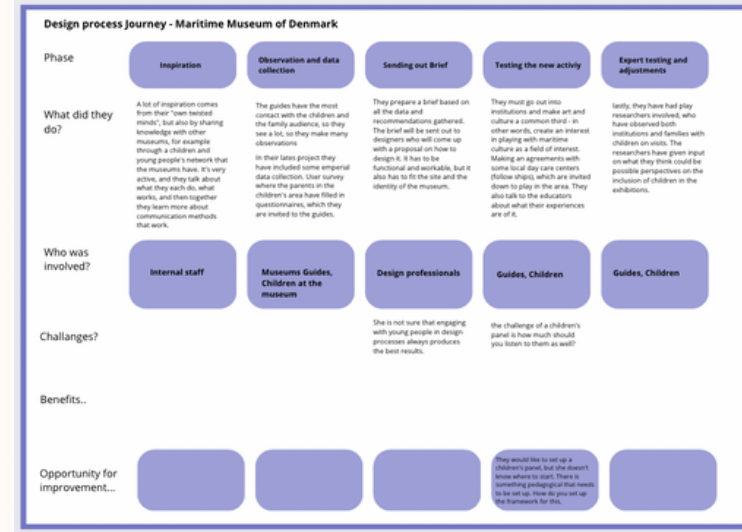
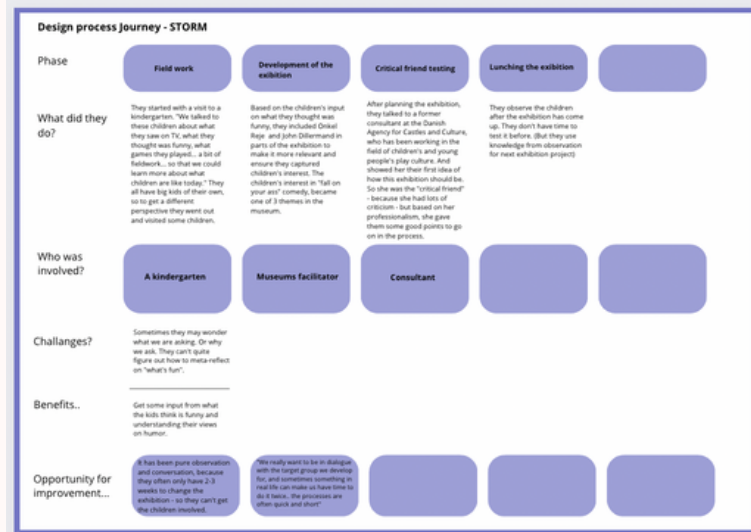
Vestsjællands Museernes 10 års jubilæum - de vil gerne lave nogle tidskapsler med børn, som har samme alder som museum organisationens alder, altså 10 år. Her skal børnene indsamle deres 'kan ikke leve uden' objekter i en tidskapsel, som de så bliver inviteret ind for at åbne om 10 år (år 2033). De håber, at lave lignende forløb med forskellige ting og i forskellige sammenhæng over årene. De har en udfordring i, at de godt ved, at børnene ikke kommer til at give deres mest værdifulde genstande til museet, og derfor skal der fra museets side arbejdes på at indsamle erstatnings genstande, som kan repræsentere de ting, som børnene vælger til tidskapslen.

## 1.4 LINKS TO INTERVIEW RECORDINGS

- 1.4.1 23.02.23 - Interview with Stefan Bang from the Glyptotek - [Link](#)
- 1.4.2 27.02.23 - Interview with Sidsel Staun from STORM Museum - [Link](#)
- 1.4.3 28.02.23 - Interview with Signe Stauning from the Workers Museum - [Link](#)
- 1.4.4 01.03.23 - Interview with Henriette Nielsen from Brandts Museum - [Link](#)
- 1.4.5 03.03.23 - Interview with Mads Kring from the Planetarium - [Link](#)
- 1.4.6 10.03.23 - Interview with Nina Trier from the Maritime Museum - [Link](#)

## 2. DESIGN PROCESS JOURNEY

### 2.1 TEMPLATE FOR DESIGN PROCESS JOURNEY





## 3. SERVICE SAFARI

### 3.1 TEMPLATE FOR MINI SERVICE SAFARI

#### Mini service safari at Glyptoteket

##### Citation:

UXPin. (2023, March 17). How to Do a Service Safari in 5 Easy Steps - by UXPin. Studio by UXPin.  
<https://www.uxpin.com/studio/blog/service-safari/>

##### Case:

We are two service design students looking to explore the child-centered service offerings in Danish museums to understand how the needs of the children are being heard in museum environments.

##### Example client / project

The museums have exhibitions and/or activities for children which are meant to make children feel more included, heard and involved in the museum experience.

##### Research question

What exhibitions and activities are the museums offering children, and do these actually involve children in the main exhibitions?

##### Scenario

I am a child visiting the museum with my dad on a Thursday afternoon. He says it will be a great way for us to share an experience about the museum's topic, and that the museum has great activities to support my experience of the exhibition.

##### Focus areas:

- Do I understand the exhibition contexts?
- Are there supporting activities and/or services which will facilitate my experience?
- Are these activities supporting us in having a shared experience?
- Will I learn something about the subject field in which the museum operates?
- How are my needs thought into the museum experience?

##### Steps to undertake during this service safari

Research online | Select what exhibitions/activities are interesting/relevant for children | Make an enquiry | Plan a visit | Visit site | Post visit contact  
→ Remember to save pictures, screenshots, etc.

Location: Ny Carlsberg Glyptoteket, Copenhagen

Researchers: Saskia & Anne-Sophie

Images of visit: [Link](#)

Date of visit: 23/02/2023

##### Pre-visit – Research online searching for information

Any thoughts, pain-points questions? How easily is the offer explained? Can you find information easily? Can you find lots of options? Are there any CTAs if you don't see what you're looking for?

##### Pre-visit – Select what you're interested in

Was it easy to compare options? Were they clearly explained? Can you save / share them? What information could have been better? What was really good? Was pricing clear?

##### The Visit - Experience

Were they expecting you? Did someone greet you? Was it someone you'd spoken to previously? What services did they offer you? Were you clear about what would happen if you signed up? Was it clear what you would do if there was an issue? How flexible were they on price

##### The Visit - Communications / messages

How did the person who greeted you describe the space? Did they name USPs? Were they good at answering and questions you had?

##### Objects

List objects that are used by people and that populate the environment? Are there any tools e.g tablets for furniture options? Photograph as much as possible

##### Environment

Describe the surroundings, what are the main features? How would you describe the atmosphere?

##### The visit - Services

How was digital and physical mixed? Were there any community events or benefits? Do they have a customer app? If so try it out... thoughts

##### Post visit - Comms

Do they follow up after your visit? If so how?

##### People

Who did you deal with during the whole experience? How long did each step take?

##### Add on services

Are there any 'add on' services e.g internet, cable etc? When did they mention them? Was it clear they wouldn't be included as standard?

## 4. INTERVIEWS WITH EXPERTS IN CHILD-CENTERED CO-DESIGN

### 4.1 INFORMATION ABOUT EXPERT INTERVIEWS

	Expert and contact	Title	Company affiliation	Venue and date
1	Ditte Hansen <a href="mailto:ditte.marie.hansen.01@regionh.dk">ditte.marie.hansen.01@regionh.dk</a>	Anthropologist	Mary Elizabeths Hospital	Rigshospitalet on Thursday, March 16th at 14:00
2	Maria Vitaller del Olmo <a href="mailto:mvalo@create.aau.dk">mvalo@create.aau.dk</a>	Play and Innovation Designer Research Assistant at Service Design Lab	Aalborg University Copenhagen, Service Design Lab	Aalborg University Copenhagen on Tuesday, March 14th at 9:00
3	Sidsel Kirk <a href="mailto:cp2k@kk.dk">cp2k@kk.dk</a>	Educational Development Consultant	Skoletjenesten	Skoletjenesten on Monday, April 17th at 10:30
4	Karen Feder	PhD in Child-Centred Design for Play and Head of Design for Play	Designskolen Kolding	Online on Teams on Friday, April 21st at 10:00 <sup>niro</sup>

### 4.2 INTERVIEW GUIDE FOR DITTE HANSEN, MARY ELIZABETH'S HOSPITAL

March 16th, 2023, Interview with Ditte Marie Hansen from Mary Elizabeth's Hospital

#### Contact person:

Ditte Marie Hansen

Anthropologist

[ditte.marie.hansen.01@regionh.dk](mailto:ditte.marie.hansen.01@regionh.dk)

Date: Thursday, 16. March at 14:00 at Rigshospitalet

#### Introduktion:

I vores speciale fokuserer vi på hvordan museer kan igennem brugerinddragelsesmetoder kan inddrage børn mere aktivt, når de udvikler nye udstillinger, aktiviteter eller services til børn. I den forbindelse vil vi gerne udvikle en værktøjskasse, som museer kan gøre brug af til at inddrage børnene mere aktivt og sikre, at børnenes indsigter og interesse bliver repræsenteret på museerne.

