



the museum *and me*

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The Museum and Me:
Co-designing a resource with families to enhance parent-child interactions to
support early years development goals

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Project Overview

The objective of this project is to explore the ways in which playful museum interventions can enhance and increase parent-child interactions in order to support early years development goals, including language/communication and self-regulation. This pilot study has been based out of Fitzwilliam Museum, University of Cambridge. The approach used is a participatory design methodology that includes co-design sessions and semi-structured interviews with users and stakeholders. The target group of this investigation focuses on children aged 0-5 and their primary family members living in Cambridge City. This investigation consists of (1) co-design of a museum resource through active engagement and creative development with children and their families (2) design and execution of a physical multi-component toolkit through rapid prototyping using the Museum's existing resources and distribution channels to achieve the social impact objective. This project focuses on the creation of a physical prototype as opposed to a digital one based on initial conversations with parents about use, preferences and interest.

Keywords: early childhood development, museum learning, design for play, co-design, rapid prototyping, physical toolkit

Literature Review

Family Museum Visits and Spatial Ethnography

Research shows that families are crucial stakeholders by means of which museums carry out their general missions along with generating sustainable income (Louisa Hood et al., 2021). Moreover, as per the UN Convention on the Rights of the Child, museums play a central role in their ability to support and encourage children to participate in cultural life (Wallis & Noble, 2022). A museum thus becomes a place beyond historical knowledge, and starts to encapsulate active sensory, aesthetic and cognitive experiences in extraordinary surroundings (Wallis & Noble, 2022). In order to understand the nature of participation that the parent-child stakeholder can experience, it becomes imperative to conduct a research study that actively involves participation in generating data.

Designing for a Sense of Ownership and Belonging

Participatory design can be defined as an approach to support mutual learning through equitable partnerships of communities and experts through the design of an intervention (Cumbo & Selwyn, 2022). By actively involving all stakeholders in the design process, this approach aims to generate a result that meets stakeholder needs and is usable. The process of co-design, although in the same realm, takes this approach a step forward and deepens the level of engagement, input and decision-making power that stakeholders wield in the designed outcomes (Ashley, 2022). This project uses a co-design process carried out in the form of various creative activities and semi-structured interviews, placing the users at the centre of the opportunity space.

Incorporating Ways of Seeing and a Child's Perspective

Duncan and Wallach 1980; Sftinteş 2012 relied on the concept of liminality which looks at the interplay between people and the built environment in museum research (Louisa Hood et al., 2021). Inspired by the use-case of liminality in family life (Louisa Hood et al., 2021) and as researched by Isabelle, Dominique, and Statia (2019), this project references the magic of *nesting, investigating and stamping* through guided playful museum interactions. *The Museum and Me* is therefore a case-study of the production of socially charged, contextually relevant and culturally sensitive physical tools aimed to materialise the intangibles of early childhood development.

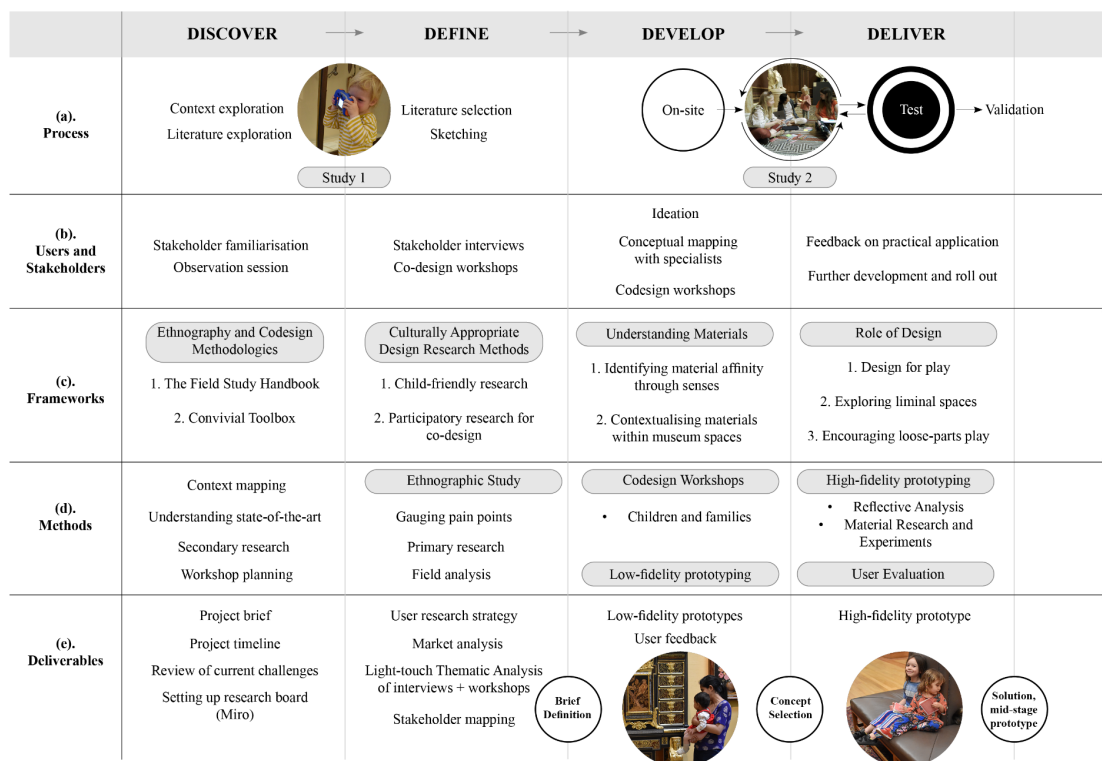
Approach and Methodology

The research and physical kit have been created in close collaboration with experts from museum learning and early years education through a process of co-design sessions and semi-structured interviews with users and stakeholders. As shown in Figure 1, the overall process used is a Double Diamond Approach with different stages of the project drawing from relevant theoretical frameworks of museum curatorship, learning methods for young children and designing for play. The co-design sessions were spread across the month-long project to inform the research, with two visits between the *discovery and define phases* and one visit between the *develop and deliver phases*.

