Games design as a curatorial intervention

Rethinking museum representation, meaning-making and agency with games design

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A thesis submitted in partial fulfilment

of the requirements for the degree of Doctor of Philosophy

of University College London, Institute of Education.

Department of Culture, Communication and Media

2020

I, Angeliki- Zinovia Symeonidi confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signature

ABSTRACT

This thesis contributes to the academic fields of Museum and Heritage Studies and Game Studies by rethinking the application of games, play and design in museums. I propose and document the applicability of games design with visitors as a creative and visual methodology in museums. Building upon established Museum Studies, games, play and design theories, power and agency theories and Multimodal Social Semiotics, I conceptualise games design with visitors as an active curatorial intervention in representation, meaning-making and agency in the museum site.

The research begins by examining recent and current debates around the role and application of games in non-entertainment settings and particularly in museums. In the process of understanding the rationale for the development and application of games in museums, I trace how and why museums have sought institutional change to attract and engage new and different audiences throughout the years. I point out that museums employ games as part of the democratisation of the museum experience. However, I explain that museums' hierarchical relationships with their visitors and issues of curatorial authority, authenticity and representation have limited the development and application of museum games to educational, evaluation and engagement purposes.

I demonstrate that such games' application in museums simplifies the potential of games as cultural, dynamic and ludic objects but also limits museum and heritage visitors' meaning-making, representation and agency. I note that the established museum game practices promote a pre-determined, passive and didactic approach to the museum experience. Therefore, I argue that the relationship between museums and games needs to be re-examined moving away from the trend of gamification and the notion of games as emerging pedagogy. I propose a conceptual and methodological shift towards the examination of games

as representational and cultural objects. I suggest focusing on what happens when museums give the design tools to visitors to make games inspired by museum collections and themes.

Drawing on data collected during two case studies, I examine and describe step by step how families with young people design games inspired by museums and their collections. As part of the research process, two workshops were designed and implemented in two different museums in the UK. The first one was implemented at the UCL Grant Museum of Zoology in 2016 and the second was conducted at the Museum of London Docklands in 2018. Bringing together theories from the fields of Museum Studies, Game Studies, Platform Studies and Museum Distributed Network theories and Multimodal Social Semiotics, I read visitors' games as curatorial platforms that challenge, add and transform the context within which they are situated, designed and played.

This thesis maps out and highlights the potential of games design as a creative and visual methodology. It provides new and important insights into the much-debated question of museum representation, the notion and ethics of the playful and participatory museum and the role that games as media can play in the relation between museums and their communities. Its findings show that games design with visitors offers museum practice and academia the methodology to rethink issues of curation, representation, meaning-making and agency. Games design with visitors as a curatorial intervention allows museums to recognise and empower the production of alternative classifications that add new layers of playful representations and meanings to the authentic museum curation. In this way, new paths of encountering and experiencing the tangible and intangible heritage and natural history are created allowing visitors to play and experiment with meaning and representation in the museum setting.

These findings make a significant contribution to the literature of Game Studies. By proposing and applying games design as a participatory curatorial intervention in museums, this thesis

introduces and documents the value of games as media beyond their current entertainment and educational application. In this way, the findings in this study extend the understanding of how game studies and games culture contribute to other academic fields and practices.

IMPACT STATEMENT

This thesis focuses on games design with families. The findings from this research make several contributions to both the current museums' academic literature and empirical practice. As noted in the literature review Chapter, while there is high interest in games, play and design in museums, there has been no detailed investigation of the relationship between museums and games beyond the boundaries of gamification and serious games. This research draws from Games Studies literature to demonstrate what games and particularly games design can offer to museums. As this suggests, this work has the potential to bring valuable insights in the field of Museum Studies which explores playful and dynamic media in museums. The findings of this thesis generate useful insights about the expressive, playful and dynamic power of games and particularly games design. These findings have been presented and discussed with leading scholars of the field in international conferences including the *DiGRA 2018* held in Turin, Italy, the *Video Games and Museums Conference* held in Helsinki, Finland, and the *10th International Inclusive Museum Conference*, in Manchester, UK.

As a Visitor Generated Content and participatory work, this research sheds new light on co-creation and co-curation practices in museums. In this thesis, I unpack and detail how families with young people design games and how they use different dynamic and playful resources and communicational modes to construct and express their ideas and narratives about the museum collections and displays as a response to the environment of communication. This new and detailed understanding of visitors' design work can assist museums' knowledge of participatory, playful and co-curatorial practices. These insights were presented during a seminar held at the Museum of London for museum professionals.

This work brings together academic research and the everyday empirical practice of museums. As such, it has also the potential to influence and benefit the museums-universities relation

and collaboration. Valuable lessons were learnt from this collaboration. These lessons were documented in the paper ‘Museums as experimental test-beds: Lessons from a university museum’ (Ashby, 2018).

Lastly, for this research, two game-making workshops were organised as public engagement events in two different museums. Therefore, this work has a public engagement impact. In each game-making workshop, families with young people were invited to explore the museums and design and play games inspired by the museum collections and displays. The families spent time in the museums handing the museum collections and researching the archives and collections. They also experimented with different digital tools and resources.

ACKNOWLEDGEMENTS

The completion of this doctoral thesis would not have been possible without the valuable support, guidance and advice that I have received from many people throughout the years.

I am deeply indebted to my principal supervisor, Diane Carr, for all the advice, support and detailed feedback. Diane's invaluable insight into Games Studies and extensive knowledge of research methods and ethics challenged my thinking and inspired me to push the limits of my research. I would like also to thank my second supervisor, Andrew Burn, for his constructive advice and comments, and our thought-provoking conversation on Multimodality, games, popular culture and the role of museums. I would also like to thank Alison Gazzard who acted as my principal supervisor during the first year of my doctoral studies. Alison provided me with advice, encouragement and guidance which were particularly helpful to me at the beginning of my PhD journey.

I would like to recognise the assistance that I received from my colleague Bruno de Paula. Bruno was always available to help and discuss games with me. I would like to express my gratitude to John Potter and Claire Robins who acted as my upgrade examiners. Their insightful suggestions shaped my research. I also wish to thank all my colleagues and friends at the UCL Institute of Education, the UCL Knowledge Lab and the British Museum for the patience, inspiration and unparalleled support.

The case studies were possible only through the support and trust that I received from the two host museums. I would like to thank the manager of the UCL Grant Museum of Zoology Jack Ashby for his profound belief in my work. I also wish to thank the learning and access officer, Dean Veall, for his support and help during the preparation and setting up of the museum for the game-making sessions. From the Museum of London, I would like to thank Melissa Bennett for her help and patience. Thanks should also go to Sophie Holland and Sandra

Hedblad of the Museum of London Docklands whose practical suggestions and insight cannot be underestimated. Lastly, special thanks to all the families who participated in the game-making workshops and dedicated their time to my research.

Finally, I cannot thank enough my family and especially my parents Egli and Chris for their love and belief in my abilities. I would like to thank them for playing board games and Tomb Raider with me and my brother every Sunday night and for exposing me to museums and heritage from a young age. Also, I would like to thank my brother, George, for playing and discussing video games with me and introducing me to numerous video games. Last but not least, I would like to thank my husband, Yasumaro, for his endless love and patience while listening to my nonstop rumble about my research and for trying to make sense out of it.

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CHAPTER 1: INTRODUCTION

What happens when museums invite their communities to play and design video games for and about museum collections, objects and displays? What is the meaning of a playful, open and participatory museum?

Currently, museums face complex and severe economic, social and political challenges which shape the way they establish and build relations with different communities and identify their role and mission as cultural institutions. Immigration, social injustice, political debates and activism are now topics that challenge museums to be more open, dialectic, playful and accessible. Museums are under increasing pressure to represent 'a plurality of lived experiences, histories, and identities' (Sandell & Nightingale, 2013, p. 1-2). They are required to be participatory, inclusive and develop different partnerships with different communities (ICOM, 2019). But these institutional challenges are not new. As Sharon Macdonald (1996) pointed out twenty years or so ago, museums since the end of the twentieth century 'are sites in which seductive totalizing mythologies of the nation-state and Enlightenment rationality struggles against alternative classifications, and in which ''high culture' and 'popular culture' battle for legitimacy'' (p.14). In this quote Macdonald (1996) sums up one of the most important and still relevant political debates in the museum sector (p. 14). In the heart of this debate, key issues of curatorial authority, power, representation and visitors' meaning-making and agency play out. These key issues occur within and through different relations between museums and the public and between expert and novice curatorial voice and representation.

Within this social, cultural and political context, museums in the UK have introduced digital games in their learning and engagement programs, collecting video games and organizing different play and design activities onsite and online. Such playful museum activities aim to engage and establish new relations with diverse and younger audiences. Museum research

and practice have viewed games as a way to transform museums and promote more open, playful, participatory and inclusive strategies. For many Museum Studies scholars and practitioners, games offer visitors effortless, 'fun' and playful encounters with the museum collections and heritage culture (Charr, 2019; Blair, 2016; Prudames, 2011; Gish & Zaia, 2011; Bath- Goodlander, 2009). As an important part of the contemporary and popular culture, games seem to enable museums to include these new and alternative representations and approaches. However, games practices in museums have attracted much speculation and debate. I will argue that although these practices' objectives and aims are valuable, the way games are employed can be perceived as marketing bait.

Undeniably, digital games, play and design have been widely used as educational tools and assets for marketing, engagement and social participation in the museum site (Allison, 2011). Museum practice and academia have mainly focused on the learning benefits and outcomes of games, play and design. As I will later show in the literature review chapter, both fields of Museum Studies and Game Studies have underlined that such games employment is too instrumentalist as it omits the expressive, dynamic and ambiguous nature of games. In addition to this, I will demonstrate that museum practice and academic literature have employed mainly a celebratory and descriptive approach to games, play and design. I will explain that this approach simplifies what games are as cultural, dynamic and ludic objects.

I will also argue that previous research on museums and games has mainly focused on visitors' play practices. Based on the literature review, it seems that museum research and practice are mainly interested in exploring how visitors engage with different curatorial subjects while playing games or how games' virtuality, spatiality and ludic aspects allow visitors to experience and explore historical and cultural heritage while playing (Flynn, 2005; Giddings, 2015). Building upon this argument, I will suggest that very little is known about heritage visitors' game design practices and their connection to representation, meaning-making,

culture and agency. Lastly, I will argue that a fresher and contemporary perspective to discuss games in museums, and specifically games design in museums is needed. It is essential to explore how and who can design games in the museum site expressing and attaching new representations and meanings to the museum collections, displays and heritage sites. I will propose to approach games in museums informed by the developments in the Game Studies field. In this way, bringing together the Museum Studies and Game Studies field will lead to a new understanding of games in museums.

For all the above reasons, I propose that the relation between museums and digital games needs to be reexamined, moving away from the trend of gamification and the notion of games as emerging pedagogy and moving towards the examination of games as representational and cultural artefacts that reflect and transform the context[1] within which they are situated, played and designed. With this in mind, I will focus on the complex processes that games design involves rather than on games learning and engagement benefits and outcomes. In this way, the different ways museum visitors through design approach, challenge and negotiate representation and meaning-making within and beyond the museums site will unfold. Focusing on and understanding the creative processes and actions that visitors undertake as game designers will offer a refreshed way of defining the playful, dynamic and participatory

[1] In this thesis, the term 'context' will be used solely when referring to the museum space, the museum curatorial representation and meaning-making, and the power relations and dynamics between museums and visitors. The term context does not refer to the social and cultural background, identity and profiles of museum visitors or this thesis' research participants. Although, in this thesis, the complexity of the relation between subjectivity and game design is recognized. But it is not in this thesis' scope to make claims that the participants' games reflect or are influenced by subjectivity and identity. This limitation will be further discussed in the section concerning the limitations and achievements of this thesis.

museum. In this thesis, the playful and participatory museum is perceived as a place where different communities add new layers of representations and multiple meanings to museum collections, spaces and displays by creating dynamic and playful objects that challenge, reflect and transform curatorial work.

In this thesis, I will explore how families with young people design games inspired by museum collections, space and displays. I will focus on the act of making to understand what happens when they produce digital playful content for and about museums. My aim is to demonstrate how the games act as curatorial platforms that reflect, transform and add to the museum culture and context. By fleshing out the act of making, I will present the different ways, the research participants' as game designers engage with curatorial work. My argument is that employing games design in the museum site can be more than an effortless and fun learning activity for museum visitors. I propose examining games design beyond the perspective that views it as a creative activity which allows visitors to simply react to museum collections. Instead, I argue that games design enables visitors to assume an agentive role within the museum site. I will show that, with games design, they engage with curatorial work thinking about representation and meaning-making in different platforms, spaces and modes.

To achieve these research aims and objectives, two case studies were designed and implemented in two different museums in the UK. The first case study was implemented at the UCL Grant Museum of Zoology in 2016. The second case study was conducted at the Museum of London Docklands in 2018. For both case studies, families with young people were recruited as research participants. In the UCL Grant Museum of Zoology case study, three families co-designed an Alternate Reality Game (ARG) and in the Museum of London

Docklands case study, three different families designed four different computer games using the games authoring software of Mission Maker[2].

In this doctoral thesis, the following overarching research questions will be examined[3]:

1. What do museum visitors' game designs reveal about curatorial representation, meaning-making and agency?
2. In what ways do museum visitors assume the role of game designer in the museum site?

In chapter 2, the conversation about the relation between museums and games will continue. In order to understand this relation, the context within which museums have employed games, play and design in their activities will be thoroughly discussed. The chapter will then go on with the review of the most relevant empirical and academic practices of games, play and design in museums. The examination and analysis of how games have been employed empirically and academically allow me to present what motivates museum research and practice to employ games. In addition to this, to be able to fully present the relation between museums and games, the debate on gamification and serious games will be considered and examined.

To understand games design as a participatory, co-curatorial and Visitor Generated Content (VGC) practice in the museum site, it is essential to define and further discuss the terms

[2] The Mission Maker will be thoroughly discussed in chapter seven under the section 'Making Games'. In 'Making Games' section, I will detail the background of Mission Maker, how it has been used and how it will be used in this research project.

[3] These are the overarching research questions which will be explored throughout this doctoral thesis. These questions capture the main goals of this research work. Later on chapters 5 and 6 more in-depth research questions will be raised based on the aims and objectives of each case study.

related to this research inquiry. Thus, in chapter 2, I will examine what participatory, co-curatorial and VGC mean in the museum context and how they have been used until now. Then, as this thesis looks at games, play and design, it is important to provide some clarity on how these terms have been conceptualised and used culturally. Revising these terms will show what the open and participatory museum means for this research and how games design can contribute in the process of reworking our understanding of visitors' design work, representation, meaning-making and agency in museums.

The main aim of chapter 3 is to unpack the contested terms that will be used throughout this doctoral thesis such as the notions of curation, meaning-making, representation and agency. The objective is to develop and present a theoretical framework within which this thesis proposes and develops its research and methodological inquiries. To achieve that, theories from the fields of Museum Studies, Game Studies, and Social Semiotics will be brought together to explore visitors' games as curatorial platforms/interventions and the way games design connects with representation, meaning-making and agency.

Salen and Zimmerman's (2014) Rules, Play and Culture framework will be used as a theoretical foundation to understand visitors' games as cultural objects. This will allow me to examine how these games can reflect and transform the context within which they are designed and played and how they can manifest visitors' agency as designers. To conceptualise the notion of curation and draw parallels to game design, four different lenses will be proposed and used. These are the museum-visitor lens, the representation lens, the social semiotic lens, and platform lens. To propose these four lenses, curatorial theories, Social Semiotics, and Platform Studies and Museum Distributed Network theories will be employed.

Agency will be explored using the theoretical work of Bourdieu (1991) and Kress (2010). I will argue that using the seemingly opposing theoretical tools of Bourdieu and Kress can be useful.

Bourdieu's notion of field and habitus will allow me to better understand the social structure of museums and the different power relations and dynamics that exist within the museum context. While, Kress' Multimodal Social Semiotics approach (2010) to meaning-making, representation and agency will enable me to recognise the agent's intentionality of choice in the semiotic work, meaning-making and communication and conceptualise visitors' agency as game designers.

In addition to Bourdieu and Kress' work, agency will be explored from a Game Studies perspective. This will allow me to think about agency in the context of games and the player-designer relation. In both Museum Studies and Game Studies, agency has been connected with the notion of interactivity and the users' (visitors or players) actions to control and change their experiences. This research thesis focuses on the act of making and on how agency is manifested through playful design to discuss how games design reworks our understanding of visitors meaning-making and agency.

The issue of visitors' agency in participatory initiatives is mainly connected with the problem of museum authority and authenticity. Museums as cultural institutions still struggle to share and let go of their authority and disciplinary role to represent the past through authentic and rational narratives. As will be seen through my theoretical approach in Chapter 3, Museum Studies researchers including Simon (2010), Proctor (2010), Golding (2009) have critiqued traditional top-down-information delivery models and have proposed bottom-up, participatory, prototyping and dialogic models (Mclean, 2013). Museum researchers have theoretically discussed participatory initiatives in museums separating tokenistic participation in sharing of expertise and respectful collaboration (Golding, 2009). They have explored museums as platforms where visitors design their own creative work (Simon, 2010), yet the act of making and how agency is manifested through design seem to have been subject to no further investigation. Building on Social Semiotics, Multimodality and Game Studies theories, my

work discusses how agency is manifested through design and particularly through the design of dynamic and ludic content such as games. I will demonstrate that games design can offer visitors a variety of dynamic design choices and modes that manifest agency and allow visitors/designers to approach, construct and communicate meaning and representations for and about the museum collections in new playful ways.

In chapter 4, I will describe how I developed and applied this thesis' methodological framework. To explore how families design games in the museum site, a qualitative methodology was employed using multiple case studies, game design participatory methodology with participatory action research elements. To collect data, different qualitative tools were used, including focus groups, observations, semi-structured interviews, and a paper and digital games design framework. In chapter 4, the ethical dimensions of this research work will be also discussed exploring the role of the researcher and the relations and dynamics between the researcher and the research participants.

The chapters 5, 6 and 7 are dedicated to the design, implementation and analysis of the case studies. Each case study has unique characteristics and limitations which reflect each research setting's institutional challenges and opportunities. These include the morphology and availability of the museum space, the type of collections, the relation with their communities, and public engagement and marketing strategies. As will be discussed in chapter 5, for these reasons, the methodological framework was applied differently for each case study. In addition to this, the analysis of the first case study shaped and redefined the aims and objectives of this doctoral thesis. As this suggests, the methodological framework and analytical approach of the second case study were reconsidered and applied differently. With these two case studies, I examine what the design and implementation of a game design workshop in two different institutions in the UK can tell us about the way families design games in museums, how they make design decisions and what these decisions reveal about the way

they perceive the role of museums, their role and agency while making games in the museum space, and the way they negotiate representation, meaning and authority with and within the museum.

In the concluding chapter, I will argue that the findings from both case studies extend our understanding of museum participatory and co-curatorial initiatives that involve visitors in game design practices. By investigating the act of making, this research clears out the misconceptions and debates on what games and games design can bring to the conversation about playful and participatory museums, expert versus novice curatorial voice, the visitors' agency and design work, and the problem of representation in the museum site. By reworking the idea of the relation between museums and games and focusing on design, it is revealed how visitors' challenge, transform and add new layers of representations and meanings within new playful and dynamic spaces, and in new modes and platforms. In this way, the expressive and dynamic power of games as playful objects demonstrates that games in museums can contribute to the museum-visitor relation beyond a tokenistic and marketing facade.

CHAPTER 2: LITERATURE REVIEW

Introduction

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Introduction

The aim of this doctoral thesis is to investigate what happens when museum visitors design games for and about museum collections, objects and displays. Before proceeding with investigating this research inquiry, it is essential to establish the context within which this doctoral study develops its research questions, methods and methodology. Over the past decades, museums in the UK have introduced digital games in their learning and engagement programs, organizing different play and design activities onsite and online. In this chapter, I hope to understand the relationship between museums and digital games, and the circumstances and reasons that led museums in the UK to employ games. Informed by both the Museum Studies and Games Studies fields, this chapter offers a detailed review of the relevant literature and practice. It concludes with identifying and addressing a gap in the Museum Studies literature and practice. Addressing the gap will reveal this thesis' contribution to the general field of Museum Studies and particularly, to the academic area that investigates digital heritage, participatory approaches, Visitor Generated Content (VGC) and digital learning in museums.

This chapter is divided into three main parts, the *Museums and Games: A Review of Practice* part *(*Part A), the *Bringing Together Game Studies and Museum Studies Literature* part (Part B), and the *Visitors' games as curatorial platforms* part (Part C). **In Part A**, I will explore **why** and **how** museums have employed games, play and design in their activities and **what** are the short-comings of this employment. **In Part B**, I will bring together the fields of Museum Studies and Game Studies to address and further analyse these short-comings. The Game Studies literature will allow me to discuss the misconceptions and stereotypes that are regularly attached to digital/video games in the museum context and demonstrate my own research aims and objectives.

Building upon the problems that I have identified in the museum-games relation and the insights I have gained by studying the Games Studies literature, **in Part C**, I will further discuss the aims and objectives of this research. I will propose a different approach of exploring the relation between museums and games which highlights the way games and particularly games design can contribute to the museum field.

In part A, in the process of answering the question of why museums have included games practices in their programmes, I will trace the historical, cultural, social and political circumstances that led museums to reinvent their social role and the relationship with their communities. In the first section of this part, *The context: the historical, cultural and political circumstances that led museums to institutional change*, I will show that museums have always struggled with balancing and sharing their authority and power. I will argue that museums have employed more open, participatory and playful strategies influenced by the debates over **a.** The power relations and dynamics between museums and visitors. **b.** The conflict between the disciplinary/didactic role of museums versus visitors' agency within the museum site. **c.** The problem of representation which raises important questions of what and why is represented within museums and who has the right to represent the past. The latter connects with museums' Enlightenment rationality for authenticity against the inclusion of alternative classification and representation in museums.

In the *Museums' use of digital games, play and design section*, I will explain that over the past decades, there is high interest in games in museums. However, there is not enough evidence of why and how museums employ games. Most of the documentation comes from empirical practices and practice-led research which are mainly descriptive and celebratory in nature. The available limited research investigates how visitors play games (Flynn, 2005). This line of work reads games as dynamic and playful objects that have the capacity to model, reflect and transform the museum/heritage experience. However, I will note that visitors' involvement in

playing a game about the museum/heritage experience is not the same as inviting visitors to design these dynamic and ludic experiences that reflect, model and transform the museum. In the next sections and chapters, I will argue that games design allow visitors to explore representation and meaning-making and negotiate their own agency in the museum site.

To show how museums have used and continue to use games, I will review four different categories of museum game practices. These include **1. the collection and exhibition of video games**, **2. using games online, 3. using games onsite** and **4**. **the game-making and game-design related projects**[4]. My review of practice will also reveal why games have been used in museums. I will detail that museums use games, play and design as learning and engagement tools and marketing assets. An explanation of such employment might be that the museum field seeks easy solutions to replace traditional pedagogical models with new seemingly more playful and participatory models that promote an agentive role of museum visitors and attract different audiences. I will argue that the way games are employed,

[4] It is essential to clarify that museum games practices are not limited to the UK, major museums around the world have introduced similar digital strategies. However, this chapter will mainly look at UK-based examples. The decision to narrow down the focus allows me to discuss digital games in a context which shares similar characteristics, ethics and institutional challenges. Having said that, each museum in the U.K. certainly faces different institutional challenges and develops its mission and strategies. But these are created based on guidelines established by common governmental policies for museums. The last factor relates to the methodological framework of this thesis. For the purposes of this research, data were collected from two different sites in the UK. In this way, the data collection shares similar characteristics, ethics, conditions, and challenges with the museum practices explored in this chapter.

and the vocabulary used to document and discuss games in museums oversimplifies and presumes what games are as cultural, playful and dynamic objects.

In Part B, to further analyse the short-comings of the museum games' practices, I will bring together literature from both the Museums and Game Studies fields. Informed by the Games Studies and Museum Studies literature on the debate of serious games and gamification, I will note that employing games for teaching purposes does not promote nor empower visitors' agency. On the contrary, it replaces the old traditional and didactic museum models with new but still didactic ones that are simply masked under playful and 'fun' game-like experiences.

I will show that using games as learning tools and marketing assets conceals the potential of games to address the problem of agency, representation and meaning-making in the museum site. In *The debate about museum games, serious games and gamification* section, both sides of the controversial debate will be presented raising questions about the use of games, play and design in the museum site. I will demonstrate that including the Game Studies literature in the discussion of museum serious games and gamification offers some important insights into understanding the weakness of an instrumentalist approach of games in museums.

To further discuss and debunk the misconceptions and stereotypes that are regularly attached to digital/video games in the museum context, I will explore what games are and how they have been approached and used culturally. In the section *Discussing vocabularies: games, play and design,* informed by the Game Studies literature, I will show what games, play and design can offer to museums and the relationship between museums and their visitors and propose a re-examination of the museums-games relation.

I will propose that the relation between museums and digital games needs to be re-examined, moving away from the trend of gamification and the notion of games as emerging pedagogy and moving towards the examination of games as representational and cultural artefacts that

can reflect and transform the context within which they are situated, played and designed. As this suggests, the design of games as a Visitor Generated Content practice allow visitors agency to assume the role of designer and employ different ways and modes of reflecting, representing, transforming and communicating meaning for and about the museum context. With this in mind, I will suggest focusing on the complex processes that games design involves rather than on games learning and engagement benefits and outcomes. In this way, the different ways museum visitors through design approach, challenge and negotiate agency, representation and meaning-making within and beyond the museums site will unfold.

It is in **Part C**, that I shift the attention towards games design as a co-curatorial and participatory practice and present the aims and objectives of this doctoral thesis. I will propose to focus on games as curatorial platforms and interventions and games design as a curatorial practice. The games as curatorial platforms allow visitors to construct and communicate new layers of representations and meanings for and about the museum collections. Agency-as-choice is manifested through game design. Internally to the games (looking at games as rule-based and ludic objects), the visitors as designers negotiate agency of how to make decisions concerning the meaning and representation of the museum collections as playful and dynamic objects. Externally to the game (reading games as cultural objects situated within the museum context), the museum visitors as designers negotiate agency and their position, role and relation within the museum structure and field.

In the first section of the part, to conceptualise games design as a participatory, co-curatorial and Visitor Generated Content practice in the museum site, I will draw from the Museum Studies literature, to unpack the notions of co-creation, participatory and visitor generated content. I will explore the tensions and debates regarding the question of curatorial representation and authenticity, the shared authority between museums and visitors, and lastly, the power dynamics that define museums authority and visitors' agency in curatorial

decision-making. One of the main questions of this research raised the question of how museum visitors assume the role of curator and experience agency during the game-making process. I will argue that games design as co-curatorial and visitors' generated content practice connects with issues of curatorial representation and authorship, meaning-making and visitors agency as designers.

The last part of this chapter allows me to create a foundation for the next chapter. In the next chapter (Chapter 3), building on theories of curation, Social Semiotics, cultural theory and Platform Studies and Museum Distributed Network perspective, I will further conceptualise visitors' games as curatorial platforms that reflect, transform and add new meaning and representations to the museum. Informed by Games Studies, Social Semiotics, Social Theory perspective, and Museum Studies literature and philosophy, I will theorise the power relations and dynamics between museum-visitors and discuss how agency-as-choice is manifested through the design of dynamic and ludic content such as games.

PART A

2.1 Museum and Games: A Review of Practice

This section looks at the relation between museums and games. Its purpose is to demonstrate how this thesis contributes to the general field of Museum Studies and particularly, to the academic field that investigates digital heritage, participatory approaches, Visitor Generated Content (VGC) and digital learning in museums.

The first part of this chapter will start with tracing the context and background that influenced museums to employ games in their activities and programmes. The overview of the historical and political changes that defined and transformed museums and their policies will present the complexities, debates and controversies within the Museum Studies academic field and practice.

Exploring these debates and controversies allows me to understand why museums have been using games. In this way, the background and context of this thesis will be presented and thoroughly examined. The first part of the literature review will conclude with a review and analysis of the most relevant museum practices of games, play and design.

2.1.1 The Context: The Historical, Cultural and Political Circumstances that Led Museums to Institutional Change

In this section, I will outline the way museums have been transformed by tracing their role and mission over the years. The section will include a critical discussion on museum curation, the problem of representation, the relations between museums and their communities, and visitors' agency within the museum site.

Exploring how and why museums have been transformed will set the background of this research and will help the reader understand the rationale, intentions and arguments made

throughout this doctoral thesis. Examining the origins and history of museums allows a deeper understanding of the way museums have constructed different relations with their visitors, communicated meaning and shared authority and authorship in curating and representing the past.

One of the most prominent museum debates concerns the very definition of museums. Since 1946, the global museum community, including museum academics and staff, has used the International Committee of Museum's (ICOM) definition of museums as a reference to define their policies and strategies. Over the years, this definition has gradually changed. Its most recent version was coined in 2007 and reads as follows:

> *The museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment.* (ICOM, 2007)

In 2018, ICOM proposed the development of a new museum definition. According to Sandahl (2017), who chairs the ICOM's standing committee for the museum definition, museums need a new definition which is 'more relevant and appropriate for museums in the 21st century and future landscapes'. To achieve that, with an open call, the executive board of ICOM asked the museum community to define what is a museum of the 21st century (ICOM, 2018). Based on the responses, ICOM proposed for a vote the following definition[5]:

> *Museums are democratizing, inclusive and polyphonic spaces for critical dialogue about the pasts and the futures. Acknowledging and addressing the conflicts and*

[5] In the international conference of ICOM in Tokyo, it was announced that the vote was postponed due to its controversy (ICOM, 2019),

> *challenges of the present, they hold artefacts and specimens in trust for society, safeguard diverse memories for future generations and guarantee equal rights and equal access to heritage for all people.*
>
> *Museums are not for profit. They are participatory and transparent, and work in active partnership with and for diverse communities to collect, preserve, research, interpret, exhibit, and enhance understandings for the world, aiming to contribute to human dignity and social justice, global equality and planetary wellbeing.* (ICOM, 2019)

The museum community has questioned the aim and purpose of this new definition raising questions regarding its political, wordy and vague content (British Museum Association, 2019). However, as the British Museum Association (2019) points out this growing criticism connects with a wider debate between ICOM's traditionalist and progressive sides.

The conflict between museum traditional and progressive narratives is not new. From their historical formation to date, museums seem as if they have changed dramatically, yet museums still struggle to define, control, and share their authority with their communities. The Museum Studies literature argues that the transformation of museums has led to new public participatory policies and engagement strategies (Kidd, 2014; Drotner, et al., 2013; Simon, 2010). According to many theorists (Kidd, 2014; Drotner, et al., 2013; Simon, 2010) museums are now more inclusive, democratic and open. Museums have reinvented their policies due to different political, social and economic reasons (Witcomb, 2003). As Hooper-Greenhill (2007) notes 'the museum has been constructed as a symbol in Western society since the Renaissance. This symbol is both complex and multi-layered, acting as a sign for domination and liberation, learning and leisure' (p.1).

However, ongoing debates, like the definition of museums debate (ICOM, 2019), have exposed museums to discussions which have challenged their identity, mission and objectives.

In this section, the question of what has historically caused museums to seek change will be raised. This section of the literature review will now explore and attempt to answer the following questions:

- In what ways the history of museums demonstrate the debate between elite/high culture and popular/lay culture and the debate between expert and novice curation, representation and meaning-making in the museum setting?
- What does it mean for museums to be more open and inclusive?
- In what ways the relations between museums and their visitors have been established and communicated?

In the Museum Studies literature, the origins and roots of museums are either traced to the Renaissance (Arnold, 2006), in the 16th-century's Cabinets of Curiosities of rarity and novelty or even earlier in ancient Greece (Abt, 2006, p. 120). According to its classical etymology and genealogy, the term 'museum' comes from the ancient Greek word 'mouseion' (Abt, 2006, p. 120). Mouseion in ancient greek describes a sacred location which is called 'temenos'. Mouseion was dedicated to Muses, the nine ancient Greek goddesses of literature, science and art. Based on this etymology, museums have been compared to and critiqued as sacred spaces where sciences and arts are preserved, curated, represented and guarded (Marstine, 2006; Cameron, 1971). The metaphor of the museum as a temple highlights the museum's authority and expertise to curate the past through authentic representations (Marstine, 2006). Other museum theorists have argued that contemporary museums owe their formation to their predecessor, the 18th-century's Enlightenment Museum of taxonomy and rationality (Robins, 2013). Others (Crimp & Lawler, 1993; Hooper-Greenhill, 1992), note that museums, although their history can be dated almost 600 years ago, do not have a direct ancestor or a prescribed identity.

Most of these academic texts about the historical formation and origin of museums separate their transformation into different stages. Whilst this categorisation is based on how these historical phases differ, it fails to acknowledge their similarities. Museums, since their conception as proto-museums, were defined based on one similarity; they were always directly connected with the cultural and epistemological aspects of their period. While, their aim, mission, identity, and function have changed during these six centuries, they were always directly connected with the societal norms, politics and cultural policies of their time. Museums, in any form, were used to express power and authority.

For instance, the so-called private 'proto-museum' of Cabinets of Curiosities was only open to a limited part of the wealthy public and aimed to represent a microscopic and holistic image of the world (Walsh, 1992, p. 18). The taxonomy of objects was based on their imaginary and mythical connections and similarities (Walsh, 1992). They documented the story of the world but most importantly the financial power and intellectual capital and superiority of their owner (Walsh, 1992). The Enlightenment museum opened its doors as a public and free institution and introduced a new way of museum collections' representation and curation, yet it was used to express the power and authority of the state country.

The Enlightenment museum promoted order and taxonomy in museum representation and curation unlike the way collections were formed and archived before then. During the Enlightenment, the museum objects were rationally categorised based on their differences rather on their similarities (Hooper-Greenhill, 1992; Robins, 2013). The Enlightenment museum preserved and presented the most valuable and important parts of the past. Its mission was to accurately and rationally represent the world and to underline the power of the state country. It aimed to eliminate anything magical and mythical. It seems that wherein the Cabinets of Curiosities, the power was held by the individual aristocrat, in the Enlightenment era, the power was shifted to the state-country which strived to prove its power and authority

through the museological collections (Anderson, 2003, p. 3). This shift happened during a period when organizing knowledge to satisfy the scientific curiosity was a priority and scholarly projects such as the publication of the first encyclopaedia were highly promoted. The first public museum assumed the role of a three-dimensional encyclopaedia of artefacts, art, specimens and books to promote scientific truth, authority and power (p. 3).

Another difference between the first public collections and the previous proto-museums is their open access which characterizes the relationship between museums and their visitors. As the former director of the British Museum, Robert Anderson (2003) points out, the transition from the private 'cabinet of curiosities' to the open public museums happened gradually over the years (p. 1). During the 18th century, there were private collections which were entirely or in parts open to the public but mainly for scientific reasons. The free open public access was limited to those who met specific criteria which were set by museums. The first public museums might be more open than the proto-museums, yet not all parts of the public could visit. This reflects the societal and elite authority and identity of museums and their role to attract and host a carefully selected part of the public who was able to understand, value and admire history, science and art. As Bourdieu (1991) points out, museums selected and hosted those who owned the 'pure' gaze, the ability to see and understand the power of the high culture. The first public museums had a societal role which was promoted by their authority and power as knowledge and high culture gate-keepers. Taking all these arguments into account, it seems that throughout the history of museums, issues of authority and authenticity and control of representation were always central to museological discourses and debates.

The period between the late 18th and the 19th-century was characterised by the increasing number of public museums. This led to new public strategies including policies about the relationship between museums, objects, and visitors (Barrett, 2011). Public museums became, more flexible and open than their predecessors providing access with either free or paid

entrance. Nonetheless, in many cases, the paid entrance limited those who could not afford the luxury of buying a ticket.

During the same period, a new surveillance policy to ensure the regulation of the increased number of valuable museum objects and visitors was developed. This new policy established dichotomies such as ‘open/closed’ and ‘public/private’. While museums opened their doors to more visitors and developed new rules to regulate and communicate their collections, their role remained educational and didactic. Museums’ power was characterized by their authority to make curatorial decisions concerning the interpretation, openness and representation of the past. In this way, museums as cultural institutions maintained the power and authority to pose restraints and rules on the way visitors experienced and interpreted the past. Even though, public museums were founded based on the idea of inclusivity and openness which rejected the privacy of the Cabinets of Curiosities (Robin, 2013), as many museums theorists (Hooper-Greenhill, 1989; Preziosi, 2003) point out museums remained conservative, disciplinary and exclusionary institutions.

Drawing on Foucault’s concept of ‘power/knowledge’, many theorists have critiqued museums for promoting passive learning and presenting a predetermined truth and representation of the past (Black, 2012; Hooper-Greenhill; 1989, Bennet, 1995). From a Foucauldian point of view (Hooper-Greenhill, 1989; Bennet, 1995), museums have acted as knowledge authorities and agents of civilising the public and creating one-sided cultural and historical representations. The visitors have been treated as agents who enter the museum and agree to follow its rules, constraints and conditions. Visitors visit museums to acquire knowledge and cultural capital (Bourdieu,1996) or to practice and demonstrate their ability to understand museums’ high culture based on ‘pure’ gaze and cultural capital. This shows that, despite, the constant debates about the role of museums in the lives of their communities, the Enlightenment heritage and classifications seems to maintain their influence.

Since the second part of the 20th-century, due to political, financial and philosophical shifts, museums have attempted to re-identify their social role and recognise the importance of visitors' active participation in the representation of history and culture (Merriman, 1999). Several reasons led museums to decide to focus on more democratic and inclusive policies. Merriman (1999, p. 43-46), presents three main reasons: firstly, museums faced financial problems and less government funding which required the introduction of a new museum policy regarding visitors' attendance and participation. According to the British Museum Association (2018), museums in the UK faced severe financial challenges in the 1980s which shaped the relations between museums and their visitors. The conservative government re-introduced admission charges for national museums and significantly cut down government funding. As a result, some museums introduced charges, and some remained free. Museums like the British Museum, the Tate, and the National Gallery that remained free of charge, however, increased their visitors' numbers. But many national museums which introduced charges such as the Victoria and Albert Museum (V&A)[6], experienced significant declines in their numbers. In that period, visitors' attendance dramatically plummeted.

In addition to the government funding cuts, museums had to compete with other forms of entertainment such as theme parks, shopping malls, and zoos (Merriman, 1999). These spaces offered cheap and safe entertainment for families and young people. This final reason connects with the way museums defined their social role within this competitive environment of different cultural and entertainment institutions. Museums started embracing polices of active social participation where visitors were free to develop their own version of cultural truth. These changes were met with criticism and debate about the authority and role of museums

[6] The Victoria and Albert Museum (V&A) established a £5 admission charge.

and the line between the museum as an elite pedagogical institution and the museum as an entertainment and amusements parks (Merriman, 1999).

It is the 'New Museology' (Vergo, 1989) movement that established a new museological period (Barrett, 2011). This period is marked by debates about visitors' experience, inclusion, learning and access (Barrett, 2011, p. 4). As Cook (2008) writes 'a steady stream of critical literature has reexamined the role of the museum and the practice of exhibition production' (p. 29). This movement theoretically and empirically promoted new inclusive policies and strategies to engage more audiences with museum culture and collections. Museums reflected on their history (Barrett, 2011) and redefined their role from storehouses of objects and gatekeepers to sites of learning, engagement and enjoyment (Cook, 2008, p. 29).

Over the years, Museum Studies literature has focused on how museums promote learning (Falk & Dierking, 2000; Hooper-Greenhill, 1999). Many museum academics and practitioners have supported the power of active learning and participation and critiqued passive museum experiences (Falk & Dierking, 2000; Hooper-Greenhill, 1999). Consequently, visitors' participation and engagement were gradually acknowledged as necessary. Learning was conceptualized as an active process in which learners acquire knowledge and change their perspective, through conversation and communication. As Hooper-Greenhill (1999) describes in her book '*The Educational Role of the Museum'*, museums transformed their mission to create new paths of connections between visitors and museum collections. Hein (1998), from a constructivist point of view, studied the connections between the museum experience and learning and defined museums as 'extraordinary places'. He argued that the public visits museums to gain a great range of learning experiences through 'incredible and meaningful activities'.

Towards the end of the 20th century, discussions about the creation of a more 'Dialogic' (Bennet, 1995) museum and a new museum theory for the new post-modern museum

(Hooper-Greenhill, 1992) emerged. These new museum theories promoted the idea of giving the power of decision-making to those whose history and culture was previously misrepresented by the 'monologic voice of museums' (Adair et al, 2011). Contemporary museums aim to evaluate their social role and promote participation, collaboration and shared decision-making between museums and visitors (Adair et al, 2011). They examined how and why they are relevant to those who are visiting them and how they represent the local communities' identity, culture, and values.

At the beginning of the 21st century, museums in the UK acquired new governmental funds for free admission which enabled major British national museums to reinstate the free entry (British Museum Association, 2018). During the same period, the government promoted a new cultural policy which with its central message 'Creative Britain' brought more funding to the heritage and art sector (2018). As a result, the annual numbers of visitors were drastically increased and ambitious refurbishments took place in major British museums (Hewison, 2014). As Hewison (2014) notes 'the National Lottery had been turned into an engine of urban regeneration' (p. 69). Through cultural production, this new governmental funding aimed to generate employment and solve major social problems including education, crime, and community hardship (Hewison, 2014). In this way 'cultural policy became part of economic policy. Culture was an industry and its products a commodity' (p. 7).

With the introduction of participatory strategies, debates over the museum-visitor relation were resurfaced focusing on how the power and status are distributed within this relation (Dean, 2017; Finlay & Gough, 2013). As McLean (2003) and Simon (2015) pointed out that museum professionals are concerned with how to involve museum visitors in participatory projects without undermining the museum's authority, role and purpose to deliver 'carefully controlled' and refined exhibitions and authentic curatorial products by experts (McLean, 2013, p. 4). Further research (Golding, 2009) has also examined the museum participatory initiatives to

investigate visitors' agency. This research has pointed out the differences between 'tokenistic participation, consultation, and information gathering' and 'respectful collaboration and sharing of expertise' between museums and visitors.

Discussing how museums have been transformed and challenged over the years shows that museums have always struggled with balancing and sharing their authority and power. The following key issues have been central to the museological debates. They characterise the historical, social and political context within which museums employ more open, participatory and playful strategies.

a. The power relations and dynamics between museums and visitors.

b. The conflict between the disciplinary/didactic role and Enlightenment rationality of museums versus visitors' agency within the museum site.

c. The problem of representation which raises important questions of what and why is represented within museums and who has the right to represent the past.

I argue that it is within this historical, social and political context that museums have employed games, play and design in their activities. Over the past twenty years or so, influenced by these debated and key issues, museums including key cultural institutions in the UK such as the Victoria and Albert Museum (V&A, 2015-2018), the Museum of London (2012-2018) and the British Museum (2018-2019) have included digital games in their programs and collections to reinvent their strategies, redefine their social role, and attract a more diverse and younger audience (Ferreira-Alexander, 2011, p. 57). Similarly, smaller cultural institutions were founded, like the National Video Game Museum. Nevertheless, this phenomenon is not UK-limited, games have been used widely by museum practitioners around the world. Examples of such activities have been recorded in other countries including Australia (Hughes, 2011), New Zealand (Lambert, 2011) and the USA (Scaller & Flagg, 2013. Museum Learning Departments inspired by the increased interest in games in different institutions such as the

military and schools started considering games as a medium to accomplish the learning and engagement goals that they set (Kelly & Bowan, 2014; Birchall & Henson, 2011) for the 'hard to reach demographics such as 16-24 years old' (Bacon, 2013b).

However, there is not enough evidence that critically discusses how and why games, play and design have been used in museums. Most of the documentation comes from empirical practices and practice-led research which are mainly descriptive and celebratory in nature (Beale, 2011). The available limited research that is informed by the Game Studies field, focus on how visitors play games (Flynn, 2005; Flynn, 2007; Giddings, 2015). These texts explore games as dynamic and playful objects that have the capacity to model and transform the museum/heritage experience. However, visitors' involvement in playing a game about the museum/heritage experience is not the same as inviting visitors to design these dynamic and ludic experiences for and about the museum or heritage site. Employing a Participatory Design (PD) and a Visitor Generated Content approach to games, play and design can reveal important insights about the museum-visitor relation, the role and agency of visitors to construct and develop their personal meanings and representations through design.

To demonstrate how and why museums have used and continue to use games, play and design, in the next section of this part, I will review four different categories of museum game practices. This review will allow me to identify the short-comings of these practices. These game practices are: **1. the collection and exhibition of video games**, **2. using games online, 3. using games onsite** and **4**. **the game-making and game-design related projects**.

2.1.2 Museums' Use of Digital Games, Play and Design

Having explored the historical, cultural and political background and the context within which museums have employed and continue to employ games, in this section, I will review some

of the most prominent museum programmes and activities related to digital games[7]. These practices were implemented in major cultural institutions in the UK such as the Museum of London (2012-2018), the British Museum (2018-2019) and the Victoria and Albert Museum (V&A, 2015-2018), and smaller institution such the Brighton museums (2013).

My aim is to demonstrate how and why museums have included games in their practices. This will reveal how museum academics and professionals perceive what games are and how they can be used culturally in the museum context. Also, I will outline what this phenomenon means in terms of museum culture, visitors' meaning-making, agency and participation, and representation of elite and popular culture in the museum site.

My review of practice suggests that games have been used in museums in four different ways:

- **a.** The collection and exhibition of video games
- **b.** Using games online
- **c.** Using games onsite
- **d.** The game-making and game-design related projects

The review of these museum game practices will reveal that in the museum sector, games are perceived as a playful and interactive way to attract and engage new audiences with museum culture. In addition to this, as an important part of contemporary popular culture, games allow museums to introduce more inclusive strategies and represent an alternative part of their communities' everyday lives and culture. As I will present in the following sections of this chapter, museums have used the collection and exhibition of video games to include and represent alternative aspects of their communities' culture. They have used games online

[7] Most of the examples that will be discussed in the following pages are either museum-based practices or practice-led research inquiries employed by academics and museum professionals.

and onsite (serious games and gamification**)** in an attempt to refresh the encounter with the museum collections. This means that games have been used as tools for learning and assets for marketing and engagement (Beale, 2011). And lastly, museum research and practice have used game-making and game-design related projects as a way to crowdsource curatorial activities (Ridge, 2011), and engage younger audiences with museum collections (Bacon, 2013b).

Exploring these four categories is particularly important as it allows me to contextualize and locate this doctoral thesis within the current museum practice. By reviewing these examples, I trace and build the background of this thesis. I explain the academic and empirical circumstances under which this research was conceptualised, proposed and authored. In addition to this, this thesis explores games-making as a cultural and social practice, therefore, it is difficult to isolate the social and cultural context in which this thesis' arguments are developed.

However, as mentioned in the introduction of this thesis, it is important to underline that the conceptual, theoretical and methodological aims of this study focus on game-making with visitors and particularly with families, as such, the research interest and the contribution of this thesis are positioned within the fourth category, games design projects with visitors.

a. The collection and exhibition of video games

Recently, museums have developed new curatorial and collecting strategies including the collection and exhibition of video games. The purpose of discussing these new curatorial and collecting policies is to demonstrate the institutional shift that museums are currently experiencing including more democratic and social approaches. This institutional shift promotes the inclusion of popular culture and the representation of issues that are relevant to diverse cultures and identities.

Despite the debate about the value of games as artworks, gradually video games have been recognized as an important part of contemporary and popular culture (Smuts, 2005; Tucker, 2012; Antonelli, 2013; Adams, 2014). This is reflected by the increasing number of exhibitions and collecting policies of video games in museums in the UK (Barbican Centre, 2002; Museum of London, 2016; Victoria & Albert, 2018) and the USA (Museum of Modern Art, 2017; Smithsonian American Art Museum, 2012).

The first example of the new collecting policies is the Museum of London's video games collection and exhibition. The Museum of London narrates the stories of London from the Roman to the modern age. Its mission is based on five strategic aims[8]. The third objective 'Stretch thinking' connects with the museum's collecting and exhibiting strategies (Museum of London strategic plan, 2013-2018, p. 1-9). Following this objective, the digital curation department decided to collect video games which portray the city of London. Aravani (2019), the digital curator of the museum, explains that this new 'experimental' collecting policy is an exploration and articulation of how video games as media have documented and keep documenting historically the city of London. According to the museum curator, collecting video games is a 'new and experimental collecting policy' (2019). This might suggest that collecting and exhibiting video games allows the museum to become more experimental and promote different classifications, cultures and histories. This shows that the museum attempts to introduce a new policy which can be seen as opposed to the traditional collecting policies of museums. This echoes how museums perceive their authority and role and at the same time their obligation and authority to collect and represent the past.

[8] The five strategic aims of the Museum of London are: 1. 'Reach more people', 2. 'Become better known', 3. 'Stretch thinking', 4. 'Engage each schoolchild', and 5. 'Stand on our own two feet' (Museum of London Strategic plan, 2013-2018:1-9).