Vi ved, at I allerede designer og tester med børn her på hospitalet, og vi ser jer derfor som en slags eksperter inden for emnet 'brugerinddragelse med børn'. Vi vil gerne blive klogere på jeres processer, metoder og erfaringer.

Vi ønsker, at eksperterne får italesat deres designproces, hvor de oplever problematikker, og hvor de får mest udbytte. og illustrere dette med vores mapping tool

#### Spørgsmålene:

- Arbejdet med brugerinddragelse på hospitalet
  - Hvad er din rolle på hospitalet?
  - Hvordan ser en arbejdsdag typisk ud for dig i forløbet af et projekt?
  - Hvilken rolle spiller afdelingen på hospitalet, og i hvilken grad benyttes afdelingen?
- Målgrupperne
  - Hvilke målgrupper arbejder I med?
  - Er der forskel på hvordan I arbejder med de yngre børn kontra de lidt ældre børn?
  - Hvordan får I kontakt til børnene I tester med? Hvor finder I børnene henne?
- Processer
  - Kan du fortælle lidt om hvordan I arbejder med børnene på hospitalet?
  - Er der forskellige måde I inddrager forskellige børne målgrupper på?
  - Lader I børnene guide jeres process, eller har I en forudbestemt process I følger? (onion model)
    - Hvordan ser en typisk process ud for et barn, når det inddrages i en test hos jer?
    - Er samme barn med i hele processen eller inddrages forskellige børn i forskellige faser af processen?
    - Hvilke fordele og ulemper oplever I ved denne måde at inddrage barnet på?
- Metoder
  - Hvilke metoder eller øvelser gør I brug af i de forskellige faser?
  - Hvor har I fået inspiration til de metoder eller øvelser i bruger?
  - Er der nogle metoder eller tilgange til brugerinddragelse I oplever virker bedre end andre? Hvorfor?
    - Er disse metoder forskellige fra målgruppe til målgruppe?

### 4.3 INTERVIEW GUIDE FOR SIDSEL KIRK, SKOLETJENESTEN

April 17th, 2023, Interview with Dorte Villadsen from Skoletjenesten

**Contact person:**

Sidsel Kirk

[cp2k@kk.dk](mailto:cp2k@kk.dk)

**Date:** Mandag 17. April kl. 10:30 hos Skoletjenesten

#### Introduktion:

I vores speciale fokuserer vi på hvordan museer, igennem brugerinddragelsesmetoder, kan inddrage børn i mere aktive roller, når de udvikler nye udstillinger, aktiviteter eller services til børn. I den forbindelse vil vi gerne udvikle en metode værktøjskasse, som museer kan gøre brug af til at inddrage børnene mere aktivt og sikre, at børnenes indsigter og interesse bliver repræsenteret på museerne.

Vi ved, at I arbejder med at udvikle og dele viden blandt forskellige aktører, heriblandt museerne. Vi vil gerne blive klogere på jeres rolle, og på hvordan I arbejder med forskellige metoder, samt jeres syn på inddragelse af børn i udviklingsprocesser.

#### Spørgsmålene:

Skoletjenestens rolle

1. Hvilken rolle spiller I for jeres medlemmer - også for museerne? Hvad er din rolle i organisationen?
2. Hvilken information / hjælp søger medlemmer hos jer?
3. Hvordan rådgiver I de forskellige medlemmer?

Museernes udvikling med børn

1. Hvordan indsamler og udvikler I viden omkring arbejdet med børn?
2. Hvordan formidles jeres erfaring og viden ud til andre/organisationerne?
3. Hvordan oplever I, at børn indtænkes i udviklingsfaser af undervisningsmateriale - er der forskel på dette mellem forskellige organisationer? Er det meget aktivt eller mere passivt / til børn eller med børn? - forklar rollerne og hvordan de fungerer
4. Oplever I, at organisationerne inddrager børn meget specifikt i nogle bestemte faser af deres udviklingsprocesser, eller er det blandet?
5. Bruges børnene i nogle bestemte roller?
6. Hvordan ser udviklingen ud ift. at inddrage børn aktivt i udviklingsprocesserne? Gøres det mere og mere, er det på stabilt niveau, eller bruges det mindre og mindre?
7. Er der nogle metoder der er mere populære end andre - eller som bliver brugt af de fleste organisationer?
8. Har I oplevet at organisationer har brugt en metode der ikke virkede særlig godt?
9. Er der noget I oplever regelmæssigt bliver efterspurgt? Er der nogle udfordringer der regelmæssigt opleves?

### 4.4 INTERVIEW GUIDE FOR KAREN FEDER, HEAD OF DESIGN FOR PLAY

April 21th, 2023, Interview with Karen Feder from Designskolen Kolding

**Contact person:**

Karen Feder

Adjunkt, studieretnings ansvarlig for Design for Play

[kaf@dskd.dk](mailto:kaf@dskd.dk)

**Date:** Fredag 21. April kl. 10:00 online på Teams

#### Introduktion:

I vores speciale fokuserer vi på hvordan museer, igennem brugerinddragelsesmetoder, kan inddrage børn i mere aktive roller, når de udvikler nye udstillinger, aktiviteter eller services til børn. I den forbindelse vil vi gerne udvikle en metode værktøjskasse, som museer kan gøre brug af til at inddrage børnene mere aktivt og sikre, at børnenes indsigter og interesse bliver repræsenteret på museerne.

Vi ved, at I arbejder med at udvikle og dele viden blandt forskellige aktører, heriblandt museerne. Vi vil gerne blive klogere på jeres rolle, og på hvordan I arbejder med forskellige metoder, samt jeres syn på inddragelse af børn i udviklingsprocesser.

#### Spørgsmålene:

1. Vil du fortælle om dig selv, og hvordan du arbejder med børn i design sammenhænge?
2. Vores research indtil videre viser, at museer bruger børn meget i opstarten og i slutningen af et projekt, men ikke så meget i midten af en udviklingsproces. De bruger dem til at finde ud af hvilke tematikker børn viser interesse i, men ikke når selve indholdet i udstillingen/aktiviteten skal laves og derefter til at teste, om det de har designet fungerer.
  - Hvordan oplever du arbejdet med børn i denne del af en udviklingsfase?
  - Er det generelt en mere udfordrende fase at arbejde med børn i?
  - Er der nogle metoder, som fungerer ekstra godt i denne fase?
3. Ud fra både teorien og vores egen erfaring er selve udviklingen af noget nyt, noget der kan være meget abstrakt for børn. Man kan ikke på samme måde spørge børnene, hvad der skal skabes for at det bliver en sjovere oplevelse for dem. For de kender måske ikke til hvad der er muligt.
  - Er det noget du selv har erfaring med og hvordan har din tilgang været, for at få børnene til at tænke i de her baner?
4. Hvilke tanker gør du dig, når du skal frame en opgave med børnene, for at sikre dig, at du får sat nogle gode rammer, men ikke guider børnene for meget?
5. Hvad er de største faldgruber, når man arbejder med børn?
  - Hvordan sikre man korrekt tolkning og brugbare udkom?
6. Når du skal arbejde med børn i et projekt, gør du så nogle etiske tanker forinden?

## 4.5 LINKS TO INTERVIEW RECORDINGS

- 4.5.1 16.03.23 - Interview with Ditte Hansen, Mary Elizabeth's Hospital - [Link](#)
- 4.5.2 17.04.23 - Interview with Sidsel Kirk, Skoletjenesten - [Link](#)
- 4.5.3 21.04.23 - Interview with Karen Feder, PhD and Head of Design for Play - [Link](#)