A mixed-methods approach was used to gather, analyse and interpret both quantitative and qualitative data from co-design sessions and semi-structured interviews. The data collection for qualitative data included the use of a camera and notes for observations and insights. A light adaptation of Braun and Clarke’s Thematic Analysis (TA) was used to generate themes from the co-design output.

Figure 1

Methodology based on the Double Diamond Approach (full version in Appendix A)



Study 1: Co-design with Families

Aim

- (1). To understand the child's persona/s as identified by their parents.
- (2). To identify the primary sense that the child uses to explore the environment.
- (3). To understand the child's favourite object/area/destination in the museum in order to get a sense of the kind of spaces children have an affinity for.
- (4). To decipher a family's museum experience through parent-child interactions in order to identify the peak of both the most challenging and most rewarding experiences.

Study Protocol and Participants

All co-design sessions took place in the galleries of Fitzwilliam Museum. Participants (N=10 families) were asked to choose an area/gallery they wanted to do the co-design activities in. Each session lasted about 45 minutes, depending on the level of engagement per family. The sessions were led by the designer along with support from a researcher at the Museum. The designer primarily engaged with the parent, while the researcher engaged with the child. However, due to the dynamic and dependent nature of parent-child interactions at that age, there was a fair amount of overlap in the interactions and the nature of the sessions was free-flowing.

Figure 2

Image from a Co-design Session with Remy and Leo



Co-design Sessions

Each session was broken down into activities of material exploration (child), semi-structured interviews (parent) and storyline exercise (parent). The activities conducted are described below:

(1). Gathering insights into material affinity (child)

Each child was shown different objects made from a range of materials that invoked responses from different senses. These included cloth, translucent and plastic frames, shakers, wooden blocks, etc. They were allowed to interact with all/any of them as they liked, and were also asked which was their favourite. The researcher watched how they used/played with that object and observed any interesting actions/interactions.

(2). Persona identification using the Blob Tree (parent)

Parents were shown the Blob Tree and asked to identify which blob/s best represented their child's exploratory nature when they came into the museum. They were also asked to give an example of this kind of interaction. This activity was conducted to identify core characteristics, behaviours and interactions that a child has with the museum space.

(3). Sense identification (parent)

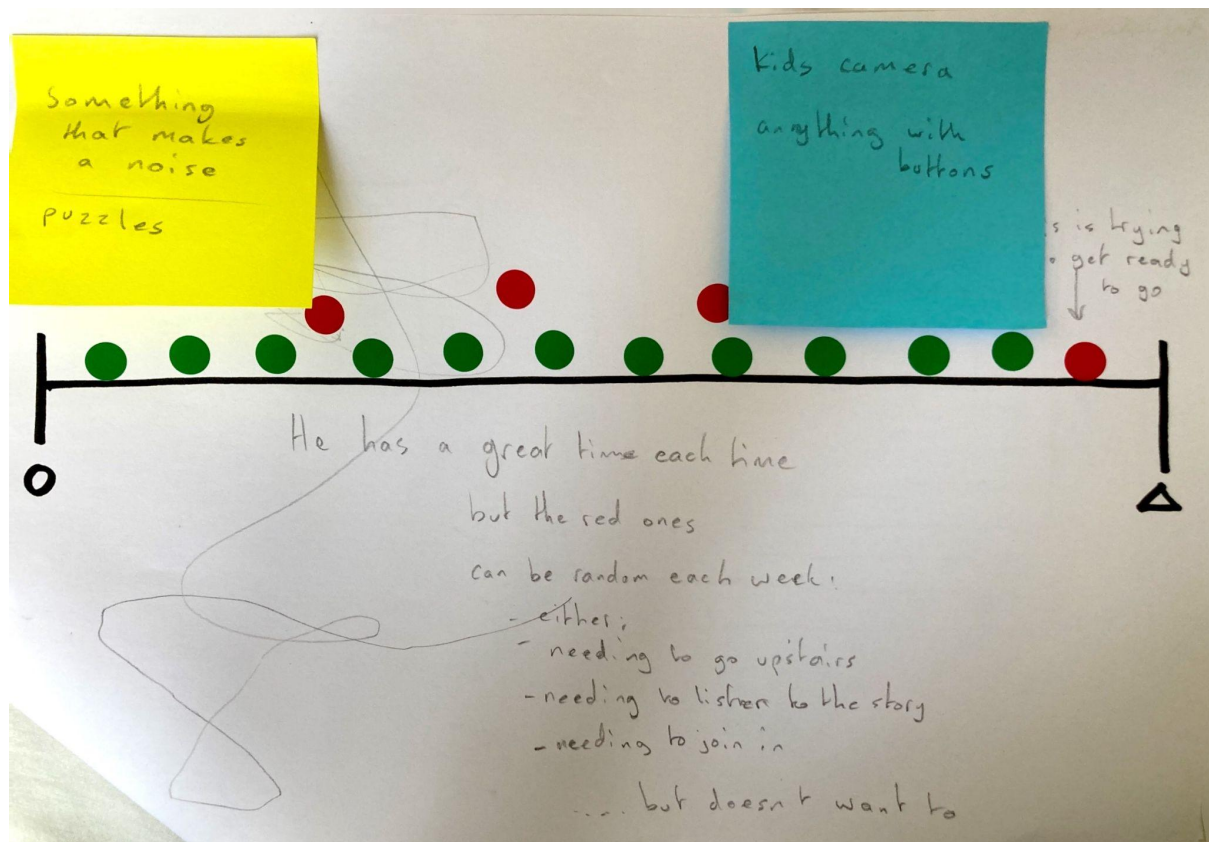
Parents were asked which sense (smell, taste, touch, sight, sound) their child was most keen to explore the environment through in the form of a multiple choice question. They were also asked to give an example of this kind of interaction.