Similarly, other museums have reinvented their policies of collecting and preserving the past by including video games in their permanent collections and exhibitions. In 2014, the Victoria and Albert Museum (V&A) established a new collecting policy which was called 'Rapid Response Collecting'[9]. The name of this new collecting policy includes the term 'rapid response' which indicates the museum's role and mission to stay relevant and up to date with the political, social, cultural and economic changes of the contemporary society. Based on this new approach of collecting, the museum started collecting artefacts which marked significant moments in the history of design and manufacturing (V&A website, 2014). For instance, the museum now collects game apps as a response to their popularity. An example of these game apps is the *Flappy Bird* app. The case of the *Flappy Bird* shows how a historically traditional and elite museum such as the V&A museum has transformed its collecting policies to include and represent major popular culture phenomena in its collections.

In addition to this new collecting policy, in 2018, the V&A museum opened its first large-scale exhibition on games, design and play which was called 'Video games: Design/Play/Disrupt'. This exhibition introduced the museum visitors to video games design, different play cultures, online communities and fan-made content raising important questions about the most common misconceptions and stereotypes of video games. These digital games exhibitions reflect the new policy-making and curatorial development trends in museums towards more inclusive and diverse representations. These trends also echo how large and traditional institutions in the UK like the V&A take radical steps towards reinventing their role and authority. These new collections and exhibitions show museums' interest in including 'a plurality of lived experiences, histories, and identities' (Sandell & Nightingale, 2013, p. 1-2).

[9] Available at https://www.vam.ac.uk/collections/rapid-response-collecting

However, there is one major problem with discussing this interest in the collection and exhibition of video games. There is a lack of research on the introduction of such collections/exhibitions. Therefore, very little is known about both the intentions of such exhibitions and visitors' experiences of them. The lack of evidence brings into question whether these exhibitions empower visitors' participation, agency and role or instead re-establish and confirm the authority and power of museums to make curatorial decisions of what is valuable or not within the museum space. It is impossible to understand whether these practices attempt to democratise the museum as a cultural institution or act as marketing baits.

b. Using games online

One of the most widely used categories of museum games is online games or game apps. For many years, museums in the UK have been using online games and apps to engage online users with their museum collections. In most cases, these online games have been created for informal and formal use inside and outside the classroom and home (Kidd, 2014, p. 108).

As Kidd (2015) notes, the popularity of museum online games relates to the increased interest towards gamification in museums and the demand for new ways of interacting and encountering the museum virtually (p. 415). Many museum academics and practitioners (Kidd, 2014; Birchall & Henson, 2011; Prudames, 2011) have examined the use of online games in museum websites including the digital heritage scholar Jenny Kidd (2014) who argues that these games have been employed to provide remote access to museum collections and 'engage and maintain communities of interest' (p. 106). According to Wellcome Collection's Birchall and Henson (2011), online games allow museums to reach out to new audiences and promote further museum engagement. As Kidd (2014) points out introducing games creates an alternative way to redefine museum pedagogy as less traditional and didactic (p. 107). It

promotes entertainment, education, and the motivation to visit the museum collections in the future (Kidd, 2014, p. 106).

The Science Museum has a long tradition with online games. Currently, on its website, under the category 'Learning' there is a separate section dedicated to online games and apps[10]. *Total Darkness* is the most recent online game which was launched in July 2018. It is a point-and-click adventure game designed for 7-13 years old children. According to the website and the museum's director of Learning, Susan Raikes (2018), the game is 'a digital storytelling experience' which aims to engage young people with science beyond the classroom. In this example, the museum uses games as a teaching tool. However, as Raikes (2018) suggests, science in the context of games and storytelling is perceived as something separate and opposed to formal and traditional learning. Storytelling has been employed in museums to engage young people (Bedford, 2001). Here it is used through games to engage visitors with science.

In 2016, the Museum of London as part of its exhibition entitled 'Fire, Fire: the great fire of London' invited Adam Clarke, a digital producer, a game designer, Dragnoz, and the 'map-builders', Blockworks to design three London maps in *Minecraft*: one before, one during and one after the great fire of 1666. This is another example of using games as learning and engagement tools in the museum context. As stated on the museum's website, the 'Great Fire 1666' maps are:

> *Inspired by the Museum of London's rich collections, allow Minecraft players to explore the City of London and experience the story of the fire like never before…Each map will*

[10] https://www.sciencemuseum.org.uk/learning, last access on the 2/12/18

include challenges that help players delve deeper into the story and experience what it was like to be part of the Great Fire.

According to the museum's digital learning coordinator, Joshua Blair (2016), the museum uses *Minecraft* for its functionality and adaptability to narrate the story of the fire. He writes that *Minecraft* can 'create a fun learning experience that can engage every young person in this fascinating story'. The key problem with this statement is that the power and effectiveness of games as learning tools is presumed without explaining the reasons and processes behind them. Blair (2016) connects the success of games as learning tools with the pleasure that often is perceived that comes with playing games. He does not explain why and how playing *Minecraft* allow young people to encounter and experience the history of the Great Fire.

The Museum of London is not the first museum in the UK that has used *Minecraft*. Previously, in 2014, the Tate Britain used *Minecraft* to re-create several maps where players were able to discover remotely different artworks and learn more about the stories and the worlds that inspired their creation. Both examples are similar since both using *Minecraft* to engage and educate their visitors about their collection's history, themes and origins. They use *Minecraft* as an alternative way to engage and teach those who are or possibly who are not visiting the museum. *Minecraft*, in these examples, is, according to the museum curators (Museum of London, 2016), a 'creative and fun' way to engage and provide remote access in the past of London. In this example, playing Minecraft is perceived as an effortless activity that allows younger audiences to learn about the past. The argument in favour of Minecraft as a teaching tool is based on the pleasure that often comes with playing video games.

Since 2008, the Tate has also a dedicated section on its website for online games. In the 'Tate Kids' website[11], there is a 'Games and Quizzes' section with several flash desktop activities

[11] Available at https://www.tate.org.uk/kids

which are either categorized under the ‘games’ or ‘quizzes’ category. According to its website, the museum invites its online visitors to ‘play and have fun with art’. Here is another example of games employment that presumes the effortless and ‘fun’ nature of games. So far, it is evident that the notion of ‘fun’ is used repeatedly in the museum games discourse in an attempt to promote learning and pleasure.

The most recent example was a series of four desktop mini-games called *Wondermind* (2012). They were inspired by the Tate collections and the world of *Alice in Wonderland*. According to its website, *Wondermind* was designed to ‘introduce different areas of scientific focus in a friendly and engaging way’. To evaluate the success of the *Wondermind* project, the museum commissioned an external agency, EdComs (2012). The agency conducted observations and interviews with teachers and families to examine among others the effectiveness of the mini-games to introduce topics related to neuroscience. The evaluation was also focused on whether playing these games improved the players’ knowledge of neuroscience. Overall, according to the agency, the study had positive results. The games were evaluated as valuable resources for teaching and learning themes related to the topic and there was a consensus among the participants that the games were more effective than other traditional methods of teaching and learning.

Looking at the analysis and findings of this study (EdComs, 2012), it seems that the museum’s objective to employ games was to introduce a less traditional method of teaching and learning of scientific subjects. This indicates that through games, the museum attempts to assume a less traditional teaching role. Nonetheless, the museum employs games without moving away from its traditional pedagogical obligations. Exploring the families and teachers responds to the games, it unfolds something rather interesting about the way museum audiences also perceive and understand the role of museums and what they expect from a museum

experience. Most of the families perceive the museum as the authority that has the responsibility to involve visitors in serious learning activities (EdComs, 2012).

Another common genre of digital games in museums is the downloadable mobile game apps. Most of these are commissioned by museums and built by game designers. From 2010- 2015, many museums in the UK developed game apps for their visitors to offer different players the opportunity to interact with and learn from the museum collections both inside and outside the museum space. In 2013, the V&A museum published its first game designer residency role and recruited Sophia George as its first resident game designer artist. The game designer developed a game app called *the Strawberry Thief* which was based on Williams Morris's artwork (George, 2013).

British Museum's *Time Explorer* (Prudames, 2011) is yet another example of an online museum game developed by a museum team to introduce and immerse young children to museum collections, cultures and representations. Prudames (2011) sees the online space of the game as a safe informal space where young children can engage with and learn about history. He claims that including online gaming in its activities, the British museum promotes a 'serious scholarship with a softer approach' and even though the games produced in a museum context are unable to compete with other commercial games, the online museum games offer 'the advantage of authority and safety' of museum content (p. 257). Prudames (2011) supports his argument further by suggesting that even though online museum-based gaming is a 'fun' activity, it ensures adults that young children will not engage with 'inappropriate content' online but will have the opportunity to learn 'without noticing' (p.257).

Prudames' view of games (2011) illustrates how certain museum practitioners perceive the role of museums as learning authorities and visitors' role and agency as learning subjects. It suggests that the museums' traditional role as knowledge authorities is camouflaged under 'fun', effortless experiences where learning happens without realising. At the same time, it

points out how museum practitioners perceive and present games as utopian spaces where serious learning can be camouflaged with less serious, 'softer approach' (Prudames, 2011, p. 257). The term 'fun' has become part of the everyday museum games' discourse. I argue that the use of such vocabulary oversimplifies and fails to recognise the complexity of games and the experiences and processes that relate to playing and designing games. It also conceals how visitors' agency is manifested through playing the game. In the following part, this idea of video games as utopian spaces will be further analysed and connected with the problem of museum serious games and gamification. I will present how this treatment of games and play instead of empowering visitors' agency, engagement, and participation in the museum context, they sabotage them.

Summary

Thus far, the museum practices that have been presented provide evidence that museum practitioners have used online games for educational purposes. Museums have developed online games to promote learning as 'fun and, effortless activity'. For this reason, museum online games have discussed and criticized in connection to the debate about gamification and serious games (Kidd, 2015). This approach to games and play has widely critiqued and has also sparked debate in the Games Studies field. Games Studies research (Bogost, 2015) has questioned the usefulness of serious games and gamification and treatment of games as learning tools. The debate of gamification will be analysed later in a separate part where the problem and controversy around museum games practices are explored in detail.

c. Using games onsite

Another type of digital games developed by and for museums are digital games played onsite such as simulations, alternate reality games (ARGs), and museum arcade-like games. These

games are inspired by the topics and themes of museums' collections and are built for further gallery engagement and learning purposes.

In the 'Great Hall' of the National Railway Museum in York, up until recently, visitors could experience the Mallard's record-breaking run in a simulation. Academic literature on the use of simulations in museum argues that while these games offer the opportunity of experiencing and exploring the past and history, there are noticeable implications of this medium on the visitors' museum learning experience (Giddings, 2015). Giddings claims that focusing on the virtual aspect of the game simulations, visitors might distance themselves from the real objects, galleries and collections which contradicts the museum objectives.

The *Engineer your Future* gallery[12] at the Science Museum in London offers a series of arcade-like games inspired by the museum's themes and collections. In the gallery, two different games are available, the *Rugged Rovers* which according to the website allows visitors 'design a space rover that will travel the furthest across a challenging alien landscape full of jumps, boulders and slopes'. The visitors are also invited to play and compete with other players to complete the game. The second game is called *Test your brain* which according to the website the players 'build and test systems inspired by some seriously complex engineering, from electrical grids to rail networks and baggage handling systems'. The museum presents these games as part of the permanent displays to promote student orientation through play. Through these games, the museum undertakes an informal social and teaching role. Games are used for educational and teaching purposes.

Alternate Reality Games (ARGs) are another popular genre of museum games. *Ghost of a Chance*, the first-ever museum-based ARG was played at the Smithsonian American Art Museum for five months (Bath-Goodlander, 2009). The museum's aims were to extend the

[12] Both games are available at https://www.sciencemuseum.org.uk/see-and-do/engineer-your-future

audiences, promote the museum, and ‘encourage discovery around collections in a new, very interactive way’ (Bath-Goodlander, 2009). In ARGs, the boundaries of a game are extended (Moseley, 2011) and blurred with and within the players’ physical world using different digital media technologies which allow the players’ physical space (i.e. museum spaces), becoming a game board (ARGology, 2011). ARGs, as location-based games and mobile games, transform the public space to a ‘playful’ space by using both the public space and a digital platform as a medium of communication with the game and other players (Bunting, 2014; Stendahl-Rokne, 2011; De Souza e Silva & Hijorth, 2009). The players work together or individually to gather different clues, solve different puzzles and complete different challenges using both the space of a physical location and different digital media resources.

Studies in museum settings (Palmer & Petroski, 2016; Ciolfi and Bannon, 2007) connect the use of ARG with the main learning theories that museum learning promotes (i.e. active learning, collaborative learning and experiential learning). These studies argue that ARGs allow museum visitors to focus on the real physical world of museums and learn more about their collections. Moseley (2011) in his paper ‘Immersive Games: An Alternate Reality for Museums’ notes that there is a clear reason why it is essential to transfer the experience of using ARG in schools to museum spaces. The reason originates from the playful and interactive elements of the ARG. These games offer visitors the opportunity to transform their visit to a playful experience, rather than a static and boring browse through the museum (Moseley, 2011, p. 234). He claims that even though there are limited ARG examples in museum environments, these examples are effective enough.

Furthermore, according to Fróes and Walker (2011), the mobile element of this genre can be a useful medium for creating enhanced learning activities inside museums. They explain that the mobile location-based digital games inside museum spaces provide the opportunity for visitors to enjoy a private experience in a public space (2011).

Another category is mobile games. The American Museum of Natural History (2016) which released the mobile game, *MicroRangers*[13], in which the players use scannable collector's coin and the app of the game to discover the museum and its collections. The aim of this game was to use the museum space as the game board and allow visitors to engage with the museum collections by playing an interactive game. Ciolfi and Bannon (2007) highlight the benefits of using game-based hybrid experiences by integrating digital artefacts in the physical world of the museum to uncover the museum collections and provide engaging opportunities to the public (p. 62-65). They argue that in this way museums can offer new experiences, which promote active and social participation and agency.

Another example of mobile games is the British Museum's *A gift for Athena* for KS2 students. In this 1-hour session, students use handheld devices and explore the Parthenon Gallery. 'A gift for Athena' is an augmented reality game. According to the British Museum, the activity helps 'students learn about the importance of Athena and how the Parthenon communicated and celebrated Athens' greatness in the 5th century BC.'[14], (British Museum, 2018).

Digital Treasure hunts are another widely used genre of games in the museum space. Most of the major museums in the UK and around the world have used digital treasure hunts to engage young people, adults and families with their collections. Since 2016, the Samsung Digital Discovery Centre (SDDC) as part of the British Museum hosts the *Samsung Great Court Games*. According to the press release (British Museum, 2016), 'these fun and interactive workshops will allow visitors to explore the British Museum's permanent collections using digital games. Families will embark on a shared learning experience as they get up

[13] Available at https://www.amnh.org/learn-teach/children-and-families

[14] https://www.britishmuseum.org/learning/schools_and_teachers/sessions/a_gift_for_athena.aspx, last access on 2/12/18.

close to incredible objects and learn about cultures from around the world'. During the game, the game master sends out instructions and challenges that take the families around the museum galleries. To play the game, the families use handheld devices to record audio, photograph the museum objects to complete the challenges. According to Susan Raikes, the former head of Learning and National Partnerships of the British Museum, these digital tools were positively welcome from both families and school students. Therefore, the museum sees them 'as indispensable in opening up and encouraging active engagement with our vast and varied collection' (British Museum website, 2018).

In addition to the Great Court Games, the SDDC offers another opportunity for gaming for school groups and families. *Build Roman Britain in Minecraft* is a *Minecraft* workshop where young people and families explore the Roman conquest of Britain and look at the early efforts of Romans to conquer the British Isles and in more depth at Hadrian's wall. The families are invited to take part in a building challenge. They are asked to build different fortifications inspired by the ones along Hadrian's Wall. The aim of this workshop is to promote a greater understanding of Roman history particularly the conquest of Britain and a chance for the families to respond creatively to the artefacts from this period. This workshop is one of the most popular and busy workshops at the SDDC. But what makes these workshops so popular in the museum space? Perhaps, their popularity reflects the way visitors and particularly families perceive the authority and role of museums. As yet, there is no research evidence about the interest and motive of families participating in *Minecraft* sessions in the British Museum, or how they perceive the role of the museum, or how their designs reflect or transform and add to the museum culture and context.

Summary

So far, by reviewing the above examples of museum on-site games, ARGs and digital treasure hunts, I have described how and why online and on-site games have been used in museums.

Museums offer games activities for two reasons: 1. For learning purposes and 2. to attract and maintain new and more diverse audiences. As the review has suggested, the field of museums sees games as an opportunity to promote enhanced learning activities (Fróes & Walker, 2011) through 'fun and interactive workshops' (British Museum, 2016).

There two major problems with these practices. **First**, there has been an emphasis on instrumentalist and pedagogical approaches. Games have been used as learning tools (Susan Raikes, British Museum website, 2018) and as a playful cover to the so-called traditional and static museum experience (Moseley, 2011). The museum field often presumes the power and effectiveness of games as learning tools without explaining the reasons and processes behind them. By using a vocabulary that emphasises the pleasure that comes from playing games, the museum field attempts to promote visitors' social participation and agency. However, this approach to games oversimplifies and conceals the complexity of games and the processes that they involve. **Second**, games are employed to maintain and motivate different audiences to visit the museum collections in the future (Kidd, 2014). This suggests that games are used as marketing baits to attract visitors and enhance their interest.

d. The game-making and game-design related projects

Over the years, larger and smaller museums (British Museum, 2017; National Museum of Scotland, 2016; V&A Museum, 2015; Science Museum, 2018,) in the UK have implemented several game-making and coding workshops with school groups, young people and families. Some of these game-making workshops were implemented as co-production projects, while others were organised as game jams and hackathons.

In some of these examples, the game-making process was inspired by museum collections and objects and in some others, the game-making process was focused on a subject rather on the museum collections. For the purposes of this study, the different examples of game-

making workshops in museums will be split into two categories: ‘games jams and game design workshops’, and ‘co-production and collaboration through game-making’. From the conceptual and theoretical perspective of this doctoral thesis, these two categories have a fundamental difference. The workshops that belong to the first category attempt to engage visitors with the museum collections using digital tools. Therefore, these examples have pedagogical aims and objectives. While the workshops of the second category promote game-based learning, they also promote collaboration and co-production.

Investigating these two categories of game-making projects in the museum space allows a deeper understanding of how and why museum practitioners have used and they continue using game design in the museum space. As yet, game-making in the museum space is not well documented since there is not enough research that examines and unpacks the way museum visitors design digital games in the museum setting. Exploring these processes academically would be useful. Examining the making process might unfold the complexity of games design and reveal what happens when different audiences are involved in co-production and co-curatorial projects. This thesis addresses this literature gap by focusing on games design with visitors and investigating the act of making and its connection representation, meaning-making and agency.

Game jams and game design workshops

In 2017, during weekends, the Samsung Digital Discovery Centre at the British Museum implemented a series of game design workshops for young people (13-15 years old), the ‘Teen game design workshops’. During these 2-hour workshops, young people were invited to design games inspired by the museum collections and objects including African and Mayan artefacts. The aim of the workshop was to engage young people with the museum collections and to allow them creatively react to them by using digital technology. During the workshops,

the participants drew characters inspired by the museum objects and programmed mobile games using a mobile app on tablets. The games were available for others to play.

As yet, there is no further documentation of the workshops and therefore, no research evidence which analyses the implementation of these workshops and the process of making games and how the young people assumed the role of maker. It would be useful if these projects were documented using research methods and tools to analyse how young people's games interrogate, reflect and transform the museum culture. The only source of information for these workshops is the centre's website. According to the British Museum's website, the workshops were advertised as digital workshops for young people interested in learning programming skills through games. Similarly to previous examples, the aim of these workshops focused on what young people learn from making games. This approach to games design is too instrumentalist. It would be more useful to investigate how the design of games can contribute and open new dialogues between museums and young people. This investigation might generate valuable insights on how games design allow young people to challenge the role and agency as visitors and how young people explore representation, curation and meaning-making through games design.

In 2015, the V&A Museum in collaboration with a game designer built a mobile game[15] and ran a series of game-making workshops with school groups inspired by the museum collections. Following the design of the museum game 'Strawberry Thief', the museum organized several game design workshops and play sessions inside the museum with a group of year seven school students (Flowers, 2014). The game-making workshops included: playing video games, exploring the museum galleries through the lens of game-making and the coding phase of the game design process. Based on the information found on the

[15] Stawberry thief was created in 2015 by Sophia George for V&A museum and collections.

museum's blog (Flowers, 2014), the students in small groups of six or seven prototyped games inspired by the museum collections.

Once again, the game-making process is not well documented to demonstrate fully how the game-making process was implemented or connected with the museum collections and which were its aims, conditions, findings and implications. The documentation is mainly descriptive without detailing the aims, conditions and perspectives of the designers. Game-making is a widely used museum practice, yet its implications and findings are rarely researchers and documented.

Other than that, as explained earlier, the V&A museum has also organised several coding sessions inviting visitors to code video games. However, these activities are not directly connected with museum collections and objects. Similar game design/coding workshops have taken place also in other museums such as the Science Museum and the National Video Game Museum.

Co-production and collaboration through game-making

In 2016, the National Museum of Scotland collaborated with school students and the Dundee Games Collective to design a digital game. *Dolly and the Atom*[16] was inspired by the Art and Design and Science and Technology collections of the museum. The students prototyped several versions of the game and the Dundee Games Collective curated all the paper-based prototypes and game ideas into one final game (McNab, 2016). The game-making process started with a brief museum tour and a discussion about the museum's objects. The students sketched some of the museum objects and asked questions about the game-making process. The first workshop then focused on the game design. The students were invited to play games

[16]Available at https://www.nms.ac.uk/flashcontent/dolly/dolly.html

and discuss the way games are designed. In small groups, the students proposed a game idea inspired by the museum objects. During the second and third workshop, the students were introduced to programming and game design. They explored, learnt and tested out different aspects of games design and programming including recording sounds, programming and testing out different game mechanics. In the final session, the students were split into teams 'made up of school pupils, game developers and National Museums Scotland staff'. These different groups started paper-prototyping different game ideas which later the Dundee Games Collective curated into one final game (McNab, 2016). This is another co-production and collaboration project in a museum space involving young people in a game-making process. In this example, the young people paper-prototyped different game ideas which were then curated and transformed into a digital game by a professional team of game developers. The project was documented on the museum's blog providing a step-by-step description of the process.

However, this documentation does not provide any information about the students' perspective and experience of designing games and on how they assumed the role of maker. In this project, the project facilitators, game designers and the museum staff acted as co-creators along with the young people. However, it is unclear how the students' game ideas were curated into the final game and whether the game-making process allowed them to negotiate meaning, representation and agency in the museum space. The project was organized by the Learning and Engagement department of the National Museums Scotland. It seems that the aim of the collaboration was to engage young people with the museum collections in a creative way using digital technologies.

This is a great example of how a game-making project involving young people can be implemented. It provides useful information describing the game-making process step by step. It offers museum practice essential insights into how game design can work in the museum

context. However, as a practice-based project, it does not provide any academic and theoretical insight about the young designers' perspective, design decisions and choices. It does not explore their agency while making design decisions about curatorial representation and meaning through game design. Lastly, it does not analyse how the designers' work connects or impacts the museum culture, space and curatorial authority. This doctoral thesis focuses on meaning-making, representation and agency through game design.

A few years earlier, in 2013, Preston Manor collaborated with twelve young people from the writing group 'Little Green Pig' and designed a mystery computer game inspired by the Preston Manor which was called *Murder in the Manor*. Built-in HTML 5, the 'Murder in the Manor' resembles more an interactive computer-based story than a computer game. The project was funded by the Arts Council's Renaissance major grants programme and it was a collaboration between the Royal Pavilion and Museums, the 'Little Green Pig' writing group and digital developer 'Say Digital'. The young people took part only in the writing process of the stories of the game and not during the digital making of the game's website and environment. Therefore, the writers were involved partially in the game-making process. The writing process was divided into three different sessions which were run by the writing group's director Ella Burns. In the first session, the 'Little Green Pig' writers were introduced to the manor and to the aims of the project. In the second sessions, they started writing up the game stories inspired by the manor's objects. First, the group authored a murder-themed plot as the main overarching narrative of the game and then, individually, each participant worked on the stories of the game characters. Each participant wrote two stories inspired by the manor's objects. In the final session, the participants completed their stories and recorded audio narrations for the characters (Bacon, 2013a).

According to the manor's digital development officer, Kevin Bacon, the first reason for making 'Murder in the Manor' was to encourage young people to engage with the manor. They

approached the process as a co-production project between the manor and the young writers. The aim of the project was to empower the participants and allow them to express their creativity and ideas. The museum's role was to provide space for this creativity and to give the participants ownership of their work. Through this project, the museum aimed to challenge its role and help the young people tell the story of the manor. Furthermore, Bacon argues that the museum used the online space of the game to capture the stories behind the manor in a nontraditional and creative way. Another aim was to create something different that will inspire and attract visitors to learn about the manor and promote the museum online (Bacon, 2013a).

This project is an interesting example of co-production and collaboration between a museum and a group of young people involving game-making. The museum by clearly defining the relationship between the museum and the participants and acknowledging and respecting the participants' creative space opens an interesting conversation about the role and authority of museums in terms of representation, curation, storytelling, the role and agency of visitors in museums and the debate between novice and expert curation.

While the perspectives of the museum practitioners and the writing group's director are presented and discussed openly online, the writer's perspectives are concealed. No information is given about the way the creators assumed the role of maker/author and approached the museum objects and collections. Including information about the role of the writers/game-makers and how they unpacked the role and the process of making would benefit both the museum practice and academia. While it would allow the museum professionals and young people to explore the process of co-production and the collaboration between different participants. It would also offer some important insights about curation, agency and representation.

In 2012, a participatory project was implemented at the Museum of London Docklands as a pilot project to test out the relationship and collaboration between the museum and its local

communities. This museum practice did not include the design of a digital game, but the design of an analogue board game. However, this example is one of few that details how the young people were involved in the project. Even though the process was not a part of a research project and was not analysed through a methodological and theoretical perspective, the museum documented the process of making in a series of short films. In these films, the makers describe the process of making and how they assumed the role of the designer in the museum site. The theme of the project was 'Many East End stories' and the main question under investigation was 'What the East End means to you?'. During the project, the diverse community group 'Tolerance in Diversity' was invited at the museum to explore how to represent East End in the upcoming museum exhibitions on East End history. The group participated in different sessions exploring different questions such as 'what is your favourite place/ person/ item in East End?'. Through that process, they browsed the museum collections and studied the historical photographic archive of East End. As a result, a Monopoly board game was designed based on the participants' paper prototypes.

Complementary to this literature review, an interview with the project manager of the East End project, Halima Kathoun, was conducted to discuss the aims and structure of the participatory game-making process. According to Mrs Kathoun, the museum's main aim was to engage the local communities in a project where they could decide from the beginning how they want to approach the topic. Therefore, the decision of creating the Monopoly Board came entirely from the group and as a need to create a map of the east end. The participants had previous experience of playing Monopoly, therefore the idea of making an East End Monopoly was popular among the participants. While discussing the experience of playing *Monopoly*, they pointed out that the official version of *Monopoly* not only did not include the East End but in their opinion generated a negative stereotype of East End and connected it with crime and poverty. Mrs Kathoun argues that through the game-making process the participants researched about the

local community, narrated its story and put pride in their neighbourhood. The game-making process encapsulated their need to define their identity as a community and to map out their neighbourhood in a way that never has happened before. Currently, the *Monopoly Board* is exhibited at the East End gallery at the museum. Presenting their work publicly at the museum was one of the participants' main aim and goal. During the sessions, they expressed how important was for them to see the *East End Monopoly* as a part of the museum galleries. According to the participants, the museum as a cultural institution represents social authority and therefore, brings credibility to their work and representation. It allows their identity and culture to be publicly shown and acknowledged.

This project is different from the above examples in several ways; According to Mrs Kathoun, the game production of the *Monopoly* board came into realization as a solution to a problem that the participants identified. In this way, games production enabled the participants to negotiate their culture and identity. According to Kathoun, game worlds tend to present a fictional reality. In this way, the game production offered the designers the motive and agency to produce and display a version of their, culture, reality and story. Although this project did not focus on the way visitors as designers perceive and experience agency while making games or on how the game designs reflect, transform and contribute to the context within which they are designed, its examination leads to and unfolds some interesting themes and questions. These questions refer to the way game design reflects, transforms and adds to the culture and context of museums within which they are designed. These issues were not further investigated by the museum team, neither identified in the museum exhibition dedicated to the project nor documented as research evidence.

Summary

My review of the practices showed that employing games design as a participatory design (PD) and Visitor Generated content (VGC) approach connects with the issues discussed in the

previous section including the problem of representation and meaning-making and the problem of visitors' role, authorship and agency in the museum site. The review has also demonstrated that even though there is museum interest in employing games design as PD AND VGC approach, there is no research that explores these issues. Therefore, this doctoral thesis attempts to build upon these museum practices and the questions that I have raised in this review. But also, my aim is to take a step further by investigating these issues through the game-making process as a different mode of curatorship which questions museum representation, the connection between expert and novice curation, and visitors' participation and agency in the museum space.

Part A Summary

Overall, this part has presented the historical, social and political context within which museums have employed games in their activities. I have argued that debates over the authority and didactic role of museums versus visitors' agency and the problem of representation and meaning-making have led museums to employ games, play and design. I have explained that over the past decades, there is high interest in games. However, there is not enough evidence of why and how museums employ games. For this reason, I reviewed four different games-related museum practices including games collections and exhibitions, online games and apps, onsite practices of games and play, and lastly, game design projects in museums. This enabled me to trace the current background within which this doctoral thesis develops and proposes its conceptual and methodological inquiries.

My review of practice has revealed that the museum field treats games, play and design as learning and engagement tools and marketing assets. The way games are employed, and the vocabulary used to document and discuss games in the museum field often oversimplifies and presumes what games are as cultural objects. The accounts are descriptive and celebratory. An explanation of such employment might be that the museum field seeks easy

solutions to replace traditional pedagogical models with new seemingly more playful and participatory models that promote an agentive role of museum visitors and attract different audiences. However, employing games as learning tools is too instrumentalist.

I have argued that there is limited research (Flynn, 2004; Flynn, 2005; Flynn, 2007; Giddings, 2015) that investigates what games can contribute to the museum-visitor relation. Informed by the Game Studies field, these texts explore how visitors engage with different curatorial subjects while playing games and how games' virtuality, spatiality and ludic aspects allow visitors agency to experience the historical and cultural heritage. However, these studies are mainly concerned with visitors' play practices and how playing games allow visitors to encounter the past. This thesis attempts to build upon these texts and continue the conversation on what games can offer to the relations between museums, heritage and visitors. But instead of concentrating on visitors' play practices, this thesis focuses on game design fleshing out the complex processes and actions that are involved in making games.

In addition to this, museum practice and research on game design as a participatory approach have only scratched the surface of the expressive and dynamic power of games. They fail to analyse the processes that visitors as designers undertake while designing games. The way games design has been employed in the museum field limits the understanding of how visitors' agency is manifested through games design and how visitors challenge and transform curatorial representation and culture with their games.

Therefore, I propose to examine what games, play and design can bring to the museum field informed by the Games Studies literature and theory. In Part B, I will draw from the academic literature on games, play and design (Salen & Zimmerman, 2003; Jarvinen 2003; Jull, 2003; Carr et., 2006; Taylor, 2007; Gee, 2009; McGonigal, 2011; Salen, 2012; Beavis, et al., 2012; Bogost, 2016) and gamification and serious games (Zichermann & Cunningham, 2011; Deterding et al, 2011; Deterding, 2014) to further interrogate and explain the problems with

serious games and gamification in museums (Bath-Goodlander, 2009; Yannoutsou et al., 2009; Gish & Zaia, 2011; Birchall & Henson, 2011; Bacon, 2013b; Kelly & Bowan, 2014).

PART B

2.2 Bringing Together Game Studies and Museum Studies Literature

Having reviewed the museum games practice and highlighted their main problems and weaknesses, I will now bring together the Museums Studies and Games Studies literature to further investigate the relation between games and museums. To achieve that, I will draw from the Museum Studies academic literature concerning digital media and play in museums and the Games Studies literature regarding the debate on gamification, serious games and games ontology. In this way, both sides of this debate will be presented.

In this section, I will show that examining gamification and serious games informed by the Games Studies literature solves the short-comings of the museums game practices. I will demonstrate that employing games for teaching purposes in museums does not promote and empower visitors' agency. On the contrary, it replaces the old traditional and didactic museum models with new but still didactic ones that are simply masked under playful and 'fun' game-like experiences. Using games as learning tools and marketing assets conceals the potential of games to address the problem of agency, representation and meaning-making in the museum site.

2.2.1 The Debate about Museum Games, Serious Games and Gamification

In the following paragraphs, the discussion about games in museums will continue and will now focus on the debate about serious games and gamification. First, the terms ‘gamification’ and serious games will be explored and defined. Then, the problem of museum games practices will be examined drawing from the debate about gamification, serious games and the ontology of games, play and design.

Almost a decade ago, gamification became a major area of interest and buzzword (Ridge, 2011) within the field of formal and informal education including schools, libraries and museums. However, since then, gamification has also grown into a controversial and much-debated subject within the fields of Game Studies and Media Education (Deterding, 2014, p. 24). Stenros et al. (2007) connect the interest towards gamification with the shift towards rationalizing and instrumentalizing games in different institutions (p. 345).

Previous studies define gamification 'as the use of game design elements in non-game contexts' (Deterding et al., 2011, p. 10) and 'the process of game-thinking and game mechanics to engage users and solve problems' (Zichermann & Cunningham, 2011). For Bogost (2015) gamification 'involves the adoption of simple, repeatable, scalable feedback systems such as points, levels, badges, and other rewards' (p. 68). Gamification has been used mainly as a marketing and advertising practice. Bogost (2015) suggests that these gamification practices presume what games are as cultural and playable objects. They fail to acknowledge the complexity and importance of games, play and design (Deterding, 2014, p. 24). Bogost (2015) points out that gamification promises to 'beautify' and make easy and 'fun' any unattractive activity (p. 67).

These definitions, however, are rather vague. The ambiguity of gamification and what it involves has allowed overlaps between gamification and serious games (Bogost, 2015, p. 70). Museum research (Kidd, 2015) often discusses museum games in the context of both gamification and serious games without distinguishing between the two terms. For Zichermann and Cunningham (2011), the term 'gamification' incorporates other games-related concepts including serious games. According to a definition provided by Deterding et. al (2011), serious games are described as 'any form of interactive computer-based game software for one or multiple players to be used on any platform and that has been developed with the intention to be more than entertainment' (p. 10).

While describing one of his games for the UK Clinical Virology Network, Bogost (2015) distinguishes the two terms and discusses the differences between them. He suggests that serious games, unlike gamification, are ‘intended as a tool for public communication and education’ (p. 70). While gamification is used only as marketing and engagement attraction. In an earlier book called ‘Persuasive Games: The expressive power of videogames’, Bogost (2007) breaks down the term ‘serious’ from the expression ‘serious games’ to illustrate its use and the reasons he proposes ‘persuasive games’ as an alternative terminology (p. 59). He (2007) explains that the expression ‘serious games’ have been mainly used by different institutions to describe experiences opposite to entertainment which only serve different institutional initiatives and goals. He points out that games instrumentalization overlooks the potential and expressive power of videogames. Videogames or persuasive games, as he prefers to call them, are ‘not games in the service of governments, corporations, educational institutions, and their kindred but games that challenge such institutions, creating opportunities to question, change or eliminate them’ (Bogost, 2007, p. 58).

Most of the museum games, play and design practices presented in the previous sub-sections were employed as marketing and engagement attractions or to serve different pedagogical goals. As such, they focus on the learning and engagement outcomes of playing or designing games. Based on the above definitions, one might argue that museum games can be found in the fine line that exists between serious games and gamification. In an attempt to ‘gamify the museum’ (Lynda, 2014), museum professionals have employed games in the broader sense of gamification which intrinsically connects with the notion of serious games for public communication and education (Bogost, 2015).

Museums have used games from a behaviourist theory perspective focusing on the outcomes and benefits. Most of these games practices are set to attract and empower young people to effortlessly learn more about history, science and other subjects while either playing or

designing games. The success of these practices is mainly justified by the so-called ‘fun’ and enjoyable nature of games. As a result, these practices tend to offer only a simplistic and celebratory view of games. They highlight only the positive benefits of using games in the museum context. For this reason, they fail to acknowledge the complexity and ambiguous nature of games.

This section will now bring together the Museum Studies literature and Game Studies literature to discuss the debate about games practices in the museum context. Games practices have not always been viewed in a positive light in the museum field. Gradually, the conversation about games in museums focused on the value of serious games and gamification as learning and engagement tools. This led to an ongoing debate which illustrates the problem with museum games practices. Looking at this debate demonstrates how video games are perceived among different museum professionals, academics and video games designers and experts in the museum sector.

Museum research (Ridge, 2011; Bacon, 2013b; Kidd, 2015) has identified and acknowledged the problem with museum games and gamification. In her article ‘Gaming for affect: Museum online games and the embrace of empathy’, Kidd (2015) briefly mentions the controversy over the use of serious games and gamification in museums and notes that museums create online games not only to educate and entertain (p.422). The aim is to motivate and empower people to explore museum collections (p.422). In the same article, Kidd (2015) continues to defend museum games pointing out that serious games ‘can create worlds within which exciting learning opportunities can be presented, and potential new audience relationships can be forged’ (p. 422).

Ridge (2011), on the other hand, is much more concerned with gamification than Kidd. She points out the ‘danger’ of using gamification in museums explaining that designing something that looks like a game, but it is not, is ‘cheap tricks’ (Ridge, 2011). In her research about

crowdsourcing games, she sees museum games as a way to crowdsource museum activities such as archiving and object-labelling. Kevin Bacon (2013b), the digital manager of Brighton and Pavilion museums, has attempted to describe the problem with museum games. He admits that museum games often lack the elements that define games. He claims that even though gamification might seem like a suitable solution, in reality, it is not. Instead, he prompts museums to explore the choice of non-games or 'gamish' experiences involving outsiders' voices in the production of museum games inspired by the museum collections. An example of such non-games is the 'Murder in the Manor'. While it borrows games elements and mechanics, the 'Murder in the Manor' shares more similarities with an interactive computer-based story than with a computer game. Bacon (2013a) argues that these types of experiences might benefit museums that are interested in engaging with games culture and producing commercial games with visitors. He notes that the idea of 'narrowly defined games' might not benefit the objectives of museum engagement, but such 'gamish digital experiences' might foster new relationships between visitors and museums.

This thesis' conceptual and methodological objectives, partially agree with Bacon's argument (2013) that museum collections should be the central focus of museum games practices and that engaging different communities in the production of such practices can open new dialogues between visitors and museums. However, it seems that Bacon's view on how museums can engage with games culture is limited by the objective of producing a commercial product. Also, instead of understanding and embracing the complexity of games, he proposes the employment of only game elements and mechanics. A weakness of this argument is that it instrumentalises participatory games production and uses it as a bait for other purposes such as marketing and public engagement.

Both Ridge (2011) and Bacon (2013b) point out that museum games look like games, but they are not. As Bacon writes they lack the 'game bit' (2013). As this suggests, museums struggle

to define what games are and as a result, they fail in designing and employing games. However, the Game Studies field has also noted the complexity of defining games. As Jesper Juul (2003) notes many Game Studies academics have argued that defining games is challenging (p. 12). As Koster (2013) explains due to the multidimensionality of games, there are multiple ways of understanding them. Similarly, Jarvinen (2003) suggests that the definition of games has many different sides and games can be read from different perspectives. Whilst, Juul (2003) points out that games can be defined differently based on their rules, the relation between the player and the game and the relation between games and the world.

Despite the complexity of framing what games are, many Game Studies scholars have attempted to define games. Presenting these definitions in this section will allow me to demonstrate that bringing together the Museum Studies and Game Studies literature can solve the short-comings of the games' employment in museums. Unlike Bacon (2013b), in this thesis, I claim that exploring how games have been defined and used culturally can benefit the objectives of museum engagement and the relation between museums and their communities. As detailed in my review of practice, the museum field has used games to promote a 'fun' and effortless approach to learning. Museums treat games as teaching tools which are less serious than other formal teaching approaches. As this suggests, museums view games as both productive and not serious. The productivity and seriousness of games have been discussed extensively in the Game Studies literature.

About games' productivity, Salen and Zimmerman's definition (2003) describes games as entering into 'a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome' (p. 11). Avedon's and Sutton-Smith's (1976) definition also looks at games as a voluntary activity controlled by a system of rules with a 'disequilibrial outcome'. Carr et al. (2006) built upon other studies (Salen and Zimmerman, 2003; Pearce,

2002) to define games as ‘rule-based systems, or structures for play’ (p.17). Juul (2003) while reviewing some of the above definitions, has defined games based on six different features (p. 12):

1. Games are rule-based.
2. Games have variable, quantifiable outcomes.
3. Games have potential outcomes, some are positive, some negative.
4. The player invests effort in order to influence the outcome.
5. The players are attached to the outcomes of the game in the sense that a player will be the winner and ‘happy’ if a positive outcome happens, and loser and ‘unhappy’ if a negative outcome happens.
6. The same game [set of rules] can be played with or without real-life consequences.

Here, Juul (2003) explains that games are challenging and to some extent, they do affect real life. But, games’ contingency raises questions whether it is possible to predict or measure the consequences of playing them.

Many of these definitions have been influenced by the Dutch historian Johan Huizinga’s (1970) writing. His contribution to the study of games has been widely acknowledged in the Game Studies field. Huizinga (1970) defines games as ‘a free activity standing quite consciously outside ‘ordinary’ life, but at the same time absorbing the player intensely and utterly (p. 13). It is an activity connected with no material interest, and no profit can be gained by it. ‘It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner’ (p. 13).

In Huizinga (1970) definition, games are defined as separate from everyday life with their own boundaries of time and space and no profit comes from playing them as they are not serious. Adopting this definition to digital games in museums contradicts the reasons museums have

chosen to employ games as learning and teaching tools. Huizinga (1970) argues that games are not connected with real life and the players do not gain while playing. As this suggests, by playing games in museums, museum visitors do not gain further knowledge which impacts real life. This view is supported by another important definition by Roger Caillois' (2001). Caillois (2001) defines games as 'an activity which is: free (voluntary, separate, uncertain, unproductive), governed by rules, make-believe' (p. 10-11). Caillois (2001) similarly to Huizinga (1970) defines games based on three criteria: first, games are separate from everyday life, second, they are subject to their rules, and third, they are not serious but fiction. Adapting Cailois definition to examine museum games also allows me to question the learning benefits of museum games.

Other Game Studies' researchers (Juul, 2003) have questioned Huizinga and Caillois' definition of games as separate and unproductive (Huizinga, 1970, p. 10-11). Juul (2003), for instance, points out that the separation of games depends on the relationship between playing the game and the world. This relation is based on the rules of the game that define the relationship between the game and the world, but also it relies on the players who decide how to push these boundaries (Taylor, 2007, p. 113). For instance, many games like ARG (Alternate Reality Games) employ the space of a building or city as the game board/world of the game. Similarly, many museum games are played borrowing the museum environment where the player interacts with the different game mechanics using the museum space and objects. Therefore, the boundaries of the magic circle (Huizinga, 1970, p. 10) of the game can be blurred or negotiated. The way games are played can define whether a game can have real-life consequences or not (Juul, 2003).

Most of the museum professionals who support the learning benefits of playing and designing games build their arguments mainly based on the games studies literature which focuses on games as an emerging pedagogy (Whitton, 2014; Beavis et al., 2012; Salen, 2012;

MacGonigal, 2011; Gee, 2007; Gee, 2003) ignoring a significant part of the literature on the complex nature and ambiguity of games, play and design. As Juul (2003) notes the contingency, procedurality and ambiguity that characterise games make the consequences of playing games impossible to predict and measure.

In the museum field, games are often treated as educational tools. Many museums professionals (Charr, 2019; Blair, 2016; Prudames, 2011; Gish & Zaia, 2011; Bath-Goodlander, 2009) use games because they perceive them as effortless and 'fun' learning activities. Games are approached as utopian spaces where learning happens almost magically, without effort. According to many museum practitioners and academics, games can transform the traditional passive museum learning to 'interactive, social and fun' learning experience (Bath-Goodlander, 2009). As Yannoutsou et al. (2009) write, gaming in the museum allows visitors to be more social, to interact and collaborate, and have a purpose while having fun. Similarly, Gish and Zaia (2011) in their paper 'Playing with History: Interactive and Collaborative Games at Tryon Palace Historic Site' suggest that playing games transform history to 'dynamic, tangible and fun' (p. 153). More recently, while discussing how museums in the UK have used Minecraft to 'gamify learning experiences', Charr (2019) suggests that game platforms like Minecraft can 'mask the work involved in learning by making it more fun and playable'. According to Charr (2019), designing playful experiences on Minecraft, allow young people to learn and engage with the museum collections without effort.

However, the notion of 'fun' has been excessively discussed and critiqued in the Games Studies literature (Koster, 2004; Bogost, 2016; Garcia & Niemeyer, 2017). One of the most prominent critics of the notion of 'fun' in games is the video games designer and academic Ian Bogost (2016). Bogost (2016) in his book 'Play Anything: The Pleasure of Limits, the Uses of Boredom, and the Secret of Games' critiques the way the idea of 'fun' and play have been used and understood culturally (p. 61). He notes that games have been used as a way to

cover up and disguise learning (p. 61). He suggests that in this way games and play have been treated as something meaningless that requires no effort while learning as something difficult, serious and unpleasant (p. 61). In his book, he analyses and critiques the notion of ‘fun’ in connection with games. He argues that games have been misunderstood as effortless activities that can transform ‘anything to enjoyment’.

According to Bogost (2016), it seems that many museum games promote the so-called ‘chocolate-covered broccoli’ approach (Bogost, 2016). The ‘chocolate-covered broccoli’ approach suggests that games can sugar-coat the bitter pill of museum learning and engagement. Employing games for teaching purposes does not promote and empower visitors' agency. On the contrary, it just replaces the old traditional and didactic museum models with new but still didactic ones that are simply masked under playful game-like experiences. In other words, museums employ games to make an otherwise boring museum experience enjoyable. In this way, using games as learning tools and marketing assets conceals the potential of games to address the problem of agency, representation and meaning-making in the museum site. According to Bogost playing games does not automatically or magically make any activity enjoyable. As this suggests, playing or designing games in museums does make the encounter with the museum collections and history enjoyable, effortless or fun. On the contrary, playing games requires effort and struggle that allows players to encounter and experience something in a new and different way (Bogost, 2016).

Games studies literature (Juul, 2003; Bogost 2016) has demonstrated that playing a game is a complex and challenging activity. Bogost (2016) proceeds with his argument by exploring the problem of defining what fun is. He argues that fun is discovering something new in ordinary activities. Using several everyday life examples, he explains that fun is found in complex and difficult things that require hard work. Games require players to invest time and

effort and challenge them to take actions and influence an outcome (Juul, 2003, p. 7). Even Huizinga (1970) that sees games as ‘not serious’, he underlines the player’s seriousness, devotion and concentration while playing (Bogost, 2015).

As noted in the previous part, there is research (Flynn, 2005; Flynn, 2007; Giddings, 2015) on video games, simulation and virtual heritage that looks at games beyond the superficial notion of fun. Flynn (2005; 2007) explores how video games and simulations can engage heritage visitors with the past. More specifically, she is interested in how virtual spaces and spatial exploration challenge visitors to engage with prehistory. For Flynn (2005), gameplay and games spatial exploration can ‘encourage a more phenomenological informed encounter with the past’. Similarly, Giddings (2015) building upon Flynn’s (2007) work points out that ‘the virtual spaces emerging from the commercial popular media culture of the video game offer new ways for museum-goers to commune with the absent worlds that shaped these artefacts, rituals, and processes’. These texts raise interesting questions about the relation between video games and visitors’ engagement with virtual heritage. Both Flynn and Giddings have discussed how gameplay offers visitors playful and dynamic ways to engage with the past.

This thesis attempts to build upon this line of research (Flynn, 2005; Flynn, 2007; Giddings, 2015) and continue the conversation on what games can offer to the relations between museums, heritage and visitors. But instead of concentrating on visitors’ play practices, this thesis focuses on game design and approaches games in museums from a Participatory Design (PD) and Visitor Generated Content (VGC) perspective. By exploring how visitors design games, the different ways they interpret, challenge and negotiate representation and meaning-making within and beyond the museums site will unfold. Employing games design as PD and VGC allows me to conceptualise and theorise visitors’ games as curatorial platforms where visitors as designers reflect, model and transform the museum culture and context. Focusing on and understanding the creative processes and actions that visitors

undertake as game designers will then, offer a refreshed way of defining the playful, dynamic and participatory museum.