## 5. WORKSHOP TEMPLATES

### 5.1 CARDS FOR COMBINE & FANTAZISE

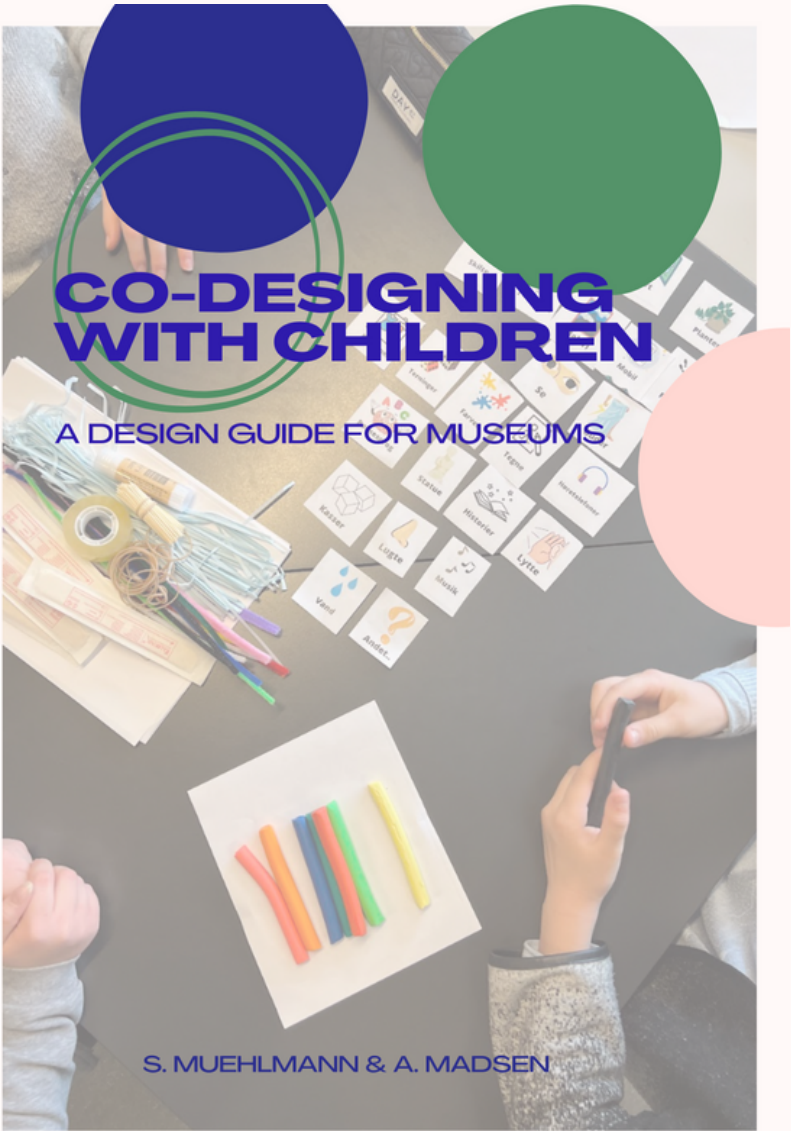


5.2 STORYBOARD TEMPLATE


Hvad sker der her?	Hvad sker der her?	Hvad sker der her?	Hvad sker der her?
Hvilken genstand bliver brugt her?	Hvilken genstand bliver brugt her?	Hvilken genstand bliver brugt her?	Hvilken genstand bliver brugt her?
Hvem er involveret i dette punkt?	Hvem er involveret i dette punkt?	Hvem er involveret i dette punkt?	Hvem er involveret i dette punkt?

6. FINAL DESIGN GUIDE

6.1 DESIGN GUIDE





This design guide is a product of the thesis project:

## Co-designing Children's Museum Experiences

An explorative study of how museums can actively involve children in design processes to create more engaging museum experiences

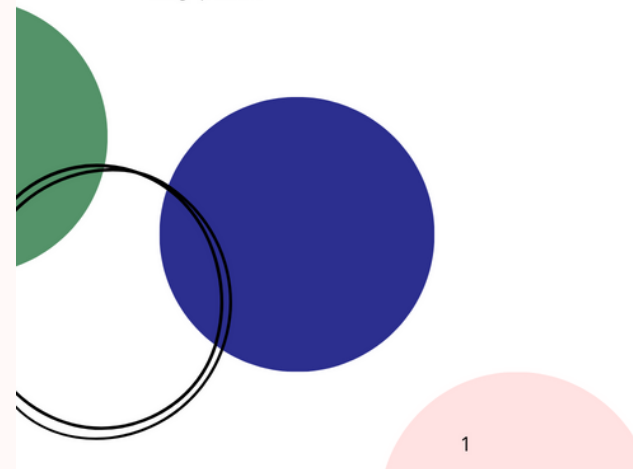
Madsen, A.-S., & Muehlmann, S. (2023). *Co-designing Children's Museum Experiences - An explorative study of how museums can actively involve children in design processes to create more engaging museum experiences* (Thesis) [MSc. in Service Systems Design]. Aalborg University, Copenhagen.

# BACKGROUND FOR THIS DESIGN GUIDE

As part of our Master's thesis in Service Systems Design, we explored how museums can benefit from co-designing children's museum experiences. This design guide is the result of the thesis project, which took place from February to May 2023. Using service design, we have based this design guide on secondary and primary research. Seven Danish museum professionals and three Danish experts in child-centered design have contributed. All learnings have been explored more deeply with a fourth-grade primary school class.

We acknowledge that museum professionals are experts in their field, and children are experts in their own experiences. Therefore, we encourage museums to co-design children's museum experiences with the children to combine their expertise. We understand that not all museum professionals know how to draw on design capabilities to co-design with children and to circumvent the challenges that can prevent involving children in their design process. Our primary focus for this design guide is to support museums to work with children in active roles as informants and design partners. This is to have children provide input and feedback to the museum throughout the design process.

This design guide shares our knowledge and insights on the benefits of involving children in active roles at various phases of a design process, and we hope that it will provide inspiration and tools to involve children in museum design processes more frequently, so children can be encouraged to be experts in their own experiences and museums can benefit from the many creative and diverse benefits this co-design can bring to their design practice.



# TABLE OF CONTENTS

What is this guide?	Page 3
The Importance of Children's Active Involvement in Museum Design Processes	Page 4
Tips to get started	Page 5
Common challenges when co-design with children	Page 6
A child-centered museum co-designing process	Page 8
Children's roles in co-design processes	Page 10
Methods in this guide	Page 12
Understand Internship as a child Open your senses Photovoice Similarities and differences Mission from Mars	Page 13
Idea Development Combine & fantasize Empathic Design Challenge Mixing Ideas Sticky notes	Page 19
Create Bags-of-stuff Story boarding	Page 24
Our co-design experience	Page 27
Acknowledgements	Page 29



# WHAT IS THIS GUIDE?

When children are introduced to museums and art exhibitions at an early age, they learn about culture, art, creativity and immersion, and it will help to stimulate their curiosity and critical sense later in life.

## WHO?

This design guide is intended for museum professionals responsible for the design of children's museum experiences, along with those who want to engage children in co-designing these experiences by giving them an active role in the creative process. By active roles, we refer to children being encouraged to offer input and feedback at different stages in the design process.

## WHAT?

This design guide seeks to support museum professionals through concrete steps and methods when designing museum experiences for children. The steps and tools can be followed as presented or used for inspiration. The guide draws on design practices and tools, which have been researched, tested, and found to be valuable in a museum context for co-designing with children.

## WHY?

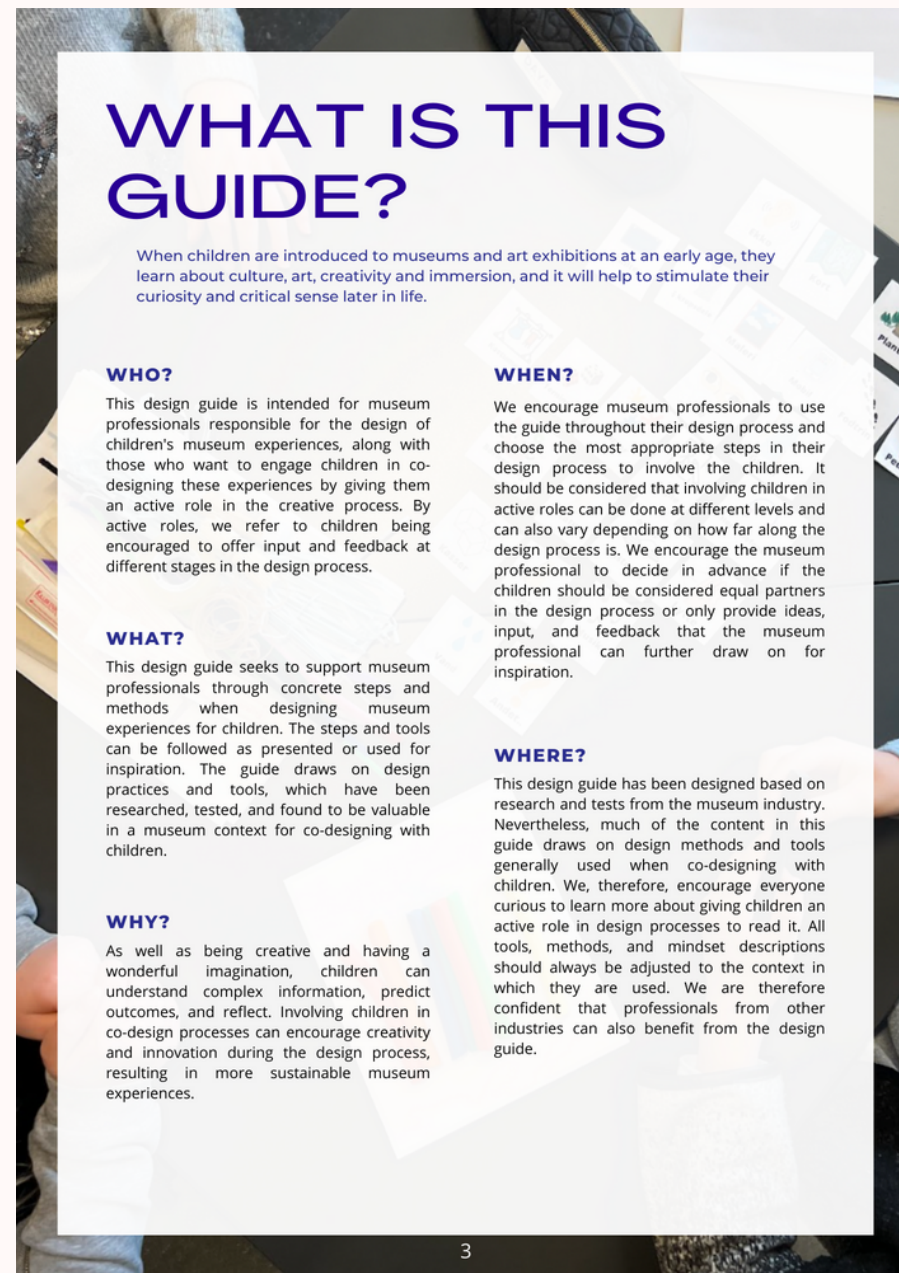
As well as being creative and having a wonderful imagination, children can understand complex information, predict outcomes, and reflect. Involving children in co-design processes can encourage creativity and innovation during the design process, resulting in more sustainable museum experiences.