(4). Storyline exercise (parent)

Taken from the Convivial Toolbox, the storyline exercise helps designers understand how a user experiences a service, product or environment. Parents were presented with an A4 sheet that had a line running through it. This line represented a linear timeline with the starting point on the left being the time they entered the museum with their child, and the end point on the right being the time they exited the museum with their child.

(a). On this timeline, they were asked to mark the most challenging moment they saw their child experience along with the most rewarding moment they saw their child experience.

(b). Using post-it notes, they were asked to name an object/activity/toy/interaction that could make those respective moments easier/memorable respectively.

Figure 3*Image of the Storyline Exercise by Abigail*

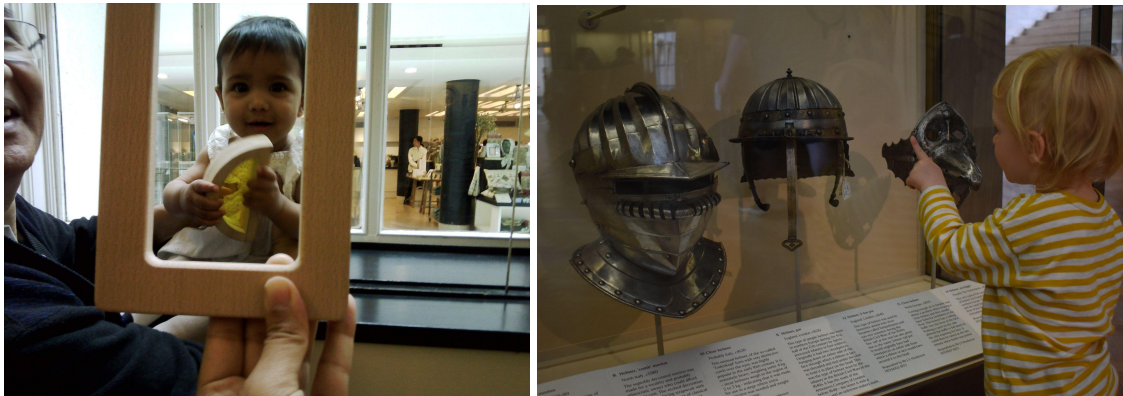
To support these activities, parents were also asked questions like “*what would you want your child to take away from these museum visits?*” and “*does your child ever talk about the museum when they are at home?*” These semi-structured interviews provided details about the child’s experience of a foreign environment and the kind of things they remembered, were excited to share with others, wanted to come back for and were excited to experience again.

Findings

(1). Children between the age group of 0-5 years are inclined to explore the museum as a physical space where the focus is not on the historical relevance (which comes at a later stage), but rather the shapes, colours, sounds, scale and perspectives that they can play with. An example is shown below in Figure 4.

Figure 4

Image from co-design sessions with Tamana and Daniel



(2). Parents' answers to the Blob Tree helped identify the kind of child we were designing for. Descriptive words/phrases that came out of this exercise included “loves being on the go”, “making imaginary friends”, “enjoys how much space there is” and “likes finding his favourite things.” Looking at the trio of blobs 16, 17 and 18, Kamala exclaimed that “these are just like us (the family), exploring the museum together!” An example of Lucy’s answers is shown below in Figure 5.

Figure 5

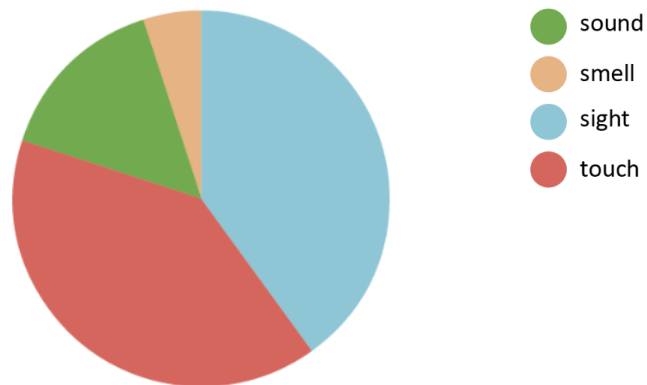
The Blob Tree as used by Lucy describing Lily’s Behaviour, Interactions and Energy in the Museum



(3). Most parents said that at this age their child relied on their sense of sight and touch to explore the environment as shown below in Figure 6.

Figure 6

Graph representing Parents' Answers for the Question 'Which Sense is Your Child Most Keen to Explore their Environment Through?'



(4). Most parents marked a point in the middle of their museum journey as the 'rewarding moment' where their child was in a complete moment of flow and absorption. While a point towards the end of their museum journey was the 'challenging moment,' where it was difficult for them to get their child to leave the museum space due to a range of personal, environmental and social factors.

Figure 7

The Average Data Gathered from Parents' Responses for the Storyline Exercise



Results and Discussion

Based on the co-design sessions, the following factors and themes emerged:

Table 1

Factors that Emerged from Co-design Sessions and their Thematic and Design Description

Factors	Thematic and Design Description
<p>(1). Design interventions needed for points of:</p> <p>(a). Rewarding moment (experienced mid-way through)</p> <p>(b). Challenging moment (experienced towards the end)</p>	<p>(1). (a). Most parents indicated that their child enters a moment of flow and complete engagement at some point in the middle of their visit, where they are focused on enjoying themselves in the museum - be it by standing next to a statue, going up and down the stairs or crawling through the galleries. On further probing, parents described wanting a physical art book/magazine for their child to draw in to remember this moment.</p> <p>(b). Most parents described that their child would experience a challenging moment towards the end of their museum visit. They explained a multitude of factors for this - reluctance to leave a place that they're having fun in (environmental), exhaustion (physical) and agitation (mental). On further probing, parents described wanting a token that could be handed over to the child as a keepsake at the gate/desk as incentive to leave the museum as well as remember their time there.</p>
<p>(2). Parents' desire for their children to explore the museum in a safe way, without feeling like they are being judged for their child walking fast, singing, exclaiming loudly, asking</p>	<p>(2). All parents explained that they wanted their child to feel welcome in the museum space, and that it would benefit them in planning their visits if they discovered through the museum</p>