In other words, I propose that the relation between museums and games should be re-examined moving away from the trend of gamification and serious games and moving towards the examination of games as representational and cultural objects that have the capacity to reflect and transform the context within which they are situated, played and designed (Salen & Zimmerman, 2003). As this suggests, the design of games as a Visitor Generated Content practice allow visitors agency to assume the role of designer and employ different ways and modes of reflecting, representing, transforming and communicating meaning for and about the museum context

PART B summary

In this part, the short-comings of museum games' practices were discussed in connection with the debates over serious games and gamification. Both sides of the debates were presented detailing their arguments and objectives.

In summary, it has been shown that museums have used games as educational tools and assets for marketing, engagement and participation (Beale, 2011). The museum field depends on the so-called playful nature of games and the enjoyment that often comes from playing to promote seemingly more open and participatory approaches. However, informed by the Game Studies literature, I have argued that such games employment is too instrumentalist and omits the expressive, dynamic and ambiguous nature of games. This approach instead of empowering visitors' agency and meaning-making through play, it conceals the potential of games to address the problem of agency, representation and meaning-making in the museums site. In addition to this, it has been noted in the above discussion, that the museum

literature on games is mainly celebratory and descriptive. This approach over-simplifies what games are as cultural, dynamic and ludic objects.

Understanding the ambiguity and complexity of games, however, shows what games, play and design can reveal about the different relations, the conflict and the negotiation that is developed between players, players and the game, and the game and the world while playing or making games. Therefore, by exploring how museum visitors design games, I will further examine what the participants' design decisions reveal about the museum-visitor relations, meaning-making, representation and agency.

In this thesis, visitors' games are theorised as curatorial platforms and interventions, and games design as a Participatory Design and Visitor Generated Content approach. In the next Part C, I will unpack what visitors' games as curatorial platforms means and how games design as participatory design and Visitor Generated content contributes to the museum-visitor relation. I will demonstrate that the games as curatorial platforms allow visitors to construct and communicate new layers of representations and meanings for and about the museum collections. Agency-as- choice (Kress, 2010) is manifested through game design. Internally to the games (looking at games as rule-based and ludic objects) (Salen & Zimmerman, 2003), the visitors as designers negotiate agency of how to make decisions concerning the meaning and representation of the museum collections as playful and dynamic objects. Externally to the game (reading games as cultural objects situated within the museum context) (2003), the museum visitors as designers negotiate agency and their role within the museum.

PART C

2.3 Visitors' Games as Curatorial Platforms

To understand game design as a participatory, co-curatorial and visitor generated content practice in the museum site, it is essential to define and further discuss the terms related to this research inquiry. First, the notion of participatory and visitor generated content approaches will be explored. Second, building on Game Studies literature, I will explain how games design as PD and VGC practice allows me to view games as curatorial platforms and interventions. In this way, I will show how games design contributes to the relation between visitors and museums and provide a deeper insight into the problem of museum representation, meaning-making and visitors' agency.

2.3.1 Participatory Design and Visitor Generated Content in museums

The term 'visitor generated content' has been widely used to refer to practices that involve different communities in participatory projects in museums. However, as Kidd and Cardiff (2017) point out even though the term is 'useful and provocative', it has its limitations (p. 44). While breaking down the term, they draw attention to the definition and role of visitors and the power relations, dynamics and politics involved when they create content for museums (p. 44). They also point out that the term 'content' focuses on the product that is generated during these projects rather than on the making process itself (p. 44).

This thesis uses the term of VGC to refer to the invitation of visitors to design games for and about museums and their collections, space and objects. Other projects have used the terms of social participation, Participatory Design, inclusive, co-production, and co-curation. In this thesis, these terms are often employed interchangeably to describe visitors design work. However, this study focuses on the process and not on the product of the VGC practice. Its objective is to acknowledge and explore visitors' agency and design work. In this way, the

game design process is conceptualised as visitors' curatorial work. Game design is approached as visitors' curatorship which enables them to design games in their own right inspired by museum collections, objects and space.

In the Museum Studies literature, there is a degree of uncertainty around the terms 'participatory' and 'participation'. The American researcher of sociolinguistics, James Paul Gee (2008) argues that 'learning requires participation', but the term 'participation' can be defined differently from one context to another. Lansdown (2005), in his book 'Can you hear me? The right of young children to participate in decisions affecting them', explains that there are many definitions of children's participation, but the genuine meaning of participation equals with something more important than 'simple(ly) taking part' in an activity which is organized by a faculty or an organisation.

Participation requires an active role in decision making (Lansdown, 2005), sharing new ideas and thoughts, and contributing time to create something new (Kidd, 2014). An emphasis on 'activity' rather than 'passivity' is given to participation, also, by Kidd (2014, p. 2), who claims that currently there is a movement towards active social participation in museums. Moreover, according to Clark and Moss (2001), participatory processes include participants as experts of their own personal experiences and knowledge (p. 6-7). According to Hein (1998), children need to gain experience by doing and not by being taught by others (Black, 2005, p. 32). Kafai in her work (2006) 'Playing and Making Games for Learning Instructionist and Constructionist Perspectives for Game Studies' claims that it is better to provide children with the opportunity to make their own games rather than only playing games. In this way, they can develop different skills while they devise their own game rules and create characters and dialogues.

In the museum context, over the last decade or so, there is a growing interest in visitors' involvement in participatory activities and Visitor Generated Content. Museums have implemented different inclusive projects to include the voices of those who were previously

mispresented in the museum setting. These practices seek to empower those who have never had the chance to communicate their stories and to support them make decisions about what and how these stories are exhibited in museums (Filene, 2011, p. 7). There are many examples of participatory museum projects in the UK. Museums often invite different communities to share their stories and generate content, meanings and representations inspired by museum collections (National Maritime Museum, 2018; Museum of London, 2012). These participatory activities include co-curatorial (Simon, 2010; McSweeney & Kavanagh, 2016) and co-production projects such as film-making (Tate Gallery; Tate, 2018), exhibition-making (National Maritime Museum, 2018) and game-making with visitors (Smith & Iversen, 2014). As presented in previous parts of this chapter, the increased development of such activities is closely related to the most recent political and social changes that have happened in the museum sector. Their development is closely related to the way museums currently identify themselves and their social role and identity.

Nina Simon's book (2010) '*Participatory Museum*' attracted global attention and quickly became one of the most influential works on participatory approaches in the museum sector. However, according to Henry (2016), Simon (2010) builds and creates her empirical framework on participation in museums based on previous research work on the field of Participatory Design. For instance, Russo *et al.* (2008) have also explored the idea of visitors' participation, but only through online platforms and social media. The participatory perspective presents a model which includes visitors in the designing process of exhibitions and decision making inside the museum, rather than only online using different social media platforms (Simon, 2010). A more recent study (Amis- Hughes, 2016) brings more evidence to this research field and places object-based Participatory Design as the main medium of museum visitors' engagement with museum collections. Furthermore, key museum theorists support, also, the view that involving museum visitors in co-curating activities and projects enables

cultural and heritage institutions to promote a 'multi-perspective approach' in their mission and practice (Simon, 2010; Black, 2012; McSweeney & Kavanagh, 2016). In this way, through the promotion of social and active participation the museum's role can be shifted from figure of authority to partner and the museum visitors' agency can be negotiated as their role from a passive user and mass consumer is transformed to social member of a community of active participants (Black, 2012, p. 86).

As noted in Part A, the concept of the 'Participatory Museum' is a prominent topic in the museum sector and as such has attracted its own controversy and debate. In theory, participatory and inclusive policies offer powerful resources, yet in practice, their implementation has been proved ambiguous and complex. Many have discussed and critiqued the way participatory projects have been implemented in museums and they have characterised visitors' participation in such projects as symbolic and predetermined by the museums' agenda (Morse et al., 2013; Lynch & Alberti, 2010; Fouseki, 2010). They have argued that participation is treated as a perfunctory process where visitors are treated as facilitators or advisers rather than decision-makers and curators-designers. In 2009, a research project took place in the UK involving more than five different UK-based museums as participants (Lynch, 2009, p. 2-26). The study revealed that museum professionals are deeply concerned regarding the way participation and collaboration with visitors work in practice (Lynch, 2009, p. 20). This shows that the question of representation and the authority of museums remains central to these practices.

Most of the studies on participatory approaches and co-production employ a pedagogical and behaviourist perspective and not a sociological approach. Most of these studies are concerned with the product and outcome. They make no attempt to examine the design and the creative processes behind these collaborations. They fail to analyse how visitors' design work reflects, transforms and adds to the museum culture, curation and representation. Even

though they draw attention to the importance of integrating more external voices in the museum curatorial presentation, they omit to justify and explore the role and agency of visitors as designers in the museum context. For this reason, in this doctoral study, the focus is shifted from the 'what' to the 'how' to understand what happens when visitors design games.

Overall, there is not enough research evidence on participatory game-making with visitors. For instance, there are several examples of participatory game design approaches or game-making processes in schools (Squire, 2011; Burn & Durran, 2007). But, there is only a small number of studies that have looked at digital game design with visitors in museums (Blakesley & McIntosh, 2015; Avouris & Yannoutsou, 2012). In addition to this, these limited studies are only focusing on evaluating and measuring the potential learning and engagement benefits of designing digital games in the museum context without exploring what the participants' design decisions reveal about curatorial voice, agency, representation and meaning-making.

This doctoral study seeks to fill this literature gap and bring new research evidence on game-making in museums in connection to the collections on display. This study attempts to breakdown how museum visitors assume the role of maker and challenge, reproduce and negotiate curatorial representation, meaning and agency. It is hoped that by looking at the relation between museums and games from a VGC perspective and focusing on the act of making will offer new ways to discuss the participatory and playful museum and raise further questions about the relations between museums and their communities.

2.3.2 Games design as Visitor Generated Content Practice

Having explored how games have been defined and used culturally in the museum sector, this section will now focus on games design as Visitor Generated Content practice.

As explained earlier, playing games is a complex, challenging and ambiguous activity (Juul, 2003). It is subject to the relations between players, the player and the game, the player and the rules of the game, and the relationship between the game and the world (Juul, 2003). Game designers when developing games, make design decisions about these complex relations (Salen & Zimmerman, 2003). They decide how these relations are governed by the different systems of rules, mechanics, narrative and aesthetics (Salen & Zimmerman, 2003).

In their influential book 'Rules of Play: game design fundamentals', Salen and Zimmerman (2003) proposed a conceptual framework that can be used to explore 'the formal, experiential, and cultural aspects of games'. This framework offers three main perspectives or 'schemas' to not only analyse games but also to understand game design. These schemas are rules, play and culture. As already discussed, games are rule-based systems (Salen & Zimmerman, 2003). Therefore, the rules schemas demonstrate that rules define and constitute games. Game designers build different systems that govern the game. These rule-based systems represent and define the different actions, relations, constraints and conditions within the game. Game designers construct these systems building different relations between the players and the game. They determine what the game represents and how it works.

Similarly, Rouse (2004) looks at the relation between design-player and points out that 'game design determines what choices players will be able to make in the game-world'. This means that apart from the player-game relation, different power relations also exist between the designers and the players. In this way, game designers act as puppet masters posing constraints, reward systems and win/lose conditions (Sicart, 2005). Colvert (2009) uses the term 'puppeteer' to discuss the authority of the designer to make decisions and create play experience for others. In this doctoral thesis, the term is used to describe the way visitors assume the role of the designer to create ludic, adventurous and dynamic experiences.

But it is the player's responsibility to follow or push the boundaries built by game designers. Games are not only rules (Salen & Zimmerman, 2003). Games are bound to the notion of play. As Salen and Zimmerman explain, playing a game is an experience. In this sense, designing a game means creating a complex 'experiential system'. In their definition of game design, they refer to the player and the experience of playing. They note: 'design is the process by which a designer creates a context to be encountered by a participant from which meaning emerges' (Salen & Zimmerman, 2003). The participants are the players who 'inhabit, explore, and manipulate these contexts through their play' (Salen & Zimmerman, 2003).

A great deal of the available literature on game design focuses on player experience. As Fullerton (2008) writes game designers build 'the objectives, rules, and procedures' to achieve 'a compelling player experience' (p. 3). While discussing the game designers' goals, Schell (2014) distinguishes 'the game' as an artefact from the experience of playing. For Schell (2014) 'the game is not the experience. The game enables the experience'. He argues that game designers are interested in creating compelling player experiences, but they cannot create the experience itself. He sees game design as the process which creates 'an artefact that a player interacts with'. He separates the games as an object from the game as an activity. Together these studies indicate that game design is concerned with the creation of a 'meaningful play' through the structure of rules, but it is also conditioned by the act of playing. This indicates that game designers create games as artefacts or experiences, but they cannot determine or control how these artefacts/experiences will be perceived, played and experienced.

Salen and Zimmerman's conceptual framework (2003) concludes with a final primary schema: culture. This schema refers to the relation between games and the cultural context within which they are situated, played and designed. Salen and Zimmerman (2003) propose to explore how games influence and are influenced by the contexts that exist outside their formal

and experiential structures. In this way, games can reflect and transform culture (p. 504). They achieve that by representing, reproducing, challenging, altering and adding to their cultural context (p. 504). Bogost (2007), also, draws our attention in the persuasive power of games to influence and challenge the context within they are designed and played.

An example of how games reflect and transform the cultural context within which they are embedded is games in museums. Research (Giddings, 2015) on digital heritage and digital culture looks at games through the lens of culture and the contextual aspect of games. Giddings (2015) in his article 'Sim Knowledge: What museums can learn from video games' discusses how games can virtually represent and reconstruct the context and its ritual and cultural dimensions (p. 145-164).

In this way, playing heritage-inspired games in the museum context, as Salen and Zimmerman (2003) point out references, influences and alters the museum context internally and externally of the limits of the game. Looking at these games from an internal point of view, their formal and experiential systems represent, reflect and reconstruct the missing space between museums and the historical past. They offer visitors the opportunity to experience the missing cultural and historical context of the museum collections. On the other hand, examining these games from an external perspective reveals that heritage games alter the museum experience and curatorial culture but adding new layers of representations and meanings.

This culture-based contextual schema can be applied to game design (Salen & Zimmerman, 2003) to explore how designing games influences and affects the contexts around them. This doctoral thesis looks at game design with visitors through the lens of all three game design schemas to examine how museum visitors as game designers approach, reflect, challenge and transform curatorial representation, meaning and culture. This thesis seeks to understand what the visitors' design decisions and choices reveal about the way they approach,

reproduce and communicate meaning and how their games designs reflect and transform curatorial representation and culture.

In view of all that has been mentioned so far in this section, game design can be studied through different lenses. Through the lens of rules, games designers create complex rule-based systems that create the conditions and structures that players interact with while playing. Through the lens of play, designers create playful systems that are not only bound to the game rules but also depend on the player's experience and agency. In this way game design is bound to how game designers have established the player-game relation and players' agency. Lastly, through the lens of culture, game designers construct complex worlds that are inspired and influenced by the world around them. But most importantly, they construct game spaces, narratives and experiences that represent, influence and challenge the context within they exist.

This doctoral thesis proposes that game design in the museum context might reveal how visitors as designers reflect, construct and represent virtually museum collections, space and objects and how they communicate and construct other players' experience of encountering and playing with them. This thesis also argues that game design presents an opportunity to understand the symbolic meaning of visitors' games and explore how their game designs and decisions reflect, transform and culturally add to the context they are situated, designed and played. Looking at visitors' design work from these three perspectives may reveal a different way to examine how games design manifest visitors agency as designer. In this way, visitors as designers encounter and unpack museum culture and assume a curatorial role to reproduce, transform and communicate representation and meaning.

Part C summary

In this part, I have introduced the aims and objectives of this doctoral thesis. Drawing from Museum Studies and Games Studies literature, I have presented a different approach of exploring the relation between museums and games which highlights the way games and particularly games design can contribute to the museum field. I have proposed to look at games in museums from a Participatory Design (PD) and Visitors' Generated Content (VGC) approach. Building on the Museum literature on PD and VGC practices (Simon, 2010; Kidd & Cardiff, 2017; McSweeney & Kavanagh, 2016), I have explained how I will approach games design as a PD and VGC approach.

Building on Games Studies literature (Colvert, 2009; Sicart, 2005; Salen & Zimmerman, 2003), I have described how visitors' games construct new ludic and dynamic experiences for others, and how they communicate and add new layers of representations and meanings for and about the museum collections. Lastly, I have discussed how agency is manifested through game design.

Conclusion

This chapter set out to present the academic and empirical background of this doctoral thesis. As explained earlier this research study focuses on game design investigating how visitors design games in the museum context inspired by museum collections, spaces, displays and objects. The aim of this chapter was to build the background of this research and present the literature gap within the Museum Studies field that motivated these research inquiries.

To achieve this, first, the relation between museums and games was explored focusing on how and why museums have previously employed games, play and design. The investigation began by tracing the historical, cultural and political context with which museums have

employed and continue to employ games, play and design in their public activities. The chapter described the historical, cultural and political reasons and circumstances that led museums to seek institutional change. I argued that these reasons enabled the shift towards more social, interactive, playful and participatory museum policies within which games-related activities were practised.

It was then demonstrated that even though museums have faced many challenges and changes, the problem of representation and curatorial authority, control and authorship remains a key aspect of museum debates even today. Museums historically have struggled to find the balance between the elite and popular culture, expert and novice curation. Visitors' social role, authorship and agency have always been connected with the way museums define their role, authenticity and power as cultural and political institutions. As a result, they have faced criticism about the way they safeguard their authority and control visitors' agency and role.

As this chapter described, museums employed more democratic, playful, inclusive and participatory practices to redefine their relations with their communities. However, these practices raised further key questions about the power relations, ethics and dynamics between museums and their communities. Participatory and Visitor Generated Content practices have been charged with tension regarding the question of curatorial representation and authenticity, the shared authority between museums and visitors, and lastly, the power dynamics and ethics that define museums authority and visitors' agency in curatorial decision-making. This part of the chapter showed that game design as co-curatorial and visitors' generated content practice connects with issues of curatorial representation and authorship, shared authority and visitors agency as designers. Therefore, the issue of representation, meaning-making and visitors' agency as designers will be theoretically analysed in the next chapter.

Drawing from both empirical practice and academic research examples, I detailed the aims and objectives of museums' use of games, play and design. I identified and analysed four different games-related practices to demonstrate that museums employ game-related practices for mainly pedagogical and marketing purposes. Exploring the relation between museums and games highlighted the problem with the existing museum games practices and shifted the discussion towards the examination of the debate about serious games and gamification.

Analysing the problem with the existing museum games practices in connection to serious games and gamification showed that most of the proponents of museum games focus on the so-called fun, effortless and interactive nature of games and their ability to engage and captivate young learners' interest. While the opponents of gamification and serious games point out that these practices instrumentalise games, play and design, and overlook their potential, complexity and ambiguous nature. Critics of gamification and serious games, play and design argue that video games are more than learning tools and marketing assets. In an attempt to explain this argument, I pointed out that games, as rule-based systems for play, create and model complex worlds that represent and reflect how different things and processes work in everyday life.

Moreover, examining the debate about museum games practices suggested that despite the extensive use of games, play and design in museums, there has been only a limited investigation of what games, play and design can contribute to the Museum Studies field beyond serious games and gamification. While most of the museum research and practice have only scratched the surface of the expressive and dynamic nature of games by instrumentalising games, there are limited academic text texts (Flynn, 2005; Flynn, 2007; Giddings, 2015) that offer a more in-depth approach of the relation between museums and games. However, these texts mainly focus on visitors' play practices exploring the different

ways games' virtuality, spatiality and ludic aspects allow visitors to experience and explore historical and cultural heritage. This allows me to suggest that very little is known about heritage and museums visitors' game design practices and their connection to representation, meaning-making, culture and agency. It is hoped that this research will contribute to an in-depth understanding of visitors' creative and design work and will generate fresh insight on how visitors engage, reflect and transform museum curation, challenge representation and negotiate agency with games, play and design.

Instead of instrumentalising games design, this thesis seeks to examine what games and particularly the design of games can tell us about the relation between museums and visitors. The purpose of this investigation is to break down the act of making games inspired by museum collections, spaces and objects. This study, therefore, is set to understand what it means for visitors as designers to design games in museums and what their design decisions reveal about curatorial representation, meaning-making and the agency of visitors as designers. Therefore, before continuing to present the theoretical and methodological perspective of this inquiry, it was essential to establish how this thesis defines and conceptualizes the relevant vocabulary related to participatory design, co-curatorial practices, games, play and design. In the second part of the literature review, the relevant vocabulary was discussed to clarify its use throughout this thesis. Defining the vocabulary related to participatory, VGC, and co-curatorial projects in museums demonstrated how museums define these terms and how they are employing them in practice. Taking these into account, I showed that participatory design and VGC have been explored from a behaviourist point of view focusing mainly on the outcomes of such practices. This allowed me to develop and propose a different approach to researching visitors' design work. Instead of focusing on the outcome and its implications, I have proposed the examination of the complex processes and actions that visitors' undertake while designing content for museums. It is the examination of

the act of making that will rework the way we look at the participatory and playful museum and the role and agency of the visitor.

The next chapter will trace the theoretical and conceptual framework of this thesis. The literature review showed that game design in the museum context connects with issues of curatorial representation, meaning-making and visitors agency as designers. Building upon these issues, in the next chapter, my aim is two-fold: first, to draw theoretical and conceptual parallels between game design and curatorial work, representation and meaning-making, and second, to understand how agency has been conceptualised in the Museums and Games Studies field and present how this thesis examines the different ways agency is manifested through design.

CHAPTER 3: THEORETICAL FRAMEWORK

Introduction

3.1 Theorizing Museum Curation: Visitors' Games as Curatorial Platforms

3.2 Discussing the Problem of Agency

3.2.1 In the Context of Museum Curation, Representation & Interpretation

3.2.2 In the Context of Participatory Initiatives & Visitor Generated Content in the Museum Site

3.2.3 In the Context of Games, Play & Design

Conclusion

Introduction

As explained in previous chapters, in this thesis, I am investigating games design in the museum context. I focus on how families with young people design games inspired by museum collections, spaces and objects. I am looking at visitors' games as platforms for curatorial production and intervention. I am exploring how the designer's role, choice and agency allow families to engage with curatorial work and negotiate, reflect and transform the museum culture and context. Before discussing the methodology and methods of this research study, it is essential to present and discuss its theoretical and conceptual framework. Developing and including a theoretical framework in this doctoral thesis leads to a better understanding of the way the research topic and its themes are explored, analysed and theorised (Bell & Waters, 2014) in the following chapters.

In the literature review, I presented the context in which this study develops its theoretical, conceptual and methodological foundations. I argued that despite the existing use of games and games production in museums, little attention has been focused on the act of making games with visitors. No analytical and systematic research has been conducted concerning the role and agency of the visitor/designer, and what games production offers to the discussion about curation, representation and meaning-making between different spaces, modes and platforms. The literature review showed that museums have taken important steps towards openness and visitors' social participation and decision-making. Nonetheless, no theoretical connections have been made between digital (games) production and the power relations and dynamics between museums and visitors-designers, the question and debate of representation, and visitors' agency and meaning-making.

While in the literature review, I have offered valuable answers about the existing and established research and empirical practice, I have also raised new questions that in this

chapter, I will attempt to answer and theorise. Initially, to identify this thesis' conceptual and theoretical underpinnings that support its research aims and objectives, the first case study was designed and implemented. It was conducted at the UCL Grant Museum of Zoology with families with young people. A detailed description and analysis of the first case study and its findings are presented in the following chapters. Two main **concepts/themes** were identified by its findings:

- The first concept/theme relates to the notion of **curation**. It connects with the way the act of curating is conceptualized in the museum setting and how it is perceived and negotiated by museum visitors through design and visitor generated content.
- The second concept/theme is the notion of **visitors' agency in the museum site**. In this thesis, the problem of agency is discussed in terms of visitors participation, negotiation of representation and meaning, and visitors' generated content and design.

In this chapter, my aims are:

First, Informed by curatorial theories, Platform Studies, Museum Distributed Network theory, and Social Semiotics, I theorise how visitors' games work as curatorial platforms and interventions in the museum context. To understand and theorise how visitors' games work as curatorial platforms, I focus on the notion of curation and the role of curator. The notion of curation will be examined from a Social Semiotics, and Museum Studies theoretical perspective. Then, I introduce the notion of 'platforms' to discuss museums as analogue platforms and games as virtual platforms. From a Platform Studies and Museum Distributed Network perspective, I theorise the political, cultural and material aspects of museums and games as platforms to understand their connection to meaning-making and representation.

Second, to theorise agency and understand how games design allows agency to visitors as designers, I look at the relations between the museum-visitor, designer-user, designer- player. Informed by the Game Studies theory, Social Semiotics, Social Theory and Museum Studies literature, I break down the power relations and dynamics that exist between the curator-visitor, designer-user and designer-player dualities. Exploring theoretically the notions of curation and agency creates a theoretical structure which presents how these notions are conceptualised and understood within this thesis and maps out the relations that are established among them.

In the first section, *Theorising museum curation: visitors' games as curatorial platforms*, curation is discussed in connection with the notions of representation, interpretation and meaning-making in the museum site. The aim of this section is to establish how this thesis defines curation and how the term will be used in the following chapters and particularly in the 'findings and discussion' sections of the following chapters.

As Longair (2015) notes, the curators' role can vary from one institution to another and often includes many different responsibilities and tasks (p. 1-7). The curatorial practice concerns with different actions and sub-actions including collecting, preserving, cataloguing, researching and publishing among others. These actions and sub-actions constitute an important part of museum communication and representation. In this chapter, the interest is particularly focused on the theoretical underpinnings of museum representation, communication and meaning-making. This section looks at the act of curating as a communicational and representational system. As this thesis is focused on the movement from the official analogue museum curation to the digital curation with games production, curation, representation and meaning-making are discussed through the lens of Platform theory and Museum-as Platform model/paradigm. Through this lens, museums and games are understood as platforms for curation and construction of representation and meaning-making.

The next section, *Discussing the problem of agency* consists of three sub-sections where I explore agency in 1. the context of museums, 2. In the context of games, play and design, and 3. In the context of participatory action research and Visitors' Generated Content. In this way, the problem of agency is examined through the analysis of the relation between producer-receiver in the context of museums, games and participatory initiatives (author-reader, game designer-player, curator-visitor). Discussing this relation in these three different contexts allows an interdisciplinary examination of the problem of agency and presents how it is manifested through these relations. This thesis explores the way families perceive and challenge their agency and produce and communicate meaning while making games in the museum space. It looks at how the designer's role and authority allow agency to visitors to construct and negotiate representation, meaning and agency. This chapter focuses on the power relations and dynamics between museums and their visitors, the act and semiosis of making in and beyond the museum site, and the role and agency of visitors-as designers to curate content in-between different spaces, modes and platforms.

3.1 Theorising Museum Curation: Visitors' Games as Curatorial Platforms

This thesis focuses on game design and explores how families with young people design games inspired by museum collections, objects and spaces. In this thesis, game design is explored as a different form of visitors' curatorial production and visitors' games are perceived as platforms that reflect and transform the museum culture, space and experience. In the previous chapter, the literature review, game design was approached and defined using Salen and Zimmerman's' (2003) rules, play and culture framework. This framework allows me to understand and look at game design through different lenses. As explained earlier, exploring game design through the lens of rules, enables me to look at how games are organised and work as designed systems. Looking at game design through the lens of play reveals that games are designed for human experience. Lastly, the lens of culture demonstrates how games reflect and transform the larger context within which they are played and designed. This doctoral thesis adopts and applies this theoretical framework to investigate visitors' game designs in the museum context. This means that visitors' games are perceived as designed and rule-based systems that model and present museum collections' culture, history and materiality. As playful experiences situated in the museum context, they can be played by other museum visitors. As a result, as cultural artefacts designed and played in the museum context, they reflect, transform and add to the museum culture and curatorial work. In other words, as formal rule-based systems, they represent and reproduce meaning about the museum collections, objects and spaces. As playful experiences, they communicate meaning to others and construct different worlds within which players encounter and interact with the museum collections. Lastly, as cultural artefacts situated in the museum context, they disrupt, challenge and add to the museum curation, culture and experience. In this way, they act as virtual curatorial platforms and interventions.

To understand how visitors' games work as curatorial platforms and interventions, this chapter draws parallels between museums and games. To achieve this, I breakdown the notion of 'curatorial' and 'platforms'. First, I theoretically analyse the notion of curation and the role of curator and then, I explore the notion of 'platforms' referring to museums as analogue and games as virtual platforms.

With regard to the notion of curation. There is a degree of uncertainty around the definition of the terms: 'curation', 'curating', 'curatorship' and 'curator'. As the academic and curator Kate Fowle (2007) writes 'curating is increasingly multifaceted practice that gives rise to much speculation as to how it functions and what it entails' (p. 10-19). In the past, the terms 'curation' and 'curating' were only used when referring to the work of curators in various elite cultural institutions including art galleries and museums (Milliard et al., 2016, p. 9). However, in recent years, the term 'curation' has infiltrated popular and everyday use (Fox, 2013, p. 132). This view is also supported by Milliard et al. (2016) who claims that the notion of curation is now widely used among other professions including digital content creators, stylists and chefs (p. 9). The 'everyone is a curator' concept has been used to refer to any activity online and on social media that includes the act of selecting, organizing, assembling and presenting. In a different academic and research field, that of filmmaking with school students, John Potter (2012) explores the idea of curatorship and points out that 'curating as a verb incorporates many subcomponents and actions' such as 'collecting, cataloguing, arranging and assembling for exhibition' (p. 162). He uses the notion of curation to explore how young people engage with media production such as film-making to curate and exhibit aspects of their experiences and self.

But the more popularity the concept of curation gains and is widely used outside the boundaries of art galleries and museums, the more it raises questions and debates within the realm of these cultural institutions (Milliard et al., 2016, p. 9). In the following pages, different

approaches to understanding the notion of curating are presented and discussed. The first approach looks at curation through the museum-visitors relation lens. The second approach explores exhibition-making and curating through the lens of representation. The third approach employs Social Semiotics to unpack curation as a complex system of representation open to different interpretation, debates and meanings that allow visitors' agency to develop and materialise their own personal representations and meanings. Even though, the act of 'producing' and the act of 'consuming' can be theoretically approached and understood in different ways and from different theoretical and philosophical perspectives and strands, looking at museums and curatorial work through the theoretical lens of Social Semiotics allows me to unpack curating as a communicational and representational system of signs and define the role of curators and visitors in the curatorial production. Later, this will assist me in conceptualising and theorising the role and agency of visitor/designer which is central to the conceptual and theoretical framework of this thesis.

Curation and the relation between museums and visitors

Even though the commonly-used notion of curating challenges its definition in connection to museums, several museum scholars have attempted to define curation and the role of curator. Many Museum Studies theorists, researchers and curators (Milliard et al., 2016; Golding & Modest, 2013) often start their analysis of the notion of curation from the Latin origin of the verb *curare* which means 'to take care of'. Based on its Latin origins, the traditional model of curating is focused on the objects rather on the relation and communication between museums and visitors. Tracing the historical underpinnings of curating, Golding and Modest (2013) write 'the term curator holds a range of meanings including the 'custodian, steward, keeper, superintendent, guardian'. Golding and Modest's (2013) definition highlights the authority and role of curators in safeguarding and caring for museum collections. It underlines the existence of a 'hierarchical line of power and a rigidity of processes' that define top-to-

down curatorial models (Simon, 2010). According to these models, curators are responsible for the custody, preservation and care of museum collections, while visitors act as passive consumers. In other words, they act as emitters/producers and visitors as receivers/consumers. Based on this, museums have been criticized and perceived as authorities which preserve and present set values, facts and pure aesthetics. From this point of view, curators set the rules of the curatorial representation and visitors passively encounter, engage and consume museum content. This means that curators seek content consistency that offers museum visitors high quality and authentic representation of the past (Simon, 2010).

Nonetheless, as explained in the literature review, due to different factors, museum literature and practice (Simon, 2010) have focused on developing new models of curatorial work and communication that redefine the role of curator and the relation between museums and their communities. Now, there are many examples of museums involving visitors in different co-curatorial roles which challenge museum representation, visitors' role and agency. In this way, representation and meaning-making are subject to discussion and negotiation between museums and visitors. Museums explore new ways to replace traditional models with more participatory ones. So that meaning emerges from 'multi-directional content experiences' (Simon, 2010). Drawing from new participatory and open models, contemporary curating promotes and involves curators not only as keepers and carers but also as producers, mediators, collaborators (in collaboration with artists and different audiences) and commissioners (Milliard et al., 2016, p. 9-10). Von Bismarck et al. (2012) recognise curating as an act of 'mediating, connecting, sampling, editing, publishing or advertising' (p. 10). Curators' work includes 'directing, choreographing displays and organizing spaces' (von Bismarck et al., 2012, p.10) for visitors who engage with museums and their collections in different ways and make meaning out of them. These definitions underline the role of curator as mediator and designer of curatorial experiences and the agency of visitors to construct

meaning by engaging and interpreting them. But, undoubtedly, museums still struggle to find a balance between curatorial approaches that maintain museums' authoritative role and curatorial accounts that not only recognize and promote visitors' personal routes to engaging and interpreting museum collections but also allow space for visitors' design work.

Exhibitions as systems of representation

Exhibitions as curatorial products and experiences have long been discussed as devices of re-production, meaning-making and signification and as systems of representation. The French academic and philosopher Jean-Louis Deotter (2013) drawing from Walter Benjamin's work 'The work of art in the age of mechanical reproduction' (2008), compares exhibitions to the radio (p. 10). He argues that similar to the radio, an exhibition is a 'surface of (re)production', a medium of signification, and a device of aesthetics. Similarly, Hall (1997) while discussing language as signifying practice, refers to different media like photography, music and museum exhibitions as representational systems (p. 5). For Hall (1997) these systems function based on 'the principles of representation through language' (p. 5). Referring to museum exhibitions, he (1997) notes that curatorial products 'can be also thought of as 'like a language' (p. 5). He writes that exhibitions and displays use 'objects on display to produce certain meanings about the subject-matter.' (p. 5).

This approach to exhibition-making perceives curators as producers and transmitters of meaning and visitors as receivers of a predetermined curatorial experience. This suggests that visitors cannot influence or change curatorial content. Others, for instance, the curator and Museum Studies academic Nora Sternfeld (2013) are concerned with how museum exhibitions are perceived as representational systems (p. 145). Sternfeld (2013) in her essay 'Being Able to Do Something' questions the notion of curation as 'simply the work of displaying art or artefacts for educational and aesthetic experiences' (p. 146). She (2013) prompts museum researchers and curators to explore 'curating beyond representation as being able

to do something… so it is no longer about exhibitions as sites for setting up valuable objects and representing objective values, but rather about space for curatorial action in which unexpected encounters and discourses become possible' (p. 146). Here Stensfeld focuses on the relations of power and knowledge that are at work within the museum space. She rejects traditional representational models which promote objective facts and knowledge and she sees museums as organisations of conflict where representation, meaning-making and interpretation are not predetermined and set. She (2013) highlight that 'curating is based on contingency and processuality' (p. 147).

In this way, Stensfeld draws out attention to curation as a process with unexpected outcomes which are conditioned by visitors' agency and choices. The Museum Studies theorist and philosopher Beth Lord (2005) discusses the concept of representation in curatorial work and notes:

> *The question of museum representation has become relevant again as it has not been since the late eighteenth century. Questions of how and why we represent objects, from whose cultural perspective, and according to which sets of presuppositions, are of enormous importance as the role of museums as centres for learning, inclusion and community building is fully recognized* (p.153).

Here, Lord (2005) focuses on the who, what, why and how of museum curation and representation. She prompts contemporary museums and museum curation literature to question how museum objects are classified, represented and interpreted. She points out that it is important for museums to re-consider their authority and power of representing one correct and universal truth. And to recognise that there are multiple approaches and perspectives of classifying, representing and interpreting museum objects. In this way, museum curation is open and challenges the traditional classification and representational systems. Lord (2005) suggests that focusing on the problem of representation in the museum

site is closely related with the ‘return to an Enlightenment way of thinking’ which ‘questions the very nature of representation, the way we apply words, concepts and interpretive systems to things’ (p.153).

This question of representation is central to this thesis’ aims and objectives, but unlike the Enlightenment museum’s answer to the problem of representation, this thesis looks at visitors’ design practices and focuses on the act of making. In this research, I explore how game design allows visitors agency to engage with curation and representation to construct meaning and apply interpretive and representational systems to museum objects using different modes and platforms and spaces.

Curation and Social Semiotics

Social Semiotics theory has derived from the field of semiotics. Semiotics according to Saussure (1974) is ‘the science of the life of signs in society’. A key term in semiotics is the ‘sign’. As Umberto Eco (1979) notes, the theory of semiotics is ‘concerned with everything that can be taken as a sign’ (p. 7). It is the study of signs and the process of producing, reproducing and circulating meaning through signs (Hodge & Kress, 1988). For Umberto Eco (1979), a sign is something that substitutes, stands for or represents something else. Other researchers (van Leeuwen, 2005; Hodge & Kress, 1888), however, who have extensively looked at semiotics using social theory, propose the use of the term ‘semiotic resources’ instead of signs. They argue that the way semioticians define the notion of ‘signs’ fails to consider that the social use and interpretation of the sign affect the sign. Signs are shared social resources. As such, they do not stand for only one referent, their meaning is constructed in correlation with the complexity of the relations and interactions that exist in different social practices. The signs do not express stability but productivity between signifier and signified in time and space (Kress, 2013, p. 199-132).

Social Semiotics is a single theory that deals with all meanings made in all different settings by members of a community who are using a variety of modes to communicate these meanings. As Kress (2013) writes 'Social Semiotics is a theory about meaning-making in process of interaction as communication' (p. 119-132). The producer's agency and interest construct meaning in the form of signs.

> *Social Semiotics deals with the sign-maker's assessment of environments of communication, that is, with the rhetorical assessment of the complex of participants – occasion – objects - location, linked in practices shaped by relations of power.* (Kress, 2013, p. 119-132*)*

Employing a social semiotic approach to curating enables me to treat the product of curatorial work (exhibitions or displays) as a text in its broad semiotic (Hodge & Kress, 1988, p. 6) sense which is not produced just to be simply read by museum visitors, but it is open to different interpretations, debates, and meanings. It allows an examination of the different power relations and roles at work through and during the production and interpretation of exhibitions or displays. Based on this theory, I build a theoretical foundation to further understand in what ways the participants of this research project take a step further and assume the role of designer to produce, negotiate and communicate meaning, authority, agency, and cultural representation through game design inspired by the official museum curation. I explore what their game designs and prototypes reveal about representation, meaning-making, the construction of social relations between curator-visitor, and negotiation of agency.

From a communication and Social Semiotics perspective, Kress (2013) argues that 'an exhibition is a message' (p. 119-132). A message which communicates 'complex series of prompts' to museum visitors. However, as argued above, these relations are more complex than that. In the museum setting, curatorial teams plan and produce an exhibition or display and visitors experience it in different ways and produce personal meanings from and about it

(Annis, 1986, p. 168). A curatorial team produces different semiotic systems to represent an aesthetic, scientific or artistic point of view. As Bezemer et al (2012) point out museums design different discourses (aesthetic, artistic, scientific, political etc.) which reflect the producers/meaning-makers/emitters' point of view including their interests, beliefs, expressions, meanings, epistemological positions, policies, and strategies. For Bezemer et al. (2012) museum exhibitions and displays act as textbooks in which curators (or various curatorial teams) create 'reading paths for visitors' including different multimodal resources and layout. In this way, the designer lays out the relations between museum-visitors, visitors-curatorial content (objects, galleries, exhibitions), the relations between objects-signs within the curatorial context.

So far, I have discussed and theorised museum curation. I have presented three different approaches of looking and understanding curating. These allow me to understand how the act of exhibition-making have been understood and continue to be understood and what it entails. I have demonstrated that curation is closely related to representation and meaning-making. Traditional or open models of curation define the relation between museums and their communities and determine who decides what and why is represented in the museum context. These models of curation define the authority of museums to make these decisions and the agency of their communities to negotiate, challenge, transform and add new layers of representation and meaning to museum culture and curation.

Milliard et al. (2016) note: 'curating in its contemporary form is just a half a century old' (p. 7). It emerged in the 1960s (Kapur, 2007) and even though it is still developing, it keeps re-shaping. With the introduction of participatory design approaches in museums (Simon, 2010; McSweeney & Kavanagh, 2016), the notion of curating has changed and developed even more. Now, there are many examples of museums involving visitors in different co-curatorial roles which challenge museum representation, visitors' role and agency. In this way,

representation and meaning-making are subject to discussion and negotiation between museums and visitors.

This doctoral thesis looks at curators as agents who structure representational systems to communicate meaning. But meaning is made in social interaction where the outcome is uncertain, ambiguous and unpredictable. This thesis builds upon Barthes' (1968) theoretical work and recognises that meaning is not in its origins but its destination. It accepts that the reader produces personal meanings from the text. By employing this theory to museum curation, representation and meaning-making, I recognize that meaning is produced and negotiated by the visitor and not by the curator's intention. In this way, 'the museum is an open work, created only in the play of its users' (Carr, 2001, p. 180). Drawing from the philosopher and semiotician Umberto Eco (1989), David Carr (2001) argues that visitors are free to engage with museum collections and experiences and construct and communicate meaning based on their own choices. However, the design process is a mediating process (Kress, 2013). The designer through the design process expresses interests and purpose in relation to the 'other', the 'imagined audience'. Eco (1981) defines this 'imagined audience' as a 'model reader' that authors keep in mind while writing (p. 62). Designers use different semiotic resources to express and materialize interest and purpose (Kress, 2013). Therefore, involving visitors in design opportunities in the museum context adds another layer of meaning in Carr's concept of 'museum as an open work' and the interpretation and representation of museum objects and collections. The relation between designer-user challenges the way the role and agency of the research participants are conceptualised in this thesis. Within the museum context, the research participants encounter and react to the official museum curation and representation. They produce personal meanings and representations from the museum and then they materialise these personal meanings and representations through design. Through the game design process, they express their interests and purpose. But, their

games as playable objects are always open and subject to others (players) interpretations and experiences.

Museum curation and platforms

The museum as an open work acts as an analogue platform where visitors assume the role of designer and use different semiotic resources to negotiate, communicate, express and materialize their interest. Through design, they creatively respond to the official museum curation. They do so by producing new representational systems and meanings. As Proctor (2010) writes 'a platform is a medium through which information or content is published or exchanged. In this sense, a bricks-and-mortar museum is an analogue platform' (p. 35). Simon in her book Participatory Museum (2010) suggests that museums can act as platforms where visitors can also produce their own content freely within a distributed museum network (p. 184-185). When the museum experience and curation are expanded through the visitors' design work, the museum information and content are created, distributed and exchanged in different platforms within a distributed museum network. The museums and digital technology scholar Susana Bautista and culture and media theorist Anne Balsamo (2013) have also drawn our attention to the 'distributed museum experience' (p. 55). They argue that the notion of museum is no longer attached to a physical space. Museum presence, curation and experience are now extended beyond the physical and fixed in and through different virtual spaces and technologies of mobility (p. 55). For Bautista and Balsamo (2013), the distributed museum has three dimensions: the physical/virtual axis, the fixed/mobile axis, and the closed/open axis (p. 59). The physical/virtual refers to digital and virtual practices that allow museum experience to move beyond the physical space. The fixed/mobile refers to activities that allow the museum experience to move 'among locations in time and space' (p. 62). The closed/open dimension connects with museum practices that allow museum visitors to

produce new content. This third dimension focuses on the 'creative expand of the activity rather than the spatial or temporal character of the experience (p. 62).

This doctoral thesis builds upon Smith and Balsamo's (2013) notion of the distributed museum experience and proposes that game design with visitors involves and connects with all these three dimensions. Visitors' games act as virtual platforms within the distributed museum network. Museum visitors design games inspired by museum collections, spaces and objects exploring the relationship between physical and virtual curation, representation and meaning. As game designers, they experience museum culture and curation and propose and add new layers of representation to them beyond the fixed physical space. Lastly, they produce content that reflects, transforms, expands creatively and culturally the museum.

Regarding looking at games as platforms, it is essential to discuss how they work as platforms. As Okkema (2018) writes the term 'platform' as a concept is elusive and often challenging to define (p. 4). In the context of games, the notion of 'platform' can be explored through metaphorical platforms which allow participatory design, political and creative expression, and literal hardware and software platforms such as gaming consoles, games authoring tools, the web etc. In their influential book 'Racing the Beam: The Atari Video Computer System', Montfort and Bogost (2009) explain that a platform is 'whatever the programmer takes for granted when developing, and whatever, from another side, the user is required to have working in order to use particular software' (p.2). They suggest that by choosing a platform, designers chose the development and expression of the computational expression. This happens as the technological limitations and affordances of platforms influence, facilitate or constrain these expressions (Montfort & Bogost, 2009, p. 3). However, game platforms are not only influenced and constrained by these technological limitations and affordances. Games as cultural artefacts are situated within a political, historical, economic and cultural context which shapes them. But also, games as computational platforms express 'views about

the world' (Montfort & Bogost, 2009, p. 148). As already discussed earlier, the view of games as cultural artefacts that express and reflect the world is also supported by Salen and Zimmerman (2003). In their Rules, Play, Culture framework, they point out that games, as cultural artefacts, reflect and transform the context within which they are designed and played. Adopting these theoretical ideas in the museum context, this view of video games leads to new questions on how game design can expand museum culture beyond the fixed physical museum space. In this way, I examine what visitors' game designs reveal about designers' agency and how they produce new representations and meanings that transform and add to the curatorial work.

So far, this section has presented how games design with visitors is theorised as a platform for curatorial production in this thesis. I have unpacked the notions of curation and platforms drawing parallels and connections between museums and games as representational systems. In this thesis, I recognise and explore the way families with young people design games inspired by museum collections, galleries and objects, and add different layers of representation and meaning to them. I examine in what ways the participants make design decisions while making games using different semiotic resources available in the site including the games authoring tool, museum objects, museum space, and other resources. The aim of this doctoral thesis is to investigate what the participants design decisions reveal about: 1) the way they unpack curating as a process of producing representational systems, 2) how they produce and negotiate curation, representation and meaning, and construct different social relations in their designs, and 3) how they negotiate agency and perceive their role as visitors/designers.

The next section will explore and theorise the notion of agency. As described earlier game design allows visitors' to negotiate, challenge and add different layers of representation and meaning to the context within which they create games. In this way, they move from visitors

to visitor/designers. The notion of agency is central to the way they assume the role of designer and make curatorial decisions about representation and meaning. However, agency is an elusive term. The next section will explore agency in three different contexts: a. in the context of museum curation, representation and interpretation, b, in the context of participatory action research and visitor generated content, and b. in the context of games, play and design.

3.2 Discussing the Problem of Agency

3.2.1 In the Context of Museum-Visitor Relation

Having discussed the way curation, representation and meaning-making are contextualized in this thesis and their connection with game design, now this section will explore the problem of agency focusing on the museum-visitor relation in the context of museums. This doctoral thesis looks at how its research participants assume the role of designer and design games inspired by museum collections and displays. As demonstrated in the previous section, games design allows the participants of this study to make curatorial decisions producing new meanings and representations. In this way, they experience the museum and their relation to it in a different way. This thesis proposes that visitors' agency is manifested through the role and authorship of the designer.

Focusing on the museum-visitor relation and agency allows a deeper understanding of the complexity of museums as institutions, the way different roles within the museum context are understood and the way different agents are connected to communicate and influence each other in the museum site. Exploring the museum-visitor relation will set the theoretical boundaries within which this thesis investigates the way visitors assume the agentive role of designer and engage with curating, negotiate agency, and construct the power-agency relations with their game design decisions. In this section, social theory, Social Semiotics and

participatory approach are employed to explore and theorize the museum-visitor (curator-visitor, author-reader) relation, the complexity of museums as institutions and the problem of visitors' agency.

In the Museum Studies literature, the term 'agency' relates to visitors' engagement and participation while they are visiting museum galleries and participating in various activities. Traditionally, museums have criticised for denying their visitors' agency. This reflects on the established museum dichotomies between open-closed, private-and-public space and the relations between curator-visitor, curator-objects, and visitor-objects. From a Foucauldian point of view (Hooper-Greenhill,1989; Bennett, 1995), museums act as knowledge authorities and agents of civilizing the public and creating these dichotomies and one-sided cultural and historical representations. Visitors are treated as agents who struggle to gain capital and visiting museums as a means to reproduce and distribute capital (Bourdieu, 1993; Bourdieu, 1996). Many Museum Studies academics and theorists (Dicks, 2016; Hanquinet, 2016; Fyfe & Ross, 1996; Macdonald, 2011) have employed Bourdieu's theoretical and philosophical work to examine the different political, theoretical, philosophical and sociological complexities of museum practice including museums' curatorial work, taste and consumption, and the museum-visitor relation. Bourdieu has been widely used by Museum Studies academics especially in the Arts context to criticize museums for their social and pedagogical role in society as disciplinary and political institutions (Fyfe, 2006).