## WHEN?

We encourage museum professionals to use the guide throughout their design process and choose the most appropriate steps in their design process to involve the children. It should be considered that involving children in active roles can be done at different levels and can also vary depending on how far along the design process is. We encourage the museum professional to decide in advance if the children should be considered equal partners in the design process or only provide ideas, input, and feedback that the museum professional can further draw on for inspiration.

## WHERE?

This design guide has been designed based on research and tests from the museum industry. Nevertheless, much of the content in this guide draws on design methods and tools generally used when co-designing with children. We, therefore, encourage everyone curious to learn more about giving children an active role in design processes to read it. All tools, methods, and mindset descriptions should always be adjusted to the context in which they are used. We are therefore confident that professionals from other industries can also benefit from the design guide.





# THE IMPORTANCE OF CHILDREN'S ACTIVE INVOLVEMENT IN MUSEUM DESIGN PROCESSES

## WHY SHOULD MUSEUMS CO-DESIGN WITH CHILDREN?

Museums should embrace children in their regular exhibitions so that children have equal accessibility to the resources, learnings, and experiences at the core of museums' role in society. Children under 12 often require different means of mediation than older visitors. Thus it is beneficial for museums to involve children in the design process, as children are experts in their own lives and experiences. Museums who work actively with children during design processes report that children regularly turn down the ideas museum professionals would think are of interest to the children and vice versa. Therefore they experience that co-designing with children ensures that children's perceptions, point-of-view, and creativity are represented in the exhibitions. Therefore they experience that co-designing with children ensures that children's perceptions, point-of-view, and creativity are represented in the exhibitions. This means the children are given a voice in the design process and can contribute to shaping their museum visits. It also allows them to be more engaged with the exhibitions since they have participated in creating it.

## WHAT IMPACT CAN CHILDREN HAVE ON A CO-DESIGNED MUSEUM EXPERIENCE?

### Authenticity and relevance:

Children have a unique perspective on the world. They draw on their own authentic experiences, interests, and desires. By engaging with them in the design of exhibitions and activities, the museum ensures that exhibitions and activities are relevant and meaningful to children.

### Empowerment and ownership:

Children involved in designing their own experiences are empowered to take ownership. In a final design, this shines through for other children, when they recognize how other children have been involved and contributed to the design, creating a sense of belonging and responsibility.

### Creativity and reflection:

Children are naturally curious, imaginative, and creative, and when this creativity is connected with their abilities to predict and reflect on outcomes, the museum's usual approach is broken with, resulting in new museum experiences.

### Enhanced learning experiences:

By actively involving children in museum design processes, experiences can be designed to be more interactive, based on playful and free investigations, which supports children's approach to learning.

# TIPS TO GET STARTED

## 1. DEFINE THE PURPOSE

Begin by defining the overall reason for involving children in your process. What should be co-designed and why? What are you hoping to gain from it? Once this is defined, it is easier to plan the process and select the project's best approaches, methods, and activities.

Furthermore, consider the number of children who can concentrate and focus on the activity. In such situations, they may lose concentration more quickly due to many new impressions. Therefore, we recommend allowing breaks and limiting activities to 45 minutes or less.

## 2. CONSIDER THE TIME AND RESOURCES AVAILABLE

Involving children in active roles can take time, and planning the whole process in advance can be challenging. Since you cannot predict each step, planning the process along the way is more efficient. Therefore, it is imperative to be realistic about the timeframe available. There can also be a lot of work involved in processing insights after working with children, and this is where all the significant inputs are collected and synthesized.

## 3. CONSIDER THE CHILDREN'S ABILITIES

It is important to know that not all children have the same abilities and prerequisites. Before involving children, you must consider the children you have chosen to work with. Assess whether the children have the skills needed to solve your prepared activities. When working with a school class, some students may be accustomed to museums, while others may not have previously been to museums. This will be different if you choose to involve children who have previously visited the museum, as they will then have a prerequisite of knowing the museum and possibly other museums.

## 4. ETHICS

When working with children, it is important to consider the ethical aspects. Parents and children must be informed about what role the children play and the activity's purpose. Children have the right to contribute and have a voice, but they also have the right to remain silent. It is their choice whether they want to contribute or not. It can therefore be a good idea to have backup activities ready if some children do not wish to participate in an activity.

## 5. ADJUST METHODS TO THE PURPOSE AND PARTICIPANTS

It is essential to be aware that methods must be customized to the purpose and the participants. The methods in this guide can all be adapted, and they must be so. As well as providing inspiration for getting started, the methods provide a framework for what you want to accomplish. However, the content is not fixed and can easily be adapted to your and the children's needs and the project's context.

## 6. GIVE IT A TRY

When you begin this process with the children, the most important thing is that you try it out in a way that makes sense to you. There is no right or wrong way to go about the process or use the approaches and methods presented in this guide. So just give it a try!

## COMMON CHALLENGES WHEN CO-DESIGN WITH CHILDREN

Children are often discouraged from participating in design processes due to challenges and presumptions, despite the benefits they can bring. Nevertheless, there are ways to go about these and still carry out collaborative design with children.

### LACK OF RESOURCES FOR CO-DESIGN

Involving children in a co-design process can be time-consuming, tricky to plan, and hard to process and analyze afterward. Finding the staff and money you need to co-design with children can also be challenging.



**Tip:** With well-planned scheduling, well-framed methods, and well-organized notes, you can limit a co-design session to just a few hours from start to finish. Choose one method from each phase and work with the children. And last but not least, fewer children require fewer adults, and there are simple methods that do not require more than pen and paper.

### SHORT DEADLINES FOR DESIGNING

The timeframes for museums to create new experiences for children can be tight. This may make scheduling a co-design session with children difficult, as organizing these often requires some advance planning.



**Tip:** When time is limited, it is best to engage children through one or two lightweight methods from each phase of the design process during a 'quick and dirty' design process. You can quickly identify a need, get feedback on ideas, and test a solution.



### ABSENCE OF CHILDREN TO CO-DESIGN WITH

Finding children to co-design with can be challenging, especially if more children are needed. Although some museums invite kindergarteners or schoolchildren to participate, this can be difficult due to logistical issues and limited resources for the institutions.



**Tip:** There are no rules regarding the number of children needed to co-design, nor is it necessary for the same children to participate at each stage. Working with various children is beneficial since it ensures a greater variety of inputs, just as the children are unfamiliar with the facilitator's expectations or project goals. Including different children in different phases will still provide a better representation of children's perspectives than not including them at all. This also allows for a broader range of ideas to be generated and discussed.

### GETTING CHILDREN TO EXPRESS THEMSELVES IS DIFFICULT

Some professionals doubt children's ability to elaborate on, think about, or discuss unfamiliar topics or ideas. This is, however, not limited to children but is a common challenge in the field of user involvement, as users sometimes have difficulty expressing their needs, opinions, and ideas.



**Tip:** Design methods are important to help users understand and express themselves in unfamiliar contexts. Using design methods can assist children in understanding the project context and expressing their inputs, ideas, and needs. Children's input must always be translated and interpreted into useful information by the facilitator, regardless of how they provide it.