<p>questions, etc (behaviour that goes against traditional expected norms of silent and watchful museum visits)</p>	<p>outreach and media channels that the museum was a child and family friendly space.</p>
<p>(3). Parent's desire for their children to learn about the museum as a place that's different from their home/other public spaces, to learn about the existence of an environment where things are preserved and about the ways that people lived in the past.</p>	<p>(3). This ties in with the need of a physical guidebook that illustrates how a museum can be explored through a child's perspective, taking into account their developmental stage and affinity for observing bright colours, exploring different heights and finding their own favourite markers that strengthen their sense of place.</p>
<p>(4). Parents' desire for their child to not feel threatened by or afraid of museum security staff.</p>	<p>(4). This ties in with training and capacity building that is needed to be delivered to museum staff, highlighting how authority and uniforms can solidify fear and nervousness in a child. As at this age, it is important for a child to start being recognised for who they are, this can be supported by the museum staff handing out name tags for children to wear and write their names in. Subsequently, if a child is found running or touching something in the gallery, museum staff can thereby address the child directly with an ease and friendliness in their tone.</p>

Study 2: Design and Execution of a Physical Multi-component Kit through Rapid Prototyping

Figure 8

Work in Progress Image of the A3 Zine



Aim

- (1). To develop a physical prototype that represented participatory research insights through playful interactions.
- (2). To identify areas of further development that go beyond the current form of the prototype.

Components

(1). A3 Zine

To fulfil the identified need of *factor 3 from the Results and Discussion section*, a low-cost and easily replicable A3 zine was developed. This zine title 'The Museum and Me' is a visual guide to be used by parents and children (together or alone as preferred) to explore the physical museum space. The story of the zine is based on a child's perspective and use of their senses to explore a new environment (as represented in the empathy map in Appendix A Figure 3A). It makes use of a clay model developed by a family as the primary character that walks the parent-child through different spaces, objects and creative experiences.

This zine was prototyped in stages (refer Appendix A Figure 4A and 5A) and the low-fidelity version was tested with three families. Feedback was incorporated and elements modified, after which the high-fidelity zine was designed.

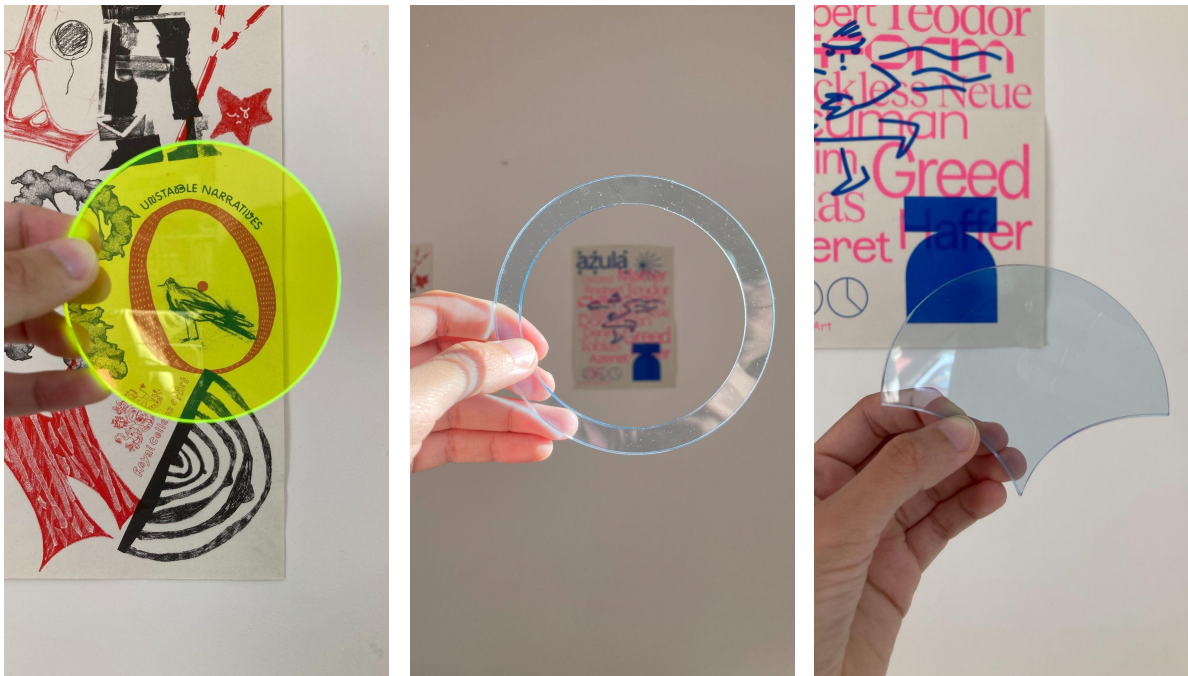
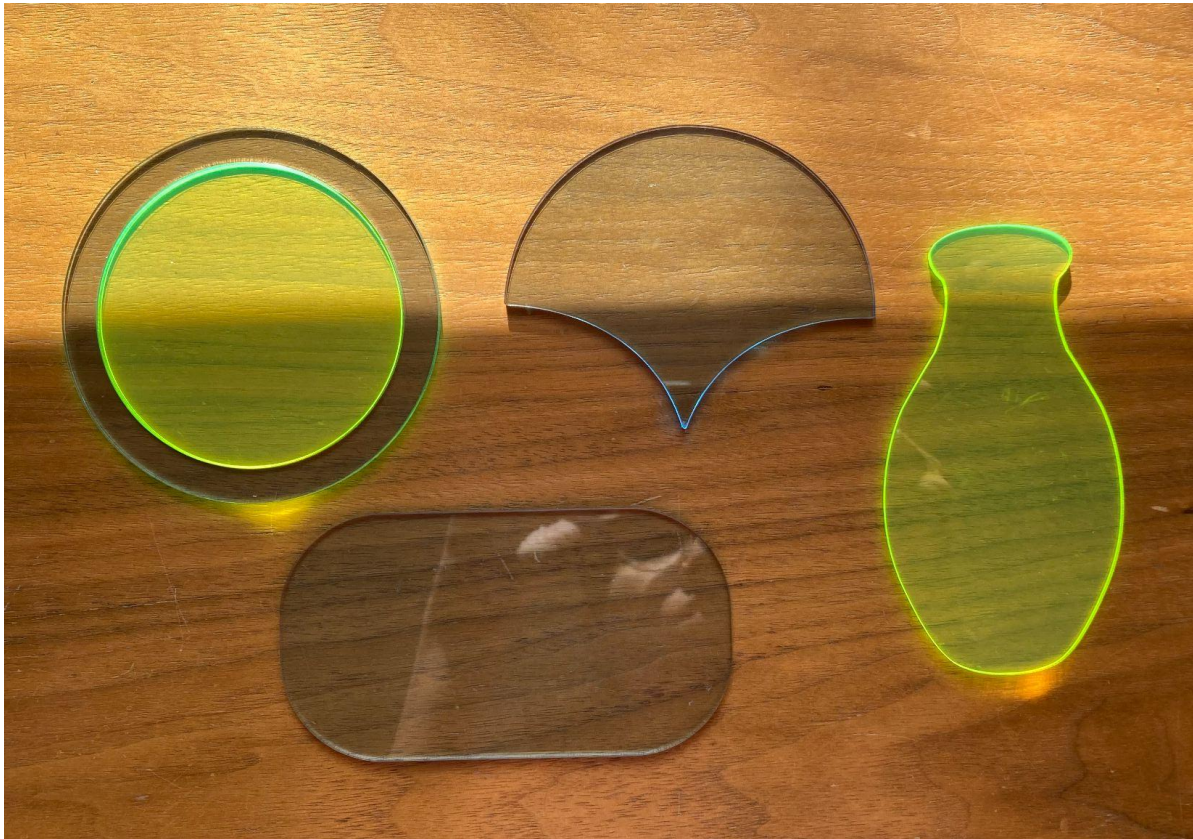
Figure 9