In this study, Bourdieu's work is used differently. Bourdieu's theory is used to understand power relations and dynamics between museums and visitors. It is used to explore the interplay between museum and visitors and the different structural conditions within which they experience and unpack museum collections and culture. Employing Bourdieu's philosophical and theoretical work allows me to explore the different social relations and roles that are at work within the museum space as a social and cultural field and how game-making

with visitors opens new dialogues and opportunities to negotiate agency and unpack and redefine these relations and roles. By adopting Bourdieu's theoretical tool of field (1993-1996) and overcoming its limitations, I approach the museum site as an arena of conflict which shapes the museum-visitor relations and the different ways visitors push the boundaries of this relation.

Bourdieu in his works investigates the complexities of social life. He uses the concept of field to demonstrate how individuals interact with society and within different socials spaces of society. In Bourdieu's work (1993; 1996), these different social spaces are called fields. Bourdieu argues that society consists of different fields (1993; 1996). These fields are relatively autonomous; however, the dominant field is the field of power which includes other smaller fields. A field can be any social space such as an institution (schools, museums, hospitals), the family, friends and workplaces (1993; 1996). These fields have specific characteristics and structures which define their function, the role of different individuals (agents) within the field, and the relations between the field and agents. Bourdieu sees social fields as spaces of conflict where different agents struggle and compete for domination within the field's hierarchy. Each field is constructed and defined by its rules, or according to Bourdieu, its doxa and nomos (1992). The doxa defines how the field works and what each agent's role is within the field and how the relations between structure-agency are constructed and function. However, individuals decode and understand the doxa of each field based on their own habitus. It is the agent's habitus that allows him or her to know how to act and react in a social situation (1992). Habitus enables the agent to make decisions unconsciously based on his or her 'practical sense' (p. 73). This 'practical sense' is what Bourdieu calls the agent's 'feel for the game' (p. 73). Habitus, according to Bourdieu, is the different resources and dispositions that individual agents own and use to unconsciously decode the way each field works, their role within the field while acting, making decisions, and interacting and

communicating with others. In Bourdieu's work, the problem of agency is related to the notion of habitus. With the notion of habitus, Bourdieu critiques the duality structure-agency. With the theoretical notion of habitus, he proposes a way to explore social practice beyond the dichotomy of structure-agency and he focuses on the social relations within the field. Using the equation '(habitus)(capital)] + field = practice, he suggests that the agent's actions result from the relations between the agent's habitus and capital within the social space of the field. The habitus is constructed and characterized by the individuals' economic, social and cultural capital. The status of each capital allows individual agents to act accordingly within different fields. Bourdieu (1977) argues that habitus is a structured strategy that influences the individual's actions within the field (p. 73). Bourdieu (1977) while referring to the notion of habitus, he writes: '[the habitus] enabling agents to cope with unforeseen and ever-changing situation' (p. 72). In this way, agents make decisions and act unintentionally but within the existing social rules, structures and convections. Their actions depend on their natural tendency to make decisions and choose strategies, their position within the field, their habitus and capitals, and the existing forces of power within their environment (Bourdieu, 1992, p. 108).

> *Bearers of capitals and depending on their trajectory and on the position, they occupy in the field (…) They have a propensity to orient themselves actively either towards the preservation of the distribution of capital or towards the subversion of this distribution.* (Bourdieu, 1992, p. 108)

Looking at museums through Bourdieu's work and his theoretical thinking tools (field, habitus, capital) enables the examination and definition of the different relations that take place within the museum context. Museums as fields function under specific rules and institutional challenges. The doxa of museums maps out the way individuals act within the museum space. Museum curators as museum professionals follow specific rules and patterns to work in

museums. Within the field and according to the museum doxa, curators have a specific power, authority and role. However, there are other forces from outside and inside that define the agency of the museum field (Fyfe, 1996). As described in the literature review, other social, and economic fields outside museums put pressure on museums to define their policies and strategies (Fyfe, 1996). Similarly, museum visitors following the museum doxa assume different roles within the museum which define their ability, agency and power to negotiate representation and meaning. Additionally, the visitors' cultural capital and habitus influence their decision-making and role. The museum doxa, also, defines the museum-visitor relation. As demonstrated in the previous chapter museum practice has been defined and transformed by different political, financial and social factors. Therefore, museums and the rules that define their function has changed over the years. These changes have defined and transformed the role of museum curators and consequently, the act of curating (O' Neill, 2012). This transformation has similarly affected the museum-visitor relation. The curator and writer Paul O'Neill (2012) in his book 'The Culture of Curating and the Curating of Culture(s)' explores how the role of curator has changed over the years and how this transformation affects and re-defines the relations between curators, artists and visitors. But, as discussed in the literature review, outside forces from other more powerful fields define the function of museums. As Gray (2016) argues these 'pressures and demands' lead museums to face ambiguous and contradictory ideas (p. 117). In this way, visitors' agency to act depends on their own habitus and capital and the power relations of the museum-as-field which are defined by internal and external forces, pressures and demands.

While using Bourdieu's theoretical perspective allows a deeper understanding of museums and the different power relations at work in museums, it essential to underline its limitations. Bourdieu (1977) sees agents' actions and social practice depending on the relations between the agent, the habitus and the social forces of the field but fails to consider and recognise the

potential and intentionality of choice of how agents act, communicate and negotiate meaning and agency as response to the 'environment of communication' (Kress, 2010). Bourdieu treats visitors as 'puppets' manipulated by their own fixed habitus, capital and social forces within and outside the social fields. For this reason, Bourdieu's theoretical work limits my understanding and examination of agency.

On the other hand, Kress (2010) recognizes and underlines the agent's intentionality of choice in the semiotic work, meaning-making and communication. From a Multimodal Social Semiotics theory perspective, he argues that the agent has a variety of choices for meaning-making and representation. These potential choices allow agency to the agent to construct and communicate meaning and representation in different ways. Adopting Bourdieu's theory to examine the power relations within the museum site promotes the view that the lines between museum-visitor, curator-visitor, designer-user, producer-learner are clear and definite, and empowers these dichotomies. But, looking at these lines from a Multimodal Social Semiotics theory and participatory game design enables me to unpack these lines and dichotomies and recognize their contingency and fluidity.

This research looks at the instance when visitors/designers move from being 'puppets' to become 'puppeteers'. I examine how game design allows them to produce meaning and representational and interpretive systems within the distributed museum networks and platforms. From a participatory and game design perspective, I look at what the design and the designer's decisions reveal about the way they engage with curating, the relations between designer-player and how they negotiate representation, meaning and agency as a response to the environment of communication. The design allows the participants to push the boundaries of the museum-as-field and negotiate and change their position and role within it. This process brings change to the participants' agency at the museum site. In the next section, the problem of agency in the context of participatory initiative and visitor generated

content in the museum site will be examined. The next section described further the way the problem of agency is understood and conceptualized in this thesis.

3.2.2 In the Context of Participatory Initiatives & Visitor Generated Content in the Museum Site

This section discusses the problem of agency in the context of participatory approaches and visitors' generated content and design in the museum site.

A significant portion of the theoretical and philosophical inquiries (Burger, 2006; Eco, 1981; Benjamin, 2008; Schott, 2014; Taylor, 2007) on the production of works of art, curatorial and media production such as music, literature, theatrical plays, video games, museum exhibitions etc. are often concerned with the relation between producer- receiver such as the relation between musician-listener, writer-reader, game designer-player, museum curator-visitor, etc. These inquiries look at these relations from the perspective of production and reception. Looking at the line between producer and receiver (Burger, 2006), they are concerned with the power and authorship of the producer and the agency of the receiver to interpret, control and push the boundaries of the artistic or media experience. They often define these lines as separate and distinct (Burger, 2006) or they recognize their contingent and fluid nature (Taylor, 2007; Malaby, 2007). Building on these inquiries, this thesis raises the question of what happens when the receiver adopts the role of the producer within the context of these traditional systems and relations between producer and receiver in museums (curator-visitor) and games (designer-player). This thesis explores how museum visitors/designers challenge and push the boundaries of the official museum curation and representation and negotiate agency and meaning-making through games, play and design. This thesis' objectives and aims focus on visitors' generated content, game design and participatory approaches in the museum site.

As demonstrated in the literature review, most of the participatory approaches in the museum site focus their interest either in the agency of visitors to construct personal meanings, engage, interpret and add their own layers of representation to the existing formal museum representation and curation or on visitors' consultation in curatorial production and visitors' generated content onsite or online. Many museum theorists (Simon, 2010-2015; Mclean, 2013; Kidd & Cardiff, 2017) who are focusing on these topics, have criticized traditional museum models such as top-down information-delivery models of exhibition-making and have proposed bottom-up, participatory, prototyping and dialogic models (Mclean, 2013, p. 2) which promote different ways to involve visitors in decision-making and curatorial production. Building on participation theories, further museum research has explored the difference between visitors' participation and collaboration between museums and visitors. The Museum Studies research Viv Golding (2009) adopting Arnstein's (1969) eight-step ladder theory of participation critiques museum participatory initiatives and separates 'tokenistic participation, consultation, and information gathering' from 'respectful collaboration and sharing of expertise' between museums and visitors. While Arnstein's eight-step ladder theory might be useful to separate and discuss different ways of involving museum visitors in curatorial production, it focuses on the distribution of power between museums and visitors.

In the context of Participatory Design and VGC discourse, museum professionals are often concerned about sharing their curatorial authority and power (McLean, 2013; Simon, 2015). According to McLean (2013) and Simon (2015) museum exhibition makers and curators are concerned with how to involve museum visitors in participatory projects without undermining museums' authority, role and purpose to deliver 'carefully controlled' and refined exhibitions and curatorial products by experts (Mclean, 2013, p. 4). Mclean (2013) prompts museum professionals to embrace a new way of thinking about museum curation and museum practice. She points out that museums must redefine the way they think about expertise and experience

in the museum site (p. 4). Nonetheless, she does not explicitly describe what this means or how museum professionals can reflect on the way they think about curation and museum practice in the museum space or beyond. Simon in her book Participatory Museum (2010) suggests that museums can act as platforms where visitors can produce their own content freely in a distributed museum experience (p. 184-185). The notion of museum as an analogue platform was discussed in the previous section to explore how museums as platforms adopt more inclusive and participatory models of curation which allow visitors to produce new representations and communicate meaning in a distributed museum network. This also connects with the notion of agency.

Returning now to the problem of authority of museums and their objective to control the agency and creative work of museum visitors. In her more recent talks, Simon (2010) argues that the museum-as-platform can impose control systems and restraints on visitors' generated content. She compares museums to web-based platforms such as YouTube and Instagram in which the platforms pose certain restrictions on their users such as content control and surveillance. While Simon (2010) proposes a new approach to the problem of the museum power and authority, this approach raises further questions about content creation and ethics. But most importantly, this approach focuses on and highlights the importance of maintaining and safeguarding museums' authority and control over participatory initiatives. This distracts the focus of the participatory discourse away from issues of visitors' agency, meaning-making and production. It undermines the importance and complexity of the act of making and visitors' agency to experiment and creatively react to museum representation and curation through design. Instead of examining the process of making and how visitors construct meaning and engage with museum collections through design, this approach suggests focusing on how to maintain the boundaries that feed the dichotomies between museums and visitors. It fails to recognize design as a process of making during which the visitor/designer has individual

power and agency to negotiate representation and meaning. A power which does not sabotage the authority of the official museum production and curation, but it challenges and adds to it. Focusing on design that creates opportunities where visitors are confronted and asked to creatively react to museum representation and curation through design allows museum practice and academia to move beyond the notion of participation as simply taking part in something or consulting. It allows museums to focus on the notion of design and the way visitors are using different multimodal resources and design tools to creatively react, challenge and negotiate curation, representation, agency and meaning in the museum site.

3.2.3 In the Context of Games, Play & Design

Examining the problem of agency in the context of games will contribute to the conversation on visitors' authorship and agency in the context of Visitors' Generated Content in the museum setting. Game Studies theories of agency allow me to explore how the field of games have conceptualised agency and discussed the designer-user/curator-designer/designer-player.

In this thesis, I focus on the moment visitors through games design push the boundaries of the museum curation and become designers/authors/curators of the museum experience beyond the physical boundaries of the museum. I will show that the dualities between curator-visitor, designer-user and designers-player are not always set. Employing games studies theories to understand these relations shows that often the players (with their different practices) push the boundaries of the games and become 'designers' of the game.

As previously presented in the literature review chapter, games, as media are defined as 'systems of rules' (Salen & Zimmerman, 2003) and 'structures for play' (Carr et al., 2006). In the games, play and design context, the problem of agency has been discussed widely and has been the focus of numerous debates. It is associated with the way players experience gameplay and their ability to make decisions which can control, manipulate, and alter their

gaming experience (Schott, 2014). In the Game Studies literature and philosophy, agency has been explored in terms of players' in-game actions to make decisions and meaningful changes in their gaming experience. The game designers and scholars Katie Salen and Eric Zimmerman (2003) connect agency to meaningful play and interactivity which includes the players' power to make choices and act during gameplay. Murray (1997) on her influential book 'Hamlet on the Holodeck examines the notion of agency and notes that agency is the power that enables agents to take 'meaningful action and see the results of our decisions and choices' (p. 123).

Often, the concept of interactivity is mistaken as agency. Murray (1997) claims that interactivity has been extensively used to vaguely discuss the ontology of games and play. Often, players' activity and actions during play are treated as agency (1997). Yet, a simple relation of cause and effect is not agency (1997). According to Murray (1997), 'activity alone is not agency'. She notes 'the players' actions have effect, but the actions are not chosen, and the effects are not related to the players' intentions' (p. 124). She then proceeds to discuss the 'pleasures of navigation'. For Murray (1997) the 'pleasure of navigation' connects with the ability and power of players to choose how to approach, explore and experience games and play (p. 127). Games often allow players to interpret and experience games as they see fit (Murray, 1997). From this point of view, players have the power to transform games and their gaming experience. Linda Hughes (1999) sees games as situated social contexts where players construct play and not the game rules. She argues that players are responsible for interpreting, reinterpreted and shaping the meanings and purposed that the game rules have imposed (p.94). She continues by explaining that players have the power and agency to transform the experience of the game *(*p. 94).

For instance, players are often using cheating (Consalvo, 2007) to push against the constraints that the game rules impose. Agency is also often examined beyond the traditional

‘in-game experience’ of players. Notably, players seek different ways to expand the boundaries of games and to allow their gaming experience to leak into everyday life. While their actions and discussions take place seemingly outside the game, these actions and discussions influence the game development and play significantly. As a result, the experience of gameplay depends on the players’ agency and actions. In this way, the boundaries between the game and everyday life are blurred and fluid. As Taylor (2007) writes the players have the ability to push the boundaries of games (p. 113). For instance, players push these boundaries by creating fan-fiction, art and other types of player production inspired by videos games (Poremba, 2003).

These examples are particularly useful and enable a deeper understanding of how agency is theorized in terms of games, play, and design. They reveal the complexity of games and play, and the relations between designer-player, and player-gameplay in terms of game rules, narrative, and design affordances. This study focuses on the agency of the visitor/designer and not the agency of the visitor/player. My aim is to investigate how games design allows visitors to respond creatively to the formal museum representation and narrative and challenge and push their boundaries. The objective is to examine how games design enables them to make design decisions and negotiate the relation museum-visitor, challenge their agency as visitors, and construct and communicate meaning and representation.

As mentioned above, players often ‘hack and alter…play in new and undetermined contexts’, but also, they design their own games using ‘existing games as a platform to express their own views and ideas in the change cultural landscape’ (Poremba, 2003). Poremba (2003) explores the agency of the player/author and the relation between the player-game from the point of view of player production and game design. In her work (Poremba, 2003), players are using games to produce new meanings and representations. In this way, games become a participatory platform where agency is manifested. Building on this line of research, I propose

to explore how visitors as designers use games curatorial platforms to explore, challenge and negotiate representation, meaning and agency.

Thus far, the texts presented in this section when they discuss agency, they refer to the way players either control, manipulate and extend play within or outside the boundaries of games or produce new creative artefacts based on or inspired by them. This research, however, explores how game design allows museum visitors agency to produce meaning that represents, reflects, influences and transforms the museum culture and context. I look at the connection between game design, culture and agency in the museum context. I explore games as platforms that reflect, influence and transform the contexts within which they are created and played. Here, the notion of 'platform' is used in a figurative and political sense to explore visitors' agency as designers and the way they represent, reflect and transform curatorial work, context and culture. Even though I take into consideration the Platform Studies (Montfort & Bogost, 2009) perspective on games, I do not only focus on how the technological properties of games software impose different opportunities and constrain to the way games are designed. I look at the connection between games, context and culture and how games reflect and transform the context within which they are designed and played (Salen & Zimmerman, 2003). In this way, I examine the way visitors' agency is manifested by the game designers' choices, power, authority and authorship to produce meaning, represent culture and thus, influence transform, add to the context and culture of museums.

In the previous section, I discussed museums as analogue platforms which connect with other platforms in a distributed museum network through virtual or participatory and visitor design experiences. In this context, visitors' games are explored as metaphorical platforms that can exist within the distributed museum network. In the museum context, this view of video games leads to new questions on how game design can expand museum culture beyond the fixed physical museum space. But also, it allows me to examine what visitors' game designs reveal

about their agency. The act of designing games allows them to challenge their agency as visitors and assume the role of visitor/designer and creatively react to the official museum curation.

Conclusion

In this chapter, the objective was to develop and present the theoretical framework within which this thesis proposes and develops its research and methodological inquiries. The theoretical framework discussed in this chapter describes how this thesis' central topic and themes are approached, theorised and will be used in the following chapters. As presented in previous chapters, in this thesis, I am focusing on game design and investigating the way visitors design games inspired by museum collections, spaces and objects. The literature review and the implementation of the first case study at the UCL Grant Museum of Zoology revealed that game design with visitors connects and is concerned with the different ways game design allows visitors agency to explore, reflect, transform and add to the museum culture and curation by producing different layers of representations and meanings. This led to further questions on how visitors' games work as curatorial platforms within the museum context, how curation connects with games design and last, how the notion of agency associates with the role of visitor/designer in the museum context. Based on these questions, it was important to focus on and further explore the notion of curation and draw parallels between curatorial work and game design and agency.

This chapter began by describing how the notion of curation connects with game design and how games work as curatorial platforms. To achieve this, I looked at curation from three theoretical lenses. First, I examined curation through the museum-visitor lens using curatorial models and theory. Second, I approached curation through the lens of representation employing Semiotics and cultural theory. And third, I employed Social Semiotics to understand

curation as a complex system of representation which is open to different interpretations, debates and meanings and allows visitors agency to develop and materialise their own personal representations and meanings. Then, building on Museum Distributed Network theory (Bautista & Balsamo, 2013), museums-as-platforms model (Simon, 2010; Proctor, 2010), Salen and Zimmerman's Rules, Play, Culture theoretical framework (2003), and Platform Studies (Montfort & Bogost, 2009, p. 3), museums were discussed as platforms where visitors are free to produce, materialise and communicate their personal meanings and representations. I suggested that visitors' game designs act as curatorial platforms within a distributed museum network. As such, visitors' games are conceptualised as cultural artefacts that reflect, transform and add to the museum curation, culture and context.

Then, the chapter moved on to trace how agency has been conceptualised and theorised within the Museums and Games Studies literature. Agency was explored through three different perspectives: in the context of museum-visitor relation using sociological theory and Social Semiotics, in the context of participatory and Visitor Generated Content in museums using participatory approaches, and in the context of games, play and design. Building upon Social theory, Social Semiotics, and games, play and design theories, it was revealed that despite the differences, the term 'agency' is used in these different disciplines to describe how different agents (museum visitors, players etc.) take meaningful action and make decisions and choices that control and change the experience and context within which they act.

In the context of museums and games, agency connects with authority and conflict, the power relations and dynamics between museum-visitor, curator-visitor and game-player and designer-player. Bourdieu's theory was used to explore the museum-visitor relation and to understand how different forces shape the museum's role and authority and visitors' agency, and unpack how museums work as arenas of conflict. However, the limitations of Bourdieu's theoretical work (see 1977-1996) were highlighted in this thesis. Particularly, I argued that

employing his theory can limit our understanding of the relation between agency and intentionality and the agents' choice to control the way they act and produce meaning. To overcome Bourdieu's limitations, I proposed the employment of Social Semiotics theory and Multimodality to explain how visitors' agency, intention and choice define the way they experience museums and produce meaning from and about the museum collections and exhibits.

In the second part of this chapter, I showed that most of the museums and Game Studies research when discussing agency, they focus on the viewer, visitor and player. They are mainly concerned with the way the reception/operation level (Montfort & Bogost, 2009, p.3) of the museum experience or play connects with agency. This sets the theoretical context within which this thesis develops its theoretical framework to approach and understand agency. In this thesis, agency is conceptualised and used drawing from Participatory Design approaches, Social Semiotics and games, play and design theories. In this way, agency is examined as a process which is manifested through co-creation and design.

Theoretically unpacking the problem of **curatorial authority** and the **agency and role of visitors** in making design decision about **curatorial representation and meaning-making** within the museum context has allowed me to develop the following overarching research questions:

1. What do museum visitors' game designs reveal about curatorial representation, meaning-making and agency?
2. In what ways do museum visitors assume the role of game designer in the museum site?

These overarching research questions capture the main goals of this doctoral thesis. They allow me to plan and design the research plan including the methodology and methods of this thesis.

In the chapter that follows, I will describe the design of the methodology employed to investigate how families with young people design games in the museum context. The chapter will detail how different methodological tools are employed and how the research ethics, the research participants and the relation between the researcher and the participants shaped the research design and implementation.

CHAPTER 4: METHODOLOGY & RESEARCH ETHICS

Introduction

4.1 Methodology & Methods

4.2 Research Questions

4.3 Analytical Frameworks

4.4 Research Participants

4.5 Researcher's Role

4.6 Research Ethics

Conclusion

Introduction

This chapter details the research methodology and methods that were used by this doctoral thesis to investigate the ways that families with young people design games inspired by museum collections. To explore how families design games in the museum site, a qualitative methodology was employed using multiple case studies methodology, game design participatory methodology and participatory action research elements. To collect data, different qualitative tools were used, including focus groups, observations, semi-structured interviews, and a paper and digital game design framework.

To investigate the aims and objectives of this thesis, two case studies were conducted. The first case study was implemented at the UCL Grant Museum of Zoology as an exploratory study (phase one), and the second case study was implemented at the Museum of London Docklands (phase two). Due to their connections and overlaps, the two case studies are treated as two phases of the same fieldwork and not as separated and single instances. However, as will be noted in the next chapters, each case study has unique characteristics and limitations which are bound to each research setting's institutional challenges and opportunities. This shaped the research design and implementation and analysis.

The two case studies also have separate research questions. After the implementation and analysis of the UCL Grant Museum of Zoology case study, the research focus and design progressed and changed. As a result, this research progression focused and redefined the second case study's research questions, aims and objectives. This means that the UCL Grant Museum of Zoology case study acts as phase one of the data collection and the Museum of London Docklands case study acts as phase two. The transition from the first to the second case study will be further discussed in chapter six.

In both case studies, game design participatory methodology and participatory action research elements were used. The design and implementation of these two cases allowed a deeper investigation of the research topic and research questions. The first case (phase one) was treated as an exploratory study to explore and narrow down the aims, objectives of this doctoral thesis. The second case offers an in-depth investigation of this thesis' aims, objectives and research questions.

The two case studies examine and focus on two topics:

- First, what the design and implementation of a game-making process with families in two different institutions in the UK can tell us about: a. making games with visitors in museums, b. how the research participants made design decisions and what these decisions reveal about the way the participants perceive their role and agency while making games in the museum space, c. how the participants challenge the authority and role of the curatorial voice, and d. the way they negotiate meaning and authority with and within the museum.

- And second, what the design and implementation of a game-making workshop/interventions involve and what they can tell us about: **co-curation**, **representation** and **meaning-making**.

Different types of data were collected during the data collection including interview recordings (audio & video), observation research notes, game paper prototypes (drawings, mind maps, game rules, short written narrations, game posters), and digital game prototypes (game designs in the game authoring tool, Mission Maker, voice recordings of game walkthroughs). In both case studies, families with young people were recruited as research participants. For each case study, a series of sessions (game-making workshops) were designed and run by the researcher. The UCL Grant Museum of Zoology case study took place in January 2016 as a four-session workshop, while the Museum of London Docklands case study took place in March 2018 as a three-session workshop.

The *Research Participants* section briefly outlines the criteria of recruiting families with young people as research participants and discusses how the notion of families is defined approached in this thesis. In the *Researcher's role* section, I will explore how my role in the research process is defined and understood. I will reflect on how it affects and influences the way data were collected, treated, analysed and interpreted. Reflexivity will allow me to examine and define the different relations and power dynamics that exist between the researcher and the researched.

After discussing the methodology and methods, I will briefly explain how I have developed the research questions. I will clarify how they were generated from the literature review and theory chapter and how they relate to the research questions of each case study.

This chapter will conclude by detailing the ethical considerations which arise from this doctoral thesis. The *Research Ethics* section will highlight the ethical issues that surround the research of participatory and Visitors' Generated Content in museums. Then, it will describe the measures and steps that this study takes to ensure the ethical and democratic conduct of research.

4.1 Methodology & Methods

In this section, the methodology and methods employed in this research will be presented. The aim of this doctoral thesis is to generate in-depth research data and findings. For this reason, qualitative research tools are employed. The objective is to explore what happens when visitors are invited to design games for and about museums and their collections. The research interest is focused on how the games designer's role and agency allow the research participants to engage with curatorial work and negotiate meaning and representation as a creative and design response to the 'environment of communication' (Kress, 2010, p. 132).

In the field of Visitor and Museum Studies, there is a growing research interest that focuses on participatory, creative and visual methodologies such as drawings (Diamantopoulou & Christidou, 2018) and photography (Marcus & Levine, 2011, p. 105). These creative and visual methodologies are used to explore and evaluate the different ways museum visitors understand, perceive and make-meaning through their own design work. Building on these studies, this thesis proposes games design as a dynamic and playful methodological approach to examine how visitors engage with museum culture and curatorial production and explore representation, meaning-making, agency.

At this point, it is essential to highlight why games design is proposed as a playful and dynamic research methodology instead of other creative media such as drawing, film-making and photography. As Aarseth (2005) explains in his article 'Doors and Perception: Fiction vs. Simulation in Games', games and the worlds and objects within them are ontologically different than the worlds and objects depicted in other older creative media (p. 37). It is the relation that we establish with these worlds and objects through games that makes them different than those depicted, for example, in drawings. Virtually moving around a heritage site in a game world is different than looking at a static drawing of the same site. It is the

spatial mobility, the movement and the dynamic experience that games offer that differs games from drawings. In simulations, we can test the limits and affordances of the museum objects or the heritage site and in this way, to better understand them. For instance, a drawing of a museum object or a heritage site can reveal the designers' interest and meanings, yet the drawing itself is only a static representation of the subject. Its visual representation is based on the available semiotic resources and the restrictions and affordances of drawing as a platform. Games, on the other hand, are significantly different than drawings or any other visual media such as photographs or even films.

This shows that there is a significant difference between the way visitors expressing and materialise their design ideas through drawing and video games production. Games design allows the participants to represent, model and simulate historical and cultural behaviours, themes, experiences and movements in time and space using different modes and resources beyond the static nature of a drawing. In this way, games design as methodological approach enables the collection of dynamic materials that potentially model and simulate how different relations, behaviours and experiences were perceived and understood by the designers in the 'environment of communication' (Kress, 2010, p. 132). As a result, analysing the participants' games can tell us more about the way they approach, understand, make and materialise meaning in different modes and between analogue and digital platforms.

I employ Multimodal Social Semiotics both as a methodological and analytical approach. As a methodological approach, it allows me to view visitors' games as signs of the designers' agency and choice (Kress, 2010) of different resources and modes. Multimodal Social Semiotics help me understand how the research participants construct new representations to communicate meaning and research agency-as-choice.

The use of qualitative research is suitable since the nature of the game design with families as a research process is complex. It requires an in-depth analysis of the participants' game

prototypes, interviews and focuses groups responses and discussions. In this way, the research participants' design decisions, experiences and actions are collected and recorded for analysis, interpretation and theorisation. To achieve this, two-phase research fieldwork was designed and implemented in two separate museums in the UK using a multi-method approach (Gillham, 2000, p. 13). The UCL Grant Museum of Zoology and the Museum of London Docklands were selected as the research settings. Families with young people were recruited as research participants.

Case study was employed as the main method of data collection. In this way, the research fieldwork consists of two separate but interrelated case studies; one case study was based at the UCL Grant Museum of Zoology and another one at the Museum of London Docklands. The first case study was developed and implemented in 2016 and the second one at the Museum of London Docklands in 2018. During both case studies, game design workshops were organised and delivered by the researcher. The conceptual and methodological design and implementation of these case studies were planned and conducted using the research design principles described by Bill Gillham (2000) in his book 'Case Study Research Methods'. Within each case study, additional methods were employed to further investigate the research topic. These sub-methods include games prototyping, semi-structured interviews, focus groups, observations and Personal Meaning Mapping (PMM) approach. This combination of methodological tools is chosen to enhance and validate the research process and avoid misinterpretations of the research data (Denzin et al., 2005, p. 5).

The first case study was implemented as a four-session game-making workshop, while the second case study was conducted as a three-session game-making workshop. During the sessions, Participatory Design methodology and its framework of three different phases were used. This means that the sessions included a. participatory techniques of idea generation (Druin, 2002; Guhan et al.; 2004), b. collaborative paper-based and digital game prototyping

inspired by museum objects, space and collections, and c. reflective process of playtesting the games (Watkins & Russo, 2007, p. 212-221). This framework is employed based on previous research studies, which have used the Participatory Design methodology inside museums and cultural institutions with children as design partners (Taxen, 2004; Roussou et al., 2007). During the brainstorming sections, the participants discussed the topic and proposed different game ideas. During the collaborative paper-based and digital prototyping, they used different tools and strategies to design games inspired by the two museums and their collections. Finally, during the play-testing section, they play-tested the games and reflected on their work. The structure and content of each session will be discussed in the following two chapters. Chapter five will breakdown and describe the game-making workshop conducted for the UCL Grant Museum of Zoology case study, while chapter seven will discuss the game-making workshop implemented during the Museum of London Docklands case study.

In both case studies, the paper and digital game design sessions were prepared according to the game design frameworks used by other researchers in the field of Games Studies and Digital Media. Kuittinen and Holopainen (2009) describe six stages of game design including: 'initial idea, concepting, designing, prototyping, implementing, and playtesting' (p. 5). Salen and Zimmerman's (2003) iterative design method which emphasizes in the playtesting and prototyping design process also influenced this thesis game design methodology. According to this method, the paper-based game design includes the repetition of the prototyping and playtesting process. Andrew Burn's work on game-making in schools and other informal spaces was also particularly useful and used as a framework to design the workshops. Burn and Durran (2007) suggest 'proto-design' as an alternative approach that gives the opportunity to young people to design their own games using both paper and digital tools and focusing on the development of both narrative and ludic elements (p. 126). Rikke et al. (2003)

and Pelletier (2007) employ a similar methodology to study the way students co-design computer games inside the classroom and to examine mathematics and designers' motive and interest. In this study, the research participants, after developing the game ideas, were asked to use paper and digital tools to prototype game characters maps, rules and mechanics. The originality of this research is that it employs a game design framework as a creative and dynamic method to collect data and to examine how museum visitors engage with curating and negotiate representation and agency.

Previous Game Studies research (Pelletier et al., 2010; Consalvo & Dutton, 2006; Aarseth, 2003) has suggested that analysing only the designer's games often reveals only one side of the designers' decisions and choices. Therefore, collecting data from any available sources is essential. To collect data about the participants' design decisions and choices, additional methods were employed including focus groups and semi-structured interviews. The families, in focus groups, participated in facilitated discussions, presented and play-tested their games with others. During each session, in small groups of two or three families, they explored different topics related to the museum and the game-making process. My role as the focus group facilitator was to provide the families with different discussion topics and questions. For example topics and questions such as 'Which are your favourite video games', 'what is a museum?', 'what is a video game?'. Apart from discussing games and museums, they, also, play-tested the games. In this way, they reflected on their game designs and gave and received feedback about their design decisions and choices from others. The use of focus groups allowed the participants to share their ideas openly without feeling exposed or scrutinized. In this way, they had the opportunity to take control of the design and playtesting and adopt an agentive role within the research process.

To investigate even further the participants' design decisions and choices, along with the game design and the focus groups, semi-structured interviews were conducted. During the

game-making workshops, interview questions were selected from a pool of questions in a nonspecific order and based on the participants' response patterns (Diamond et al., 2009, p. 72-73). While making games, each family member was approached and interviewed about the design process, the decisions and choices. In this way, the designers discussed and explained how they designed the games and how they used different resources and modes of communication. The semi-structured interviews enable each individual to explain their decisions while making the games and reflect on their work. They also allowed the researcher the time to reflect on the research process and redefine her research strategies.

In addition to this, conducting observations contributed to the collection and a better understanding of the data. The designers were observed while interacting with the museum objects, the other family members and space, and while designing games. The game design process in family groups enabled the researcher to take a step back and observe the designers. This method is widely used in Museum Studies literature and is the most common method of collecting data from museum visitors (Price et al., 2015; Moussouri, 2014; Jewitt, 2012; Macdonald, 2002). Observations notes were kept during and after each game design session with the participants. Focus groups, semi-structured interviews and observations were used in both case studies. However, these methods were used differently in each case study. In the following chapters, more details about the data collection will be presented separately for each case study.

To capture their conversations, experience and the way they interacted with each other while making games, the families were video, and audio recorded using DSLR cameras and voice recorders. However, video-recording was used only in sessions where the participants' consent had been previously secured. In the first case study, the families consented, while, the families which participated in the second case study did not approve filming. Therefore,

for ethical and practical reasons during the second case study, only audio recorders were used[17].

Lastly, the Personal Meaning Mapping (PMM) approach (Falk et al., 1998, p. 106-120) was used in both case studies to record the participants' background, prior experiences and expectations. The families in focus groups were asked to write on a shared paper their ideas about a specific topic. The participants were given a keyword or phrase such as 'video games', 'museums', 'my favourite video game', 'my favourite museum'. In this way, the families discussed what video games and museums are. They shared their experiences of visiting museums and playing games. This approach was developed by Falk (1998) and applied in different museum settings. According to Lelliot, (2007) who has previously used PMM to collect data about school visits in science centres, this approach is a complementary tool to the main methods of data collection and is suitable for museum settings (p. 85-90). Brown (2011) also used this approach to explore the museum visitors' experiences while they were visiting museum exhibitions. These two studies used the PMM method to capture the experiences that museum visitors had before and after the museum visit. In the proposed study, the PMM method is used not only to explore the participants' background and experience but also to enhance the paper-based co-designing process of the game. It introduces the families to the purpose of the game-making workshops and allows them to start thinking about the game design process. In this way, the didactic role of the research-as-facilitator is minimized allowing space to the families to develop their ideas and understand the purpose of this research study.

[17] The lack of video recording in the second case study will be discussed further in the seventh chapter (page)

So far, this chapter has briefly discussed the methodology and methods of this doctoral thesis. In the following chapters (Chapter 5, 6 & 7), more details about each case study will be presented. Chapter five breaks down and analyses the first case study. Chapter six, particularly, draws attention to the similarities and differences between the first and second case study and the way these different sub-methods are used during each case. Lastly, chapter seven describes the design, implementation and findings of the second case study. However, before focusing on each case study, this chapter will now move on briefly outlining the criteria of selecting families as research participants and how this thesis defines families as visitors and research participants.

4.2 Research Questions

Research Questions

This thesis started by posing two questions. First, what happens when museums invite their communities to play and design video games for and about museum collections, objects and displays? Second, what is the meaning of a playful, open and participatory museum? These questions have derived from the review and examination of the Museum Studies literature and practice on games in museums. These two key questions act as the starting point for this thesis.

In the process of answering these key questions, the first case was designed and implemented at the UCL Grant Museum of Zoology. From the analysis and theorisation of its findings, key themes were identified. The issue of **curatorial authority and representation** and the issues of **visitors' meaning-making and agency**. In chapter 3, these themes are problematised and theoretically unpacked. Focusing on and theorising these themes allowed me to form the following **overarching research questions**:

3. What do museum visitors' game designs reveal about curatorial representation, meaning-making and agency?
4. In what ways do museum visitors assume the role of game designer in the museum site?

These overarching research questions capture the main goals of this research. They act as a foundation and reference for this thesis' research findings. However, as noted above, after the implementation and analysis of the first case study, the research focus and design progressed and changed. The findings and themes of the first case study gave me a more in-depth direction and focus. They allowed me to formulate more in-depth research questions for the second case study in line with the theoretical and methodological inquiries of this thesis.

The second case study investigates the themes of **curatorial authority and representation** and **visitors' meaning-making and agency**. This means that the overarching research questions and the research questions of the second case study are connected through the main research themes.

To accommodate the narration of this thesis, later, in chapters 5 and 7 each case study's research questions will be presented and further discussed.

4.3 Analytical Frameworks

Investigating different research questions for each case study also means that it was important to employ a different analytical framework for each case study. For this reason, each analytical framework will be presented in the chapter dedicated to each case study. Detailed accounts of the first case study's analytical framework will be discussed in chapter 5 and the analytical framework of the second case study will be included in chapter 7.

4.4 Research Participants

Having already discussed the methodology and methods of this thesis, this section will now focus on the research participants and on why families with young people were recruited.

As Price et al. (2015) note, there is a growing museum interest to engage families with museum collections and exhibitions using digital technology. Both the UCL Grant Museum of Zoology and the Museum of London Docklands expressed their interest in involving families in making games inspired by their collections. In the initial meetings where the research proposal was discussed with the UCL Grant Museum of Zoology and the Museum of London Docklands, families were identified as the primary audience. Both museums were interested in targeting families as they are a large part of their audiences. Therefore, family groups with young people between the age of eight to fifteen were recruited. As Falk and Dierking (2013) explain in 'Museum experience revisited', families were always an important part of museums visitors. They are considered as the largest museum audience (Falk & Dierking, 2018). Since the 80s, there is an extensive literature about the way they visit museums and learn through museum collections and activities (Falk & Dierking, 2018).

Recruiting families with children of different ages complemented the research process and enabled this study to investigate the research topic from a cross-age point of view and focus on the notion of family as a multi-generational social group who visits the museum together. In the fifth and seventh chapter, the recruitment process will be discussed focusing on how it impacted the research design. This section will now move on to illustrate how this thesis within the relevant museum literature approaches and research families as visitors in the museum site.

According to museum literature on families in museums (Sterry & Beaumont, 2006; Sterry & Beaumont, 2005) defining families as a social group is important since the structure of families is constantly changing in the UK. As the developmental phycologist Jil Hohenstein and the Museum Studies scholar Theano Moussouri (2018) point out, museum literature tends to

focus on only how children experience family activities in the museum setting. While only a few studies explore the family as a unit, there is a plethora of research on children's experience of the museum (Anderson et al, 2003). In their research, Zimmerman et al. (2008) found that families while visiting museum galleries share and discuss their ideas about the exhibitions (p. 143-152). These ideas are informed by the exhibitions but often the families critique the curatorial work. Another interesting finding from their research is that each member reflects on their work and all family members give feedback to each other building their experience as a whole. In this way, according to Zimmerman et al. 'expertise is distributed across adults, children and the museum'.

In this thesis, families are defined as multi-generational social groups. This research thesis understands families' engagement, social participation and design work from a sociocultural and Social Semiotics perspective. It supports the view that while the family engages with museum collections, exchanges expertise and ideas (Zimmerman et al., 2008, p. 143-152). Their participation and design work are situated in the research setting and influenced by the social interaction between each individual that takes part in the research project including every family member, the researcher, and the curatorial voice which emerges from the museum space and collections. However, in this thesis, I do not make claims about the way the family members interacted and designed the games or perhaps how the profile of each family and subjectivity may have influenced the design work. From a Multimodal Social Semiotics perspective, I read the participants' designs as a response to the 'environment of communication' (Kress, 2010).

4.5 Researcher's Role

In previous sections, I described the methodology, methods and the participants of this research thesis. In this section, I look at the role of the researcher in the design,

implementation and analysis of the research. Including this discussion in this chapter contributes to the openness and fairness of this research study. This study is an empirical research practice, which focuses on public engagement, participatory approaches, Visitor Generated Content and visitors as designers. For ethical reasons, I use elements of participatory action research (PAR) and community-based participatory research (Brydon-Miller & Maguire, 2008) to reflect on the power relations and dynamics between the researcher and the research participants. Employing PAR elements and principles allows me to identify and define my role and authority as a researcher and recognise the research participants' agency and role in the research process.

Brydon-Millen and Maguire (2008) argue that in qualitative participatory action research the relationship between researcher and participants is characterized by systems of power, privilege and oppression. This view is also supported by Finlay and Gough (2003) and Dean (2017) who further suggest that considering how the power and status are distributed within these relations and systems is essential. In this study, addressing how the relationship between researcher and participants is structured allows me to acknowledge the participants' agency and reflect on my position as a researcher, facilitator, co-creator and analyst; and to think about how the relationship between researcher and participants influences the research and its findings.

To discuss the relation between the researcher and the participants, reflecting on my position and role and identity as a doctoral student and museum professional is important (Dean, 2017). According to Finlay and Gough (2003), the researcher's role in qualitative research and the way the collection, analysis and interpretation of data are constructed appear to be closely linked. Reflexivity allows focusing on the research practice and explicitly define the research decisions and methods employed throughout the project. My identity as a PhD student and my academic training have influenced my role and position as a researcher and the way I

approached methodologically the research process and how I made decisions about the data collection. In addition to this, at the beginning of each game-making workshop, the participants were informed about my research position and aims and objectives. This defined the structure of the research relations and how the families perceived and reacted to my authority and role while making games.

In addition to this, the families were aware of being researched, video or audio recorded. Previous research has discussed how museum visitors notice and react to filming (Ross, 2014). To reduce the interference of filming, the cameras were attached to tripods away from the action. To assist the data collection, additional methods of data collection were employed such as audio recordings and observation notes. During the first case study, the families seldom made eye contact with the cameras. However, this behaviour was only observed in the adult members of the families and only when the families were waiting or listening others talking in groups and not while making the games as a family. While making games, the families appeared to concentrate and focus on the activity without acknowledging their surroundings. Even though, it is impossible to fully understand how the participants react and make decisions because of the presence of the recording equipment and the researcher. It is helpful to acknowledge the existence of such implications and interferences. It allows questions about the power relations and dynamics that exist within academic research with visitors in museums. It is important to discuss how research participants react to traditional research methods such as interviews and focus groups which are led/facilitated by the researcher or videotaped, and how they might experience other research methods such as game-making where the researcher's role and influence are less present and dominant.

Apart from my academic identity, I define myself as a museum professional. My experience as a museum professional shapes my identity and research approach. But also, it defines how my presence is perceived in the museum. In the museum setting, as described in previous

chapters, families visit museums with predetermined ideas and agenda (Falk & Dierking, 2013, p. 150) not only about the authority and role of museums and their staff but also about their own agency and experience within the museum setting. Falk and Dierking (2013) drawing from previous museum research demonstrate that among other reasons, 'families use museums as socially 'mediated' learning environments'. This might mean that, the research setting and my role as a museum professional act as determining factors in how the research participants perceive my authority and their agency during the sessions. The families might have certain learning expectations from the research project and the research. These can influence the way they behave and react to the project. This influences the way the research is carried out and the way the data are collected.

During the data collection, the game design process and the data analysis, I have assumed different roles including the role of researcher, facilitator, interviewer, co-creator and analyst. The decisions and research choices concerning the data collection, the structure of the game-making workshops define and shape the nature of the data. Similarly, the theoretical and methodological framework used to collect and analyse the data influenced the data collection and analysis and their results and findings.

Researcher as facilitator and interviewer

During the game-making sessions, I assumed the role of facilitator to support the families and help them interact with the museum exhibits, handle and analyse the museum objects, and design games. This means that the line between facilitator, researcher and interviewer was often blurred. Switching between these roles was essential but challenging during the data collection. During the sessions, the families needed support to handle the museum objects, learn how to make games and use the game authoring software. For this reason, the role of researcher-facilitator was often didactic. To balance between the didactic aspect and research purpose of the researcher, the multi-method approach to data collection was employed as

described earlier. Reflexivity was required to explore the power relation and dynamics between me as a researcher and the participants. Reflecting on my position and power and how these influence the participants' decisions is essential (Banks et al. 2013). The multi-method approach enabled the movement between the role of facilitator and interviewer. For instance, the use of the focus groups and game design methodology allowed me to take a step back and observe the families while interacting, sharing their ideas and making games. While the semi-structured interviews gave the time and space for the in-depth and targeted examination of the subject. The sessions were structured and organised in such a way that they allowed the researcher to switch from one role to another.

However, my presence and authority as a researcher and facilitator in both case studies cannot be disregarded. The way the research was structured and presented shaped the design process. Even though the data collection was designed to enable the research participants to take agentive design decisions, my role as facilitator and the way the sessions were structured may have influenced the way the participants designed games. This means that the researcher is indirectly part of the creating process.

Researcher as co-creator

However, my role as co-creator was not only indirect. In the UCL Grant Museum of Zoology, I assumed the role of co-creator. The families were asked to paper prototype an Alternate Reality Game (ARG) inspired by the museum. This means that the participants were involved only in the paper-based design process of the game. After the completion of the design sessions, I collected the participants' game designs and designed the final digital version of the game. The game was designed based exclusively on the participants' prototypes and semi-structured interviews. However, the paper prototypes were transformed into a digital game based on the digital software's platform affordances and limitations. Drawing and writing on paper as platforms present different design options and affordances than programming in

a digital platform. In the theoretical framework, it was discussed how different computational platforms influence game design by posing certain limitations and constraints. Each platform influences the game's appearance and gameplay in different ways. The families made design decisions based on the platform. Similarly, the final game was designed based on the digital platform. This means that, to a degree, the game was co-created by the researcher participants and the researcher.

Researcher as analyst

The role of the researcher-analyst also shaped the data collection and the way the families designed games. In both the case studies, the collected materials were analysed during the data collection. This decision allowed space for reflection and a better understanding of the research process. It offered more time to establish a relationship with the participants which promoted the negotiation of power and agency. My role and decisions as analyst balanced the co-creating relation with the research participants and enabled me to collect more in-depth data. For instance, analysing the materials throughout the data collection revealed that during, the game-making process in the first case study, the participants expressed an agentive behaviour. Even though initial guidelines were given to the participants on how to select the objects and then, propose a game idea, the participants ignored these instructions. Later, when asked why they followed a different approach, they answered that 'this way' fits better with their game ideas and 'it's more interesting that way'. For this reason, more flexible guidelines were given to the participants in the following sessions. Analysing the data collected from the focus groups and the semi-structured interviews during the sessions helped me build up my research strategy and allow the participants to negotiate agency.

This section has demonstrated that the role of the researcher can change during the research process. Often, the researcher might not only conduct interviews or use other methods to collect data. The researcher can assume the role of facilitator, interviewer, co-creator and

analyst throughout the process. In this way, she or he often glides from one role to another. The research process does not exist alienated from the research context and its circumstances and conditions. On the contrary, the research is situated in the context within which is implemented. The research setting, the research participants, the background and the identity of the researcher constitute this context. This section showed that the context influences and shapes the different roles that the researcher undertakes. As a result, the roles affect and define the research process and its findings. However, this section suggested that reflexivity and flexibility allows the researcher to find mechanisms and methodological strategies to recognise and reflect on these influences.

4.6 Research Ethics

In this section, the ethical issues that surround the research of participatory and Visitor Generated Content in museums are presented along with the steps that were taken to ensure the ethical conduct of research.

Previous research work (Banks et al, 2013) on community-based research in museums has identified six themes connecting to ethical issues and challenges: 1. 'Partnership, collaboration and power. 2. Blurring the boundaries between researcher and researched, academic and activist. 3. Community rights, conflict and democratic representation. 4. Ownership and dissemination of data, findings and publication. 5. Anonymity, privacy and confidentiality. 6. Institutional ethical review processes' (p. 267-269). More recent research (Kidd & Cardiff, 2017, p. 43) has suggested that museum practice and academic literature lacks 'a common language with which to interrogate the ethical dimensions' of participatory and community-based museum partnerships. Kidd and Cardiff (2017) also focused on issues of ownership and dissemination of data. This doctoral thesis has reflected on all these six

ethical considerations and how they challenge the research design, implementation and analysis.

As a result, no sensitive information and personal data were gathered during the data collection. The research participants were not exposed to any risk or harm. On the contrary, designing rewarding and engaging workshops for families was important. Therefore, the game-making workshops were planned to benefit the families. In both case studies, they explored different museum galleries in a private tour, examined unique museum objects and specimens in object handling sessions; and they played and designed games using a variety of analogue and digital tools. Based on their semi-structured interviews and feedback, the research participants found the game-making workshops engaging. Most of the participants commented that making games was an inspiring and rewarding experience for them and their families.