### GETTING CHILDREN TO THINK INNOVATIVELY

When it comes to facilitating children's innovative thinking, museums encounter challenges. Children rarely know what is possible or indicate what they already know, so asking what new things they want to see or experience in a museum can be challenging.

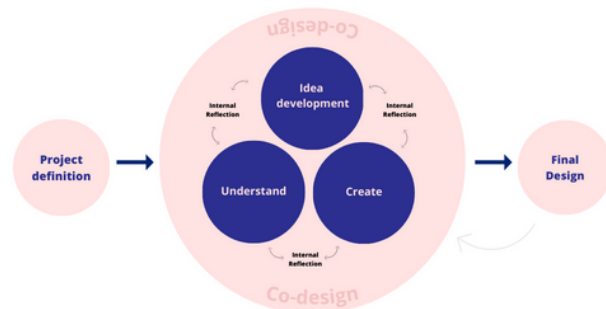


**Tip:** A facilitator needs to frame the methods to encourage children to connect the activity with their current abilities and knowledge to achieve new knowledge. It is important to realize that it is not the responsibility of children to design something innovative or valuable for other children. Instead, it is the facilitator's responsibility to translate their inputs into innovation. It is the sole responsibility of the children to know about being a child. The facilitator, therefore, needs a solution-focused and action-oriented mindset.



# A CHILD-CENTERED MUSEUM CO-DESIGN PROCESS

This design process has been tailored to reflect museum professionals' skills, needs, and purposes to support museums' needs, procedures, and challenges when collaborating with children. We recommend that children are involved as soon as possible and at various and frequent phases throughout the design process to ensure a more sustainable and viable design outcome for the children.



## PROJECT DEFINITION

This first phase focuses on initiating a new project within the museum or improving a current exhibition or activity. During this internal phase at the museum, the project's goal, direction and resources are planned. In this section, three possible starting points are identified:

1. A new exhibition is to be opened, and the museum needs to incorporate children's perspectives.
2. A current exhibition is already in place, but the children's perspective needs to be incorporated.
3. A new service for children, such as an activity or exhibition, should be explicitly designed for them.

## CO-DESIGN SPACE

Once the project has been defined, the process moves into the co-design space. This space focuses on co-creating the experience, with both the children and with the expertise of other professionals and stakeholders.

In most cases, the Co-design phase begins with Understanding, but you can start at any phase, depending on your project. Thus, all three phases can be used in any order appropriate for the project.

## UNDERSTAND

In this phase, the focus is on empathizing, discovering, exploring, and understanding what is relevant to the project, but mainly the users are in focus. As part of this phase, children are actively engaged to explore and empathize with their experiences.

## IDEA DEVELOPMENT

During this phase, the focus is on defining, generating, and choosing ideas. In this phase, the museum professional and the children explore different development methods together. Children are encouraged to explore opportunities, consider several ideas, possibly combine them, and choose the most likable.

## CREATE

This phase focuses on building, prototyping, testing, and evaluating ideas before implementing them. In this phase, the museum professional works with the children to decide on and implement their favorite solutions.

## INTERNAL REFLECTION

Children can provide you with a surprising amount of information when you work with them, so it is important to understand that co-designing with them cannot be a linear process, planned from start to finish. Therefore, we encourage museum professionals to work in sub-phases for Internal Reflection after each activity and phase before preparing for the next step instead of following the phases sequentially. Therefore, it is crucial to be present and engaged with the children during sessions and ask them curious questions to learn more. Once the phases in the Co-design space have been carried out satisfactorily, and the museum professional reaches the deadline and considers the project finished, the process moves out of the co-design space, and the Final Design is ready.

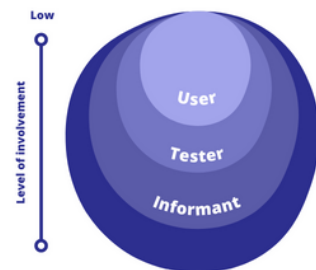
## FINAL DESIGN

In the Final Design phase, the idea and design have been implemented into the museum. This does not, however, indicate that the design process is over, and we encourage continuous improvement, evaluation, and discovery of new opportunities to improve what has been designed. Therefore you should remain open to going back to the co-design space.



# CHILDREN'S ROLES IN CO-DESIGN PROCESSES

Adults are often considered knowledgeable citizens, and children the learning citizens. For this reason, children can sometimes find it challenging to communicate their opinions, needs, and wants in their own experiences, as they typically rely on adults for everyday activities. Additionally, children are viewed through our own biases and assumptions as designers of experiences, and we tend to base our designs on what we assume children might want. As we learn more about children and their engagement with museum experiences, we can better serve them, and our research and design practices can be improved to make more informed decisions that will have lasting effects on the future generation. Bringing children into design processes through different design roles, and encouraging them in active voices, can help us make these informed decisions.



## INVOLVING CHILDREN IN ACTIVE ROLES

Involving children in active roles includes the roles of informant and design partner. Since the involvement of the roles build on top of each other, the active roles incorporate the passive roles of user and tester as well. The active roles involve children in various phases and steps of the design process, where children are observed, provided feedback, and contribute with inputs and ideas. In the role of design partner, they also have a voice in decision-making and can influence which ideas are brought forward in the process. Usually, learning from active roles are new inputs and ideas for implementation at the museum. These are found by encouraging children to provide their special experiences and viewpoints that adults might not be able to think of.

**Challenges:** When children are involved actively and throughout a design process, there is the risk of bias or neither part really being in charge. In the role of informant, the designer continues having the final decision, possibly causing bias in the design outcome. In the role of design partner, a need to negotiate decisions can occur, which can be complex because children easily fall back into the role of learners looking at the adult as authority figures. Additionally, design sessions with children in active roles can be more time-consuming, with more insights and data to process afterward.

**Spaces:** The active roles spark a sense of empowerment in the children, and this feeling provides valuable outcomes. It helps the children evolve and understand the impact they can have on their own experiences and the world around them. Furthermore, both roles offer great flexibility regarding where and when activities occur.

Deciding which role the children should be asked to participate in is important. Be aware of this when planning for their involvement in the project and inform the children accordingly, so they understand their voice and the impact they can contribute with.

## WHICH CHILDREN CAN BE INVITED TO PARTICIPATE IN CO-DESIGN SESSIONS?

**Involving children from institutions** provides fast and many insights at once. Additionally, the children have peers and adults who know them and their capabilities to support them and spare with. A limitation is that children from the same institutions possibly have the same basis for prerequisite, thus contributing with a more limited perspective in the inputs.

**Involving children through focus groups** with their families also provides fast and many insights at once. Here the children will have close relatives to spare with and who might be more capable of encouraging ideation in the children. Additionally, the children will have a broader range of prerequisites, contributing with a more diverse perspective in the inputs and thus more ideas to build on top of. A limitation is that the planning process can be more time-consuming as it can be difficult to find families that wish to participate, just as more resources, in terms of flexible timing and snacks and beverages, might be needed for a workshop.

**Involving children from your network** can be easy to recruit, and insights can be gathered quickly. A limitation is that fewer insights will be gained than from a larger group of children, just as the children will bond with either you or the person familiar with the project and thus might be eager to please by answering what you want to hear. There is also little sparring for the child to build on top of.

**Involving children visiting the museum** provides insights founded in an experience that has just taken place and is therefore fresh in the child's mind. The children have been a visitor in a natural setting that will be similar to most other children visiting the museum later on. This approach provides fast and many insights at once and can be done over whatever timeframe is possible and with limited resources other than pen and paper. A limitation is that the children possibly have the same basis for prerequisite, as they are already active visitors at the museum and therefore might not be able to represent the viewpoint of the non-active visitors.

## IDEA FOR INVOLVING VISITING CHILDREN IN ACTIVE ROLES

Involving visiting children can be done with limited resources by applying a design game setting in the museum for the children. It is always advised to inform the children and its adults of the purpose behind the project, what the inputs will be used for, and other considerations that apply.

The same children do not have to be involved throughout the design process. You can involve visiting children in Understand through, e.g., an activity, and then use responses from this activity with children from an institution to move forward in the design process before testing and evaluation with children from your network.

Design games offer a controlled approach to co-designed activities. Through props, rules, and a playful attitude, the museum professional can take advantage of the various skills the visiting children possess and jointly with the children; through the game, the museum professional can explore multiple design possibilities within a game setting.

Imagine different posts throughout the museum where small activities are placed for the children to carry out during their visit, either independently or through engagement with the adults or the exhibition. The activity is framed to have the child carry out an exercise and note their answers, inputs, and ideas. They can complete each of these activities, hand them back to the museum information or similar, and the following day, a stack of children's experiences, input, and ideas will be ready on your desk.