Digital File for the High-fidelity A3 Zine



(2). Acrylic Shapes

The co-design activities and semi-structured interviews reflected the importance of loose-parts play in supporting a child to explore the museum environment. Children between the ages of 0-5 years seemed to have an affinity for mirrors, cameras, and tinted translucent frames through which they could focus on and look through to surrounding objects, people, doorways and architecture. Based on this insight, a set of five tinted acrylic shapes were designed inspired by shapes found in the physical structure of the museum (as shown in Appendix A Figure 6A). They were subsequently developed by laser cutting blue and yellow acrylic sheets of 3 mm thickness.

Figure 10*Image of Physical Prototypes of Acrylic Shapes***Note:**

The poster in the above photographs is purely for representational purposes and not part of the display at The Fitzwilliam Museum.

(3). Poster

To support the outreach and communication section of this project, two illustrations created for the A3 zine were turned into posters. Their intended use is for museum entrances, front desks and play corners which have resources and family learning material.

Figure 11

Digital Files of the Final A2 Posters



Results and Discussion

The key contributions of this project lie in:

- 1) Achieving a practical, interdisciplinary collaboration between fields of participatory design, museum learning and early childhood education.
- 2) The use of a participatory design methodology - with a focus on co-design - from beginning to end, actively involving stakeholders in the design process to ensure their needs have been met.

3) The use of rapid prototyping to create a physical toolkit that is socio-culturally relevant, low-cost and easily replicable.

4) The creation of a physical multi-component prototype that can be rolled out in small groups for further user-testing and development.

Future Needs and Opportunities

While the case-study has been successfully completed with key deliverables met, the majority of insights generated through this process currently remain in their early stages. This is due to a multitude of factors such as the short duration of the project, limited budget for physical prototyping and highly dynamic set-up of interactions with families. In order for the research to achieve its optimum potential in practical life, the following areas need to be considered:

Research and Development

Working with vulnerable groups requires flexibility in terms of stakeholder engagement, scheduling of sessions and the breadth of details that can be covered through interactions with the primary researcher/designer. While this project has taken these nuances into account, the depth of research could benefit with closer interactions with family groups. Areas that can be modified in the research design to achieve this include:

(1). Ensuring that the structural integrity of interactions is maintained across all co-design sessions. For example, if planning for single family interactions while preparing co-design activities, it is important for all subsequent sessions to follow the same pattern. Otherwise, the risk of losing personal insights is enhanced in the face of group dynamics where people might be afraid, pressured or influenced by the other stakeholder's presence, opinions or answers.

(2). In order to compare and contrast how families perceive museum learning and what they would want it to entail, it would be beneficial to supplement individual family sessions with focus groups for parents. This would allow stakeholders to have shared discussions about goals, ideals and value systems. It would also help in creating a network of family groups that feel connected about this topic, potentially leading to a strengthening of inter and intrapersonal relationships that could positively impact their visits to the museum. In order for parents to have such discussions with their

full attention and without disruptions, it would be necessary for their children to be taken care of (if they are in a position where they lack child support) by museum/institutional staff.

User Testing

In order to understand the effectiveness of the extent to which the current physical prototypes meet the needs identified, it is crucial for on-site user testing to be conducted. Given the contextual requirements of the project, the ideal test measures would follow a mixed-methods approach that would include the use of child-friendly likert scales, polling questions and journey maps. To gain a holistic evaluation at this stage, it would be beneficial to test the prototypes in individual families as well as in groups of families. The evaluation reached at the end would serve as a necessary blueprint for further iterations required, followed by mass development and roll-out phases.

Capacity Building for Key Museum Staff

The effectiveness of any tool, product or service depends on the openness, interest and curiosity of the stakeholders involved. In social innovation projects, this tends to involve more than the primary stakeholder as such environments flatten the curve between top-down and bottom-up structures. For children and parents to feel comfortable using the prototypes and guidelines provided, the supporting museum staff including the front desk, security team and museum curators need to be trained in the delivery of the toolkit. This would enable the use of the material in a safe, inclusive, positive and child-friendly environment.