However, for ethical reasons, it was essential to ensure that the participants were protected and that they had fully understood the purpose of this research study. In addition to this, all materials produced during the fieldwork were ethically protected, stored and handled. Equally important was to disclose how or to whom the gathered information will be shared and presented (BERA, 2011) during and after the completion of my doctoral studies. Therefore, prior to the implementation of this research, information sheets and consent forms were sent via e-mail to all participants disclosing the above information. All participants were asked to return these consent forms signed via e-mail before the implementation of the workshops.

The nature of the project and the materials produced during the research complicates the ethical dimension of this project. This study, as a participatory and VGC project, involves families in the design process of games. As a result, paper and digital prototypes were produced. This means that this project's participants are the co-designers and designers of these games. The research-participants as game-designers have the right to be

acknowledged as creators and maintain the copyrights of their paper and digital prototypes. As Kidd and Cardiff (2017) point out the issue of ownership in VGC and participatory projects is complex and often connects with much uncertainty (p. 47). To illustrate the complexity and uncertainty of ownership in VGC, she draws examples from Tate's participatory projects. These examples illustrate the variety of what is considered as visitor generated content in museums. This can include online visitors' comments, children's artworks and collaborative and co-curatorial artworks and exhibits onsite and online. Each type of content has its own ethical challenges and complications regarding ownership. Museums often own the rights of visitors' work, while sometimes they adopt more open strategies such as using Creative Commons license to acknowledge the visitors' copyright to their creative work and have the right to share and in some cases edit it (Kidd & Cardiff 2017, p. 48). But the most interesting aspect of Kid's research is that it reveals the speculation and uncertainty about VGC and ethics. It seems that from both sides; museum professionals and museum visitors are uncertain about the ethical dimension of such practices.

In this research project, to ensure that the families fully understood the right of owning their creations, in the consent form, they were asked to describe whether they preferred to remain anonymous or be named as the co-creators and creators of their digital and paper prototypes using their real names or a pseudonym. To those who choose to stay anonymous, their identities were kept secret and confidential and reported only using a capital letter for their names or a nickname for their group. Their full names were kept secret in this thesis and later, will not be published without their consent. For those who wished to be named as the game designers and co-designers, a credit will be given. The researcher will hold the right to analyse and publish the games as part of the research procedures and as explained in the information sheet.

Another issue concerning the protection of the research participants' anonymity, is video recording. Video recording is a common data collection method used by Museum Studies researchers. This doctoral thesis follows the ethical procedures that other researchers in the field have employed to ensure the ethical use of video recordings in museum research. Previous studies (Christidou & Diamantopoulou, 2017; Gutwill, 2002) suggest that informing the research participants is essential. But, often in the museum setting visitors' consent is secured either explicitly or implicitly. According to Gutwill (2002), explicit consent is obtained when visitors sign a consent statement and agree in writing with the terms and conditions of the research, while implicit consent is assumed 'based on [visitors] behaviour in a situation of choice' (p. 232-238). In this doctoral thesis, consent was obtained explicitly. In both case studies, the research participants were informed that they were filmed before the start of the game-making workshops and they were asked to consent in writing. In this way, the information sheets included a section dedicated to video recording. The participants were informed that the video recordings will be used for research and publication purposes only. The information sheets emphasized that the video recordings would be accessed only by the researcher and will be stored safely[18]. In the first case study, the families consent and therefore, video recording was used. However, in the second case study, the families did not consent. As a result, only audio recorders were used during the sessions. Often, re-recruitment is advised when filming plays an important role in data collection. However, for reasons that will be explained in chapter seven, no further families were recruited for the second case study. Evaluating and reflecting on why different methodological tools are used is an essential step of the research design.

Conclusion

18 The video data treatment will be discussed further in Data Treatment section of chapter 5.

I have outlined this thesis' methodology, methods and research ethics. I have detailed how the limitations of the proposed methodology and its ethics and the research participants shaped the research and methodological decisions. I have also discussed the researcher's role and the relations and dynamics that exist between the researcher and the research participants. This highlighted how my role within the research process influenced the design, implementation and analysis of the research and its materials. The next chapter focuses on the data collection and describes the design, implementation and analysis of the UCL Grant Museum of Zoology case study (first case study). I will present the first case study's aims and objectives outlining its research questions, methods and limitations.

CHAPTER 5: CASE STUDY 1: UCL GRANT MUSEUM OF ZOOLOGY STUDY

Introduction

This chapter presents the design, implementation and analysis of the first case study. The first case study was conducted at the UCL Grant Museum of Zoology as an exploratory study. Families with young people were recruited as research participants. The UCL Grant Museum of Zoology case study was implemented as a 4-session game design workshop. In these four sessions, the families were involved in the design of an Alternate Reality Game (ARG) inspired by the UCL Grant Museum of Zoology's collections, specimens, and space. The families were asked to take inspiration from the museum and paper-prototype an ARG. The final version of the ARG was designed by the researcher based on the participants' paper prototypes and play-tested by the participants.

The UCL Grant Museum of Zoology case study, as an exploratory study, attempts to initially investigate the research topic. The purpose of its implementation was to explore, experiment and test the initial research questions in practice and formulate more focused and explicit inquiries and research themes. This chapter is separated into six main sections including the *Design, Data Collection, Data Treatment, Data Analysis, Finding and Discussion, and Synopsis.* Each section is separated into smaller sub-sections.

In the *Design* section, I discuss how the first case study was planned and designed based on the affordances and limitation of the research setting. I detail the criteria and process of selecting the research setting and recruiting research participants. Discussing the criteria for selecting the research setting and participants informs this case study's aims, objectives and research questions. Then, this case study's aims, objectives and research questions are presented to show the research intentions and purpose. In the final sub-section, the research design limitations are explored and analysed. Presenting the limitations and affordances of

the research design allows the reader to understand the complexity and circumstances that the research design, implementation and analysis.

The *Data Collection* section describes the methods and tools that were used to collect and record data during the prototyping process. It includes a detailed description of how data were gathered during the 4-session workshop. The prototyping process is separated into distinct steps to demonstrate how each activity was recorded using different qualitative research tools. Lastly, the *Making of Games* sub-section explains what an ARG is and how the research participants were involved in designing the game inspired by the museum collections, displays and space.

The *Data Treatment* section plays a key role in this chapter. The first two sub-sections will explore how the data were stored, organized, sampled and transcribed. The *Curating the final game* sub-section focuses on how the participants' paper-prototypes were collected, organized and ensembled by the researcher to design the final ARG. For ethical and research purposes, this section discloses the way the researcher gathered and curated the participants' paper-based prototypes into the final version of the game. This will further reveal the relationship between the research participants and researcher, the role of the researcher in the making process and the way playful digital data are treated and analysed for research purposes.

The Data *Analysis* section consists of two sub-sections: The *Data Analysis Framework* and the *Data Analysis and Interpretation*. The first subsection informs the second. The first sub-section fleshes out the analytical framework that is used to analyse and interpret this case study's data. While the second sub-section demonstrates how the data analysis framework was applied to analyse and interpret the data.

The final two sections are dedicated to the findings and conclusions of the UCL Grant Museum of Zoology case study. They will present the main themes that emerged from the analysis and interpretation of the data. Then, these will be analysed along with the research questions, aims and objectives of this case study.

5.1 Design

This section will detail how the UCL Grant Museum of Zoology case study was planned and designed. First, the criteria for selecting the research setting will be presented and analysed along with the criteria of recruiting and selecting the research participants. Before, discussing the limitations of the research design and moving to the next section of this chapter, the aims, objectives and research questions of this case study will be examined. This will allow the reader to understand this thesis' main focus and objectives.

5.1.1 The Research Setting

The UCL Grant Museum of Zoology is an award-winning museum for its digital project *QRator* and the only university zoology museum in London. Its collections contain one of the oldest natural history collections in the UK (Ross et al., 2013, p. 4) including 67,000 specimens, many of which are now extinct (Chatterjee, 2011, p. 180-182). It is a natural history museum and part of the University College London (UCL) in London. It was founded by Robert Edmond Grant in 1828. The aim of the museum was to act as a teaching collection. Today, even though the museum still functions as a teaching collection, it is open to the public, school groups and families (Ross et al., 2013, p. 4). It regularly organizes public engagement and learning events for families and school groups. It is a unique micro-museum where a variety of skeletons and specimens are exhibited in Victorian cabinets and jars. Its collections include primate and carnivore skeletons, fossils and other specimens (MacDonald & Ashby, 2011, p. 164-165).

The museum focuses on visitors social participation, interpretation and engagement. Previously, it has developed several programs that have involved visitors in object-based participatory learning and engagement workshops (Ross et al., 2013, p. 4). For example, the award-winning digital project, *QRator* was an online platform in which museum visitors could upload their interpretations and publicly write and share their stories about the museum

specimens. Through this project, the museum has promoted the idea of digital collaborative creation and social interpretation of museum objects' labels and the interaction between museum visitors and museum collections (Ashby, 2012; Carnall et al., 2013).

While Carnall et al. (2013)'s studies of QRator and Tales of Things promote the idea of visitors as curators, the process of digital co-curation of the museum collections is rather limited (p. 55-71) Using the *QRator* platform and an online form, visitors can only contribute and add to the museum curation by submitting a question, a quote, or labelling a museum specimen. Even though all submissions are open and in this way, the visitors can develop discussions about the museum specimens and their interpretations online, the process resembles more an informal open-access digital archiving rather than a co-curatorial project where visitors contribute or add to the official museum narrative. The visitors have limited choices and resources to produce meaning.

This case study intends to build upon QRator and UCL Grant Museum of Zoology's previous work on museum visitors' social interpretations and curatorship. It aims to take a step further and explore co-curation with games production. The participatory game design offers a dynamic framework which enables visitors to explore, research, and gather information about the museum objects, and propose and add new layers of interpretations to the museum collections. In this way, the visitors not only share their ideas and thoughts on the museum collections but also generate new meanings and assume the role and identity of the curator.

Game design can offer multiple choices and resources to designers. It allows them to produce meaning and explore representation in different modes, spaces and dimensions using different tools, game mechanics and modes of communication and representation. This study seeks to explore further what the game design can contribute to the research area of digital curation and Visitor Generated Content using digital media in the museum space.

Gaining access to the research setting

Gaining access to a museum setting was a priority during the first months of the research design. To identify the suitable museum setting, the digital learning, outreach policies and participatory programs of several museums in London were researched. This allowed the researcher to identify connections between the existing museum practice in the UK and this thesis' aims and objectives. The UCL Grant Museum of Zoology was considered as an appropriate choice as its mission and strategy promote visitors' social participation and digital learning, interpretation and engagement. As mentioned above, the museum has collaborated with visitors experimenting with digital learning, interpretation and engagement with new and playful technologies.

Initially, the museum was contacted via e-mail. A formal meeting with the museum research committee was scheduled where the research proposal and the case study's design plan was discussed and negotiated. After some additional meetings with the former museum director and lead curator, Jack Ashby and learning department team, the research project was accepted and implemented as a four-session workshop.

Museum's involvement

Apart from the initial discussions and negotiations concerning the design and implementation of this case study, the museum had no further involvement. The four-session workshop was run by the researcher. The museum granted the researcher access to the museum collections and assisted the researcher during the setup of the room.

5.1.2 Selecting Research Participants

Regarding the recruitment process, participants were recruited based on two criteria: the museum's space capacity and its daily schedule. The museum space is particularly small. It

consists of one room with several Victorian-style glass cases. Therefore, only five families were recruited. However, only three of the five families fully committed to the project. The recruitment process took place through the museum's social media (Facebook and Twitter page) and 'Family Learning' mailing list. Several families contacted via e-mail the museum director to express their interest and based on the study's selection criteria their booking was confirmed. The recruitment process lasted two weeks.

Then, the selected families were contacted by the researcher via e-mail and briefed on the projects' objectives and structure. The selected families also received an information pack including an information sheet with the projects' details, the researcher's cv, and a consent form. The families were asked to return the consent form signed before the start date of the study. Families which failed to submit on time their consent form were eliminated from the process for ethical reasons.

Participants' profiles

Concerning the participants, three families with young people participated in all sessions of the first case study. They were selected and separated into two groups. The first group consisted of one family. This family included a mother and a young daughter. The second group consisted of two families. The first family included a father and two sons and the second one a father, a mother, and daughter. The families were separated into group 1 and group 2 based on their availability.

No further personal information was collected about the families. The families were asked to name their families with a team name. Throughout the project, this team name was used to identify and communicate with each family. The team names were: The 'Thunder-meows', the 'Team that never loses' and the 'Girls Power'

In the audio/video recording, all families are referred to using these team names. However, for practical reasons, a new code name was allocated to each family for the organisation, transcription and analysis of the data.

5.1.3 Aim and Objectives

The aim of this case study was to examine the role of participatory game-making in museums in connection to the collections on display and how museum visitors could develop a new relationship with the museum specimens. The objective was to use the paper-based game-making process of an indoor ARG to allow visitors to discover, narrate and connect the stories of museum objects in a different way. As an exploratory study aimed to explore and shape the direction, research questions and methods and methodology of this thesis. Its goals were to collect data on how families with young people design games and explore how the game-making process allows them to connect, interpret, represent the museum specimens, and narrate the stories behind the museum's collections, specimens and space.

5.1.4 Research Questions

The following research questions aimed to explore the different aspects of the research project and to narrow down the focus and the theoretical underpinnings of this thesis. They derived from the findings of the literature review and were formed in the process of answering the question of what happens when museums invite their communities to play and design video games for and about museum collections, objects and displays.

Research Questions

- How can games design be used as a creative methodology to explore the way visitors uncover and narrate the stories of the UCL Grant Museum of Zoology collections and specimens?

- What are the ways in which visitors interpret and uncover the stories of museum specimens in their game designs?
- What features of the participatory game design enables the research participants to creatively engage with the museum collections and specimens?

Research Questions	Aims & Objectives
How can games design be used as a creative methodology to explore the way visitors uncover and narrate the stories of the UCL Grant Museum of Zoology collections and specimens?	To use the process of co-designing an ARG inspired by the museum collection as a creative methodology to investigate how visitors discover, interpret and narrate the stories of museum collections within and beyond the museum space.
What are the ways in which visitors interpret and uncover the stories of museum specimens in their game designs?	To explore and examine the connection between participatory game design and museum visitors social participation and engagement with the museum collections and archives.
What features of the participatory game design enables the research participants to creatively engage with the museum collections and specimens?	To examine the role of participatory game-making in museums in connection to the collections on display and how museum visitors could react creatively to the museum collection and specimens.

Table 5.1: Research questions in correlation with the aims and objectives

5.1.5 Design Limitation

During the design and implementation of the research plan, several limitations were encountered. These limitations shaped the way this case study was designed and implemented. This section offers a detailed description of how the design of the case study was influenced and re-designed based on the research setting, recruitment and participants.

Research setting and recruitment

The recruitment process was the most challenging part of the research design. Even though museums regularly work with different audiences including school groups, youth clubs and families, they lack the relations that schools develop with their students and families. Additionally, different ethical processes and policies are followed and employed concerning museum visitors' contact details. For ethical reasons, the museum did not share with the researcher any contact details of school groups or other audiences. The recruitment process took place only through the museum's social media (Facebook and Twitter pages), mailing list and website as an open call. As a result, the process was time-consuming and demanding. Communicating and negotiating with potential research participants and following all the ethical principles and procedures was essential in this stage of the research. Even though this slowed down the research process and discouraged many potential participants, it helped to ensure that they understood and approved the research aims and objectives prior to the research implementation.

However, the UCL Grant Museum of Zoology has developed strong relationships with the local communities which are regularly visiting the museum and participating in its learning and outreach programs. Through these programs, the museum has formed a close-knit community around it which communicates through the museum's social media, mailing lists and website. The main audience that connects with the museum through these platforms is families. This affected the recruitment process and shaped the selection process. As

explained earlier, the recruitment selection was shaped by the museum's interest and focus on family learning.

Research setting and space

Image 5.1: the UCL Grant Museum of Zoology

The museum space and layout contributed to planning the research design. As mentioned above, the museum consists of one room. As illustrated in the above image (Image 5.1), only this limited space is available for the implementation of all visitors' activities. The activities area is part of the public space and the exhibition space. It consists of three tables. This affected the research design in two ways. First, only a small number of families could participate in each session. Second, for ethical and practical reasons the data collection was possible only when the museum was closed for the public. For the purposes of the research, the research participants needed to be able to move freely and use all the available museum space without disruption. In addition to this, the data collection and analysis required the audio and video recording of the sessions. Video and audio recording a public space would require

employing different ethical procedures including acquiring non-participants/visitors' consent for filming. Therefore, the data collection took place during weekends two hours before the museum's official opening hours.

Concerning the participants

Recruiting families with young people as research participants imposed certain limitations. For the purpose of this research study, the participants took part in a series of game design sessions. Commitment is key for the collection of reliable and relevant data. This research study required the families' commitment for more than two days. However, availability often changes. Initially, four families were selected to fully participate in all sessions. However, one of the families withdrew from the project during the sessions. As a result, only data from three out of four families were used in the data analysis. In addition to this, the families schedule and availability often vary. For this reason, two different time-slots were created to accommodate the families schedules and availability.

So far, this chapter has detailed the design process of the UCL Grant Museum of Zoology case study. It offered a synopsis and description of all the design limitations and the way they were encountered and solved. The next section will describe the different aspects, affordances and limitation of the data collection. It will offer a detailed account of the methodological tools and strategies used to collect and record data during the four-session game design workshop at the UCL Grant Museum of Zoology.

5.2 Data Collection

Having discussed how the UCL Grant Museum of Zoology case study was designed, this section addresses how data were collected and recorded. The data collection was implemented as a four-session game design workshop. In this section, the procedures and methods used during the data collection will be described. To begin with, I will explain what an ARG is, and how the families were involved in the design process. This will allow a better understanding of the aims, themes and objectives of this case study.

5.2.1 Making the Game

In this case study, the research participants were asked to paper prototype an Alternate Reality Game (ARG) inspired by the UCL Grant Museum of Zoology collections, specimens and space. As already discussed, the aim of this case study is to explore how the research participants engage and interact with the museum space and its collections through game design. The objective is to examine visitors' social participation and engagement with the interpretation and representation of museum objects within and beyond the museum space through the design of playful digital content. Looking at visitors' social participation, engagement and digital generated content from a game design perspective allows finding a different way to understand the relation and dynamics between museums and their visitors.

Numerous researchers have explored ARGs in the context of educational settings such as universities (Whitton et al., 2011), schools (Colvert, 2009; Bonsignore et al., 2016), and museums (Moseley, 2011). Although it seems that there is an agreement of what constitutes an ARG, yet the term has been used without precision (Garcia & Niemeyer, 2017, p. 10). As Colvert (2009) notes Alternate Reality Games (ARGs) are different than most mobile or computer games. The game world of an ARG is a combination of 'on-and-off screen media' and the gameplay relates to the dynamic and playful relations that are developed between the

designers and players (2009). As mobile and location-based games, they transform a public space to a playful environment by using the public space as the game board and a digital platform as a communication channel between the game engine and players (De Souza e Silva & Hijorth, 2009, p. 3). This means that during gameplay, the gaming experience is situated in a hybrid environment which includes: the real physical/analogue space of a public site and the digital/virtual space of an online platform such as a blog, mobile game, or other multiple platforms such as social media. In this way, the already visited public spaces, such as museums and libraries are explored in new and playful ways through the lens of gaming. As a result, these public spaces are being differently experienced and understood (Gazzard, 2011, p. 413). In this case study, designing an ARG with families allowed the participants to draw connections between the physical/analogue elements of the museum and the digital/virtual aspects of the game which was based within the physical/analogue space of the museum. It offered a framework in which the participants explored museum representation and interpretation in and beyond the museum space, in a shared playful environment.

Stenros et al. (2011) point out that ARGs often focus on narrative and story-telling. For this reason, the design of an ARG was suitable in this stage of the research and for the purposes of this case study. It enabled the exploration of this case study's aims and objectives. This case study employs the game design of an ARG to explore how taking inspiration by the museum and its collections allows the research participants to extend and add different layers of interpretation and representation to the existing museum space and narrative through game design. The starting point of this was the exploration and interpretation of the museum specimens and space. The participants interacted and handled different museum specimens, researched their background and proposed new ways of thinking about them. They created game characters, a story and rules inspired by them and the space within they exist. To paper prototype and design an ARG, no programming skills or advanced software knowledge were

required. The research participants were asked to use paper-based resources to design the game elements, narrative and mechanics. On paper, they planned the game map, they drew the game characters and built a relation between the players and the game through the game's narrative and rules. The participants created games character profiles and drawings.

5.2.2 Description of Data Collection

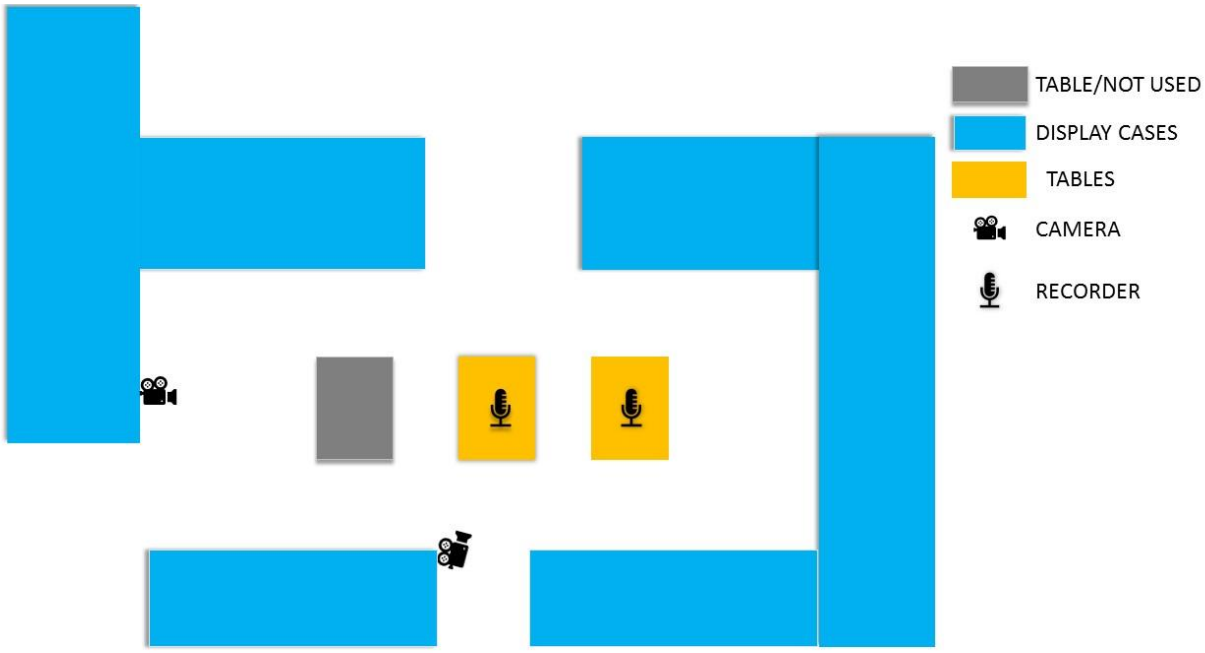
This case study consisted of four sessions which were implemented in 2016 during non-working museum hours at weekends. The collection of data took place during the same period. In this case study, each session lasted for sixty minutes. The first three sessions included two different time-slots, and the fourth session included three different time-slots. In this way, during the first three sessions, the families were separated into two groups. The first group consisted of one family and the second group consisted of two families. In the fourth session, the families were separated into three groups. Separating the families into three different groups allowed more time for each family to play-test the final version of the game and discuss their experience and feedback. In this way, the researcher, also, had more time to focus and interview each family using semi-structured interviews.

During the sessions, the research participants handled several specimens, paper-prototyped and played-tested the game. The ARG was called 'Midnight Mayhem: Alive at the Grant'. In the third session, the families were asked to propose a name for the final game. Then, the families voted their favourite. 'Midnight Mayhem: Alive at the Grant' was the most voted. Each family designed on paper a level of this game, its story and its characters, inspired by the specimens and the museum space. Even though they did not use digital tools to design the game, the paper prototyping process offered them the framework to think about and design the game mechanics, characters and narrative. At the beginning of each session, the participants were introduced to a different aspect of the game-making process. For example,

they were gradually introduced to different game mechanics such as game rules and narrative. In this way, in each session, the participants worked together and gradually designed a different part of the game. During this process, my role as researcher and facilitator was to introduce each topic (game rules, game characters, narrative etc.) and facilitate their discussions by posing in-depth questions. The data collection took place in focus groups and as semi-structured individual interviews. The process was video, and audio recorded.

Video and audio recording set-up

Group 1

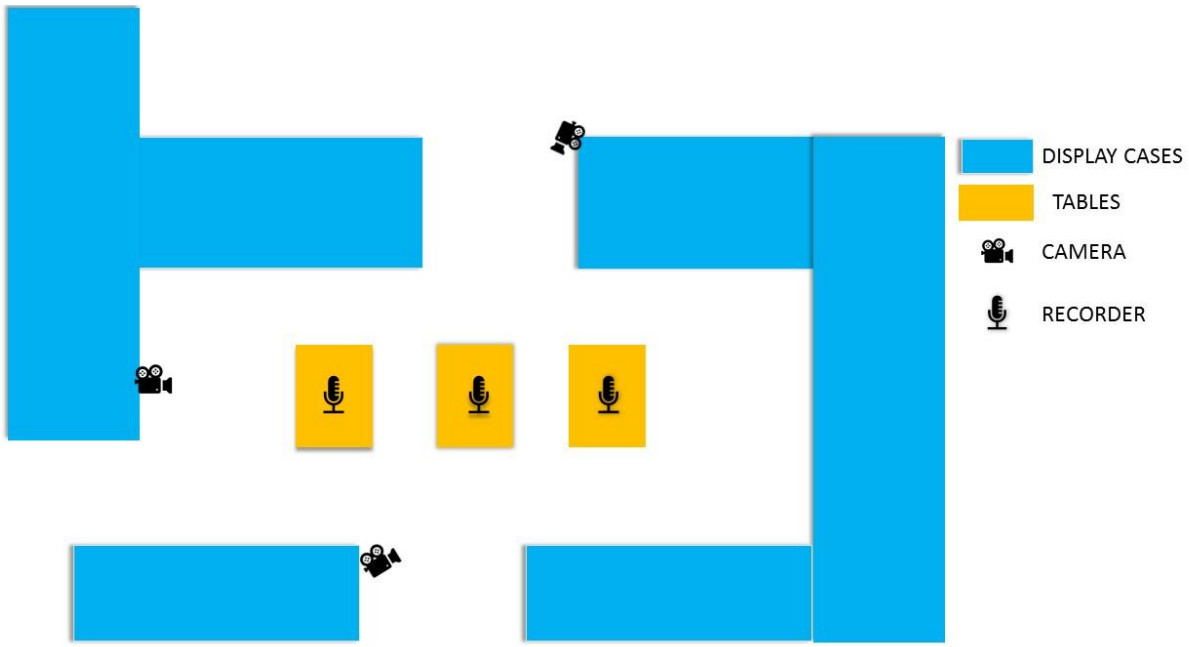


Map 5.1: Group 1 research setting setup

For group 1, two tables were set up at the centre of the room. This setup was used during the introduction and the prototyping sessions. The table on the left (grey colour) was not used. The table in the middle was used as an object-handling table. The table on the right was used

by the family 3 during all sessions. Two cameras and two audio recorders were installed on these two tables.

Group 2



Map 5.2: Group 2 research setting setup

About group 2, three tables were set up at the centre of the room. This setup was used during the introduction and the prototyping sessions. The table in the middle (object-handling table) was used during the object-handling activities and group discussions. The tables on the right and left were used by the families to paper prototype the game. The GMOZ Group 1 used the table on the right and the family 2 used the table on the left. One audio recorder was attached to each table. As illustrated in the image below, the cameras were attached to tripods and located in different parts of the room. In this way, the participants focus groups and group discussions, and semi-structured interviews were recorded both in video and audio format.

During the play-testing session, the families played the game using the museum space. For practical reasons, the play-testing session was only audio recorded. Each family used a tablet

to play the game. In this tablet, an audio recording application was used to capture their discussions while playing.

Research Setting and Setup Limitations

This setup had certain limitations. During the session, the families often used sections of the museum space that were not audio/video recorded. For instance, they often moved around in the room, visiting different display cases and examining different specimens to prototype the game mechanics and secondary game characters. To capture how they used these parts of the museum and the objects, observation, focused semi-structured interviews and observation notes were used. As the available research budget was limited, digital equipment (cameras and audio recorders) was borrowed from the UCL Institute of Education (IOE) Media Services. However, according to the IOE Media Services' regulation, digital equipment is limited to one item per loan. Therefore, additional personal digital equipment was used.

Workshop Sessions

First Session | Introduction

The first session was an introduction to the aims and structure of the project and an exploration of the participants' previous experiences of visiting museums, playing and designing digital games. Exploring the participants' previous experiences provides a better understanding of the research participants and their intentions and expectations of the game design workshop.

Before prototyping the Alternate Reality Game (ARG), the participants were introduced to the workshop's main purpose by playing a paper-based ARG demo game. The demo game was designed by the researcher for the purposes of this research study. It consisted of two decks of paper-based game cards. The first deck included the quests cards. The quests were

puzzles and treasure hunts. The first deck of cards was given to the players. The cards of the second deck were corresponding answers and clues for the quest cards. The cards of the second deck were scattered in the museum space and were attached to different display cases. Each quest and its clues connected with the museum specimens. The players, after accepting a quest, they searched the museum space, investigated the museum specimens and found the clues and answer cards to complete the game.

Even though the demo game was paper-based and not digital, it allowed the participants to experience and understand what an ARG is and how it is designed. It enabled them to understand the importance of a paper prototyping and play-testing a mobile digital game. While playing the demo ARG, the families used both the space of the museum to find clues and answers and the virtual space of the game to discover the game quests. They interacted with different game characters, rules and narrative both through the game platform and the museum space. This means that by playing, the participants experienced different game elements including the game space, rules and mechanics that comprise an Alternate Reality Game.

After playing, the families were asked to reflect and share their experience of playing the game and discuss its different elements. In this way, they discussed the demo game's narrative, characters, different mechanics and rules.

Apart from introducing ARGs and game design to the participants, playing a demo had a second purpose. The game took place in the museum space. The participants as players used the museum space as a game board and the museum specimens as game characters and objects. This enabled the participants to explore and experience the museum space in a playful way. Even though two out of three families have previously visited the museum, the game introduced the museum and its collections to the participants. For one of these families

it was the first time visiting the museum. Two out of the three families have visited the museum before, but the game re-introduced the museum and its collections in a different way.

Object-handling

Then, the families were asked to focus on the museum collections and specimens. Different specimens were placed on the middle table. In focus groups, the families handled several of them including animal skulls and skeletons. During the object-handling activity, the families explored the specimens in the context of the museum and everyday life. In focus groups, they asked questions about the objects and guessed their origins and background.

Game ideas

The last part of the session was dedicated to game design. Game ideas development is an important aspect of game design. First, the families were asked to explore the museum collections and choose their favourite specimens. The families were prompted to select any specimen. Then, inspired by these specimens, the participants were instructed to propose a game idea. During this stage, the families focused on the specimens and developed different game characters inspired by them. They examined their favourite museum specimens in the context of video games and explore the movement between analogue and digital, and reality and fantasy. Having the game characters as a starting point they started thinking about the basic narrative, rules and structure of the game idea. Lastly, in focused groups, the families introduced their favourite specimens and presented the game ideas and characters.

Second Session | Prototyping Session

Recap

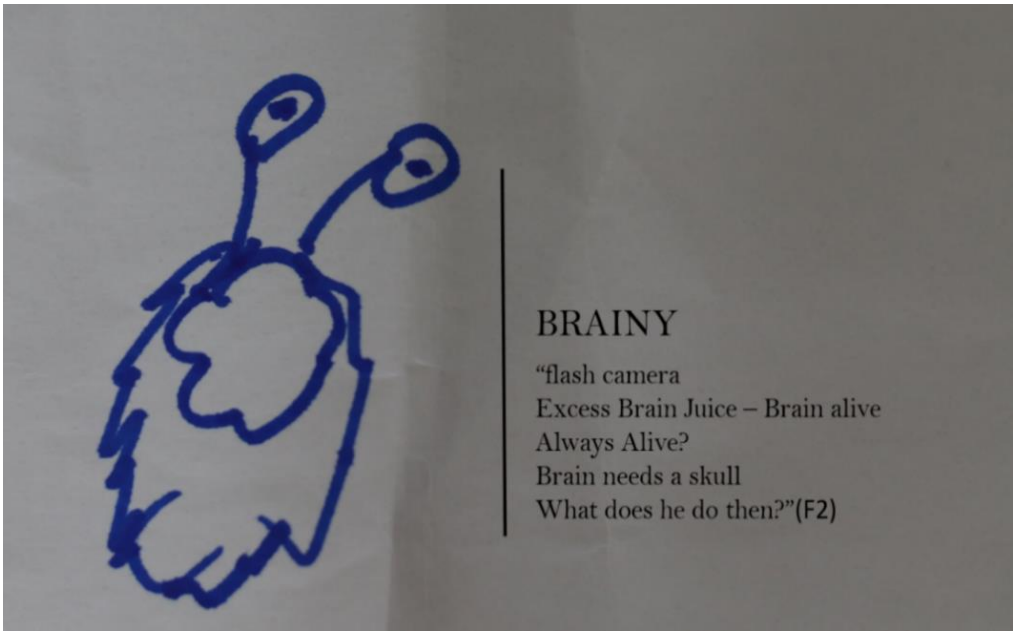
This session began with a recap of the previous session. The families talked about the museum specimens and re-introduced to each other the game ideas and characters and discussed their game design plan. The families were asked to give feedback to each other and discuss possible overlaps and connections between the game ideas. The aim of this was to facilitate the design of the final version of the game. All discussions were video, and audio recorded.

Prototyping

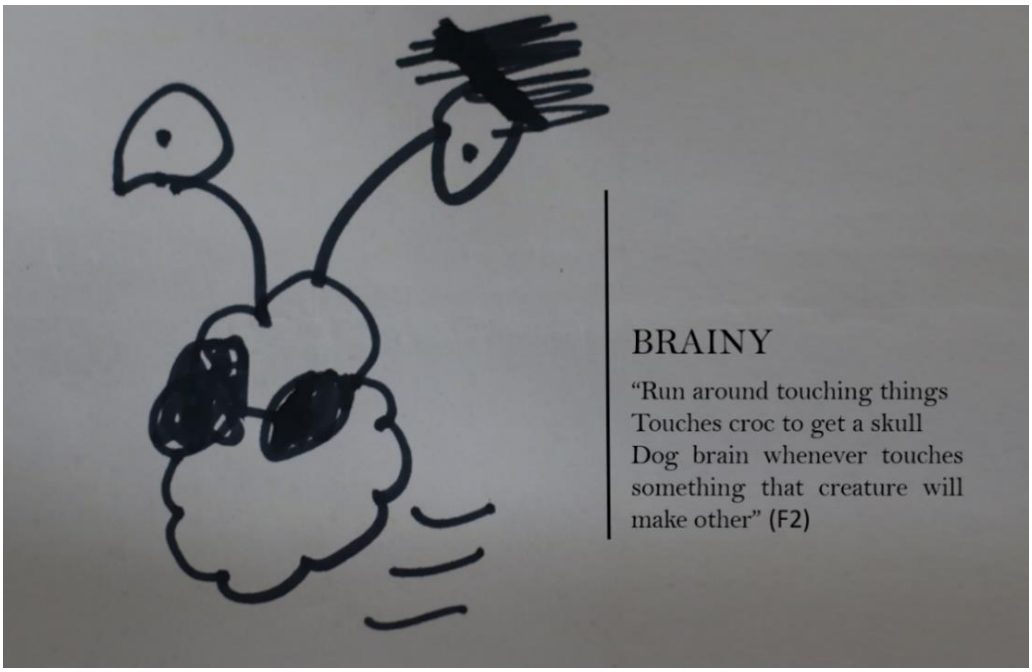
The main topic of this session was 'game characters and game mechanics'. The families were asked to develop different game characters, rules and narrative for the game ideas. Similarly to the first session, this session was focused on the museum specimens and the movement between museum space and game space. To assist the game design process, the specimens that were selected by the families during the previous session were placed in the handling-objects table. In this way, the objects were always present and visible, and the participants closely examined the specimens and continue working on the game ideas. They also browsed the museum archives and the web collecting useful information about the specimens. To create the game characters, they outlined the characters' profiles and sketched them on paper. An example of these character drawings is Brainy (see prototypes 5.1 & 5.2).

Conclusion

The session concluded with a brief presentation of the participants' game ideas and characters in focus groups. They reflected on their initial paper-based prototypes and then planed the next steps on how to extend and refine them.



Prototype 5.1: A drawing of the game character called Brainy, who was based on a dog brain specimen



Prototype 5.2: A different drawing of Brainy on paper with participants' notes

Third session | Prototyping Session

Recap

This session began with a recap of the previous session. The families re-introduced to each other the game ideas and characters and discussed the game design plan.

Prototyping

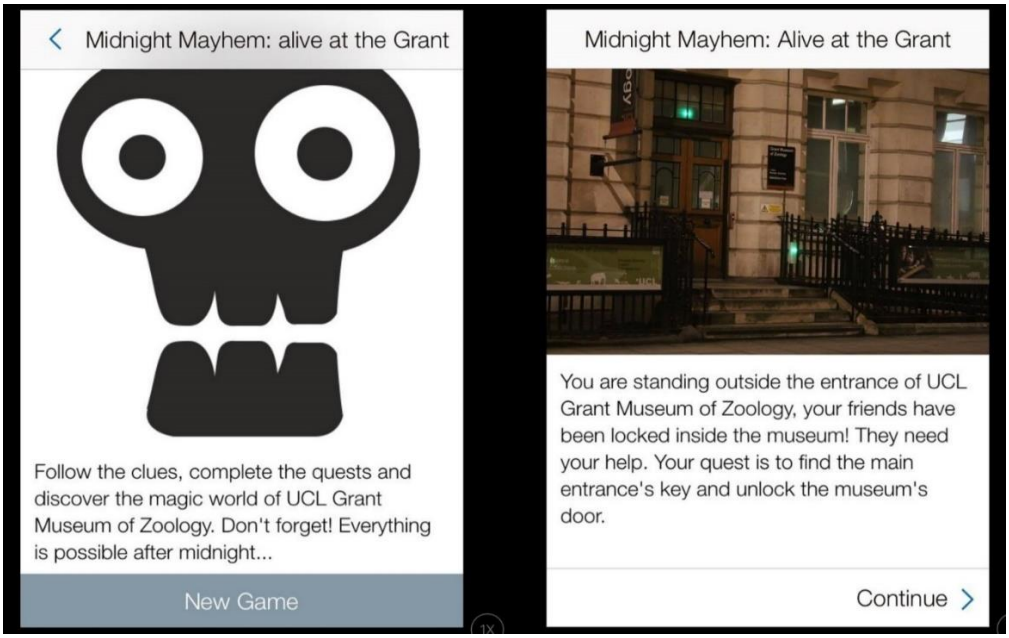
During the third session, the families worked separately. The aim of the session was to define a game name, refine the game levels and construct the final game's rules and narrative. All families reflected on the game levels and characters, and then, they created the main game narrative and rules. In this way, they created the game rules and scenario of the game. They made design decision including the way the gameplay would work and how the game characters would communicate and connect with each other. The families were also briefly introduced to the basic conceptual model of the ARIS editor which was used to design the final version of the game by the researcher. The participants tested out the limits and affordances of the ARIS platform and accordingly they made modifications and changes in the paper-prototypes. They explored how the player will access the content of the game using different triggers and how the game will be organized in different scenes. This allowed them to explore and understand the affordances and limitations of the game platform. Having experimented with ARIS, the families re-defined the game rules and mechanics that were created during this session.

My role, as a moderator of the discussion, was to remind the families what digital games are and how they function and ask questions about the final game. Collecting rich information about how the families envisioned the final game was essential for the next stage of the game design.

Between Third and Fourth Session | In Preparation for the Fourth Session

During the period between the third and fourth session, the researcher collected, reviewed and curated the participants paper-based game designs and designed the final version of the ARG using the ARIS project platform[19]. In this way, in the fourth session, the participants play-tested the final and digital version of the game using iPads. The purpose of play-testing and reflecting on the final version of the game was to examine how the families experienced game design and reveal their game decisions, choices and expectations.

Fourth Session | Playtesting Session



Game screenshot 5.1: Digital version of the game demo

In the fourth and final session, the families re-visited the museum to play-test the game on their iPads and mobile phones. Before playing the game, the families were asked about their

[19] For more information on the how the researcher curated the participants' paper-based game designs and edited the final version of the game see section Curating the Final Game.

expectations of the final game. After playing the game, they were asked to reflect on the gameplay, narrative, rules and game characters and to identify any difference and similarities between their designs and the final game. Lastly, they were asked to propose any changes and improvements.

Workshop Sessions Limitations and the Researcher's Role

The structure and content of all sessions remained the same for both groups. However, minor difference occurred due to the structure of each group. As previously explained, the first group consisted of one family and the second group consisted of two families. This means that the family of the first group did not participate in the group discussions with other families. They independently proposed a game idea and designed a series of game prototypes. However, the families of the second group collaborated and exchanged feedback throughout the workshop. The following description of each session outlines the main structure of the game workshop, but minor changes were applied to facilitate the first groups' needs. These changes were concerned with my role as a researcher and facilitator. My role as facilitator was more prominent during the data collection with the first group than during the data collection with the second group. As the first group consisted of one family, the discussions were guided and facilitated. During the data collection with the first group, my role as facilitator was to help the family unpack the game design and develop their game ideas and prototypes. On the other hand, as the second group consisted of two families, the discussions were mainly developed and carried out between the families. My role as facilitator was enacted only when needed. My role as a researcher was more prominent than my role as facilitator. I was mainly observing and introducing new topics and questions to the groups.

In summary, this section has attempted to provide a detailed account of the procedures and methods used to collect data. The structure of each session, the methodological tools and

strategies that were used throughout the data collection were presented and discussed. In the section that follows, I present how I treated the materials gathered during the data collection. This includes a detailed description of how I stored, organised, transcribed, sampled and used the participants' paper prototypes and video and audio recordings, and my research observation notes.

5.3 Data Treatment

Various authors (Duranti, 2006; Bezemer & Mavers, 2011; Cowan, 2014) have taken into consideration the way research data are handled and treated in qualitative research. They have explored how qualitative researchers approach, transcribe and treat their data to construct meaning and theorise their research findings. This section will discuss the way the raw research data were handled, stored, organised and prepared for transcription, analysis and interpretation. The data under investigation include different materials collected during the UCL Grant Museum of Zoology case study.

The data include the following materials:

- Audio and video recordings of focus groups discussions, participants' conversations and semi-structured interviews,

- Written text on mind maps,

- Paper game prototypes (including drawings and written text).

- Researcher's observation notes

The data were created/produced through:

- Observations
- Focus groups,
- Mind-mapping,
- Semi-structured interviews while game prototyping,
- Paper-based game prototyping,
- Semi-structured interviews while play-testing.

They were recorded on:

- Three audio recorders,
- Three video cameras,
- Paper

5.3.1 Data Storage and Organisation

To store the research data, the UCL guidelines were followed. As demonstrated in the above section, the data of this case study were rich and included both paper (game prototypes) and digital materials (audio and video recordings). Therefore, different techniques were used to store and organize them.

The paper-based materials included the participants game prototypes; therefore, they were considered particularly important and acted as one of the main sources of investigation. To store and organize them, I used filing products such as folders and office boxes. All paper-based materials were stored in a safe location accessible only by the researcher and filed as described in the 'Organisation' section below.

The digital data which included audio and video files were saved on two different devices to securely back up:

- On an external hard drive, and
- On the researcher's laptop

To manage access and security, both devices were password protected and securely stored when not used. To store and save the digital data, a filing system was used as explained in the 'Organisation' section.

About the digital data which include the files of the final version of the ARG were saved and stored as follows:

- During the final session of data collection and throughout the data analysis period, the files of the game were saved and stored live on the ARIS project database in the cloud. They were password protected and accessible only to the researcher. As the editor of the game, I was the only person who had access to read and edit the files. Saving and storing the files of the game online on the ARIS project database in the cloud was essential. Only in this way, the game was available on the App Store and the families could play-test the game at the UCL Grant Museum of Zoology during the fourth session.
- After the conclusion of the data collection and analysis, the digital files of the game were deleted from the online ARIS project database in the cloud. The files were only stored in the researcher's laptop. All files were password protected and accessible only to the researcher.

Preservation and Archiving

About their preservation and archiving, according to the UCL Research Data Policy (2018), all research data should be stored for a minimum period of ten years after their publication or public release. Therefore, all materials generated from this research project will be stored and saved for at least ten years after their publication. After that, the raw data will be deleted permanently.

Organisation

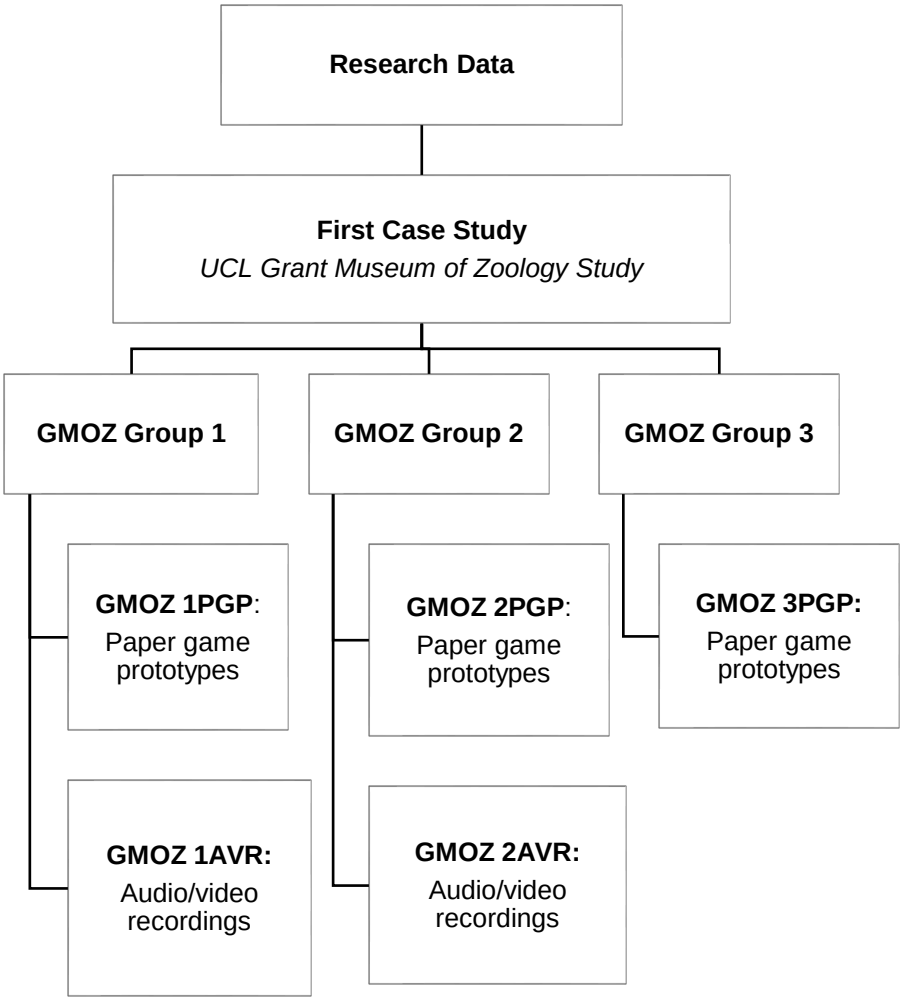


Figure 5.1: Data Organisation

As seen in the table above, first, the raw data from each family were filed into three folders; one for each family:

- GMOZ Group 1
- GMOZ Group 2
- GMOZ Group 3

Even though, all materials were gathered as a process in progress, organising and filing them into folders that represent each family and not each session allowed the researcher to handle,

treat and then interpret the data as units. Then, the raw data from each group were filed into different categories which represent each type of the materials gathered. For instance, the materials generated from the first family (GMOZ Group 1) were categorised as follows:

- GMOZ 1PGP represents the paper game prototypes from the first family at the UCL Grant Museum of Zoology.
- GMOZ 1AVR represents the audio and video recordings from the first family at the UCL Grant Museum of Zoology.

The next step after the organisation and categorisation of data was transcription. The following section will outline the way the transcription was approached and used to prepare the data for analysis and interpretation. During the transcription, the above data organisation allowed the researcher to easily and quickly access the raw data and prepare them for analysis and interpretation.