## METHODS IN THIS GUIDE

### METHOD MATRIX

A number of methods for involving children in the design process have been collected and presented in the method matrix below. Using the method matrix, you can quickly get an overview of methods, their purpose, and when they can be helpful in a design process.

The following methods all help to strengthen and facilitate the inclusion of children's perspectives in the museum, while some also can be used to trigger creative ideas. Common to all the methods is that they all focus on facilitating dialogue between you and the children to ensure that future projects and concepts are valuable for the children and the museum.

The vertical line of the matrix shows what the purpose of the methods is and which activities this method involves. This can help plan and facilitate the process with the children. All the methods can be adapted and built upon if needed, and you are encouraged to adjust the methods to fulfill the specific requirements and constraints of the museum project.

		Empathize	Observe children	Encourage new ideas	Understand trends & interests	Subject for common ground	Evaluate	Narrative	Lo-fi prototype	Photographs	Dialogue	Experiencing	Drawing
Metode		Objective					Activities						
Understand	Internship as a child												
	Open your senses												
	Photovoice												
	Similarities and differences												
	Mission from Mars												
Idea Development	Combine & fantasize												
	Empathic Design Challenge												
	Mixing Ideas												
	Sticky notes												
Create	Bags-of-stuff												
	Storyboarding												

## PHASE 1: UNDERSTAND

### WHAT HAPPENS IN THIS PHASE?

This phase involves actively engaging with children to understand their experiences from their perspective. This could include how they experience the museum, understand a specific topic, or their interests in everyday life.

During this phase, you may invite the children into the museum to gain insight into their experience, get input on what captures their interest, or get quick inspiration for smaller ideas about what the museum needs to consider concerning the children. Additionally, you can engage with the children at the museum or in their own environment to see what interests them now. Thirdly, at this stage, you can engage children who visit the museum with their parents more actively to see how they experience it without your influence.

### WHAT IS THE CHILDREN'S ROLE IN THIS PHASE?

In this phase, children act as active informants, answering and providing input to the questions you may ask. In addition, their role is to be observant, curious, and explorative; this is because children who acquire knowledge through free inquiry and spontaneous effort are more likely to retain their knowledge later and can reflect on their discoveries.

### WHAT IS YOUR ROLE IN THIS PHASE?

It is your responsibility to observe the children as they engage in activities with you during this phase and ask them questions and initiate conversations with them to better understand what they are experiencing. Be present during the activity rather than taking notes; instead, take notes after it is over. This will allow you to engage in meaningful dialogue with the children and understand them more deeply.

### WHAT HAPPENS BEFORE AND AFTER THIS PHASE?

After defining the project, this phase can be the first step to better understand what you might investigate or gain ideas. You can also go through this phase after you have come up with an idea but still need additional knowledge about what the idea should include for children.

If your exploration in Understand builds on an already existing idea where you want to understand needs and wishes better, you may choose to move forward into Create.

### WHICH METHODS ARE RECOMMENDED IN THIS PHASE?

- Internship as a child
- Open your senses
- Photovoice
- Similarities and differences
- Mission from Mars

# INTERNSHIP AS A CHILD

Designers learn through play with children.



## WHAT OUTCOMES CAN YOU EXPECT FROM INTERNSHIP AS A CHILD?

This method can allow you to get close to the children and experience their everyday life through their eyes. The method recognizes children as the true experts in being children without any predefined agenda, as it is about observing and engaging with children on the children's terms.

It can give you open and honest insights into how children think, and play, what is important in their play, and what interests children have at the moment that can be valuable for you to bring forward when coming up with ideas and creating something for the children.

## WHAT HAPPENS DURING THIS METHOD?

During Internship as a Child, you should take on the imaginative role of an 'intern,' engaging in children's everyday life to (re)learn what a child being is like. The method is characterized by no prior planning and preparation. It emphasizes the importance of simply being present, playing, and engaging in dialogue with children on their terms so that we can better understand how they interact with the world.

Start by asking what the child wants to do or if you can join them in their play. You must remain present in the child's game and be on the same wavelength as them. Feel free to ask questions about the game: Why is it fun? What other games do they enjoy? When is it most fun to play? If you have any other relevant questions, please do not hesitate to ask.

## WHAT SHOULD YOU BE AWARE OF?

In this method it is important that you are present with the child, therefore there is no need to take notes along the way. Save this for afterwards when you have set aside time for reflection after each session with the children. You may want to make quick reflections on small reflection cards right after your practice. This can draw your attention to new things that they hadn't noticed before.

## RESSOURCES NEEDED

- One or more children

# OPEN YOUR SENSES

Children (re)discovers the environment by looking, hearing, feeling, smelling and maybe even tasting.



## WHAT OUTCOMES CAN YOU EXPECT FROM OPEN YOUR SENSES?

This method will give you insights into how children generally experience the museum, a particular space, or what things they are most drawn to. In this method, children will be asked to listen to the sounds or the lack of sounds in the museum, touch materials, feel the textures, and describe or draw their experiences and discoveries. They may also take pictures.

As well as providing you with inspiration for what can be designed for the space, this exercise can also be used as a warm-up method, giving the children a better feeling of the museum and inspiration for coming up with new design ideas.

## WHAT HAPPENS DURING THIS METHOD?

Choose a room or a space in the museum you find relevant to the project. Through a mindful and calm approach, the children are asked to close their eyes and listen, smell, taste, or touch, depending on the information they wish to get. As you go along, you might ask them questions, but without too much guidance, since you want their honest opinion. Furthermore, you can give them some time to explore the room independently or give them some small focal points, depending on your focus. Afterward, gather the children to share their ideas.

The exercise can also be more specific by asking what shapes they can see or what sounds they would hear if nobody was in the area.

## WHAT SHOULD YOU BE AWARE OF?

While the children are observing the room, you should also pay attention to how they behave and move. Doing this gives you a lot of insight into what interests them. You may also engage in dialogue with them while they explore to learn about the observations they make along the way.

It is emphasized that children can influence each other's answers. If insights are shared in a plenary, children's responses can influence each other and be repetitive. It can be beneficial to provide children with methods so they can note their individual responses before presenting and discussing them.

## RESSOURCES NEEDED

- Group of children
- Pen and paper (optional)



# PHOTOVOICE

Children documents their experience through pictures.



## WHAT OUTCOMES CAN YOU EXPECT FROM PHOTOVOICE?

This method will help you better understand the children's perspective through pictures. It is an opportunity to confirm or deny what children find interesting at the museum or be surprised by something completely unexpected. In addition to providing deeper insights, the pictures can also be used to engage children in dialogue.

## WHAT HAPPENS DURING THIS ME?

The children will use cameras to record their museum experience, what they want to learn more about or things they find interesting or weird. Depending on the number of children and your resources, this can happen in groups or individually.

You can let the children roam freely or give them specific instructions. Most importantly, they document their experience by taking photos along the way. Your role is to review the photographs and engage the children in a dialogue based on their photos, asking the reasons behind their photos, their experiences with what the photos show, and other curious questions.

You can also do the method in collaboration with a school class, who, as homework, takes pictures at home or documents their activities during the day. The information can be used to gain insight into children's daily lives.

## WHAT SHOULD YOU BE AWARE OF?

The photographs cannot stand alone. They must be used as entry points to understanding how children experience an exhibition or experience objects. You need to be able to observe during their visit and then go back to the children and talk to them about the pictures they have taken to get a better understanding of why these were important to document. You might be surprised by the answers.

In addition, there must be room for flexibility. There must be room for the children to do something other than what you actually expected them to do, so you must be able to follow and adapt your method. This creates the most authentic representation of their experience of the museum.

## RESSOURCES NEEDED

- Group of children
- Cameras

# SIMILARITIES AND DIFFERENCES

Children's mindset is adjusted to the project context.



## WHAT OUTCOMES CAN YOU EXPECT FROM SIMILARITIES AND DIFFERENCES?

This method can be used as a warm-up method and prepare the children to think in a certain mindset before doing other activities in the museum or the children's environment. The exercise allows children to think back to their previous experiences in museums.

## WHAT HAPPENS DURING THIS METHOD?

Children are divided into small groups with a maximum of 4 children. They are, e.g., asked to find four museums they have all visited and one that they have each individually visited but the others have not. They then report back to you what they have decided on. The exercise can also be used for other things or topics. The essence is that they have to find similarities and differences between themselves and the topic in question. This could also involve the children discussing what they like and dislike about museums and then finding answers to why they find them exciting or boring.

## WHAT SHOULD YOU BE AWARE OF?

Children may find it difficult to talk about things they do not immediately recognize. If children have not experienced a museum recently, or maybe ever, they may find it difficult to express themselves or have an opinion about it. It is, therefore, important that your framing takes this into consideration.