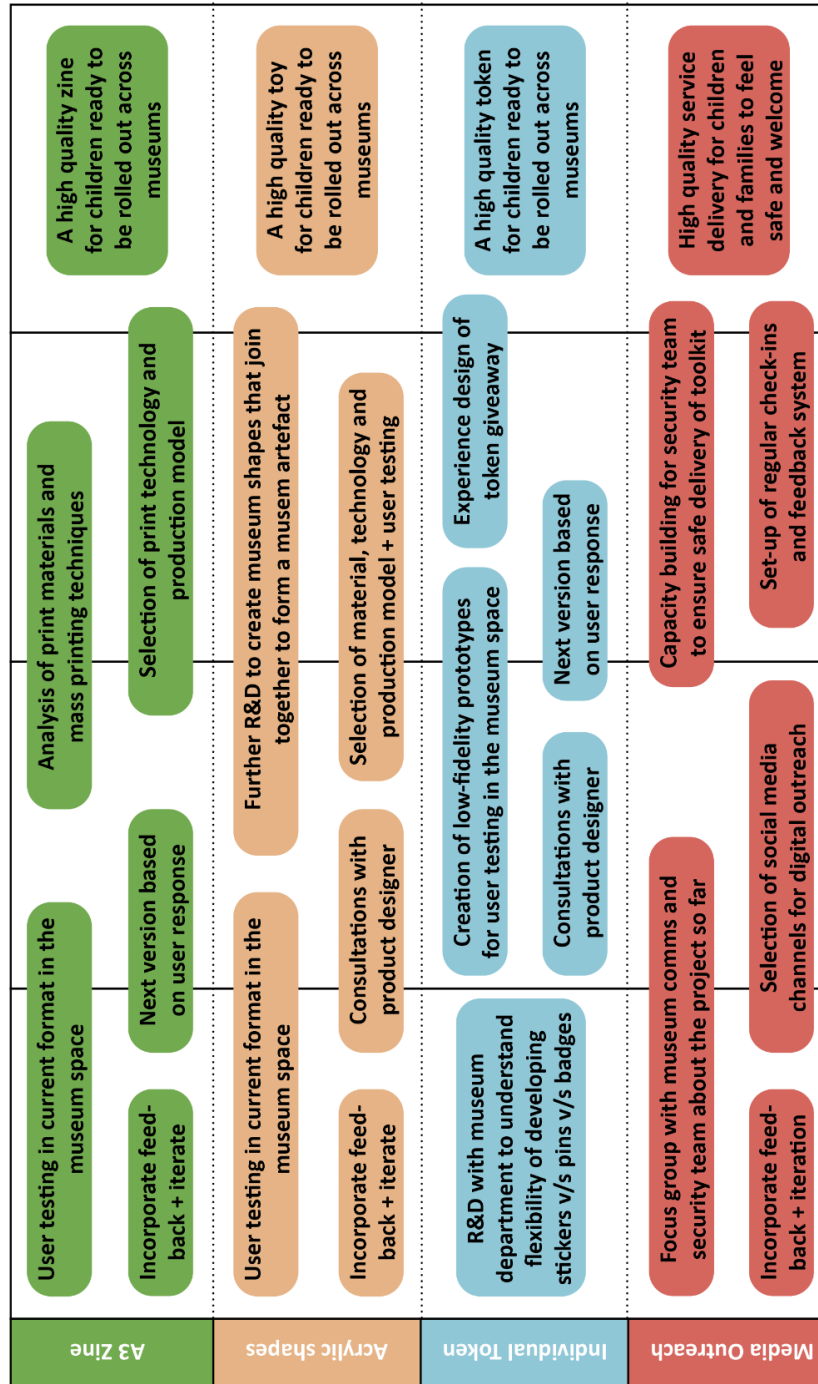
Tech Roadmap

This diagram has been created keeping the following conditions in mind:

- (1). All physical prototypes are to be based on and user-tested at The Fitzwilliam Museum before they can be adapted to other museums.
- (2). As this project has a very strong social impact objective, the tech roadmap consists of social innovation, design strategy and impact assessment that need to be further delivered along with technical development.

Figure 12

Visual Representing Further Technical Developments for the Project



References

Ashley (2022, June 3). The difference between co-design and participatory design. Medium.

<https://uxdesign.cc/difference-between-co-design-participatory-design-df437666816>

Clark, A., Moss, P., & Kjørholt, A. T. (Eds.). (2005). *Beyond listening: Children's perspectives on early childhood services*. Policy Press.

Cumbo, B., & Selwyn, N. (2022). Using participatory design approaches in educational research.

International Journal of Research & Method in Education, 45(1), 60–72.

<https://doi.org/10.1080/1743727X.2021.1902981>

Early Arts. (2017, March 15). How Young Children Learn—Earlyarts.

<https://earlyarts.co.uk/blog/how-young-children-learn>

Early Education, Early Years Coalition. (n.d.). Birth To 5 Matters – Guidance by the sector, for the sector. Retrieved 28 August 2023, from <https://birthto5matters.org.uk/>

Hackett, A. (2014, July 21). Don't stop toddlers running around museums – it could help them learn. The Conversation.

<https://theconversation.com/dont-stop-toddlers-running-around-museums-it-could-help-them-learn-28699>

Hood, L., Coles, T., & Pringle, E. (2021). Liminal spaces and the shaping of family museum visits: A spatial ethnography of a major international art museum. 37(5), 531–554.

Sanders, E. B.-N., & Stappers, P. J. (2012). *Convivial design toolbox: Generative research for the front end of design*. BIS.

Wallis, N., & Noble, K. (2022). Leave only footprints: How children communicate a sense of ownership and belonging in an art gallery. 30(3), 344–359.