5.3.2 Transcription and Sampling

Transcription of Audio and Video Recordings

For the UCL Grant Museum of Zoology Case Study, the transcription of the audio and video raw data took place after the completion of the first three sessions[20]. As mentioned in previous chapters, as part of the research process, the researcher collected and ensembled the participants' paper game prototypes to design the final version of the game. To complement the design of the game, the transcription of the semi-structured interviews and focus groups discussions took also place in the same period. This means that all audio and video recordings

[20] For more information on the research plan and structure of the UCL Grant Museum of Zoology Case Study see Methodology chapter page […]).

were transcribed ‘word for word’ by the researcher using an orthographic transcription technique. As a result, transcribing the audio and video recordings during the data collection allows the researcher to curate and design the final version of the game based on the participants’ interviews, design decisions and input and not based on her assumptions and personal interpretations of the participants’ paper game prototypes.

After the completion of the data collection, the audio from the fourth session was transcribed ‘word for word’ using an orthographic transcription technique.

Sampling the Audio and Video Recordings

In this doctoral thesis, sampling of the audio and video recordings was an essential step of the data treatment. Throughout the data collection, hours of audio and video recordings were generated. However, not all data were relevant to the purposes of this thesis. Therefore, after the transcription of the audio-visual raw data, the researcher selected the most relevant parts of the semi-structured interviews and focus groups discussions for further analysis and theorisation.

Sampling the data was conducted based on the following criteria:

1. The materials were relevant to the design of the digital game.
2. The materials were relevant to the research questions, aims and objectives of the research.

5.3.3 Curating the Final Game

As explained earlier in the *Data Collection* section, during the period between the third and the fourth session of the UCL Grant Museum of Zoology case study, the families’ paper-based game prototypes were transformed into the final version of the game. To achieve that the

games authoring platform '*ARIS project*' was used. This sub-section offers a detailed description of how the final version of the game was designed by the researcher based on the participants' designs, semi-structured interviews and focus group discussions.

The process of curating the research participants' paper prototypes into the final version of the game is considered as part of the data treatment and proto-analysis. For this reason, this sub-section is included in this section of the chapter. It is an important part of the research process. It complements both the data collection and analysis. About the data collection, in the fourth session, the participants play-tested the final game and reflected on their work. This allowed the researcher to collect further data about the participants' design decisions and choices. About the data analysis, it helps the researcher to reflect and analyse the participants' game prototypes along with the semi-structured interviews and focus groups recordings. As a result, the following section could, also, be included in the *Data Analysis* section. Overlaps exist between the Data Treatment and the Analysis sections. These overlaps concern the way the participants' designs were collected, analysed and ensembled into a final ARG. These processes connect with the way the data were treated for the purposes of the research.

Proto-analysis and Game Design

Here, the term proto-analysis is proposed and used to describe the process of initially analysing the data before proceeding with the implementation of the formal data analysis. As a researcher/game-designer, I analysed the participants' paper-based designs and interview recordings using an analysis framework based on the principles of Thematic Analysis. I categorised the different elements of each game prototype using codes. The following table presents the codes that were used to organise and analyse the families' game designs. For instance, the game prototypes were categorised into data referring to game characters (player and non-player characters), digital/game objects, analogue/museum objects and rules. This

categorisation allowed the researcher to identify patterns in the research participants' designs and ensemble them in a coherent game.

By transcribing and sampling the interview recordings, I identified interview segments that refer to these game elements and describe the designers' choices and decisions. In this way, the final version of the ARG was designed based on the participants' detailed designs and design decisions and choices as captured in the semi-structured interviews. Undeniably, this does not mean that the researcher's involvement and choices are completely absent from the final version of the game. It does not mean that the final version of the game, as a product of transformation, is perhaps limited by the researchers' interpretations of the participants' prototypes and interviews. As explained earlier in the Methodology chapter, the researcher acted as co-creator of the games. But, as demonstrated, other research strategies and steps were employed to minimize the researcher's role and impact.

The rules and levels of the final version of the ARG were created based on the paper-based game scenario and rules that the families created during the third session based on the affordances of ARIS. During the third session, the families discussed and decided the final gameplay of the game. They drafted the structure and rules of all separate levels and the central narrative of the game. The researcher transferred the participants' designs in the digital platform of ARIS. Table 5.3 offers a synopsis of the game rules as prototyped by the families. These rules were programmed using the ARIS editor. Table 5.4 outlines the game structure including all four game levels. The first and fourth level were created by the second and third family during the third session. Level 2 was designed by the second family. Lastly, Level 3 included game ideas from all families.

GMOZ GROUP 1

GAME CODES	GAME PROTOTYPES
Game Characters	**Player Characters:** the player or a team of players who assume the role of the museum visitor. **Non-player Characters:** Mother turtle and her little hatchlings.
Digital/Game objects	- Love potion - Various specimens (Ingredients to create the love potion).
Analog/Museum Objects	- Hatchling leatherback turtle in a glass jar - Turtle specimen
Rules	**-** To win extra points reunite the mother turtle with her hatchlings. **-** To reunite mother turtle and hatchlings, make a love potion. **-** To make the love potion, collect a sea mouse, a moon jellyfish, and a bright orange starfish.

GMOZ GROUP 2

Game Characters	**Player Characters**: the player or a team of players trying to save their fellow UCL students who are trapped at the museum **Non-player Characters**: UCL Students (they are trapped at the museum), Brainy (the main game villain/ acting also as game-master).
Digital/Game Objects	**-** Various specimens and bones
Analog/Museum Objects	**-** Dog brain specimen in a glass jar

Rules	- To help Brainy and save your friends, collect body parts to complete Brainy's body.

GMOZ GROUP 3

Game Characters	**Player Characters:** The players assume the role of museum visitors. **Non-Player Characters:** Elfus Magoo (deer Antlers), Bob (preserved cat), Slimey (Hagfish skeleton), Curator (Villain)
Digital/Game Objects	- Various specimens and bones (the characters searching for the rest of their bodies)
Analog/Museum Objects	- Deer antlers specimen - Cat specimen in a glass jar - Hagfish skeleton
Rules	- 'Get body parts to complete the characters' bodies and win points. Best points awarded for the closest anatomical match to what creature needs.' - 'To trip the museum curator, use slime.'

Table 5.2: Summary of participants' game designs

Midnight Mayhem: Alive at the Grant

Rules

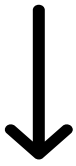
- To sneak into the museum, solve the following riddle. Take a photo of your answer.
- The flash of your camera has awakened Brainy's curse. Help Brainy find his body and discover your friends.
- Brainy is back! His plan is to resurrect all the museum specimens and destroy the museum. Find Nicky and Slimey, to save the museum.
- 'They just don't feel complete'. Collect body parts, to help Nicky and Slimey.
- To win more points help the mother turtle to find her hatchlings.
- Be careful! The curator is back! The clock is ticking, sneak around the museum, trip or slow down the curator.
- Talk to Elfus Magoo. He is your only hope!
- Find a body for Elfus Magoo. Collect bones from the Aisle of Cabinets.

Table 5.3: Final rules by **GMOZ Group** 2 & 3 (Third session)

Level 1	- Unlock the door: Solve the riddle, enter the museum. (Challenge created by Family 2&3)

Level 2	- The return of Brainy (Challenge created by Family 2). Unleashing Brainy's curse and awakening the museum collections.

Level 3	- Collect body parts to help Nicky and Slimey (Challenge created by GMOZ Group 3) - To win more points help the mother turtle (Challenge created by GMOZ Group 1) - Talk with Rufus Magoo and ask him to help you defeat Brainy (Challenge created by GMOZ Group 3) - The museum curator is back. Find a way to trip up, slow down the curator. (Challenge created by GMOZ Group 3)



Level 4	- Your only hope (Challenge created by GMOZ Group 2&3)

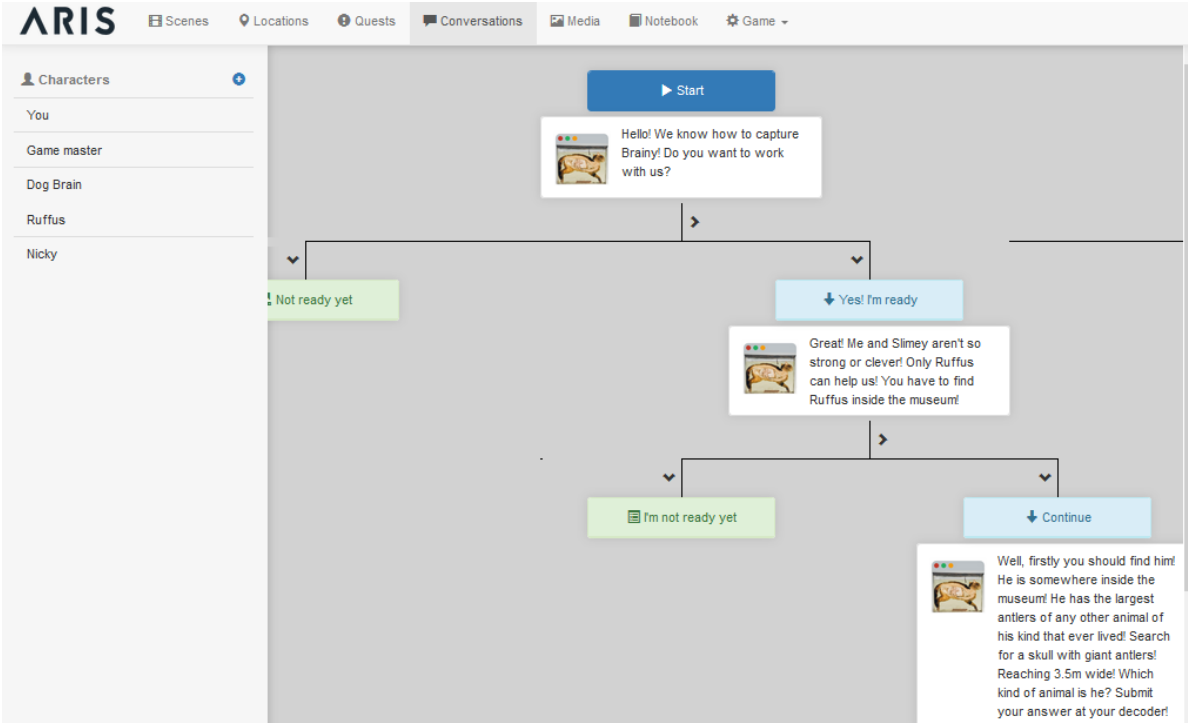
Table 5.4: Description of game levels

ARIS PROJECT

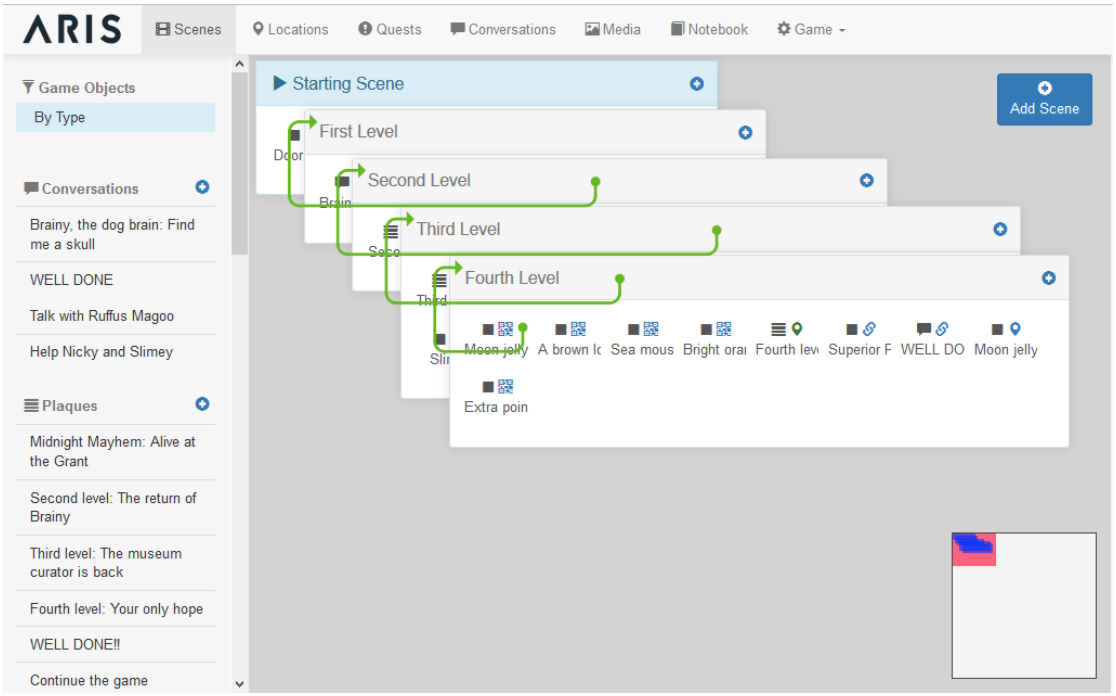
ARIS project is an open-source platform and tool for creating and playing augmented reality playful experiences on hand-held devices such as mobile phones and tablets. Playful location-based experiences can be designed including interactive storytelling experiences, scavenger hunts and guided interactive tours. To design these experiences, player location (GPS), QE codes, Bluetooth beacons and other navigation and social interaction methods are used. It consists of a mobile app for players, the Editor for designers where ARIS experiences are designed, and the server where the games are saved and stored.

ARIS has been widely used and for many purposes. One of the most common uses of ARIS is in formal and informal learning settings such as museums, libraries and schools. There are many examples of ARIS games including games made by school teachers in classrooms with students, other practitioners in museums, after-school clubs and community centres with children and young people. This means that ARIS has been tested before. Therefore, its accessibility, design affordances and ability to connect a physical/analogue space with its digital/virtual platform through different mechanics were the main criteria for selecting ARIS.

In this doctoral thesis, the ARIS project is used as a platform to design the ARG. The researcher used the ARIS editor to create the game characters, narrative and mechanics based on the research participants paper designs, interviews and discussions. The following image (Game screenshot 5.2) shows the Conversations page on the ARIS editor. This image presents how the researcher programmed the conversation between a game character and the players. This conversation was built based on the second family's paper prototypes and semi-structured interviews. The next image (Game screenshot 5.3) shows the Scenes page of the ARIS editor. In this page, the designer can program the game levels/scenes.



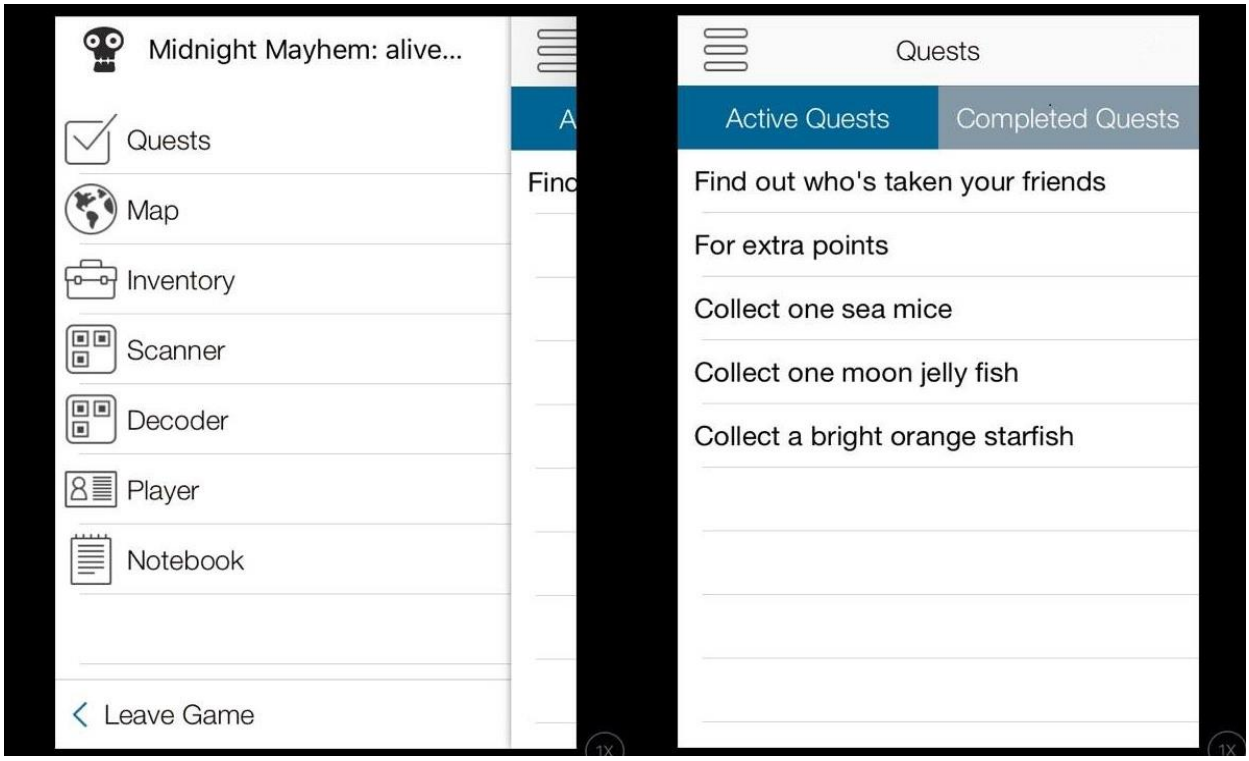
Game screenshot 5.2: Design of conversations between players and characters



Game screenshot 5.3: Design of the game scenes

I have programmed all four game levels based on the participants' design decisions. In these two images also the menu of the ARIS editor is seen. The menu includes the Locations page where the location of the game can be programmed, the Quests pages, were the players' quests can be found, and the Media page where images and audio files can be uploaded.

The ARIS app was also used to play-test the game. In the final session of the UCL Grant Museum case study, the research participants used the mobile ARIS app on an iPad to play-test the final version of the game. The game screenshot 5.4 shows the player's main menu on the ARIS app.



Game screenshot 5.4: Example of the mobile version of the game using the ARIS project platform

Summary

Overall, in the *Data Treatment* section, I have discussed how the data were gathered, organised, ensembled and stored. I have detailed how the transformation of the participants'

designs into the final version of the digital game took place between the third and the fourth session. In this way, the role of the researcher in collecting, analysing and interpreting the data was discussed.

The section that follows is dedicated to the data analysis. Having discussed the treatment of the materials gathered, I will next move on to present the data analysis framework and then, I will demonstrate how I used it to analyse step by step the data.

5.4 Data Analysis

5.4.1 Data Analysis Framework

In this sub-section, the data analysis framework is presented. In this stage of the research, the data were examined and analysed using Thematic Analysis. The Thematic Analysis allows the researcher to search for emerging themes in the data. This process is found in several qualitative data analysis methods such as qualitative content analysis, Thematic Analysis, and Grounded Theory. Braun and Clarke (2006) and Drisko and Maschi (2015) identify similarities between the qualitative Content Analysis and the Thematic Analysis and between the qualitative Content Analysis and Grounded Theory. For instance, the Grounded Theory analysts will follow the steps of identifying and interpreting the themes in the data in a similar way as the Thematic analysts (Strauss & Corbin,1990). Likewise, the qualitative Content Analysis systematically analyses different texts to formulate specific themes based on the research data (Drisko & Maschi, 2015, p. 82).

As Braun and Clarke's (2006) notes Thematic Analysis is a method for identifying, analysing and reporting patterns (themes) within data (p. 77-101). The Thematic Analysis includes the following six steps:

- Familiarising yourself with your data
- Generating codes
- Searching for themes
- Reviewing themes
- Defining and naming themes

- Producing the report

Table 5.5: Thematic Analysis guideline, (p. 16-23)

Thematic Analysis is mainly used to initially analyse research data and to interpret emerging themes (Braun & Clarke, 2006, p. 77-101). Thematic Analysis is considered particularly useful for exploratory studies, which aim to initially explore the research topic, to narrow down its focus, research questions, methods and methodology. Therefore, Thematic Analysis was used to identify, categorize, understand and interpret themes that emerged from the data gathered during the four sessions of the data collection. Several studies from the field of Museum Studies have used the Thematic Analysis as a data analysis method. For instance, this method was used to explore the museum visitors' experience such as the analysis of families' museum visits (Ellenbogen, 2002) and the way they experience the museum environment (Goulding, 2000, p. 261-278), and the way museums integrate new technologies (Wishart & Triggs, 2010; Charitonos et al., 2012) or game elements (Sanchez & Pierroux, 2015, p. 471-479) in their activities.

As demonstrated in the *Curating the final game section*, before the main Thematic Analysis, and in-between the third and fourth session, initial data analysis was implemented using both Thematic Analysis principles and Game design methodology as analysis method to transform the participants' paper prototypes into the final ARG. This process is equally treated as part of the data analysis process and contributes to the main analysis, interpretation and theorization of the data.

In the following sub-sections, the data analysis using Thematic Analysis will be presented along with the interpretation and theorisation of the emerging themes.

5.4.2 Data Analysis and Interpretation

First step: Familiarising yourself with your data

The data treatment including the organisation, transcription and sampling of the data contributed in the process of familiarizing myself with my data. Equally, the proto-analysis and transforming the participants game designs to the final game allowed me to understand and reflect on the rich research materials and organize them using different codes (game characters, game objects, rules etc.). These codes allowed me to transform the participants' game prototypes into the final game and gain valuable insight into the research material.

While analysing the participants' prototypes in different game codes (game characters, game objects, etc.) allowed me to design the final game and familiarize myself with a significant proportion of the data, this code system revealed only a part of the rich and complex data of this case study. Therefore, to analyse all materials and further investigate the aims, objectives and research questions of this case study, an additional code system was generated and used to interpret and develop themes from the data. In the following sub-section how new systems of codes were generated will be discussed.

Second step: Generating of codes

After closely examining the data, the next step of the data analysis is to produce codes. To achieve that, the data segments are organised into groups that share similar features. The codes describe what the data segments contain and refer to. They are the initial notes and ideas that are formed while reading and categorizing the data based on the case study's aims, objectives and research questions.

Similar features in the data were found when the participants discussed the following topics:

- The game prototypes
- The research project
- Their background

Based on these three topics, different codes were generated to categorise and systematically organise the selected data segments. The following table shows the relation between the above topics, the main codes and the data segments. The first part of the table is dedicated to the topic of 'game prototypes'. The main codes are presented along with the game codes and the data segments. The game codes of the proto-analysis refer to the different game elements that the families created while making the games including the game characters, game objects, narrative and rules. The data segments describe when and how the participants created these different elements. The main codes are the researcher's interpretation of the data segments. They connect with the similarities and patterns that were found in the data when the participants discussed different aspects of their game designs. For this reason, the main codes are presented along with the game codes and data segments. The second part of the table presents the main codes that refer to the participants' decisions, perceptions and experience of the research project. These are illustrated in the data segments that are included in this part of the table. Lastly, the third part of the table gathers all the main codes about the participants' background of visiting museums and playing and designing games. The main codes are discussed along with the participants' interviews and discussions.

Generating codes provides an organisation system of the main features that are found in the data in this initial stages of the data analysis. It allows the researcher to examine the data further and develop more focused themes and interpret and theorise the data. As detailed in the table[21] below, the main codes were generated as follows:

[21] The following signs indicate which group of participants expressed each idea, in which session the materials were collected and how they were recorded.

S1 (for session one)

S2 (for session two)

S3 (for session three)

ABOUT THE GAME PROTOTYPES		
Main Codes	**Game Codes**	**Data Segments**
Anthropomorphism of museum specimens **Definition of code:** The museum-specimens as game-characters have human-like characteristics.	Game Characters	- 'Talks as a person' **S1, GMOZ G3** (referring to a game character inspired by a museum specimen) - 'The exhibits come alive and escape, looking for things' **S2, GMOZ G2** (while creating their game characters) - At the beginning of the game, the players will discover that a camera flash triggered Brainy's curse of resurrection. **S3, GMOZ G2** (while creating their game characters) - 'No, I think the brain is the bad(y)'. **S2, GMOZ G2** (while creating their game characters) - The game characters inspired by the museum specimens have names such as Brainy, Bob, Ruffus Magoo (**S2 PP, GMOZ G2 &G3)**

S4 (for session four)

FQ (for follow-up questionnaire)

PP (for pepper prototypes)

MM (for mind maps)

ON (for observation notes)

GMOZ G1 (for the family of a mother and a daughter)

GMOZ G2 (for the family of a father and two brothers)

GMOZ G3 (for the family of parents and a daughter)

		- Even though the game characters are inspired by animal specimens, they can move, talk and see. For instance, Brainy who is a dog brain. (**S2 PP, GMOZ G2)** - 'They just don't feel complete!' **S2 PP, GMOZ G3** (while creating their game characters) - Very grumpy about not having a body, despite the others being in a similar situation **S2, GMOZ G3** (while creating their game characters)
Common opposites **Definition of code:** The designers create common opposites to describe the different game characters and define time in the game.	Game Characters, time and space	- Good-Bad, Night-Day, Captive-Free, Dead-Alive, Visitor/intruder- Curator/gate-keeper, Visitor/hero- Curator/Game villain **PP S2-S3**
Relations in the game **Definition of code:** The designers establish how the player interacts and communicates with the game through rule-making and storytelling.	Game rules and narrative	- 'During the night, three of your fellow UCL students broke into the UCL Grant Museum of Zoology. But something went really wrong. Your mission is to save your friends and solve the mystery of the Museum'. **S3, GMOZ G2** (while structuring the main storyline of the game) - 'Working against the clock because the curator is trying to lock them up (specimens) in their cabinets'. **S2, GMOZ G3** (while structuring the game storyline)

		- 'Or maybe he (player) is trying to trip the curator'. **S2, GMOZ G3** (while structuring the game storyline) - The third level starts when the museum curator is back to the museum. The players must find a way to avoid the curator and save the museum. **S3, GMOZ G3** (while structuring the main storyline of the game).

ABOUT THE RESEARCH PROJECT

Behind the scenes of the museum **Definition of code:** This code explains how the designers experienced the museum differently while making games. Generating content for the museum allowed them agency and authorship.	- 'Happy to be at the museum when no one else is here and experience the museum that quiet'. **S1, GMOZ G2** - 'I hope we had more opportunities to visit the museum like this'. **S1, GMOZ G3** - 'I'm sad that this is the last day, I wish we could have more opportunities like this to participate in projects like this in museums'. **S4, GMOZ G2** - 'You are lost as you navigate the museum and at the same time you are lost in all these things'. **S1, GMOZ G3** - 'You can be distracted with all these things'. **S1, GMOZ G3** - 'Because I had designed other games in my school but not for a museum and also, this time, my game will be available on iTunes and I will play it online, we didn't do that in school'. **S1, GMOZ G2**
Discovering the museum and its collection **Definition of code:** The designers said that they discovered the museum while making games.	- 'You are lost as you navigate the museum and at the same time you are lost in all these things'. **S1, GMOZ G3** - 'Not knowing is more fun because you will search around, you will discover other things'. **S4, GMOZ G1** - 'We didn't just design a game but also explored the museum'. **FQ, GMOZ G2**

Element of fun **Definition of code:** This demonstrates some of the reasons for participating in the project.	- 'We will create something fun for the museum'. **MM, GMOZ G2** - 'We will do something fun here, we don't have the opportunity to do fun things at museums'. **S1, GMOZ G3** - 'We thought it will be fun'. **S1, GMOZ G1**
The role of the designer **Definition of code:** This shows how one of the families perceived their role as designers and the museum's authority. The public aspect and the authority of the museum motivated this research participant to take part in the game-making process in the museum.	- 'We will create something fun for the museum'. **MM, GMOZ G2** - 'Because I had designed other games in my school but not for a museum and also, this time, my game will be available on iTunes and I will play it online, we didn't do that in school'. **S1, GMOZ G2.**
Family **Definition of code:** This code refers to the relations between family members. They discussed how the project impacts family relations between them.	- 'It will be interesting for me to create something with my family, this museum has a variety of diverse things and it will be a great inspiration for a game'. **S1, GMOZ G1** - 'Knowledge about our own children (e.g. I didn't know my child is such an imaginative child. I didn't know how my child is knowledgeable. I knew my child's strength through this workshop (when did she learn?)'. **FQ, GMOZ G1** - 'The other is for my understanding of my child. I could find many aspects of my child...'. **FQ, GMOZ G1**
Focusing on specific museum elements	- 'We learned about how to turn a story into a game. We examined the specimens closely. We thought the location

Definition of code: They compared their experience of interacting with the museum collection as visitors before and during the project as designers.	of specimens and how that would affect the game'. **FQ, GMOZ G2** - 'There are so many specimens displayed. We only focused on some'. **S2, GMOZ G2** - 'You can be distracted with all these things'. **S1, GMOZ G3**
Learning something new **Definition of code:** The participants discuss how game design help them learn something new about the museum's collections.	- 'Discover more information about them, the scientific name of the one-horned rhino is Unicornis (sounds like a unicorn)'. **FQ and similar quote on S4, GMOZ G2**

ABOUT THE PARTICIPANTS' BACKGROUND

Museum activities **Definition of code:** This code refers to the families' prior experiences in museum activities.	- 'Yes, with an iPad, choosing photographs'. **S1, GMOZ G1**
Game Design **Definition of code:** This code refers to the families' prior experiences of game design	- 'I'm not playing digital games, but I design games…like math apps'. **S1, GMOZ G3** - 'Because I had designed other games in my school but not for a museum and also, this time, my game will be available on iTunes and I will play it online, we didn't do that in school'. **S1, GMOZ G2.**

Visiting the museum **Definition of code:** This code is about the participants' prior experiences of visiting the museum. The families that have visited the museum before they explain the reasons for being regular visitors including family tradition and learning through the collections.	- '(We) used to visit the museum as a couple and then when our daughter was born and now it's incredible that we don't need to carry her around (the museum), but she's walking by herself through the aisles, enjoying all these animals'. **S1, GMOZ G3** - 'We've been here (UCL Grant Museum of Zoology) before… It's the best museum because it's full of skulls, bones, and furry animals, every time we're coming here, we discover something new, something new attracts our interest'. **S1, GMOZ G2** - **'**It's our first time here, but we've been at Victoria and Albert museum…. Science museum'. **S1, GMOZ G1**
Games **Definition of code:** This is about the participants' gaming background.	- 'Cat-simulator' **S4, GMOZ G3** - 'Blowing things' **S1, GMOZ G3** - 'Minecraft' **S1, F1, F2, GMOZ G3**

Table 5.6: Generating codes

The table above shows how codes were generated from the data and how the data segments are organised based on these codes. Overlaps exist within these codes. Some data segments belong in more than one code. This means that these codes are connected and illustrate a common feature. Moreover, this table presents the initial patterns and themes that can be identified in the data. As mentioned previously, these codes were generated based on three features that were found in the data, first, the data were about the prototypes of the game, second, the data were about the participants' experience of the project, and third, the data were about the participants' background.

The codes and the corresponding data segments about the game prototypes demonstrate how the participants designed the game. They offer details on how the participants interpreted and transformed the museum specimens into game characters and game objects and how they turned the analogue museum space into a digital game platform. To transform the museum specimens into game characters and objects, the participants used different strategies to represent the museum specimens in the game. They transformed the museum-specimens as game-characters using different tools of storytelling such as anthropomorphism and common opposites. To represent the analogue museum-space as gaming-platform, the families used different game mechanics and rules. These game mechanics and rules are inspired by common museum rules such as visiting museum hours and the role of visitors and curators in museums. The data show that the families borrowed and applied these museums rules in the game to create, extend and represent the museum-space as gaming-platform.

The codes and the corresponding data about the participants' experience of the project detail the participants' intentions for participating in the project and the projects' impact on the participants. First, the participants' decision to participate shows their intentions to experience the museum in a different way and to assume a different role within the museum. Prior to their participation, they assumed that designing a game for the museum will allow them to develop a different relation to the museum and role within it. They noted that navigating the museum as visitors often feels confusing and overwhelming. However, navigating the museum as game designers allowed them to discover new ways of looking at the museum specimens and focus on only some of them. The role of the designer allowed them space and time to control the way they interact with the museum and its collections. Assuming the role of the designer offered them the agency to control the way they experience the museum and move and navigate within it. Second, one family discussed the project's impact on how they understood and developed relations with their family members. Working and spending time together

making something new allowed the family to discover different aspects of their family that they had not experienced before. They experience the game design process as a bonding experience.

Lastly, the codes and the corresponding data about the participants' background include information about the participants' prior experiences of playing and designing games and visiting museums. These data show what games the families have played or designed, what museum have visited and their relationship with the UCL Grant Museum of Zoology.

In the pages that follow, the analysis will focus on how themes emerged from these codes. Having already discussed what this coding system means, I will now proceed with discussing the themes that were identified from the analysis and interpretation of the data.

Third Step: Searching themes

Having already coded and organised the selected data segments, I will now continue the analysis to identify emerging themes. To achieve that, I will develop and analyse codes that were identified in the previous step of the Thematic Analysis. The aim is to discover different patterns and overlaps in the coded data. These patterns and overlaps create main and secondary themes. Through this process, the data will be sorted out into four themes. The following table shows the four themes and the codes that form them.

Themes	Codes
'Interpretation, representation and storytelling'	• Anthropomorphism of museum specimens • Common opposites • Relations in the game

‘Public versus private experience and the participants’ agency’	• Behind the scenes of the museum • Discovering the museum • Focusing on specific museum elements • Learning something new • The role of the designer
‘The participants’ background’	• Museum activities • Game Design • Visiting the museum • Games • Museums
‘Family relations and traditions’	• Family

Table 5.7: Developing themes

Fourth Step: Reviewing themes

This step aims to refine the themes that emerged from the previous step and define the main and secondary themes. To achieve that the four themes were further investigated using the following questions:

- The question of whether the data are relevant to the aims and objectives of the research.
- The question of whether the data are answering the questions posed by the research design.

The main themes have emerged from data that are relevant to the aims and objectives of the research and contribute to the investigation of this case study’s research questions. While the

secondary themes have emerged from data that are not useful for the current research investigation. The objective of this research study is to explore how visitors design games and what this means for the relations and dynamics between museums and their visitors. Therefore, the initial four themes are separated into main and secondary as follows:

Main themes:

1. ‘Interpretation, representation and storytelling’
2. ‘Public versus private experience and the participants’ agency’

Secondary themes:

3. ‘The participants’ background’
4. ‘Family relations’

The participants’ background, even though allows the researcher to understand the participants’ choices and decisions, does not contribute further to the research aims and objectives of this thesis. Similarly, the discussion about the family relations raises interesting questions about families as visitors and the role of families in museums. But these questions are beyond the scope of this doctoral thesis and therefore, they will not be further discussed here. Even though families are the research participants of this study, the research focus is not on how game-making engage or impact families in museums. Additionally, only one family explored and discussed the impact of game-making on their family relations and communication. Therefore, there is not enough evidence to further explore this theme.

Fifth Step: Defining and analysing the main themes

First theme

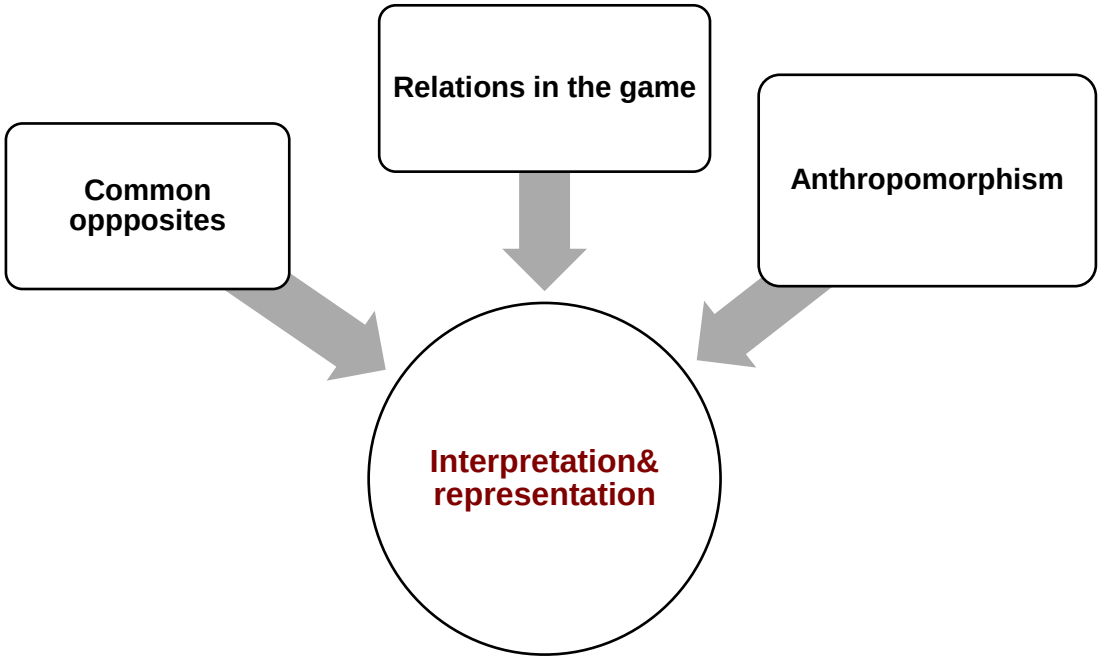


Diagram 5.1: Theme map of the Interpretation and Storytelling

The first main theme is called 'Interpretation and representation'. It emerged from the analysis and interpretation of the data segments organised under the following three codes. First, it illustrates how the participants approached and interpreted the museum space, its collections and specimens. Second, it shows what design decisions they have made to design the game and which representational strategies (game narrative and game rules making) and tools (narrative tools of common opposites and anthropomorphism) they have used to transform the museum space into a gaming platform and the specimens into game characters and objects. It is called 'Interpretation and representation' because this theme is concerned with the acts of interpreting and representing. The participants as game designers interpreted the museum space decoding its layout and rules. In this way, they represented and transformed the museum into a ludic and dynamic space. They also interpreted the museum specimens

decoding their materiality and stories to represent them as playable and dynamic game characters and objects.

As it is illustrated in the theme map, the designers interpreted, reflected, transformed and represented the museum specimens in the game using two different storytelling tools: the notions of anthropomorphism and the common opposites. The way the participants interpreted, reflected and represented the museum collections in the game reveals that they negotiated meaning and representation while designing the game narrative, characters and rules.

Anthropomorphism

Interestingly, all design groups conceptualized and transformed the museum specimens into game characters using the concept of anthropomorphism. The player interacts and converses only with non-player characters that are inspired by the museum specimens. These non-player game characters have human characteristics and traits. They have human feelings, personalities, fears and goals. They are alive, they can speak, and they can move like humans. However, the museum-specimens as game-characters are not represented as living animals. As game-characters, they maintain and reflect their museum identity and materiality as specimens. For instance, Brainy, which is inspired by a dog brain, is represented as an animated dog brain and not as a living dog. Bob the cat which is inspired by a dorso-ventrally bisected pregnant female cat is transformed into a virtual dorso-ventrally bisected pregnant female cat. As game characters, the museum specimens, as one of the families notes '…just don't feel complete'. The player's goal is to help the specimens reconstruct their bodies or find new ones. The designers choose to represent and preserve the museum specimens' materiality. They analysed the specimens' identity as museum objects and extend and represented their materiality in the game. Manipulating and extending the museum into the

virtual game space where players reconstruct and transform the museum specimens into living animals.

Common opposites

All families created different non-player game characters that the player would interact and communicate to play and complete the game. They also prototyped the players' characters. To build these different game characters, the designers used the concept of common opposites. These common opposites are dualities such as 'good-bad', 'captive-free', 'dead-alive', 'visitor/intruder- curator/gate-keeper', 'visitor/hero- curator/game villain'. According to the participants' prototypes, a game character can be good and bad, captive and free, and dead and alive. For example, at the beginning of the game all museum specimens are dead, but due to a trigger that activated a curse, the specimens become alive. Another example is the duality of visitor-curator. In the game, the visitors help the specimens trick the curator. The visitors are portraited as heroes and the curators as villains that want to capture and lock the specimens in their cabinets. Lastly, the duality of night and day. The game starts at night when the museum is closed to the public and must be completed before the sunrise when the museum opens again to the public. This shows the way they interpreted, unpacked and understood the different relations within the museum space and how these relations were further, reflected, developed and translated in the game environment. These examples show different relations: a) between the specimens as museum objects and the specimens as game characters, b) visitor and curator (the role of a visitor and the role of curator within the museum and game environment), and c) the museum as public space of order and the game as a space of fantasy.

Apart from narrative and storytelling tools, the designers employed more tools to transform the museum space into a gameboard and the museum specimens into game characters and objects. They, also, build different game rules and mechanics to define the way the museum

space and specimens are transformed into virtual entities. These game rules and mechanics constructed the relation between different aspects of the game, but also reflected the context within the game was designed and play-tested.

Relations in the game

According to one of the game challenges, the player needs to help the museum specimens collect bones to build their bodies. However, the player has limited time to complete the challenge. When the time is up, the curator returns and locks the specimens in their cabinets and the player loses. This means, that the challenge is bound with the mechanic of time. The player can interact with the game characters only for a limited time. As the designers noted, the player is '…working against the clock because the curator is trying to lock them up in their cabinets.' This represents the way the designers understood and conceptualized the museum's role as a cultural institution and the role of museum professionals as figures of authority, preservation, and education. The participants constructed different relations between the players and the game characters, and some characters (heroes) and other characters (villains). These relations in the game environment illustrate the way the participants perceived and unpacked different relations in the museum environment such as the relations between visitor-curator, museum objects-curators, museum objects-visitors. They achieved that using, as mentioned above, the common opposites of hero-villain, captive-free, dead-alive.

Second Theme

The second main theme is called 'Public versus private experience and the participants' agency'. It emerged for the selected data archived under the following six codes.

:

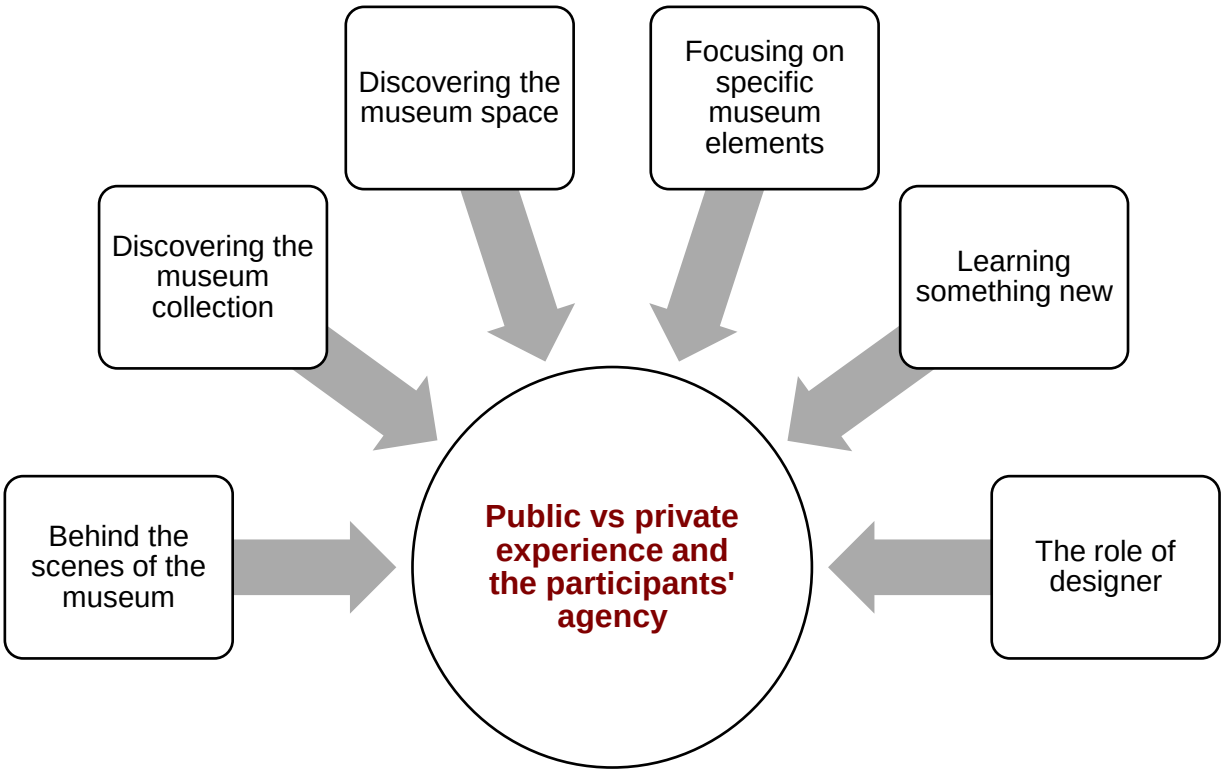


Diagram 5.2: Theme map of Private vs. Public Experience

This theme is concerned with the participants' experience of the museum and agency before and during the project. This theme details how the families experienced the museum as visitors and how they controlled the way they interacted with the museum and its collection as designers. Its name, 'Public vs private and the participants' agency' illustrates the participants' perception of how they experience the museum as visitors and as designers. The term 'public' refers to the participants' experience of visiting the museum as visitors. It is about the public experience of museum-visiting. The term 'private' refers to the participants' experience of being in the museum as designers and their agency to control the way they interact with the museum collections. It is about the private aspect of being behind the scenes and making design decisions about and for the museum.

As it is illustrated in the theme map, **t**he families compared their agency as visitors to their agency as game designers. They discussed how the role and identity of the designer enabled

them to control the way they interacted, interpreted and connected with the museum space and specimens.

Behind the scenes of the museum

Most of the participants suggested that there is a difference between visiting the UCL Grant Museum of Zoology as visitors and as designers. One participant notes '(I'm)…happy to be at the museum when no one else is here…and experience the museum that quiet'. Another family expressed a similar idea. They commented: 'I hope we had more opportunities to visit the museum like this'. Previously the same family when discussing past visits at the museum, they suggested that they often feel lost and distracted by the density of the displays. They noted that making games allowed them to slow down and experience the museum differently. This suggests that game design transformed their perception and experience of the museum space, its displays and specimens.

Another participant while explaining what motivated him to participate in this study notes: 'Because I had designed other games in my school but not for a museum and also, this time, my game will be available on iTunes and I will play it online, we didn't do that in school.' (S1, GMOZ G2). This shows how this participant perceives his role as a maker in the museum space. He sees it as an opportunity to design something for the public. For the participant, this is important because his game will be played publicly played. Even though, he had designed a game before in a different setting (at school), he had not designed a game for a museum. This shows how this participant perceives the role and authority of the museum as a public institution. He assumes that by designing a game for a museum his designs will become widely accessible and recognised as important. This reflects the perceived power and authority of museums to legitimize meaning-making and representation.

Discovering the museum

As previously mentioned, some of the participants suggested that visiting the museum can be an intimidating experience. This comment refers to the museums' curatorial presentation. According to the participants, the density of the collection and the vast number of specimens exhibited in the museum case displays make them feel lost and distracted. However, according to the participants, the game-making process allowed them to focus on the specific parts of the collection and develop new dialogues with the museum. The design gave them the semiotic resources to make decisions about the way they interacted with the museum collections and space. Some of them suggested that making a game allowed them to re-discover the museum, to open new dialogues with it, built new relations and therefore, move beyond the traditional museum-visitor relation. This suggests that the role and identity of the designer allowed them space and time to challenge and negotiate their relationship with the museum and the dynamics that can be established from such relation.

Focusing on specific museum elements

Some of the participants noted that the game-making process allowed them to focus and examine closely the collections and move beyond the museum curation, interpretation and representation. This illustrates the way the participants perceived their agency through the game-making process and while assuming the role of the game designer.

The role of the designer

One of the families discussed the importance of the designer's role and the opportunity of creating a game for the UCL Grant Museum of Zoology. During the semi-structured interviews, the youngest member of the family notes: 'Because I had designed other games in my school but not for a museum and also, this time, my game will be available on iTunes and I will play it online, we didn't do that in school.'. This interview segment demonstrates why the participant was motivated to take part in the workshop. This segment is analysed, here, from the lens of

the role of the designer. He, first, compares designing games in school to designing games for the museum. The importance of making a game in the museum rather than in the school emerges from the use of the prepositions ‘in’ and ‘for’. According to the participant, designing a game for the museum is more important than game design in school. The preposition ‘for’ shows that the participant’s role is to create content for the museum and not to learn to make games or learn from making games. In other words, the participant suggests that the research project enabled him to assume the designer’s role. In another part of the session, the same participant comments: ‘We will create something fun for the museum’. Here, the participant again using the preposition ‘for’ empathizing on the family’s role as designers. In addition to this, he adds the act of sharing publicly the games as another reason for participating. For this participant, the museum, as an open and public cultural institution, acts as a platform that allows the families to share their creative work with the public. The accessibility and publicity, that the museum offers, validate him as designer and co-creator.

So far, this section has defined and analysed the themes that emerged from the Thematic Analysis. The next section will present and theorise these themes outlining the finding of this case study.

5.5 Theorisation of Findings

I will now proceed to theorise the themes that were developed in the previous steps of the Thematic Analysis. I will theorise the research themes based on three theoretical perspectives. I will draw from Game Studies, Museum Studies and Bourdieu's work on power and agency.