## RESSOURCES NEEDED

- Group of children
- Pen and paper
- Paper with questions (optional)

# MISSION FROM MARS

Seeing things from children's perspective



## WHAT OUTCOMES CAN YOU EXPECT FROM MISSION FROM MARS?

Through this method, you will better understand a specific topic or object from a child's perspective: the way they think, how they perceive or react to specific things, and what trends they are focusing on right now regarding these topics or objects.

## WHAT HAPPENS DURING THIS ME?

Originally, this method is done by having a design team member play the role of a Martian. This person sits in one room (in outer space) while the children sit in another and communicate with the Martian via, e.g., teams. A narrative about the Martian is developed to frame the workshop. As an example, suppose the Martian is building a museum on Mars. The exhibition will be about the project you are currently designing for the museum, and the Martian knows nothing about it. It is, therefore, the children's task to explain what it is to this Martian. They must explain how they use it, what they like, and what they do not like, and generally give their perspective on what they think is important to know about the chosen topic or artifact. Consequently, you have to translate this into the specific needs and interests of the children concerning the chosen topic.

This method has its strength in providing a shared narrative space where questions related to the children's everyday life can be asked and answered informally and often dig deeper than what you, might ask. As it is the children themselves who can elaborate on the things they feel are important to tell and know.

## WHAT SHOULD YOU BE AWARE OF?

In this method, your role as a facilitator is to take the children's answers and insights and interpret and translate them into something useful.

An example could be for children to describe what a school bag is to the Martian. As children talked about their key rings and stickers on their school bags, it could be interpreted that they value personalizing them.

## RESSOURCES NEEDED

- Group of children
- A character like the Martian
- Teams (optional)

# PHASE 2: IDEA DEVELOPMENT

## WHAT HAPPENS IN THIS PHASE?

In this phase, the main aim is to develop new ideas with the children and explore new possibilities, consider several ideas, and possibly combine them so that you are left with a lot of new knowledge and new relevant ideas for what can be designed in the museum. This phase can be done in the classroom after the children have visited the museum. However, the methods can also be used at the museum and adapted to involve visiting children. The methods in this guide are designed to provide a common ground and visual support to ensure that the children can verbalize their ideas better and that you can understand them.

## WHAT IS THE CHILDREN'S ROLE IN THIS PHASE?

In this phase, the involvement of children as design partners is ideal, as they help create the ideas and partly choose which to bring forward. Their task is to use their creative minds to develop new ideas and initial ideas on how ideas can be implemented in the museum. You may encourage the children to combine their ideas differently to develop even more ideas.

## WHAT IS YOUR ROLE IN THIS PHASE?

Like in the previous phase, it is your role to observe the children during the activities and engage in conversations with them. This allows you to gain in-depth insight into their way of thinking, what they want, and why they create the ideas they do. Additionally, it will give you a better understanding of the ideas they have created, as it can be difficult to interpret the depth of the idea if the children only write them down. In addition, your knowledge is valuable; together with the children, you can come up with realistic and valuable ideas. In this way, the dialog during the activities is the most important.

## WHAT HAPPENS BEFORE AND AFTER THIS PHASE?

Before you begin this phase, it is a good idea to go through the Understand phase to get insights from children and give them a deeper understanding of the museum to create a strong foundation to develop new and relevant ideas. Once the ideas have been developed, the next step will be to finalize them to be tested.

## WHICH METHODS ARE RECOMMENDED IN THIS PHASE?

- Combine & fantasize
- Empathic Design Challenge
- Mixing Ideas
- Sticky notes



## COMBINE & FANTASIZE

The children come up with new ideas by fantasizing about random combinations of objects and properties.



### WHAT OUTCOMES CAN YOU EXPECT FROM COMBINE & FANTASIZE?

This method can help you to get inputs and inspiration on new ideas for upcoming exhibitions or activities at the museum directly from the children themselves. The strength of this method lies in the fact that the children are not influenced by the museum in the same way as you are, and the children's creativity has no limits.

Even though some of the ideas may seem unrealistic, they can give a deeper insight into what children want or lack at the museum and can be a good source of inspiration for what can be designed in the future.

### WHAT HAPPENS DURING THIS METHOD?

Children are divided into groups and given a stack of preprepared picture cards. The images can be based on artifacts in the museum or exhibitions or generally related to what you want insights and ideas for to ensure the ideas are relevant to the museum. In groups, each child takes turns choosing a card and combining one or more at a time to develop a new idea. By combining the cards, new creative ideas can emerge. The children then write down their ideas.

You may also want to incorporate input from previous activities with the children into this method. For example, the cards may include things the children have shown an interest in or a lack of interest in, allowing them to provide feedback on how to make boring things fun for the museum's visitors.

### WHAT SHOULD YOU BE AWARE OF?

In this method, your role is to engage with the groups through dialogue with them as they put the cards together. For you, valuable inputs may be missed in the children's written outcome since they do not necessarily write everything down.

As a museum professional, you are also in a unique position to contribute ideas since you know what is possible. Therefore, it offers an opportunity to guide the children to develop more realistic ideas. You must, however, avoid guiding them too much, as this will lead to a lack of creativity and a loss of the children's perspective.

### RESSOURCES NEEDED

- Group of children
- Printed cards with pictures
- Pen and paper

## EMPATHIC DESIGN CHALLENGE



Through empathy, children come up with solutions based on a story they are told.

### WHAT OUTCOMES CAN YOU EXPECT FROM EMPATHIC DESIGN CHALLENGE

This method can get children to come up with specific solutions to a relevant problem. By getting children to empathize with a character in a story, they can translate their own needs into the needs of others. This method can provide you with many concrete ideas for your project from the children's perspective, making the method a great tool for a quick and efficient ideation session when time and resources are limited.

### WHAT HAPPENS DURING THIS METHOD?

You prepare a story relating to the goal of your project. The story does not have to be long. The most important thing is that the story focuses on details and emotions for the children to empathize with the character in the story. Based on the story and possibly some predefined requirements and wishes that the solution should fulfill, the children can come up with suggestions and ideas for a solution. Remember that the fewer requirements, the more creative the ideas will be.

The story is told to the children at the beginning of the method. Based on the situation described, the children can walk around the museum, or where relevant, to find an improved situation or a desired solution.

Giving them a sheet of paper with 2 - 3 boxes may be relevant. One with the story, one with requirements, and a blank one for them to write on.

### WHAT SHOULD YOU BE AWARE OF?

Be aware that children's ideas can be very creative and not always realistic regarding the museum's possibilities. You should therefore frame the exercise to encourage the children to come up with relevant ideas, but without restricting or influencing them too much, as their creative and sometimes unrealistic ideas may still be useful and valuable once interpreted.

Your task is to translate the children's ideas into something realistic that can be implemented in the museum. If they want something impossible, think of how you can accommodate the idea differently: What are they actually asking for?

### RESSOURCES NEEDED

- Group of children

## MIXING IDEAS

Children think of different ideas and in groups they disassemble the groups to re-combine the individual ideas into new ideas.



### WHAT OUTCOMES CAN YOU EXPECT FROM MIXING IDEAS?

This method is designed to combine children's ideas and elaborate on them until a solid solution can be presented. This helps children think outside the box and develop more inventive solutions. It also encourages collaboration among them as they learn to work together and build on top of each other's ideas.

### WHAT HAPPENS DURING THIS METHOD?

After the children have been to the museum and have gotten a good understanding of it and the topic of the project, the children come up with an idea of something that could be implemented into the museum. Alternatively, you can use ideas from a previous method. Each child chooses an idea, and they get into groups of 4. In the groups, they have to mix their ideas into one. Feel free to use A3 sheets. It may be beneficial for the children to draw the individual elements of each idea before putting them together. This may require facilitation by an adult.

You can explain to the children why they should mix ideas and use an analogy like baking cookies. Each individual ingredient may not taste pleasant, but when all the ingredients are combined, you get a tasty product that is much better than each individual ingredient.

### WHAT SHOULD YOU BE AWARE OF?

This method can be very time-consuming, and it may be a good idea to split it in two, as it can be challenging for children to concentrate for too long.

This method also requires adult facilitation, and having an adult for each group is a good idea. Teachers or parents can be involved.

It may also help to give the children a specific task and possibly tell them what an experience is if that is what they will draw. A question to start the m could be: "How would you change the information on the artifact if you could?" This is specific enough for them to draw new solutions.

### RESSOURCES NEEDED

- Group of children
- Teachers
- Pens and paper (A4 + A3)

## STICKY NOTES

Children vote on their favorite ideas by writing thing they like or dislike about each idea.



### WHAT OUTCOMES CAN YOU EXPECT FROM STICKY NOTES?

This method is used to get the final input from the children before choosing a final idea. The children choose the idea they think is the best. Ideally, this method is based on their own ideas they have come up with.

### WHAT HAPPENS DURING THIS METHOD?

Children either present their ideas themselves, or you present the ideas you have taken forward. After the presentations, each child gets two post-its in two different colors. They must now write one good and one bad thing for each idea.