Appendix A

Figure 1A

Methodology based on the Double Diamond Approach

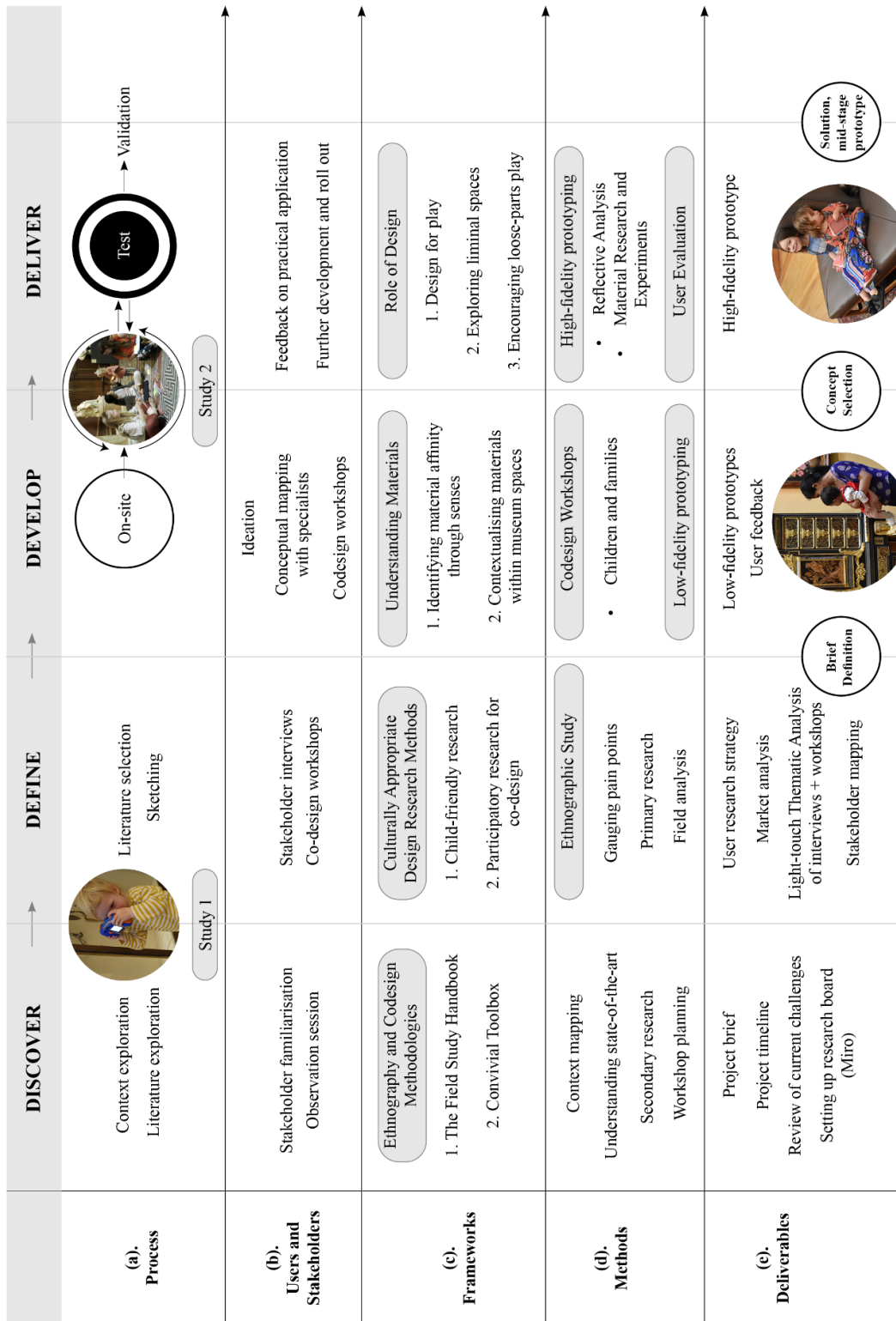


Figure 2A

Screenshot of Miro Board used for Research

https://miro.com/app/board/uXjVMwrDfAY=?share_link_id=379249249458

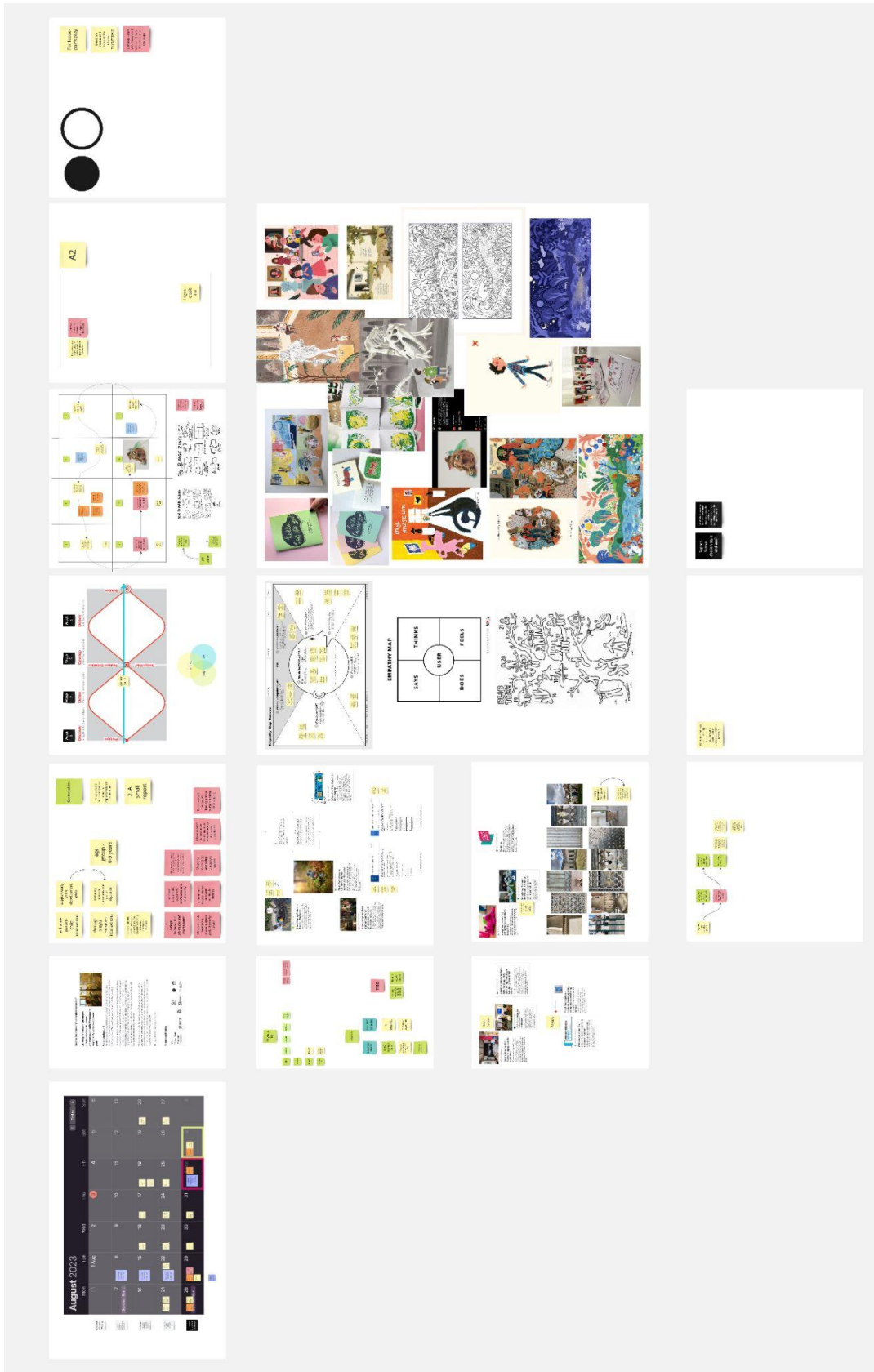