Salen and Zimmerman's Rules, Play, Culture theoretical framework (2003) allows me to read the participants games as rule-based, playful and cultural objects that reflect, model and transform the museum context and culture. In this way, the Game Studies theory enables me to bring Museum Studies theories on materiality and biography of objects to discuss how the participants through the games challenged, reflected and extended the materiality and cultural biographies of the specimens in new, playful and dynamic ways. Salen and Zimmerman's theoretical framework (2003), also helps me to understand how they approach and reproduce museum authority and visitors' role and agency in their designs.

In addition to this, Bourdieu's theoretical work allows me to unpack how the designers reflect and reproduce in their designs the power relations between curators-visitors and how they challenged their agency as designers within the museum during the research project.

Interpretation and Representation

This theme revealed the relationship between the participants and the museum and its specimens. The analysis of the participants' game designs showed the way they uncovered, interpreted and narrated different stories through the game-making process. In the analysis of this case study, meaning-making, interpretation and storytelling are understood through the theoretical lens of object materiality (Henning, 2006), material culture and cultural biography of objects (Gosden & Marshall, 1999).

According to the notion of the cultural biography of objects, context defines and shapes meaning (Gosden & Marshall, 1999, p. 169-178). Museum objects as commodities have

accumulated meaning because of their constant movement between different contexts. The specimens have been transformed from living animals to curiosities and teaching objects. During the game-making process, the participants as designers collected different museum specimens and researched their biographies and stories. By making the game, they proposed and materialised new ways of experiencing these specimens and their stories. They proposed new meanings, representations and interpretations for them. In the game prototypes, they transformed the museum objects to game characters and objects providing them with a new biography beyond the physical space and boundaries of the museum. They added new dimensions to the museum objects' materiality expanding their lifespan as cultural and social artefacts (Henning, 2006) within a new redefined playful and dynamic museum space.

Interestingly, during the co-designing process of the game, the three families developed similar interpretations and meanings, even though they worked separately on their game ideas. These similarities reflect the way the developed the game characters and the central narrative of their game ideas. For instance, all families represented the museum specimens as living animals with anthropomorphic characteristics and feelings. This is a rather common interpretation of natural history specimens. Tunnicliffe (1996) identified a similar pattern in the way museum visitors interpreted natural history museum specimens (p. 130-141). In Tunnicliffe's study, the participants interpreted the natural history specimens as living animals and gave them different human characteristics (p.130-141)). While studying the benefits of visiting natural history museums and taxidermy collections, Sanders and Hohenstein (2015) found a similar pattern in their study (p. 251-262).

However, in this thesis, game design has offered an opportunity to experiment with the specimens' materiality and propose new ways of interacting with them outside the stillness of the official museum curation. As rule-based systems (Salen & Zimmerman, 2003), visitors' games model and present museum collections' biography, history and materiality. As playful

experiences (Salen & Zimmerman, 2003), they communicate meaning to others and construct different dynamic worlds within which players encounter and interact with the specimens.

Looking at the participants' game designs as cultural artefacts (Salen & Zimmerman, 2003) can reveal a different perspective about their design decisions and perception of museums as cultural institutions. As cultural artefacts situated in the museum context, the game designs disrupt, challenge and comment on the museum's role and curation and the role and agency of visitors within the museum context. In addition to this, from a sociological perspective, the designers identify conflict in the museum structure which they reflect and represent it in their game designs. They use the common opposites to challenge the museum as a cultural and social institution and negotiate meaning within and beyond the official museum curation. The common opposites such a 'dead-alive', 'hero-villain', and 'captive-free' were used to represent the relations between museum visitors-curators, museum objects-game objects, museum visitors-museum objects, curators-museum objects. Using these common opposites, the designers expressed the way they perceive and define the power relations and dynamics that are at work within the museum environment. They critique the curatorial dynamics of the relations between visitor-museum, visitor-curator, visitor-specimens and curator-specimens. They represent these relations as conflicts between the established dichotomies that exist in museums. For instance, the definition of visitors as 'heroes' contrary to the development of curator's character as a 'villain' may relate to the way the public understands the authority of museum professionals including their role in defining, representing, curating, preserving and protecting cultural artefacts and natural history specimens.

Similarly, the opposite of 'captive-free' illustrates how the designers challenged the authority, rules and power of museums as cultural and social fields (Bourdieu, 1993). It shows how the participants perceive the museum's authority to curate, represent and display the natural history. Examining the relations between the players and game characters and the

relationship between the game characters and the objects leads to a better understanding of the way the designers perceive the role of the museum, its visitors and specimens, and the relations between them. In the game, the curator was represented as a villain whose role is to bring order back to the museum. The player's goal, on the other hand, was to save the museum and its collection of specimens. This means that the players set to save the museum without teaming up with the museum curator, but by 'cheating' and 'tricking' the curator. Here, the designers explore and challenge the role of the curator and the role of the visitor. They explore and challenge the authority and power of the curator to define the museum-visitor relation and dynamics, and the agency of visitor/player to push the boundaries of the museum and 'cheat' to win the game.

The use of the common opposite 'day-night' represents the fantasy of museums as places with magical powers. Magical powers that can be 'awakened' during the night and disappear during the day. An idea widely introduced and represented in the contemporary literature and film-making industry. For instance, in the American film trilogy 'Night at the Museum (2006-2014) which is inspired by Milan Trenc's children's book 'Night at the Museum'. In the film, a night museum security guard discovers that the museum collections come alive at night but return to normal during the day because of a magical object (Marcus & Levine, 2011). The notion of a day and night version of museums generates and empowers the fantasy of dual museum life. On the one hand, during the day, museums are understood as places of informal learning which follow specific rules and norms, but on the other hand, during the night, museums are full of possibilities and mysteries which are hidden during the public hours of the museum. In this way, the museum artefacts have the potential of an alternative life beyond the museum and its rules and constraints. Similarly, to the previous common opposite, the participants through this metaphor explore and challenge the notion of the museum as a

cultural and social institution. They negotiate meaning and representation and question the power relations in the museum environment.

The use of the common opposites reveals that the research participants recognise and identify the museum as a social field within which different agents compete for power and domination. As Bourdieu (1993) argued social fields have specific characteristics and structures which define their function, the role of different individuals (agents), and the relations between the field and agents. The doxa of museums maps out the way individuals act within the museum space. Museum curators as museum professionals have a specific power and authority and visitors act according to specific rules and experience the museum according to predetermined patterns and rituals. The analysis of the game prototypes shows that the research participants explored and commented on the role and authority of the curator and the role of visitors within the museum field.

Public versus Private Experience and the Participants' Agency

During the game-making, the families noted that assuming the role of the game designer allowed them to experience the museum differently. According to their statements, the role of designer (game-designer) allowed them to move beyond the public experience of museums and experience the museum not only as visitors but also as designers. This finding contradicts Bourdieu's theory that agents are manipulated by their own fixed habitus, capital and social forces within and outside the social fields. Bourdieu (1993) sees agents' actions and social practice depending on the relations between the agent, the habitus and the social forces of the field, but fails to consider and recognise the potential and intentionality of choice of how to act, communicate and negotiate representation, meaning and agency.

For the participants, the experience of being at the museum as visitors differs from the experience of being at the museum as designers. This means that the agency of the visitor

differs from the agency of the visitor-designer. Designing games for and about the museum allowed them the time and space to control the way they experience the museum and interact with the collection. In other words, assuming the role and identity of the designer allowed them agency to control the way they interacted with the museum and its collections. In this context, it is the designers' intentionality of choice during the designing process that allowed them to negotiate agency and the way they interacted with the museum. This is another finding that contradicts Bourdieu's theory that agents make decisions and act unintentionally and only within the existing social rules, structures and conventions. The game design allowed them to experience the museum behind the scenes. This means that they were able to make design decisions about the museum and its collections. They assumed the authority and power of the curatorial figure within the museum context.

Schorch (2009) described the need for a 'reflexive museum' which opens the doors of museums to the museum visitors to discover the museum processes which are implemented behind the scenes (p 1-7). However, Schorch (2009) refers to these processes in connection with the curatorial presentation and not with the integration of visitors in the designing and development process of museum exhibits or other content creation within museums (p.1-7). These findings indicate that the design of such content enables visitors to take part in processes that reveal curatorial work and allow agency to visitors to explore meaning-making and representation in different ways.

The participants' use of the notions of 'in-front' and 'behind the scenes' connects with the concepts of 'museum as theatre' and 'museum spectatorship'. These concepts have been previously discussed in Museum Studies literature to investigate the ontology of museums and the role and agency of visitors within the museum space (Maure, 1995; Bennett, 2012; Christidou & Diamantopoulou, 2017). According to these concepts, the museum consists of two different 'scenes', the 'front' scene refers to the space where visitors experience the

outcome of the curatorial work (exhibitions, displays etc.) and the 'behind' scene of the museum where different curatorial teams design museum experiences, make decisions and construct meaning. Museum visitors act as actors who perform pre-written rituals guided by curators/puppet-masters (Maure, 1995). Behind the scenes of the museum, the curators/puppet-masters make decisions on how visitors/actors perform in the museum space. Susan Bennett (2012) points out that museums and theatres share similar methods and strategies in constructing the visitors' experiences (p. 3-5). They both offer 'linear narratives, committed to organizational categories intended to be definite' (p. 4). Other researchers (Christidou & Diamantopoulou, 2017), however, who have looked at museum spectatorship from a Multimodal point of view, draw attention to visitors' agency. Christidou and Diamantopoulou (2017) point out that visitors' agency, intentions and choices contribute to the way they perform in the museum space and encounter the museum exhibits. The findings of this case study suggest that through the game-making process, the research participants as game-designers explored and challenged and negotiated the notion and role of the visitor and the curator in the museum environment. Based on the participants' semi-structured interviews, the role of the designer offered them agency to control the encounter with the museum collection. But, most importantly, the designer's agency and authority gave them the opportunity to explore the creative process of museums behind the scenes. This means that the game-making process enabled them to assume the role and identity of the curator/puppet-master and made decisions about representation and meaning.

The participants argued that assuming the role of game-maker enabled them to focus their interest and be selective. To make the game, they followed a series of actions and sub-actions including the collection of a small number of museum objects, cataloguing and researching these objects, interpreting them in a playful way and assembling them to prototype the game. On multiple occasions throughout the sessions, the participants mentioned that in the past

while visiting the museum, they felt overwhelmed and distracted by the encounter with the museum objects.

- ‘There are so many specimens displayed (in the museum). (Through the game-making)…We focused only on some of them’. (Transcript from the video recordings of the second session, F2P2),
- ‘You can be distracted by all these things’. (Transcript from mind maps, first session F3P3).
- ‘We didn’t just design a game but also explored the museum’. (Transcript from the follow-up questionnaire after the third session, F2P2)

In summary, the findings of this case study suggest that during the sessions, the game-making process allowed the families to confine this encounter, negotiate the way they experience the museum space and collections. While, at the same time, they produced and curated a new encounter with the museum space and objects using the game as a platform to add new layers of representation and meaning to the museum and its collections. In this way, negotiating the encounter with the museum objects and producing new meanings and interpretations about and for the museum objects, also, allowed them to negotiate agency and meaning.

Limitations of the findings

In this case study, paper game prototyping is used as a method to collect data about the way families explore, approach, interpret and narrate the museum’s stories through design. As previously discussed, the paper prototyping process offered the research participants the platform to think about the museum space and specimens in different ways, to play with their materiality and propose playful ways of representing them beyond the museum space. In this stage of the research, paper prototyping was useful and allowed the families to experiment with game design using affordable and easy tools. It allowed them to easily plan, organise,

draft and test their ideas. The families used different techniques to create game ideas. They used creative writing and drawing to transform the museum space into a game board and the specimens into game characters and objects.

However, allowing the designer to use only paper as a platform to design a digital game limited their understanding of how their ideas can develop beyond paper and unpack the way the museum space and its collections are represented in the digital platform of a mobile digital game. The paper prototypes present only an aspect of the participants game ideas. They are a platform with specific characteristics, affordances and limitations. Similarly, designing a game in a digital platform presents different affordances and limitations. The designers' decisions and choices are subject to the platform's affordance and limitations. In this way, the analysis of the participants' paper designs reveals only one side of the designers' decisions and choices. Involving the families in digital prototyping may highlight different aspects of their decisions and choice. In this way, more in-depth data might be gathered about visitors' role and agency as designers and the way they challenge and negotiate representation and meaning-making through game design.

Another limitation concerns the data analysis methods. For this case study. Thematic Analysis was used to analyse the data. This data analysis method offered useful techniques to organise the data and read emerging themes in them. Despite its exploratory nature, the analysis offers useful insights into the way the research participants paper prototyped the game. It reveals some valuable information about the families' perspectives and views in terms of their role and agency as visitors and designers in the museum.

However, the Thematic Analysis offers only a descriptive read of the data. It does not allow the researcher to break down the participants game prototypes and analyse in detail the different elements, resources and modes that the designers used to represented and

communicate meaning. For these reasons, for the next case study, Multimodal Social Semiotics approach was used as an interpretive method.

Having discussed the limitation of this case study, the next chapter will present how these limitations shaped the plan and design of the second case study.

5.6 Synopsis

This case study set out to explore game-making with families at the UCL Grant Museum of Zoology. Its research questions were:

- How can games design be used as a creative methodology to explore the way visitors uncover and narrate the stories of the UCL Grant Museum of Zoology collections and specimens?
- What are the ways in which visitors interpret and uncover the stories of museum specimens in their game designs?
- What features of the participatory game design enables the research participants to creatively engage with the museum collections and specimens?

Even though these research questions focused on the interpretation of the museum collections and the way visitors uncover and narrate the stories behind the museum specimens through game design. The research findings pointed out towards a different direction for the investigation of game design in the museum site. According to the analysis and theorization of the findings and the two main themes, game design offered new possibilities and opened new dialogues between the research participants as visitors/designers and the museum. These possibilities not only enabled the participants to react creatively to the museum collections but also, empowered them to negotiate the way they encounter the collections and make-meaning through and about them. The game design allowed them to produce meaning anew and explore representation in different ways.

In summary, this case study has shown that:

- The game-making process enabled the research participants to reflect, add, construct and extend the museum specimens' cultural biographies, representation and meaning within and beyond the museum boundaries.
- The game-making process enabled the research participants to explore and challenge the museum structures and power relations and dynamics between visitors-curators, visitors-museum objects and curators-objects.
- The game-making process enabled the research participants to negotiate and challenge their agency and to move beyond the public experience of the museum and assume the role of the designer.
- The role of designer enabled the research participants to control their encounter with the museum space and collection.
- The game-making process enabled the research participants to challenge, transform, negotiate and construct meaning and representation in different ways using the game as a curatorial platform.

This case study's findings and themes refer to the notions of representation, meaning-making and the agency of visitors as designers in museums. They connect with debates concerning the question of representation, VGC and expert versus novice curation. The main themes of the research findings are not treated as single separate entities but as interrelated phenomena. Game design enabled the participants to negotiate, construct and communicate meaning and propose new representations and interpretations for the museum collections. This process is essentially a process of curating in a different platform, dimensions and modes. This process allowed the participants to negotiate their agency and encounter the museum anew.

The analysis of the participants' game prototypes and audio/video recordings of the focus groups and semi-structured interviews undertaken here, has extended our knowledge of participatory game design with families in the museum site. The findings reported shed new

light on what games and game design with families in museums can bring to the conversation on museum representation, curation and the relation between visitors and museums. They do so by revealing and focusing on the visitors' perspectives of their experience of designing games inspired by the museum and its collections. This has highlighted the designers' perceptions and understanding of the notions of curatorial authority, visitors' agency, and museum objects' materiality and cultural identity in museums. In this way, these findings add to a growing body of research on Visitor Generated Content and participatory and digital co-curation and visitors' agency in museums.

After the implementation and analysis of the first case study's findings, a natural progression of this research work is to focus on how games production allows visitors to explore and challenge museum curation and representation and negotiate visitors' agency through design. Building upon the first case study's findings and emerged themes, my aim is to flesh out the act of making and to focus on the analysis of the participants' games. Further work is required to fully understand how visitors assume the role of designer and make digital games inspired by the museum collections. To achieve that, a second case study was implemented at the Museum of London Docklands with families. The next two chapters will first, detail the transition between the first and second case study and then, they will offer a detail description of the design, implementation and analysis of the second case study. This second case study will closely analyse the research participants design decisions and choices to obtain in-depth information about the way game design allows visitors to engage with curatorial work and challenge and negotiate representation, meaning-making and agency.

CHAPTER 6: FROM CASE STUDY ONE TO CASE STUDY TWO

Introduction

6.1 Moving from Case Study One to Case Study Two

Introduction

Having presented the design, implementation and analysis of the UCL Grant Museum of Zoology case study (Case Study 1), this chapter acts as a transition between the previous chapter and the following. The previous chapter offered a detailed presentation of the Case Study 1 and its findings and limitations. The following chapter is dedicated to the description and findings of the Museum of London Docklands case study (Case Study 2). This means that this brief chapter will connect the first and the second case study and present their similarities, overlaps and differences.

The purpose of this chapter is to facilitate the narration of this thesis. Another objective of this chapter is to allow the researcher to step back and reflect on the research process, its findings and limitations and re-define the aim, objectives and purpose of this research inquiry.

6.1 Moving from Case Study One to Case Study Two

The findings and limitations of the first case study shaped the way the second case study was conceptualized, designed and implemented. One of the objectives of the UCL Grant Museum of Zoology case study was to explore and test the research questions and methods of the

proposed research thesis. After the implementation and analysis of the first case study, a few changes were introduced in the research focus and the collection, analysis and theorisation of the second case study's data.

Research Focus

As previously mentioned, the first case study was exploratory in nature. In chapter 2, I suggested that up to now, there has been no in-depth investigation of how visitors design games in museums. Previous work on game design with visitors is mainly descriptive and celebratory of games. It treats games, play and design as educational tools and marketing assets. No previous research work has focused on the act of making and has looked at visitors' games as platforms for curatorial production and intervention.

Therefore, prior to the implementation of the first case study, no previous research assumptions were taken for granted. The implementation of the first case study provided an important opportunity to explore a previously unexplored research area. The analysis and theorization of the data allowed me to reflect, narrow down and re-focus the research interest of this thesis.

The first case study revealed that the process of designing games for and about the museum and its collections allowed and opened new channels of communication between the participants and the museum. Even though the initial objective of the first case study was to investigate how families react creatively to museum collections and uncover and narrate the stories behind them, the findings highlighted the complexity of designing games with visitors.

The findings of the first case study suggested that the agency of the designer allowed the families to engage with the museum and its collections in their own terms. Game design gave them the platform, resources and agency to control the encounter with the museum and make design decisions about the construction and communication of meaning and representation.

These findings raised further questions about agency, the power relations between visitors and museums, the questions of representation and the authority of curatorial work within and beyond the boundaries of the museum space.

Building upon these findings and newly formed questions, the research will focus on the act of making and the designers' agency to construct new meanings and representations. The analysis will not only look at the research participants' games as playable entities but also as cultural artefacts (Salen & Zimmerman, 2003). In this way, I will pay particular attention to what the design decisions of visitors as designers reveal about the way they make, reflect and transform meaning and representation in-between spaces, modes and platforms.

Narrowing down the research topic has formulated more detailed aims and objectives. The second case study has three main objectives:

- First, to focus and investigate the act of game design and its connection with representation and meaning-making from analogue to virtual,
- To reveal how visitors' games as curatorial platforms reflect, transform and add to the museum culture and curation,
- Lastly, to explore visitors' agency as designers in the museum site.

As a result, the second case study's research questions were re-evaluated and re-formed to investigate these aims and objectives. In the following chapter, the research questions of the second case study will be presented and discussed in detail.

Collection

A few changes were implemented in my data collection design and strategy to obtain in-depth information on the way the families design games and investigate what their design decisions reveal about agency, representation and meaning-making.

A. Introducing digital games-making methods as well as paper prototyping methods to design games.

The game-making circle involves different design stages. Paper-prototyping and digital prototyping are two of the most important stages of the digital game-making circle. In the first case study, the research participants were involved only in the prototyping phase of the game. However, to systematically investigate the research questions and objectives of the second case study, it was essential to collect more in-depth and detailed data. Involving the participants in both paper and digital prototyping allows a deeper examination of the way they design digital games using different semiotic resources and game mechanics. The digital prototyping process will allow the participants to think about the game-making process in different ways and to make decisions in different representational modes in different dimensions and contexts. As a result, this addition to the research methods offered rich and valuable data which enabled a detailed research analysis.

B. Each family designed individually a game using paper-based and digital-based tools.

Collecting more complex and richer data was essential in this stage of the research. In the second case study, each family designed a digital game using paper and digital game prototyping techniques and tools. In this way, more complex and richer data were collected. As mentioned above, the research objectives, aims and questions were re-focused based on the findings of the first case study. This re-focus required a further reflection and re-evaluation of the research methods. The aim of the second case study was to trace and record systematically the way the families design games. Collecting data from each family while producing individually a game allowed the researcher to investigate each family's participation in a detailed manner and record the complexity of making games in the museum setting.

After the analysis and theorization of the first case's findings and after reflecting on the above methodological changes and modifications, the role of the researcher during the data

collection was reconsidered and changed. As mentioned in the previous sections, in the first case study, the researcher was involved in the designing process as the co-creator of the game. The researcher curated the participants paper-based game prototypes into a digital Alternate Reality Game. Even though this process was implemented following the research participants' guidelines and design decisions, the involvement of the researcher/co-creator played a minor but visible role. In the second case study, to avoid further disruptions and bias into the game-making process and ensure that the data collection reflect the research participants design decisions and choices as game-makers, the researcher was not involved in the design process of the participants' games.

As demonstrated above, focusing on the act of making and not only on the games as playable entities allowed the researcher to take a step back and capture the way the families made games without disruptions. In the first case study, the participants were involved only in the paper prototyping process; therefore, the researcher undertook an essential role of transforming the participants' designs into a final playable entity so that the participants could reflect on the final game. Playing the games is essential for both case study because it enables the participants to reflect on their work and their design decisions. In the second case study, the participants were involved both in the paper and digital prototyping.

Analysis and Theorisation

In the first case study, I analysed the data using Thematic Analysis. Thematic Analysis was used to initially identify and categorise emerging themes in the early stages of this research. These themes were, then, reviewed, interpreted and defined based on several theoretical perspectives.

However, to analyse the materials gathered at the Museum of London Docklands case study, I will follow a different data analysis strategy. The materials will be analysed from a Multimodal Social Semiotics perspective based on the conceptual framework proposed by Kress and van

Leeuwen's work (2006) and as adapted previously by other researchers from the fields of Media Studies (Pelletier, 2005; Buckingham & Burn, 2007; Pelletier et al., 2010; Jewitt, 2013). The analysis will focus on games as multimodal texts which include different communicative modes such as speech, writing, visual design, and code (Burn, 2016, p. 12). The Multimodal Analysis focuses on the act of design and captures the complexity of how games are designed (p. 12). Choosing Multimodal Analysis instead of Thematic Analysis will allow a detailed understanding of game design and in-depth reading of the participants' games as multimodal texts (Jewitt, 2013).

In the second case study, I also view visitors' games as rule-based, playful and cultural objects that can reflect, reproduce and transform the museum culture and context (Salen & Zimmerman, 2003). Unlike, the first case study, in the second case study, I further theorise my data using Multimodal Social Semiotics approach (Kress, 2010). Kress's work allows me to demonstrate what the families' games represent, as rule-based, playful and cultural objects, and highlight the different meanings they communicate. In addition to this, Kress's theoretical tools enable me to identify the participants that are involved in the game design process (museum objects- digital game objects, designer- implied player and curator-visitors). Discussing who is involved allows me to explore the power relations and the agency of these participants (Bourdieu, 1991). In this way, I use theories from the Museum Studies, Social Semiotics, Cultural theory and Game Studies to interrogate and theorise my findings[22].

Summary

In this chapter, I have discussed the connection between the UCL Grant Museum of Zoology case study and the Museum of London Docklands case study. I have demonstrated how and

[22] The second case study's data analysis framework will be presented in the following chapter (chapter 7, section 7.4.1)

why the research aims, objectives and questions have developed and changed. In the next chapter, I present the design, implementation and analysis of the second case study.

CHAPTER 7: MUSEUM OF LONDON DOCKLANDS CASE STUDY

Introduction

This chapter discusses the design, implementation and analysis of the second case study. The second case study was conducted at the Museum of London Docklands with families as a 3-session game-making workshop. This chapter is separated into six main sections: *Research Design, Data Collection, Data Treatment, Data Analysis, Findings and Discussion, and Synopsis.* Each section is separated into smaller sub-sections.

In the *Research Design* section, I detail how the second case study was planned and designed. I explore the details of designing a case study in a complex and busy public environment. In the first sub-section, the criteria for selecting the research setting will be presented. The reasons why the Museum of London Docklands was considered as a suitable research setting will be discussed. This will reveal the context of this case study and how the setting frames the way the research design was planned and implemented.

In the *Selecting Research Participants* sub-section, the criteria for recruiting and selecting participants for this particular context will be detailed. Discussing the participant's recruitment process contributes to the openness and ethics of this study. I will, also, introduce the limitations and complexities of recruiting families as participants. Finally, building upon the first case study's findings, this section will conclude with the presentation of this case study's aims, objectives and research questions.

The *Data Collection* section is dedicated to the description of the data collection. I present how the data were collected during the 3-session workshop at the Museum of London Docklands. I provide details on a. how the research participants were involved in making games, b. what strategies and resources were used to design games, c. how the game-making process was recorded, and d. which data collection methods were used to capture the participants' design decisions and choices.

As discussed in the fifth chapter, disclosing the way the data were treated during and after collection is an essential part of the research circle. This thesis' data are complex and require a combination of treatment strategies. Therefore, before detailing how the data were analysed and interpreted, the *Data Treatment* section discloses how the research data were stored, organised, sampled, transcribed and prepared for analysis and interpretation.

The *Data Analysis* section begins with the presentation of the data analysis framework. The purpose of the data analysis framework is to identify the main theoretical and analytical tools that will be used to examine the data. This framework will introduce the theories and tools of analysis and will discuss the way this thesis approaches and investigates the process of making games with families in the museum site. In the last sub-section of this section, the data analysis framework will be applied to investigate the aims, objectives and research questions of this case study.

The *Findings and Discussion* section will summarize the findings of this case study and discuss its conclusions. It will highlight the main themes and points emerged from the analysis. The *Synopsis* will first restate the aims and objectives of this case study, and then, it will discuss its main findings referring to the main research questions.

7.1 Design

7.1.1 The Research Setting

The second case study was implemented at the Museum of London Docklands in 2018. The Museum of London Docklands opened on the Isle of Dogs in East London as part of the Museum of London in 2003. It is housed in an early-19th-century Georgian warehouse which was built in 1802. It narrates the story of Thames and explores how commercial docks transformed the city of London. Currently, the museum houses in a chronological order nine thematic galleries in three different flours[23]:

- **No. 1 Warehouse**: This is an introductory gallery that narrates the story of the museum's building.
- **Trade Expansion**: This gallery is set during 1600-1800 and presents how the West India Docks operated and how trade brought to London different exotic products such as tea, silk and spices**.**
- **London, Sugar and Slavery**: It narrates the story of how African slavery, the transatlantic slave trade and children exploitation shaped London.
- **City and River**: It tells the story of London between 1800 and 1840 when new docks were built.
- **Sailor Town**: This is a reproduction of an 1840-50s sailors' town. Visitors can immerse themselves in Sailor Town's alleys and shops**.**

[23] In the second case study, the research participants explored most of these galleries in a self-directed tour.

- **First Port of Empire and Warehouse of the World**: During 1880-1939, London was transformed into a successful empire. These two galleries explore how London was transformed into an empire and the role of trade to its success.
- **Docklands at War**: In this gallery, the museum presents the events between 1939-1945. 'Docklands at war' focuses on the docs' role during the war period.
- **The New Port, New City**: This part of the museum sheds light on the after-war decline and how London was reinvented.
- **Mudlarks children's gallery**: This is a hands-on space designed for young children. It presents topics and themes related to the main museum's galleries including mudlarking and sailing.

As part of the Museum of London, the Museum of London Docklands follows the same learning and engagement policies and regulations. The museum's vision is to narrate the story of Docklands and to inspire others to discover London in different ways[24].

The Museum of London Docklands was considered as a suitable setting for the implementation of the second case study for multiple reasons. I have been volunteering at the Museum of London Docklands for three years. This experience has given me the opportunity to learn more about the museum's role, vision, collections and galleries. To achieve its goals, the museum promotes and supports visitors' social participation and engagement. It has implemented a series of participatory and inclusive policies including Visitor Generated Content practices. For instance, it has worked with school students creating films inspired by the city, collaborated with youth clubs to investigate young people's experience of living in

[24] The learning department offers free workshops for all schools who pre-book their visits and regular free activities for families on weekends and half-term. Special education needs sessions (SEN sessions) are, also, delivered by a specialist for free.

London. The museum's goal is to provide a safe place for everyone to explore London through its collections and express their individuality and creativity through co-curatorial and collaborative projects.

As mentioned in the literature review, the museum has long experience in supporting and empowering museum-goers through exhibition-making and other collaborative and participatory projects. The Many East Ends gallery at the Museum of London Docklands is one of the several examples of the museum's participatory work. Even though this project was not aiming to be a game-making project, its participants decided to design a Monopoly board-game. Game production was used to explore and present the stories of the local community and challenge the stereotypical narratives about the local communities. The museum supported and empowered the youth group to express their ideas through the game design and use the Monopoly game as a platform to discuss culture, agency and representation.

However, the focus of this project was not on how the members of the youth club assumed the role of maker and how they experience agency while designing games. This project did not look at how the members of the youth club engaged with curation and representation and how the game design enabled them to develop a conversation with the museum and the local community. Many questions in terms of curation, visitors' agency and representation could be raised through this project. In this research project, I build upon the Many East End project by implementing a new approach to Visitor Generated Content. My aim is to investigate what the design of games brings to the notion of museum curation in terms of meaning-making, the question of representation and agency. This case study aims to uncover in what ways visitors' designs enable them to assume a curatorial role and explore curation with game-making. It uncovers what the participants' design decisions reveal about the way they perceive, construct and negotiate meaning and agency. From a sociological and Social Semiotics perspective, this case study seeks a deeper understanding of visitors role and agency as

designers in the museum site while they design digital playable content for and about the museum.

Gaining access to the research setting

As mentioned above, I have worked at the Museum of London Docklands as a volunteer in the Learning Department since October 2016. My main responsibilities are welcoming and facilitating school visits during weekdays. However, I have regularly supported families' activities. Volunteering has given me a valuable insight into the museum's work, vision and policies. I have gained a broad understanding of the Learning department's activities and strategies on families social participation, learning and engagement.

Being a part of the museum allowed me to demonstrate my skills and voice my research and academic interests. However, I followed a formal procedure to obtain access. For transparency and ethical reasons, my research proposal was reviewed by the museum's research stirring committee and was approved following the museum's formal research application guidelines[25].

7.1.2 Selecting Research Participants

In this case study, six families were recruited as participants, but only three families fully participated in all sessions and therefore, data are used only from these three families. Selecting families for this case study allows a comparison between the data collected during the first and the second case study.

In terms of the practical aspect of selecting participants, the recruitment process took place several weeks before the implementation of the project. The methods of recruitment were the

[25] My research proposal and application form is included in this thesis (see Appendix Three).

following:

a. Getting in touch with local art youth clubs and art centres.

b. Getting in touch with home-educated children's groups.

After the initial contact, families from the above groups expressed their interest by contacting the researcher via e-mail. Then, they received a pack of information which included an information sheet, researcher's CV, and a consent form. The information sheet notes the project's purpose and structure, who is involved and the museum's role in the research process. After reading the information sheet the participants were asked to read and sign the consent form which included the terms and conditions of their participation. By signing the consent form, the participants allowed the researcher to record the research process.

The recruitment criteria were:

a. Families with children between the age of 8 and 16. The successful completion of this study can be achieved by recruiting the minimum number of two families.

b. One adult at least will agree to attend and participate in all sessions for ethical and research purposes[26]. For practical reasons, however, the adult may change throughout the project's duration.

c. The families will agree to participate in at least two sessions. This allows gathering a representative quantity and quality of research data from all families.

[26] According to the Museum of London Docklands' safety and safequarding guidelines, staff, volunteers and visitors are not allowed to stay alone with children without the presence of their guardian (appointed adult, parent or teacher)

7.1.3 Aims and Objectives

This case study investigates how families with young people design games at the museum site. It focuses on how games production allows visitors to explore, unpack and challenge curation, the authority of curatorial voice and negotiate agency. Building upon my previous findings, my aim is to flesh out the act of making. This will allow me to understand how visitors assume the agentive role of designer and challenge museum representation, negotiate agency as designers and construct and communicate meaning within and beyond the museum site. In other words, in this research project, I read visitors' games as curatorial platforms. I break down the creative design process to investigate what visitors' design decisions reveal about museum representation, curatorial voice, meaning-making and agency. In this way, this case study challenges the notion of museum curation, the authority of the curatorial voice and visitors role and agency in the museum site.

7.1.4 Research Questions

The main research questions of this case study are:

1. In what ways do the participants' game designs enable them to adopt a co-curatorial role and unpack the notion of curation?

2. What are the participants' design decisions revealing about the way they negotiate and construct representation and meaning-making?

3. How do the participants negotiate agency inside the museum while making digital games inspired by the museum galleries and collections?

Secondary questions:

1. In which part/parts of the game production circle the participants negotiate agency?

2. In which part/parts of the game production cycle the participants negotiate meaning and representation?

7.1.5 Design Limitations

The reader of this thesis should bear in mind the following research design limitations.

Concerning the research setting

The Museum of London Docklands is a busy public environment. During weekdays, it runs school activities and at weekends, it offers workshops for families, young people and under-fives. During half term, it organises family festivals. All these activities take place in the museum galleries or the museum 'classrooms'. As a result, the museum space is limited. To find a balance between the needs of this research study and the museum's availability, dates were agreed months before the research participants' recruitment. This limited the recruitment process.

Accessing only limited resources complicated the research design. For the purposes of the research study and the game-making sessions, laptops were required. The museum has only two laptops available. For the successful implementation of the session, the researcher's laptop was used as a third device. This limited the number of families that could simultaneously participate in each session.

Furthermore, the aim of this case study is to examine how families design games inspired by museum objects, collections, and spaces and displays. For this reason, an object-handling session was planned. The museum has a considerable small object handling collection which is independent of the museum galleries. Thus, the participants were limited in handling a limited number of objects which had no visible or direct connections with the museum galleries. In the first case study, as the UCL Grant Museum of Zoology houses a teaching collection,

the families had access in almost any specimen. This allowed the participants to establish a direct relationship with the museum and its collections.

A final limitation concerning the museum was its online marketing and public engagement strategy. Unlike the UCL Grant Museum of Zoology, the Museum of London has a strict social media usage policy and follows certain marketing strategies to communicate its activities and programmes. For this reason, the researcher was responsible for the recruitment of the research participants. As a result, the reach of recruitment was considerably limited.

Concerning the participants

Many difficulties were encountered during the recruitment process. This project requires families to attend at least two sessions. This is essential for gathering information about the way families design games. But, half of the families which initially expressed their interest in participating, could not commit and complete the sessions. Therefore, these families were not involved in data collection and analysis. Finally, the participants' schedule influenced the research design and data collection's plan. All families were available only during weekends. Thus, the sessions were scheduled only during weekends.

Concerning data collection

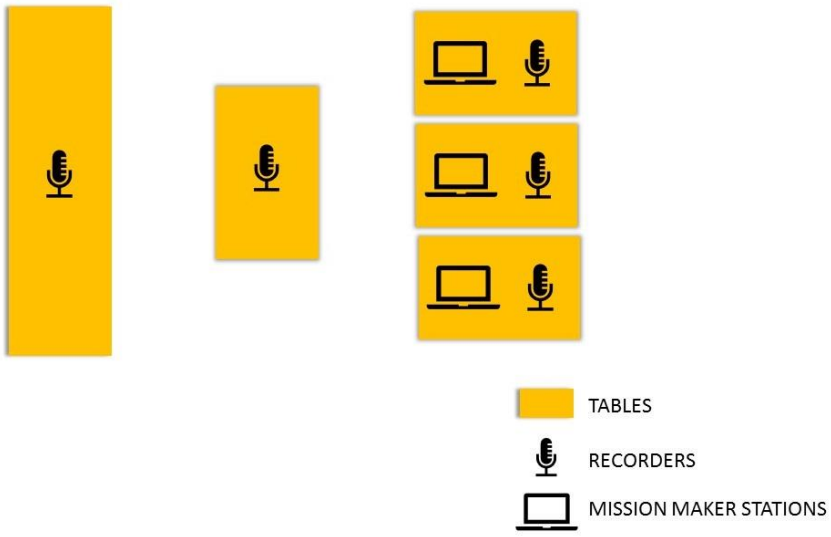
Prior to the implementation of this case study, all families voiced their concerns about video recording. For this reason, interviews and discussions were recorded only in audio format. This thesis recognises video as a valuable data collection tool. In the first case study, videos were recorded during all sessions. But in this case study, the participants' ethical objections were valued. In addition to this, the time limit of the completion of this thesis and the museum's availability did not allow further recruitment. This challenge, however, did not limit the research work. As mentioned previously, the focus is primarily on the game design process and the families' game design decisions while paper and digital prototyping digital computer games.

In this research project, the audio of the semi-structured interviews, the paper-prototypes and the Mission Maker game prototypes capture successfully the complexity of making games.

7.2 Data Collection

This case study took place in 2018. It consisted of three sessions which were implemented at weekends. The collection of data took place during the same period. In this case study, each session lasted for ninety minutes.

Data Collection setup



Map 7.1: Data Collection set up at the Museum of London Docklands

The data collection took place in one of the museum's classrooms located in the basement. This means that the families had no direct access to the museum galleries during the game making process. For this reason, a museum tour was included during the first session. Regarding the data collection setup, audio recorders were attached to all tables. The table on the left side of the image above was used as an object-handling station. The table in the

middle was used during the focus groups discussions. Lastly, three Mission Maker[27] stations were available in all sessions.

7.2.1 Description of Data Collection

First Session | Introduction

Museum tour

Prior to the first session, a brief self-led tour of the Museum of London Docklands' galleries took place. During the museum tour, the participants explored the highlights from the following museum galleries:

- No. 1 Warehouse: Introductory Gallery (selected objects only) (3rd floor), and
- The immersive gallery of Sailors Town (2nd floor)

This brief tour aimed to introduce the museum, its themes, collections and objects to the family groups. All the families were familiar with the museum and its collections. Nonetheless, the museum tour allowed them to think about the museum space and its collections through the game-making lens. They used this experience as an inspiration for developing game ideas and prototypes.

Gaming-jam

Before starting the gaming-jam, for ethical and transparency reasons, the participants were re-introduced to this project's structure and aims. The participants were reminded of the

[27] The Mission Maker is the games authoring software used by the participants to design the games. In the 'Making Games' section (page), I will further discuss the background and uses of Mission Maker.

ethical implications of their participation and were asked to re-confirm their participation and consent. After the introduction to the aims and structure of the project, the participants in focus groups were asked to discuss their previous experiences of visiting museums, playing and designing digital games. This allowed the researcher to collect data about the research participants' background in visiting museums and playing and designing games. It also enabled the research participants to familiarize themselves with the research topic.

Then, the participants played a demo game created by the researcher. The demo game was designed using Mission Maker and it was inspired by the museum collections and galleries. After playing the demo, the participants were asked to discuss in groups what games and game-making are. The purpose of this was two-fold: first, to introduce the participants to the authoring software, and second, to encourage the groups to analyse what games and game-making are and discuss how games are made. In this way, the participants reflected on what actions and sub-actions are needed to design games. Their discussions and semi-structured interviews were recorded in audio. The researcher also took notes while observing their discussions.

Object-handling' and game ideas prototyping

The final part of the session was dedicated to a brief object-handling activity and a game-making related activity. First, the participants were introduced to a small collection of museum objects. All objects used during the object-handling activity belong to the museum's object-handling collection. During the object-handling activity, the participants examined the different objects, asked questions and proposed different interpretations about them. The object-handling activity took place in focus groups. The discussions were recorded in audio. Further in-depth data about the game ideas were collected through semi-structured interviews recorded in audio.

Object-handling activity

The museum objects were introduced during the object-handling activity. The object-handling session aimed to introduce the museum collections and prompt the research participants to closely examine the museum objects. No further instructions were given. At this stage of the data collection, the object-handling activity was not related to the game-making process.

Game ideas inspired by the museum objects

After handling and examining the museum objects, the participants were asked to select a few museum objects and propose a game idea inspired by them. The researcher did not contribute to the selection process. Nonetheless, it is important to note that the participants selected the objects from a limited collection of objects. As mentioned previously in this chapter, this limited collection of objects was selected by the researcher. The selection happened from the museum's handling collection which houses various objects from different chronological eras[28].

Finally, the participants prototyped their game ideas using paper and markers. Some of them built up the game rules, while others worked on the game characters and narrative.

Second Session | Prototyping Session

The second session began with a brief introduction and follow up of the previous session. This allowed the participants to re-visit their game ideas. In this session, they also used Mission Maker to design the prototypes of the digital game. The aim of this session was to introduce the participants to game design using both paper-based resources and the games authoring software, Mission Maker. They were asked to develop further their game ideas drawing connections between the museum objects and experimenting with both the paper-based resources and Mission Maker.

[28] For more information about the objects used during the sessions, see Appendix Three.

Working on the game ideas and paper prototypes

First, in focus groups, the families were asked to present to each other their initial game ideas and the museum objects that inspired them. The discussions were recorded in audio recorders and the researcher's participant observation notes. This process allowed the families to reflect on their work, but also to exchange ideas and inspiration. They discussed in what ways the museum objects inspired them and how they planned to further develop the games. Then, each family continued working on the games. Two families focused on the game narrative and game characters development, while only one family focused on writing the game rules. Two of the families used paper and markers to write the game narrative and rules, while one family used clay to create the game characters.

Using the Mission Maker software

First, the researcher briefly explained how to use the Mission Maker using a how-to guide. After a brief demonstration, the families experimented with the Mission maker. This allowed them to familiarize themselves with the software and learn how to use it. Then, they began building the game prototypes using laptops. During this part of the session, the participants transformed the paper-based designs and game ideas to digital game prototypes. In this stage, the game-making process was mainly focused on the design of the game space, objects and characters.

Throughout the session, the researcher approached the groups and raised questions related to the game designs using semi-structured interviews. For instance, the following questions were used:

- Tell me more about your game.
- How the museum objects have inspired your game?
- Tell me more about the game objects.

- Why did you use this game object?
- Why did you use this game room?
- Tell me more about the game characters.
- Why have you chosen this character?
- How does the character use the game object?

The focus groups discussions and semi-structured interviews were recorded using audio recorders, while the game prototypes were recorded using paper-prototyping techniques and the games authoring software, Mission Maker. Drawing and written text were used to record the paper-based game prototypes and ideas and the Mission Maker to design the digital game prototypes.

Third Session | Prototyping and play-testing Session

The third session began with a summary and follow up of the previous sessions. The participants summarized and reflected on the game prototypes and presented their games in focus groups. The families play-tested the games and exchanged feedback. This process allowed the researcher to observe the participants discussing how they designed the games and the way they made game-making related decisions. All discussions in focus groups were recorded using observation (notes) and audio recording (audio recorders) techniques. Further data related to the games and the designers' intentions and decisions were gathered through semi-structured interviews recorded in audio recorders.

Game design

In this part, two of the families continued working on the digital prototypes using Mission Maker. In this stage, they focused on building the game rules. They designed the game rules using the rule maker on Mission Maker. To capture how they built the game rules, the participants were asked to showcase the game to the researcher and the other family members. The third

family decided to propose a new game idea inspired by another set of museum objects. Due to lack of time, this family did not prototype the second game idea on Mission Maker. Nonetheless, they used paper and markers to paper prototype the game. After completing the prototypes, they showcased the gameplay and rules of the game to the researcher and the other families.

Presenting the games

After completing the game-making process, the participants were asked to produce a game poster which would be used to attract other visitors to play their games. The aim of this activity was to encourage the designers to consider who is the audience of the game and the connection between the museum collections and the games. Furthermore, this also allowed the researcher to explore how the participants assumed the role of the designer and curator through the game-making process.

The game posters are treated as data which capture the way the participants explore the relations between designer/players and curator/visitors and how they conceptualize the games as curatorial products.

Play-testing

In this session, the families play-tested all games, reflected on their work and exchanged feedback. The discussions during the play-testing section were recorded using audio-recorders while the gameplay and game walkthroughs were recorded with screen video-recorder application on laptops while using the Mission Maker game-authoring tool. Each member of the families play-tested the games individually discussing their experience of playing the games. Using semi-structured interviews, the researcher asked the participants to describe the games and give recommendations and feedback to the designers. This allowed the collection of in-depth data about the designers' intentions, decisions and work.

In this section, I have shown how a 3-session game design workshop with families was designed, planned and implemented at a busy public space like the Museum of London Docklands. Besides the limitations, I have designed a basic plan for the organisation of a game-making workshop with families which focuses on game design inspired by the museum collections and galleries. I offer a detailed account of the complete game design cycle process starting from game ideas generation, paper prototyping, digital prototyping and continues with play-testing and prototyping. Lastly, I describe how to set up, collected and recorded data from multiple groups allowing space for self-reflection and self-evaluation.

7.2.2 Making the Games

As described in previous sections, each family individually designed a computer video game. After planning and proposing a game idea, each family used Mission Maker on laptops to build the games.

Mission Maker is a games authoring software which was built in Unity. It was developed for a UCL Institute of Education research project funded by the Arts and Humanities Research Council. The research project was a collaboration between the Institute of Education, the British Library, the University of Sydney and the Game City in Nottingham. The aim of the project was to explore how students understand and engage with literature while making games. Since then, the Mission Maker has been used in other research projects to explore game-making in formal and informal learning spaces. In this study, it is used to investigate how visitors engage with curation and negotiate their role and agency while designing games for and about museum collections.

Mission Maker was considered suitable for multiple reasons. First, it has been tested and used in several projects prior to this case study to investigate the way young people design games. Second, it facilitates the research design. To explore its research questions, focusing on the

analysis of the game-making process was essential. To achieve this, it was essential to collect in-depth data on how the participant's design video games. Unlike the first case study where the families were only involved in the paper-prototyping process of the game[29], the families of this case study used both paper and digital prototyping techniques to design video games. The affordances of Mission Maker allowed the research process to collect materials from each family without the researcher's influence and interference. Lastly, as part of a self-funded PhD project, this case study had limited budget, resources and time to investigate its research questions. Therefore, using a UCL-based, comprehensive and easy-to-use games authoring software enabled the data collection and completion of this project.

Mission Maker consists of two modes: the player and the designer mode. The research participants used the designer mode to build up the game ideas. They use different resources available on Mission Maker to prototype the games including text, 3-D images, sound and speech, rules and triggers. They code the game rules, edit the game map, and add new characters and objects. To play-test the games, they used Mission Maker's player mode.

[29] As discussed in Chapter 5, a mobile Alternate Reality Game called 'Midnight Mayhem: Alive at the Grant' was designed by the researcher based on the participants' paper prototypes, semi-structured interviews and focus groups discussions.

image 7.1: Mission Maker's Designer Mode

Image 7.2: Mission Maker's Player Mode

7.3 Data Treatment

As explained earlier, this thesis approaches data treatment as an important aspect of academic research which informs the collection, analysis and interpretation of research data. As presented in the previous chapter, a few changes were implemented in terms of the research methodology and methods. Therefore, this case study's data are different than that of the first case study. As a result, different strategies were employed for the treatment of the research materials. In the first case study, the participants game designs were paper-based, whereas the second case study's game designs are both paper-based and digital. Including a data treatment section in this chapter is essential. It offers a detailed breakdown of the data and the complexity of handling and treating digital data such as video games designs.

7.3.1 Data Storage and Organisation

The data include the following materials:

- Audio recordings of the participants' conversations, focus groups discussions, and semi-structured interviews,

- Paper prototypes (written text and drawings on paper)

- Digital game prototypes (on Mission Maker including 3D images, audio, written text, rules)

- Game posters (written text and drawings on paper)

The data were created/produced through:

- Observations
- Focus groups
- Semi-structured interviews while game prototyping

- Paper-based game prototyping
- Digital game prototyping on Mission Maker
- Semi-structured interviews while play-testing

They were recorded on:

- Research notes
- Three audio recorders
- Paper
- Games authoring tool (Mission Maker)

Data Storage and Organisation

The decision of how to store and organise the data was made during the early stages of this case study. Reflexivity informed the way I approached and treated the research data collected during the second case study. Having already designed and implemented the first case study at the UCL Grant Museum of Zoology gave me the essential experience and knowledge to effectively plan the data treatment and establish a framework for the analysis. Planning how to store and organise my raw data allowed me to understand and familiarize myself with the complexity of my research data. As mentioned above, the data generated from this case study were richer and more complex than the first case study's research materials. They fall into two different categories: digital-based data including audio recordings of each game-making session and the participants' digital game prototypes on Mission Maker; and paper-based materials of paper game prototypes and game posters. Therefore, I used different storage and organisation techniques.