Their input is then discussed together before each child writes down a number for the idea they think is best.

### WHAT SHOULD YOU BE AWARE OF?

Children can easily influence each other. It is, therefore, a good idea to get the children to vote so that each child can vote individually without other children knowing how they are voting. Therefore, getting them to write down a number and give it directly to an adult is a good idea. Then the votes can be totaled.

### RESSOURCES NEEDED

- Group of children

## PHASE 3: CREATE

### WHAT HAPPENS IN THIS PHASE?

This phase is about creating with the children. Here, children build on their ideas from the previous phase and visualize and communicate through materials and drawings. This will give you a better understanding of how their ideas work, what they contain, and how the children perceive them. In addition, you can test the ideas with and on the children to adapt and adjust them.

### WHAT IS THE CHILDREN'S ROLE IN THIS PHASE?

In this phase, the children play the role of informants as experts by communicating inputs and feedback on the experiences created for them in the museum.

### WHAT IS YOUR ROLE IN THIS PHASE?

In this phase, it is important that you as the museum professional frame the methods in such a way that encourages children to connect with their current abilities and knowledge in order to create new ideas. It is important to emphasise that it is not the responsibility of children to design something innovative or valuable for other children. Instead, it is your responsibility as the facilitator to translate the children's inputs into innovation with a solution-focused and action-oriented mindset.

### WHAT HAPPENS BEFORE AND AFTER THIS PHASE?

Before this phase, you either have some ideas you would like the children to work on, or the children work and build on their own ideas. You will be responsible for testing and implementing the idea in the museum. You may want to repeat the Understand phase after this to further develop the new design and get even more input from the children to further develop the final details of the idea.

### WHICH METHODS ARE RECOMMENDED IN THIS PHASE?

- Bags-of-stuff
- Story boarding

## BAGS-OF-STUFF

Children build and visualize the best ideas, before testing their functionality.



### WHAT OUTCOMES CAN YOU EXPECT FROM BAGS-OF-STUFF?

This method is a prototyping technique where children and adults use art materials such as glue, clay, string, markers, socks, and scissors to create low-tech prototypes. This will help children to elaborate on their ideas and move closer to a finalized idea.

### WHAT HAPPENS DURING THIS METHOD?

Children will use different art materials of your creative choice to visualize their idea by building them.

The children are divided into groups of 3 - 4 children and an adult, and they then have to agree on which idea they will visualize together. The adult's task is to observe the children's process while creating the idea with them. This is to gain insight into the children's thoughts and guide them in the building and thinking process. Once each group has built its idea, it should be presented to the rest of the group.

In this exercise, you observe the groups and engage in dialogue with the children as they build. This will provide valuable input into what they think and want, as what they have created can be difficult to interpret when finished. The materials and the built idea act as a medium for dialogue between children and adults. Remember to facilitate their idea in a direction that encourages creativity but still keeps with the constraints of the museum.

### WHAT SHOULD YOU BE AWARE OF?

Note that this method can be influenced by the materials chosen to create with. Therefore, they should be as diverse as possible without materials that can "control" or influence the children's ideas too much.

It is important to be aware that the children may choose to create the idea they can see is possible to create with the materials provided. Therefore, the materials can limit the children's ability to build the best idea. It is, therefore, important in this method that an adult sits with the group and participates in the conversation. The adult asks the children questions along the way, but without guiding the children's creative process too much, to avoid the idea being created by the adult.

### RESSOURCES NEEDED

- Group of children
- Group of adults
- Art supplies (pipe cleaners, glue, scissors, cardboard, balls, popsicle sticks, toothpicks, string, modeling clay, tape etc. )
- Pen and paper

# STORYBOARDING

Children draw the details of their final idea.



## WHAT CAN BE LEARNED FROM COMPLETING STORYBOARDING?

In this method, children draw their inventive experiences. This can give you a better understanding of what the children's ideas are about and what character and depth they have. This is, therefore, a way for the children to describe their idea in more depth. The exercise can also be used in the Understand phase, where children can draw a current experience to give you a better insight into how they experience it or what things they emphasize with.

## WHAT HAPPENS DURING THIS METHOD?

Start by describing a storyboard and explaining to the children what and how to draw their idea in a storyboard, depending on the information you are looking for. Typically there are four steps with questions that allow children to elaborate on this step. This can be expanded to include more steps, but be aware of the additional time this will add to the method, as they would have to get into more details. Each child must draw their idea or describe an experience they have had and answer questions relevant to their goal of the desired outcome.

## WHAT SHOULD YOU BE AWARE OF?

Children need to be guided through what a storyboard is and what an experience is. Therefore, spend some time telling the children about this and guiding them through each step. In addition, not all children have the creative skills to communicate this way. Some children can easily sit down and immerse themselves in a drawing. However, others need some guidance. Therefore it may be an idea to have a dialog with the children while they draw, which can help them get their thoughts and ideas down on paper.

## RESSOURCES NEEDED

- Group of children
- A3 paper and pens

# OUR CO-DESIGN EXPERIENCE

This design guide has presented approaches and methods for co-designing museum experiences with children in active roles. We, of course, acknowledge that simply stating this is not a strong enough foundation to prove the functionality and benefits of the proposed processes and method. Therefore we conducted two workshops where the methods and children's design capabilities were tested in practice. Here is how it went:

We conducted two workshops a week apart, one at a museum and one in a classroom. We had 14 children between the ages of 9 and 10 participating, and our goal was to test the methods proposed in the design guide and to involve the children in the role of design partners where they, through our framing and facilitation, designed their own new service for the museum.

We were conscious of the resources used in the workshops, as we wanted to imitate a museum project with few resources the best we could. Therefore, we limited each workshop to 2,5 hours, including briefings, breaks, and practicalities. We arranged the methods to involve as few materials as possible, involving only materials that are cheap, easily accessible, and common in most office or school contexts. Two facilitators were present, one facilitating and one taking notes along the way. This approach was chosen because we also focused on testing the method functionality. Still, we realized the importance of being in the moment with the children, engaging in dialogue, and asking curious questions to better understand their experiences and ideas.

The workshop at the museum took place in the Understand phase, and four methods were tested, including Open Your Senses and Empathic Design Challenge. The methods allowed us to understand what children noticed, what caught their attention, and what they found exciting and boring in the museum.

Eventually, we could synthesize the insights into the children wanting to be told the history behind the things they recognized, explanations behind elements they did not understand, and that they were not interested in things they could not recognize, which blended in with the exhibition.

Through empathic storytelling, we also learned that children can develop realistic ideas to improve museum experiences in current exhibitions and that they can consider other potential visitors than themselves, such as very young children or older children, or adults with disabilities.

From the insights gained from the first workshop, we made sure to bring forward the most frequent, but also as many inputs and ideas as possible, to consider the children as design partners, and to make sure not to make decisions on their behalf.



The workshop in the school class took place in the Idea Development phase, and the three methods recommended for this phase were tested. The methods allowed us to see how well the children remembered their visit to the museum one week prior and how well they could develop ideas that could have improved their museum experience. We found great interest in seeing how the children approached the activities, how each group had different approaches to arranging their materials, and the ownership that occurred in the children the further they got in developing their ideas.

Through conversation and sparring with the children, we tried, to the best of our abilities, to ensure that their ideas would be realistic to implement at the museum. Eventually, three ideas were ready to be presented to the class, each idea practically ready for implementation at the museum, and hereafter the children were asked to vote for their favorite idea.

We realize that the absence of a workshop in the phase of Create means that we have not had the opportunity to explore the ideas in practice and, thus, if these would be feasible. Nevertheless, we argue for a successful co-design process with children involved as design partners. The two workshops resulted in many small ideas and three service proposals, only influenced by our facilitation and sparring but designed and decided upon by the children.

## ACKNOWLEDGEMENTS

We would like to thank the following people for taking the time to contribute with their valuable experiences and input, thereby supporting us in our research for this project.

Thank you to Marlene Kramm from the Museum Vestsjælland, Stefan Bang from the Ny Carlsberg Glyptotek, Sidsel Staun from The Frederiksberg Museums, Signe Stauning from The Workers Museum, Henriette Nielsen from The Art Museum Brandts, Mads Kring from The Planetarium, and Nina Trier from The Maritime Museum.

We would also like to thank Ditte Hansen from Mary Elizabeth's Hospital, Sidsel Kirk from Skoletjenesten, and Karen Feder from Design School Kolding.

Finally, we thank Hvalsø Primary School's fourth graders for their valuable input and great enthusiasm in co-designing a museum experience with us.

DESIGN GUIDE  
Anne-Sophie Madsen and Saskia Helena Mühlmann  
Aalborg University, Copenhagen  
MSc. in Service Systems Design  
February 2023 – May 2023