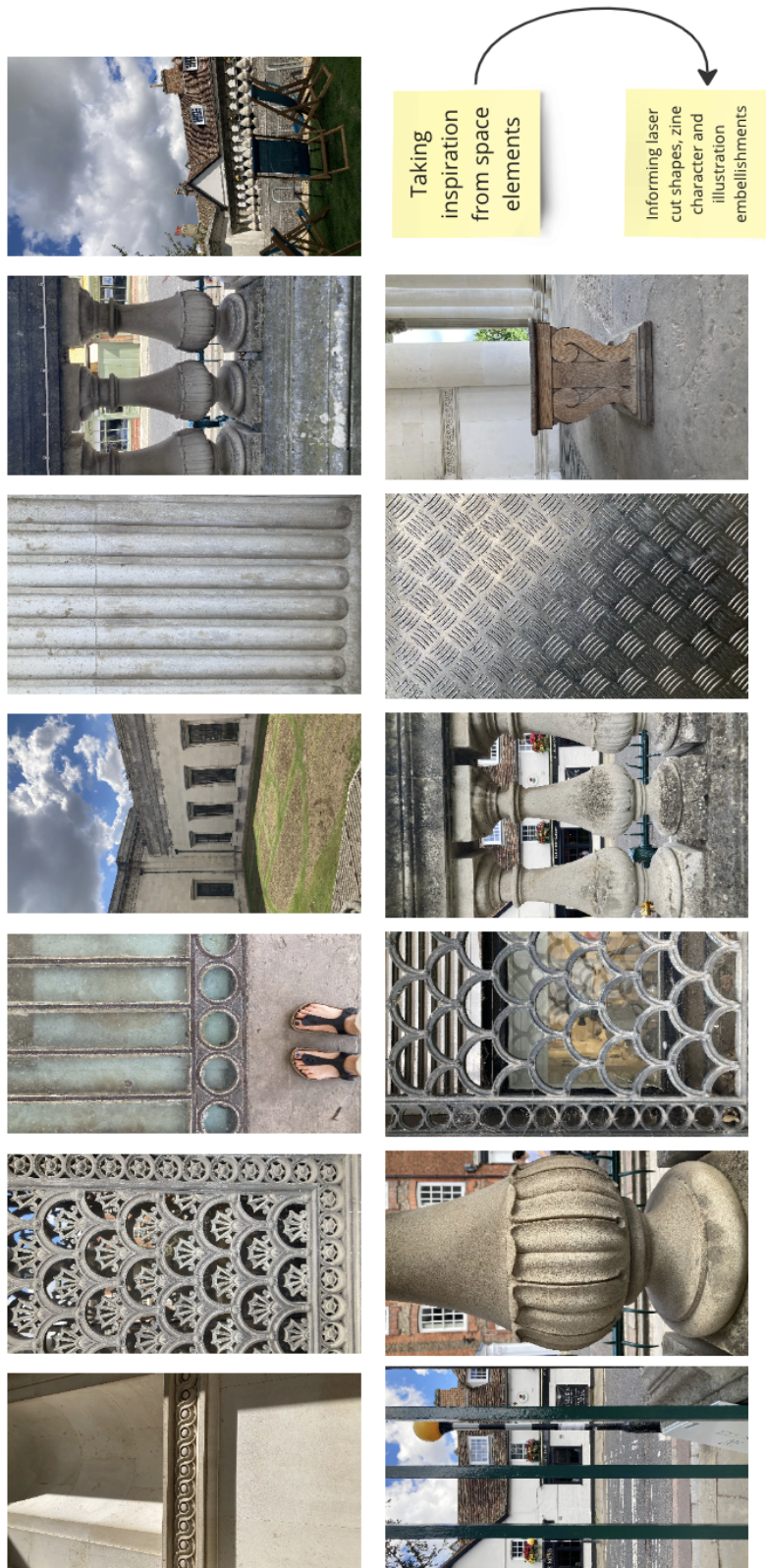
Figure 5A

Zine Low-Fidelity Prototype (V.2)



Figure 6A

Physical Structure of the Museum as Inspiration for Acrylic Shapes



The
Fitzwilliam
Museum
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