Data Storage

To store the research data, the UCL guidelines were followed. The digital data were saved on two different devices to securely back up:

- On an external hard drive, and
- On the researcher's laptop

To manage access and security, both devices were password protected and securely stored when not used. To store and save the digital data, a filing system was used as explained in the 'Organisation' section.

To store the paper-based materials, I used filing products such as folders and office boxes. All paper-based materials were stored in a safe location accessible only by the researcher and filed as described in the 'Organisation' section below.

Preservation, Archiving and Organisation

According to the UCL Research Data Policy (2014), all research data should be stored for a minimum period of ten years after their publication or public release. Therefore, all materials generated from this research project will be stored and saved for at least ten years after their publication. After that, the raw data will be deleted permanently.

Preservation of participants' games

As mentioned above, the research data of this case study included the participants' digital prototypes on Mission Maker. To preserve these data several strategies were followed. There are many challenges concerning the way digital games are preserved and archived. These data are more complex than other digital data. The games were designed and saved as a text file format (txt). Each txt file consisted of each game's code. To open and play these txt files the Mission Maker software is required. To further preserve the participants' games, game walkthroughs were recorded using a screen video recorder software. The game walkthroughs

were saved in video file format (mp4). Additionally, for the purposes of this thesis, screenshots in image file format (jpeg) were taken to complement the analysis of the data and the narration of this thesis. All the above formats of the participants' games were accessible locally only by the researcher. However, the participants have been sent a copy of the text file format (txt) of their games to continue building their game prototypes using the Mission Maker.

Archiving and Organisation

The materials generated from The Museum of London Docklands (MOLD) Case Study were saved and organised into three groups based on the three families that fully participated in the game design sessions:

- MOLD Group 1
- MOLD Group 2
- MOLD Group 3

The initials MOLD stand for the research setting (Museum of London Docklands) and phrase Group 1,2,3 corresponds to each family. Even though, all materials were gathered as a process in progress, organising them into groups which represent each family and not each session allowed the researcher to handle, treat and then interpret the data separately as units.

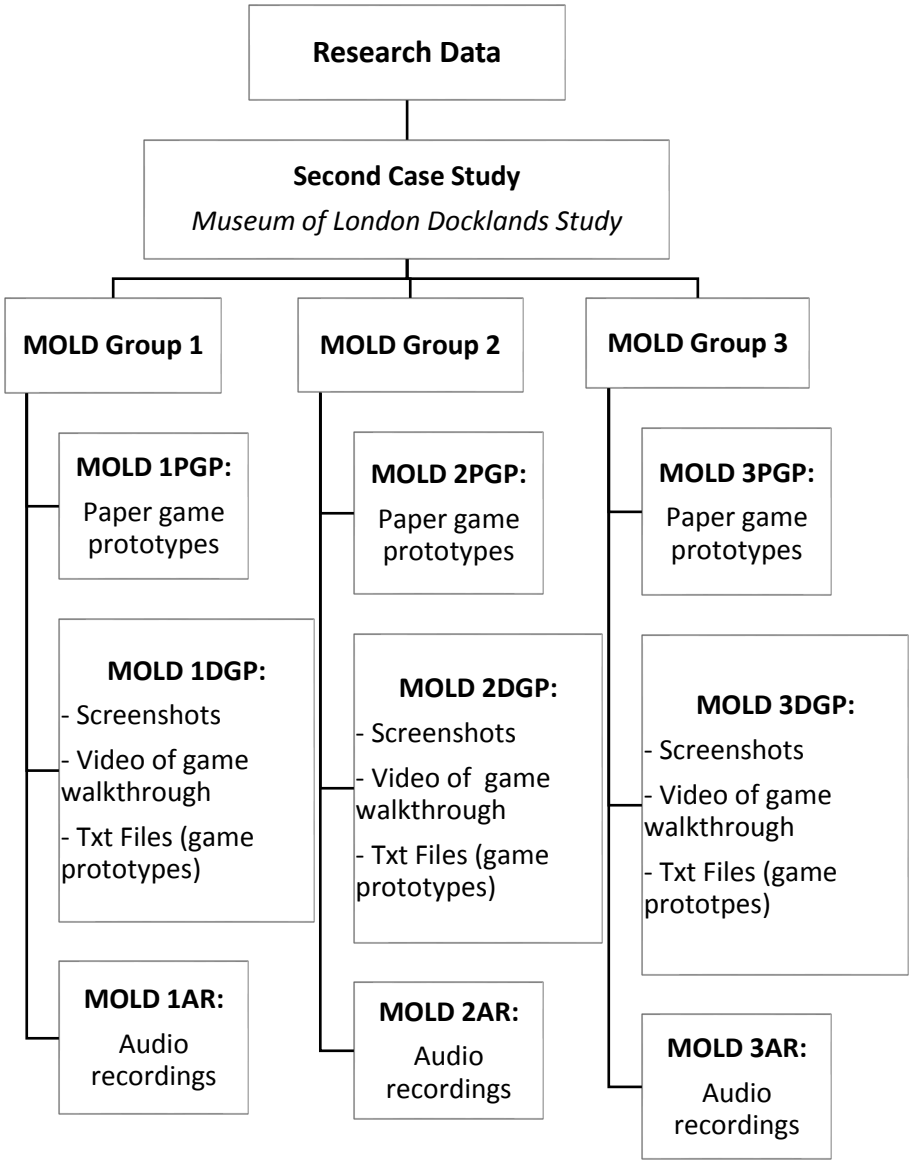


Figure 7.1; Data Organisation

Then, the raw data from each group were filed into different categories which represent each type of the materials gathered. For instance, the materials generated from the first family (MOLD Group 1) were categorised as follows:

- MOLD 1PGP represents the paper game prototypes of the first group.
- MOLD 1DGP stand for the digital materials gather from the first group including game screenshots, video game walkthroughs and the txt files of the digital game prototypes.

- MOLD 1AR represents the audio recordings of the first group's discussions and semi-structured interviews.

The next step after the organisation and categorisation of data was transcription. The following section will outline the way the transcription was approached and used to prepare the data for analysis and interpretation. During the transcription, the above data organisation allowed the researcher to easily and quickly access the raw data and prepare them for analysis and interpretation.

7.3.2 Transcription and Sampling

For the Museum of London Docklands case study, the researcher followed the same process of transcribing and sampling the raw data as the UCL Grant Museum of Zoology case study. Initially, in-between the sessions, the audio files were gradually transcribed. This helped the researcher to reflect on the research process and build up the data collection.

Sampling

This project's research data are extensive and rich. This project's methodological and analytical framework requires the transcription and Multimodal reading of participants' semi-structured interviews and the Multimodal Analysis of the game posters, game paper-prototypes, and game digital prototypes. Playing the digital game prototypes is essential to examine the way the participants approached, interpreted, represented, and curated the museum objects in their games. Analyzing them alongside the semi-structured interviews allows a deeper insight into the participants' intentions and decisions as game-designers. Finally, the Multimodal Analysis of the game posters helps us understand the way they contextualize their games within the museum culture and curation.

However, developing a sampling strategy is necessary. To assess which data are relevant to the project's research questions and objectives a sampling framework was used. The data were sampled based on their relevance to the following three key theoretical concepts: curation, representation, communication of meaning and agency, and the following criteria:

- Refer to the way the research participants treated, represented and curated the museum objects in the game prototypes.
- Describe the research participants' intentions and design decisions.
- Describe how the research participants assumed the role of the designer.
- Refer to how game design allowed them agency to construct and communicate meaning and challenge museum curation and representation.

Thus far, I have detailed the way I handled, organised and transcribed my raw research data in preparation for analysis and interpretation. I have described what types of materials constitute the data in this thesis. Furthermore, I presented how the raw data were stored, organised and archived based on the UCL's guidelines and research data policy. Finally, the way I approached and implemented data transcription was thoroughly explained.

In the section that follows, I will first demonstrate how I constructed my analytical strategy and then, how I am implementing it to analyse and interpret my data. I developed two different analytical strategies for the two case studies. For the UCL Grant Museum of Zoology case study, I approached my data from a Thematic Analysis perspective. After coding the data, I categorised them into themes. For the data interpretation, I drew from Museum Studies theories and Game design and play theories. However, for the second case study, I followed a different analytical strategy. The materials were analysed and interpreted from a Multimodal Social Semiotics perspective based on Kress and van Leeuwen's work (2006) as adopted previously by other researchers (Pelletier, 2005; Buckingham & Burn, 2007; Jewitt, 2013;

Diamantopoulou, 2018) to examine students' game designs (Pelletier, 2005; Buckingham & Burn, 2007) and digital data and technologies (Jewitt, 2013).

7.4 Data Analysis

7.4.1 Data Analysis Framework

To analyse and interpret the materials gathered at the Museum of London Docklands, I use a Multimodal Social Semiotics Approach. Choosing Multimodal Analysis instead of Thematic Analysis allows a detailed examination of game design and in-depth reading of the participants' games as multimodal texts (Jewitt, 2013). The Multimodal Analysis focuses on the design process and captures the complexity of how games are designed (Burn, 2016, p. 12).

Analysis of data

The analysis is based on the conceptual framework proposed by Kress and van Leeuwen's work (2006) and as adapted previously by other researchers from the fields of Media Studies and Learning and Technologies (Pelletier, 2005; Buckingham & Burn, 2007; Pelletier et al., 2010; Jewitt, 2013) to examine students' game designs (Jewitt, 2003; Pelletier, 2005; Buckingham & Burn, 2007) and other digital data and technologies (Jewitt, 2013). In the Museum Studies field, Multimodality and Social Semiotics have been used as methodological and interpretive approaches to analyse young visitors' drawings of ancient ruins (Diamantopoulou & Christidou, 2018).

Building upon these previous research texts, the analysis focuses on the participants' designs as multimodal texts which include different communicative modes such as speech, writing, visual design, and code (Burn, 2016, p. 12). The data analysis focused on the following communicative modes:

- **Written text**: Written text that can be found in different locations in the participants' games and game posters. For instance, in text boxes which are attached to different characters or objects.

- **Aural/audio**: Sounds, speech such as participants' recordings of narrations, descriptions and conversations.
- **Visuals**: Visual designs such as 3D objects and static images. These images represent the museum objects or other objects in the participants' game designs.
- **Rules/Code**: This mode refers to the game editor or the game code which orchestrates each game (Burn, 2016:12). The code refers to the designers' decisions of how the objects, characters and space are programmed to function within the game. It characterizes the conditionality of the game and the relationship between players, characters, space and game objects.
- **Participants' semi-structured interviews:** The participants expressed their design decisions and intentions while talking about their prototypes and play-testing their games with other family members. In this thesis, the participants' interviews are treated as another communicative mode. This allows the researcher to take into account the designers' intentions and decisions while analysing the games.
- **Space**: This refers to the game environment. The participants as designers created three-dimensional spaces for their games using the Mission Maker software. This study looks at space as an important entity of the participants' games. It proposes that there are connections between the space/environment of the games and the objects curated within it. Identifying these connections allows a deeper insight into the way the participants unpack the notions of curation, representation and agency.

Using the Multimodal Analysis, I break down the game prototypes into smaller elements. I detail which semiotic modes and resources were used by the families to design the games. I show how the designers represented the museum objects in the virtual environment of the games. In this way, I will discuss how the families approached, interpreted and transformed the museum objects into game objects in the games. This will reveal how the designers reflect

and represent the museum objects' identity, culture and materiality using different game resources and mechanics. It demonstrated that designers challenged and transformed the museum culture and experience by adding new layers of representations and meanings to the museum objects, displays and space.

The Multimodal Analysis also enables me to explore how the research participants constructed the relations between the player and the game and the designer and the player. I will discuss that the way they established these relations reveals how they challenged and negotiated their own agency as designers.

As Aarseth (2003) notes, there are three approaches for games analysis, a. analysis of the game design, rules and mechanics, b. players' observation, and c. playing the game. While he separates these three approaches and underlines that playing the game must be an important step of the analysis, he points out that the analyst must use many resources (p. 3). Consalvo and Dutton (2006), building upon Aarseth (2003), propose that the analyst must combine playing the game '…with a careful analysis of the various components of the game itself.'. Approaching these rich and complex sets of resources with Multimodal Analysis permits a deeper investigation of the different modes that the participants employed to design the games. As Burn (2016) notes 'design is the choice of mode. To tell a story, you need to decide whether it will be told orally, or in writing, or perhaps as visual narrative'. Each mode has different affordances and limitations (Burn, 2016). This means that meaning is communicated and understood differently based on the choice of mode. Therefore, as research on digital media and technologies has suggested (Jewitt, 2013), looking 'beyond language' is essential to analyse such rich data.

Multimodal Analysis, however, has its limitations. Previous work on analysing students' games with Multimodal Analysis (Pelletier et al., 2010) points out that the analysis and reading of these games as multimodal texts is not equivalent or considered to be fully representative of

the decisions made by the students who made them. For this reason, the analytical framework proposes the analysis and interpretation of the participants' games along with the analysis of the families/designers' semi-structured interviews. This will uncover their decisions and intentions of the design process, objects' interpretation and how they perceived their agency.

I also draw from the theoretical and methodological concept of 'metafunctions' and look at the game designs as complete communicational and representational systems. Kress and van Leeuwen (2006) adopted Halliday's functional semiotic (1978; 1985) theory to apply it not only to speech and writing but also to other semiotic modes such as colour and visuals. I will analyse the participants' game designs using the three metafunctions: the ideational metafunction, the interpersonal metafunction and the textual metafunction. Examining the participants' games through these three metafunctions allows me to demonstrate **what** the participants' games represent, as rule-based, playful and cultural objects (Salen & Zimmerman, 2003), and highlight the different meanings they communicate. In addition to this, the metafuctional theory allows me to present **who** are involved in the process of communication and representation receiving, decoding and experiencing meaning.

The first metafunction, 'the ideational metafunction', is about representation. It discusses what the games represent and what they are about. In this thesis, the ideational metafunction is used to understand how the participants approached, decoded and interpreted the museum objects and then, translated and represented them in the game context. Employing this metafunction uncovers how the families played, translated and extended the official museum representation and meaning in the game designs. In this way, what each game represents and how it connects, extends or disrupts the representations that already exist within the museum space will be discussed and theorised.

'The interpersonal metafunction' is used to explore the representational and communicational relations that are developed through the process of game-making. The interpersonal

metafunction allows me to look deeper at the relations that are expressed and communicated in the games and through the games/game-making. This metafunction is particularly useful in discussing agency and the power relation and dynamics between designer-user. It provides a further understanding of how the families perceive their agency as interactive participants/designers, the different agentive roles and relations in the museum environment, and how these relations, roles and agency are presented/translated in the games.

‘The textual metafunction’ is about the cohesion of the semiotic modes. In the participants' games, cohesion is expressed through the game rules and the language used throughout the games, the game descriptions and posters.

In the metafuctional theory (Halliday, 1978), the term 'interactive participants' is used to refer to another part of Kress and van Leeuwen’s work; 'the represented and interactive participants'. Kress and van Leeuwen write that all visuals involve two kinds of participants: the represented participants; the people, places, and things presented in different texts, and the interactive participants; the designers who create and communicate something and the users who view, read or experience it. Employing Kress and van Leeuwen’s theory (2006) in this thesis shows that the games involve: a. the museum objects as the represented participants and b. the families and the visitors/players as the interactive participants.

For Kress and van Leeuwen (2006), there are three kinds of relations between these participants: relations between the represented participants, relations between interactive and represented participants, and the relations between interactive participants. However, defining the museum objects, that exist virtually within the games, as the represented participants raises questions regarding the relation between the analogue/physical museum objects that exist within the museum space and the virtual museum objects that exist within the game space as game objects. These questions concern the process of transforming the museum objects into game objects and translating their materiality and meaning while moving from the

physical to the game's digital and playable space. These questions are important and relevant to Museum Studies literature, practice and theory as they connect with the debate on digital curation and representation, and the materiality, aura (Benjamin, 2008) and meaning of the digitally reproduced museum objects.

The different relationships between the represented participants can unfold the way the designers unpacked, represented, stretched, and manipulated the museum objects' materiality and the existing representation and interpretation. These relations can be identified in the game objects taxonomies, description and representation in the game environment, and in the relationship between museum objects and game objects. The relation between interactive and represented participants ties with the interpersonal metafunction too. It allows me to explore the different relationships between designer-object/curator-object. This shows the authority of the interactive participants and again how the interactive participant disrupts, manipulates and adds to the existing representation of the museum objects. Finally, the relation between designer and viewer, the designer and player, curator and visitor uncover how the families perceive different roles, relationships, authority and agency within the museum environment and their games. In this way, looking at the relationship between the interactive participants allows a further understanding of how the families expressed the way they perceive the museum practice through their game designs.

Theorisation of data

To theorise my data, I will employ Salen and Zimmerman's (2004) Rules, Play and Culture framework. The Rules, Play and Culture framework allows me to approach visitors' games as playful, dynamic and cultural objects situated within the museum context can reflect, transform and thus add to the museum culture and context. Salen and Zimmerman's framework acts as a theoretical foundation upon which this thesis builds its arguments and findings. I argue that the participants' games do not only represent and communicate meaning, they also, as

cultural objects, reveal how the research participants assume the role of curator and collect, interpret and ensemble the museum objects and then transform and exhibit meaning for and about them in the virtual space of the games. The games as cultural objects, they also reveal how the participants perceive their role and agency as curators/ game designers within the museum context and the power relations and dynamics between designer-player.

To further discuss and theorise the way the research participants assumed and reproduced the authority of the curator and challenged and negotiated their agency as visitors/designers within the museum context, I employ Bourdieu's theoretical tools and Kress' notion of intentionality of choice. Bourdieu's theoretical tools of field and habitus are used to understand the power relations and dynamics that exist within the museum space. But, as I have argued in chapter 3, even though Bourdieu's theory assists our understanding of the museum-visitor relation and dynamics, it limits the examination of visitors' agency in the context of Participatory Design and Visitor Generated Content practices. Bourdieu looks at the agents as 'puppets' acting unintentionally and manipulated by their habitus and the social forces and rules of the field. On the other hand, Kress's theory of intentionality of choice and agency allows looking at the participants' games as curatorial platforms through which they produce and communicate meaning as reactions to the environment of communication. Kress argues that the agent has a variety of choice for meaning-making and representation. These potential choices allow agency to the agent to materialise and communicate meaning and representation. Drawing on my data, I will argue that games design allow visitors/designers the agency to assume and reproduce the authority of the curator and make design decisions about representation and meaning-making within the museum field. The research participants from visitors become playful designers/curators.

From the Museum Studies field, I draw on theories related to museum curation and design (Witcomb, 2003), space syntax (Tzortzi, 2015), the morphology of virtual spaces and spatial

mobility within game worlds (Flynn, 2007), and the notion of the 'museum as text' (Ravelli, 2006). These theories support and frame this project's findings. They allow a deeper understanding of the relationship between museum visitors and objects in the museum and the game space.

7.4.2 Data Analysis and Interpretation

This section includes the analysis and interpretation of selected parts of the data. To accommodate the narration of this section, I will separate and focus the analysis on each family's design work. The most relevant game prototypes, semi-structured interviews and the game posters will be analysed using the above data analysis framework.

Participants' games: MOLD Group 1

In the table below, I provide information about the research participants of MOLD Group 1. I describe each family member, the number of the sessions they attended, and which museum objects and galleries they examined and used as inspiration.

Family group	One adult and one child
Sessions	All three sessions
Museum objects	Handcuffs, mother of pearl, diver's boot, and block and tackle
Museum gallery	'Trade Expansion', 'Docklands at war'

Table 7.1: Participants' details

Examining the game paper-prototypes

During the first session, they handled several museum objects, discussed their materiality and what they represent within and beyond the museum context. To propose a game idea, they selected a small group of objects and drew parallels between them and museum collections and the displays. This family worked with four museum objects (the handcuffs, the mother of pearl, the diver's boot, and the block and tackle) and prototyped one game idea inspired by them. According to the group, the theme for selecting these four objects was 'sea and sailors' and objects that can be used on a ship.

First, they paper-prototyped the game idea and then, using the Mission Maker designed the digital game prototypes. Throughout the sessions, their game idea was redefined and changed. Moving from paper to digital prototyping on Mission Maker challenged them to experiment with the design resources and Mission Maker's platform and think about their game proposal in different ways. Working on different platforms (paper, Mission Maker) enabled them to make design decisions that shaped the game and the way the museum objects were transformed into game objects. For instance, their initial idea to include the block and tackle (museum object) in the game was rejected and only three objects were included in the game. Lastly, exploring the museum galleries and especially the 'Docklands at War' gallery allowed them to talk about the game and how they made decisions about the game idea, game rules and the relationship between the player, the game objects and the museum.

Based on their game prototypes, interviews and the saved name file of the game on Mission Maker, the game is called 'The defenders' and is set on a ship. While talking about the game, the group noted*:*

> 'You are on a ship, that will carry you to this place, special place, you will try to get the mother of pearl. You will have to dodge sharks and fish. So, if you kill shark or fish you

get the handcuffs. For the whole time, you are alone in a ship...' (Transcription from the semi-structured interview, MOLD Group 1, 1st session)

'So, mine is that you have…I was planning to do this like you have to sail and try to get this mother of pearl with this…(ah) what's called? The block and tackle?... They (players) try to get all these stuff (pointing at the museum objects) and then, they (players) give it to the king and then the game is complete.' (Transcription from the semi-structured interview, MOLD Group 1, 2nd session)

Based on the participants' descriptions and prototypes, the player sets to find the mother of pearl. The player assumes the character of Alex and completes challenges to 'save valuable objects and the king', to 'make war allies', and 'capture the War Warriors'. (Written text on the game poster, 3rd session and semi-structured interview, 2nd session). Alex is a teenage boy who works as a sailor and travels the world to find the mother of pearl.

The game is inspired by the museum collections, nautical and war themes, narrative and objects. Many of the Museum of London Docklands galleries are dedicated to trade and life in the sea. The designers maintain the museum's central narrative and themes in the game. It is an adventure game in which the player assumes the role of a character and starts a quest to defeat enemies and acquire a valuable object.

Analysing the participant's semi-structured interviews demonstrates that the designers focused on building the game space for the museum objects. Looking at the participants' game designs as rule-based systems (Salen & Zimmerman, 2003) reveals that they created a complex system of rules and mechanics to reflect and communicate meaning about the museum objects. The museum objects do not just inspire the theme or narrative of the game. They play a central role in the game. The initial idea of the game's narrative and rules shows how the designer perceives the museum objects. It uncovers the way the designers interpret

the materiality and representation of each museum object and how the designer transforms them into digital game objects. First, the mother of pearl acts as a reward, and second, the handcuffs give the player power and allow her to complete the game. This shows that the representation and materiality of the objects are maintained in the game. However, the designer uses different strategies and mechanics to connect, frame and reveal the museum-objects as game-objects to the players.

In the following pages, three different screenshots from the digital game 'The defenders' will be presented and analysed[30]. Then, the analysis will focus on the game poster. These materials were selected as the most relevant data which reflect the way this group designed the game inspired by the museum objects and galleries.

Examining the digital game prototypes

This screenshot below was taken at the beginning of the game. It was selected for analysis because of its connection with one of the museum objects; the handcuffs. After killing a guard, the player walks down the road and encounters seven yellow crates and several other objects. There are three open doors behind, on the right and left side of the crates. Playing the game reveals that the player can move freely in any of these rooms and continue playing.

[30] A YouTube video link for the full walkthrough of the game is included in the Appendix Four.

Game screenshot 7.1: Game prototype of 'The Defenders', Family 1

The player's goal is to find and collect the mother of pearl. To achieve that, she has to complete a series of other actions including wandering around the game rooms, fighting guards and the final game boss, collecting objects and discovering/saving the king. She can complete all these actions and complete the game freely. However, there are other smaller actions that the player can choose to complete to gain extra rewards. These rewards facilitate the player in completing the above actions. This screenshot shows one of these smaller actions which offer the player a reward, the handcuffs. These yellow crates in the centre of the room are part of a game challenge. By completing the yellow crates challenge, the player unlocks the handcuffs. The handcuffs then, facilitate the player in capturing guards. However, no instructions are given to the player. Only by experimentation, she can figure out how to solve the challenge.

The challenge is complete when all blocks are used to create a tower. The second screenshot shows how the player builds a tower using the yellow crates to get the handcuffs.

As seen in the game screenshot, the handcuffs are floating above the crates. This screenshot is included in the analysis to complement the narration of this thesis. It gives additional details concerning the game and the player's actions.

In this part of the game, the designers employed two different modes; the mode of visuals and rules/code. The mode 'visuals' was used to represent the museum object in the game environment and to transform it into a game object. The mode 'rules/code' allowed the designers to construct how the museum-object as game-object was presented in the game space. In other words, how the players will encounter and interact with it.

Game screenshot 7.2: Game prototype of 'The Defenders', Family 1

The analysis of the game prototype (Game screenshots 7.1 and 7.2) will begin with the examination of the mode 'visuals'. This section will focus on the family's design decisions and choices. I will look at how the designers' experimented with the mode of visuals to create different game objects and transform the museum-object into virtual game-object.

The mode of Visuals

The table below details all the different visual resources that were used by the designers to create this particular game prototype. The mode of visuals demonstrates what visuals resources (2D images and 3D objects) were used to virtually represent different objects, including the handcuffs. For instance, the designers chose a 2D image of handcuffs as a visual representation of the museum object. In this way, they chose to realistically represent the museum object in the game.

However, the mode of 'visuals' alone cannot reveal more information about the purpose and function of this object. To explore how the players interact with this object, it is essential to look at the game mechanics. Focusing on the game mechanics shows that the designers separated these visual resources into two different categories: the pick-up items and decorative items. The first category includes objects that can be collected by the player. The second category refers to objects that only have a decorative purpose and therefore, the player cannot collect or own them. This means that the act (mechanics) of collecting allows the player to interact with different objects in the game.

MODES	MISSION MAKER PROTOTYPES
Visuals	**Pick-up items** • Yellow Crates • Map • Brown Bag • Gold • Handcuffs **Decorative items** • Road lights • Buildings

Table 7.2: Multimodal Analysis/Visuals

Regarding the pickup items, to further discuss their function and purpose, the analysis will refer to the game rules. The game rules show why the players interact with these visual resources. This means that the analysis of the mode of visuals connects and overlaps with both the mode of rules/code and the notion of game mechanics.

Examining the presentation, location and purpose of these game objects shows that they are revealed or hidden from the players based on their value. The yellow crates are part of a game challenge. However, their purpose is not immediately revealed to the player. As already mentioned, the designer presents the crates in the game space without giving any instructions or clues to the player. Playing the game and experimenting with the yellow crates reveals their purpose. Only by using them as 'Lego blocks' to build a tower, the player can collect the handcuffs. Owning the handcuffs gives the player the power to capture the War Warriors (guards). This means that as a pick-up item the handcuffs act as a power-up.

Apart from the yellow crates and the handcuffs, the designer uses additional pick-up items which are either less significant or act as traps in the game. For instance, the map is a secondary pick-up item. Even though it gives further information about the game layout, the player can continue playing without it. The brown bag and the gold act as traps. According to the semi-structured interviews, these two items exist to confuse or mislead the player. The designer's goal is to persuade the player that the brown bag and gold pick-ups are the only objects available in this room. The designer notes 'They (players) collect the bag and the gold...uh…so, they're (players) confused…'. In this way, the player will continue playing the game without completing the yellow crates challenge and therefore, she will not unlock the handcuffs. However, the handcuffs are important as they allow and facilitate the player to easily complete the game. The way the designers reveal and hide the objects shows how

they value and classify the different objects, how they structure and control the players' relation with them and agency to make decisions while playing.

Turning now to analyse the handcuffs and to further discuss what they represent as a game object. Using Halliday's metafunctions (see 1978, 1985), I will demonstrate how this family approached, decoded and interpreted this museum object and then, how they translated and represented its materiality in the game context. As a game object, the ideational metafunction of the handcuffs is presented through the game mechanics. In the game, the handcuffs are a reward. They act as a power-up which gives the player an extra ability. In this way, the ideational metafunction of the game object defines its interpersonal metafunction. The interpersonal metafunction of the game object expresses the relations between the participants that are involved in the game-making process; the designers, the players, the museum object and the museum-object as game-object.

The museum- object and game-object relation

The use of handcuffs in the game suggests that they are translated into a game object maintaining its representation as a captivity symbol and tool. The designer uses the game mechanics of power-ups to maintain and represent the museum object's materiality and symbolism within the game world. The way the museum object is represented in the game space defines the relationship between the museum object and its virtual and playful representation in the game. The relation between them shows that there are conceptual overlaps between the physical/analogue museum object and its digital/virtual reproduction. In this way, the game reflects the museum context and culture.

Looking at this game as representation (Salen & Zimmerman, 2003), allows me to see the handcuffs as part of a complex structure of game rules, narrative, aesthetics, and mechanics created by the designer. As a game-object, they belong to the game system.

They make sense only in relation to the complex structures of rules, narrative, aesthetics and game mechanics. In the game, the handcuffs are only important because the player uses them to capture enemies. Similarly, the handcuffs in the museum context belong to a complex representational system governed by curatorial rules, aesthetics and narrative. As a museum objects, the handcuffs are archived and ensembled together with other objects to represent an era or a period and narrate chronologically or thematically a story. In the museum environment, they are presented in the museum as part of the curatorial work and narrative.

Moving beyond the game as representation and seeing the game as a cultural object (Salen & Zimmerman, 2003; Bogost, 2007) situated within the museum context and culture enables me to draw comparisons between the handcuffs as a museum object in the museum environment and the virtual handcuffs as a game object in the game environment. I propose that the research participants act as curators who make design and curatorial decisions about representation and meaning. They extend and construct meaning and representation using different modes and platforms within and beyond the museum space placing the handcuffs in a new playful context. Through this lens, the game acts as a platform where the visitors/designers create a new virtual world where the museum objects can be experienced in new ways. The game as platform adds new layers in the museum experience and invites visitors/players to enact new playful rituals to encounter and interact with the museum object. In this way, the participants games challenge and transform the museum space and its collections.

The player-object relation

Closer examination of the game prototypes shows that this group focused on the relation between player and museum-objects as game-objects. They were interested in how players will encounter the objects, how they will interact with them and use them in the game.

The designers constructed complicated systems using different strategies to frame the way players encounter and interact with the museum objects in the game context. This shows that they traced different paths for the players to discover the museum objects in the game world and different rituals (collecting, solving challenges, fighting enemies) for them to enact to interact with them. Unpacking the ideational metafunction of the game object showed that in the game world the handcuffs act as a weapon that facilitates the player. This means that there are overlaps between the ideational and interpersonal metafunction of this game object. The player chooses to discover and collect the handcuffs to gain an extra ability. This condition sets the relation between the player and the object.

In the game, the museum-objects are not stored in glass cases. They are power-ups, life boosts or punishments. As such, they give special powers and rewards or punishments to players. The players do not simply look at or admire the objects. They interact, collect and use them in different ways. Using game language (rules, game mechanics, narrative) the designers structured the relation between players and game objects. They built different rules and challenges to frame the players' encounter and experience of the museum object in the game world.

There are also hierarchical relations between pick-ups. As demonstrated above, there are many pick-up items in this game prototype. The designers decided which pick-up items are either visible or hidden from the player. This design decision reveals the way the designer organises and classifies the pick-up items within the game world and how the relations between these objects connect with the relations between the player and the objects.

Reward pick-ups (handcuffs) are hidden while trap pick-ups (gold, yellow crates) are visible. These hidden pick-ups are revealed to the player through game challenges (game mechanics). While less important pick-ups are used to mislead players to continue the game without discovering the hidden pick-ups. For example, the designer displays the gold to attract the player's interest and hide the handcuffs.

The relation between game designer – player

To control the player's actions, experience and agency, the designers experimented with the affordances and limitations of Mission Maker's tools and resources. For instance, in Mission Maker, the yellow tubes are not supposed to work as building blocks. However, the designers used the game graphics' affordances and limitations to create this challenge. The interview segment below illustrates the way the designer experiment with the game affordances and limitations.

D: Can you build with blocks (yellow crates)?

R: What do you mean?

D: Like if…for example, people like…create a tower… Could you throw it (yellow crate) down and then could you jump on it (yellow crate)?

R: I'm not sure if it's possible.

D: Can I try it?

D: You can, of course. Why do you want to throw it (yellow crate) down and then jump on it (yellow crate)?

T: To get the handcuffs, cause they're in the air.

D: I see. (Semi-structured interview, MOLD Group 1)

This shows that the designer challenged the software's limitations and affordances to create a more challenging play environment for the 'implied player'. This reveals that this group assumed the role of designer and understood the power relations between game designer-player. Here, the relations between designer/player parallel with the relationship between curator/visitor in the museum context. The participants' design decisions reveal how the relations between creator-user (designer-player, author-reader, curator-visitor) are understood and constructed. This group challenges the notions of agency and power relationships within and through the games.

Looking at the participants' game as a field (Bourdieu, 1993), we can conceptualise the designer-player power relations and dynamics. Through the game, the research participants reproduce the power relations between curators-visitors, designer-players etc. While making games, they act from a position of power and decided how to manipulate and control players actions. Based on the semi-structured interviews (see below) the participants designed the game prototypes tracing the actions of an 'implied player'. They built up the game's level of difficulty using different game rules and mechanics and previewing the actions and agency of the 'implied player'. As the designer notes in the following interview segment, the crates challenge is hard and therefore more challenging for the player.

D: I think quite actually you could stand on it (yellow crate) and get the handcuffs.

R: Show me.

D: (While the designer demonstrates how to use the yellow crates to build a tower in the game) Yeah of course, if you go…and 'B' (game control key) …so…you see…I got a lot of blocks …and see where the handcuffs are (The designer points the handcuffs on the screen)…and 'E' (game control key) …and then 'B' (game control key) …and tower on top and…then 'E' (game control key). You get that? It's hard.

R: So, why are you doing this?

D: So that you can get the handcuffs, cause if you try hard you can actually get it, I think. You see, it's hard.

The mode of Rules/Code

The analysis table below presents how the mode of rules/code is used by this group to design the game. Unpacking how this mode is used demonstrates how the designers structured the virtual space of the game, controlled the players' encounter with the museum objects in the game space and established their authority and agency as designers.

This game rule was not programmed using the software's rule-maker. The designer used the game mechanics and the software's limitations and affordances to structure the rules of the game challenge.

MODES	MISSION MAKER PROTOTYPES
Rules/ Code	**Game challenge/puzzle** If you build a tower using the yellow crates, the player unlocks a pair of handcuffs

Table 7.3: Multimodal Analysis/Rules

This rule is about the way the player interacts with the handcuffs through the yellow crated challenge. Based on the semi-structured interviews and game prototypes, the player must build a tower using the yellow crates (blocks) found in the centre of the game room. The player must use and successfully balance all yellow crates to access the handcuffs. Here again, the ideational metafunction overlaps with the interpersonal metafunction. The way the player encounters and interacts with the object defines her relationship with the object. It also expresses the designer-player relation.

The player-object relation

The game rule (the object is revealed to the player only after completing the challenge) establishes the player-object relation, while the game mechanics (yellow crates challenge) are the method that is used to construct the player-object relation (Sicart, 2008). The designers hide and reveal the museum object using the game challenge. In this way, they define the museum object's presence and placement within the game and the way the player encounters it.

The designer-player relation

Previous research (Linderoth & Bennerstedt, 2007) has shown that while playing, players use previous gaming experiences to make meaning. For instance, they use their previous experience of crates in games to test the limitations and affordances of crates in the next game. In some games, crates can explode and inside the player can find different rewards (life packs, weapons etc.). In other games, they cannot. They are just used as decorative objects. But often the player will encounter crates that can explode and others that cannot. To decode the representation and meaning of crates in games, players must test their affordances and limitations. This shows that players are aware and accustomed to games' language, grammar, symbolism and conventions. Here, the designer follows a similar

process. He uses previous experiences of playing with crates in games. He applies this knowledge and experience in his designs. Based on the semi-structured interviews the designer has previous experience of playing Minecraft. During the interview, he pointed out that he was inspired by Minecraft's affordances to build this challenge. This suggests that players and designers have an established game grammar and language that they have developed while playing other games and they can use to communicate meaning and understand the conventions of games on different occasions.

In this game prototype, the designer uses game grammar and language for the same purpose. The designer predicts that players will test the affordances and limitations of the crates to figure out the challenge. The designer gives no clues to players about the crates' meaning and purpose in the game. He assumes that the players are aware of games' language, symbolism and conventions. He assumes that he shares the same language and code with the player and believes that those who do not, they will not solve, or they will struggle to solve the challenge. The game requires the 'gaming' capital and habitus to solve the challenge.

This is also relevant to visitors' museum experience and museum-making. Museum literature (Ravelli, 2006) has discussed the methods museums employ to communicate meaning to their visitors. Ravelli points out that visitors and museum professionals are familiar with these communication methods including texts, admission charges, rules, aesthetics and architecture of the museum building and space. Museum visitors recognise the different ways museums communicate meaning. They know that they will find information on labels, brochures and wall texts.

This suggests that parallels can be identified between the structure and methodology of curatorial design and game design. The participants reproduce in the game the power

relation, dynamics and conflict that exist in everyday social fields like museums. They model the way agents decode and understand the doxa of each field based on their own habitus. It is the agent's habitus that allows him or her to know how to act and react in a social situation (Bourdieu, 1993) or in this case in the game.

Examining the digital game prototypes

In this section, this group's final digital game prototype will be analysed.

Game screenshot 7.3: The Defenders, Family 1

This screenshot was taken at the end of the game. After killing the main game boss, 'the fake king', the player's goal is to find the mother of pearl and complete the game. The mother of pearl is hidden in one of the game rooms. This screenshot captures the moment when the player discovers the mother of pearl.

This screenshot was selected for analysis due to its connection with one of the museum objects; the mother of pearl. It shows how the designer transformed this museum object

into a game object and presented it to the player in the game space. The following tables detail the analysis and interpretation of the above screenshot. The analysis focuses on what modes of communication the designers use to construct the relations between museum object-game object, player-object and designer-player in the game environment.

The mode of Visuals

The following analysis table presents the visual resources that were used to represent one of the museum objects in the game.

MODES	MISSION MAKER EXTRACTS
Visuals	**Pick-up items** • Green Gem

Table 7.4: Multimodal Analysis/Visuals

The designers selected the green gem from a default selection of 3D items which are available on the Designer Mode of Mission Maker to represent the mother of pearl. The participants were not limited to use only these items. They were free to upload images from the web or drawings using the 'upload an object' section of the Designer Mode. Interestingly, all families that included the mother of pearl in their game ideas, they selected the green gem in Mission Maker.

Here, the ideational metafunction of the green gem expresses what it means within the game. The green gem represents the mother of pearl, one of the museum objects. Based on the game prototypes and the designers' semi-structured interviews, in the game, the mother of pearl acts as the final reward of the game. One of the game rules establishes that owing this pickup item allows the player to complete the game.

The museum object – game object relation

To decide and select the green gem as the visual representation of the museum object in the game, the designers first analysed and discussed the role and materiality of the museum object and then, searched for potential connections and similarities between the museum object and the available 3D items on Mission Maker. This process reveals the relations between the museum object and the green gem as its visual digital reproduction in the game. According to the semi-structured interviews, the mother of pearl symbolises beauty, value/money and power. For this reason, to translate the museum object into a game object, the designers chose gem/diamond. In the game, the mother of pearl signifies money, power and beauty.

Concerning the relationship between the museum object and the game object, in the semi-structured interviews, it was suggested that representing the mother of pearl as a valuable object is important. In this way, the materiality and representation of the museum object are preserved and reflect in the game. This means that there are conceptual and cultural overlaps and connections between the museum object and its virtual reproduction.

The designers used the game environment and rules to define and reframe the object in a new context redefining and presenting its meaning and value. The mother of pearl as a game object has similar characteristics, symbolism and value as the 17th and 18th centuries pearls which were worn to demonstrate power, authority and prosperity. In the game, the mother of pearl represents a reward. Within the museum's curatorial work, it narrates the story of the past, the importance of exotic objects and how they were treated during the 17th and 18th centuries. Now, this object outside the boundaries of the museum does not have the same value, however, within the curatorial boundaries, as a museum object, it acts as a valuable relic of the past. Similarly, within the play and game narrative boundaries, it demonstrates an

equally important role and status. In this way, the designers preserve its meaning and symbolism beyond the museum. The mother of pearl is virtually recontextualised.

The player-game and player-object relation

As mentioned above, one of the game rules defines the mother of pearl as the final game reward. This is its ideational metafunction in the game. The player can only win the game if she owns the mother of pearl. This means that the ideational metafunction of the green gem, being a reward, defines the player-game and player-object relation.

The mode of Rules/Code

This analysis table presents one of the game rules. This rule was written using the Mission Maker's rule-maker.

MODES	**MISSION MAKER EXTRACTS**
Rules/Code	'If **CHARACTER 22- FAKE KING** - STATE DEAD **TRUE** PICKUPS **MOTHEROFPEARL** - STATE AWAKE **TRUE**'

Table 7.5: Multimodal Analysis/Rules

In this part of the game, the designers structured a conditional relation between the Non-Player Character (NPC), the 'fake king' and the pickup item, mother of pearl. If the 'fake king' is dead, the mother of pearl is awake. In the game, awake means unlocked. In other words, the mother of pearl appears in the game. This is another example of how the designers use the game rules to structure the relationship between the game objects and players.

The player-game object relation

The interpersonal metafunction of this game rule reveals the way the designers framed the player's encounter with the game object. The relation between the player and the game object is controlled by the game rules and mechanics. In this section of the game, the player can only discover the mother of pearl if she defeats the main enemy of the game. This means that the player's encounter with the mother of pearl is conditional.

The designer-player relation

Moreover, the interpersonal metafunction of this game rule expresses the relation between the designers of this game and its potential players. The game designer decides and structures the way the player will encounter the game object. The game designer has the authority and agency to make decisions about the way this relationship is structured and presented. Similarly, in the museum context, museum curators decide and structure the way museum visitors encounter the museum objects. They make design decisions on how, where and partially when the objects are presented to museum visitors.

The mode of Space

MODES	MISSION MAKER EXTRACTS
Space	A maze of multiple identical rooms

Table 7.6: Multimodal Analysis/Space

In this game, the game space and its layout play an important role. The designer built a maze of multiple identical rooms to hide the mother of pearl from the player. This plays a vital role in the way the player connects and interacts with the object. As mentioned above owing the mother of pearl is the final goal of the player. According to the semi-structured interviews with the designers, hiding the mother of pearl in the maze adds another layer of struggle and difficulty to the game.

Therefore, in this game prototype, the mode of space has an interpersonal metafunction. It defines the player's relation with the museum object and the designer's relationship and dynamics with the player. Apart from the game rules and mechanics, the designers used the game layout and architecture as a space syntax (Tzortzi, 2015) to control further the player and her experience. Here the game layout and architecture act as technological limitations in the game to control the players' experience and agency. In the museum context, Diamantopoulou and Christidou (2016) refer to these technological and conceptual limitations and affordances as the 'choreography of the museum experience'. It is common for curators to create museum exhibitions by designing and controlling the navigation and flow of the galleries and the encounter with the collection (Diamantopoulou & Christidou, 2016).

The following interview describes how the designers' choice concerning the layout and architecture of the space defined the player-object relation and affected the difficulty of the game. It shows how the designer built the relation between the player and the object in the game space using different in-game resources. The designer describes how he structured the game space layout using multiple rooms to build the player's experience and encounter with the museum object in the game space. He details how he added another layer of difficulty in finding the mother of pearl using the game layout.

R: What have you done so far?

D: …I'm gonna connect another room going down and down… it looks like…It looks…um…the player is going to think he's right at the bottom, but he's actually right at the entrance.

R: Uh-huh, ok, go on.

D: So, for example, I'm gonna make…Go to the map…uh…There, so go down there, and then for example, right on the top.

R: Ok, how is the player is going to find the mother of pearl?

D: It's going to be right at the entrance, but they think… they think it's going to be right in the bottom, but it's actually right at the top…'

Adding different layers of difficulty to the game and discussing how the players interact and experience the game suggest that this group did not design the game to simply react to the museum objects and learn more about their history. It reveals that this game is meant to be played. The designers intended to create an experience for others. Therefore, this thesis proposes that they engage with curation because they employ methods and actions that allow them to curate, represent, construct and most importantly, they curate, communicate meaning to others. Game design allowed the research participants to focus on others (players/visitors) engagement, interaction and meaning-making.

This segment, also, reveals the power relations between the designer-player. The research participant as designer separates himself from the player or players. While describing his design decisions, the designer addresses an 'implied player'. The concept of the implied Player has been previously used in the Game Studies literature by Espen Aarseth (2007) who draw on Iser's (1974) concept of Implied Reader. A similar concept can be found in Eco's theory of the Model Reader (1979). These theories seem to agree that in order to write a text, an author has to create a model/implied reader. For this game, the designer builds his decisions guessing and foreseeing the player/players actions and decisions while playing. In this way, he tries to control the agency and movement of the 'implied player'.

Examining the game poster

Game poster 7.1: Family 1

This is a scanned copy of the participants' game poster. The analysis of the game poster offers an essential insight into the way the designers presented and communicated meaning to potential visitors/players. As previously mentioned, the designers were asked to create a game poster that will be exhibited in the gallery along with the game.

The tables below present the Multimodal Analysis and interpretation of the poster. The analysis details how this group designed the poster to communicate meaning about the game. The analysis will also highlight the agency of the designer and how the relations between the game and the player and the designers and players are constructed and communicated.

The mode of Written Text

The designers have visibly separated the game poster into different sections using different modes of communication. First, the mode of written text was used. The analysis of each text section describes the purpose of the poster (ideational metafunction), the role and agency of the designer and the relation between designer-user (interpersonal metafunction).

MODE	POSTER'S SECTIONS
Written text	'TRY NEW GAME'
	'One player game'
	'About: It is about London at War'
	'Description: fight to win war allies'
	'Main task: save valuable objects and save the King.'

Table 7.7: Multimodal Analysis/Written Text

The way the designers format the title reveals important information about the way they perceive their role as designers, the visitors/player's' role and the relations and dynamics between designer-user. The poster has an ideational and an interpersonal function. Regarding its ideational function, the title is a prompt to the reader and potential player. It gives information about the game; the game is new and informs the museum visitors that they can play/ 'try' the game.

About its interpersonal function, the use of the form shows the relation between the writer and the reader of the poster. The designer uses the imperative form 'TRY NEW GAME' to communicate with potential players. In the imperative form, the sentence starts with the verb 'try' and the subject 'you' is implied. But even though the subject is not stated, it refers to the

‘implied/model player’. In this sentence, the direct object is ‘game’. The imperative form is often used to form commands. This might suggest that the writer addresses the reader from a power position prompting the player to try the new game. This is another example of how the designer assumes and reproduces the authority of the designer. It shows how design allowed agency to the research participants to assume a new role within the museum structure. Design opportunities in the museum context give the opportunity to museum visitors to construct, materialise and communicate meaning in different ways. It is the availability of choice that allows the agency to the agent to construct and communicate meaning and representation (Kress, 2010). The analysis of the poster shows also that the visitors not only communicate meaning and representation, they also assume and reproduce the authority of the designer. They transform their role and agency within the museum.

Turning now to discuss the main sections of the poster. The participants separate the poster in three main sections: ‘About’, ‘Description’, ‘Main task’. The ‘About’ section has an ideational and an interpersonal function. This section informs the player about the content and the context of the game. The game is about ‘London at War’. For this reason, the purpose of this section and poster as a whole is informative. Its purpose also sets the interpersonal function of this section and the poster as a whole. It establishes and describes the relation between the designer and the user. The designer-writer informs the reader-player about the topic of the game.

The following two sections have also an ideational and interpersonal function. They are descriptive and informative. The ‘Description’ section describes in one sentence the player’s goal; ‘fight to win war allies’. The ‘Main task’ section describes how the player will play the game. The main objective of the player is to save the valuable museum objects and to the king. Here the participants provide details about the game. The player must find and save the objects which are valuable and find and save the king.

The interpersonal function is manifested by the designers' decision and choice to use the imperative form when addressing the potential player. The designer switches back to the imperative mood when describing the actions of the player. This indicates the relations between the writer/designer and the reader/player. Using the imperative mood implies that the role of the designer is separate from the role of the player. The designer sets the conditions of play. The designer decides and controls the player's actions and agency in the game. The designer determines how the game is played and the player to win must play the game following its rules. Another example of this is the imperative form of 'Save valuable objects and save the king'. This is another example of how the designers use the imperative form to communicate the conditions and rules of the game. They address potential players with commands. In this way, the designers control and confine the 'implied players'. This shows how the designers assume and reproduce functions of curatorial power. The participants define the designer/curator's authority and player/visitor' role and the rules and forces that shape the power relation and dynamics between them (Bourdieu, 1993).

As previously noted, the designers were aware that the game posters will be presented along with the game in the game galleries. Therefore, they were aware that the potential players of the games are museum visitors. This is illustrated in the use of the phrases 'It is about London at War' and 'Save valuable objects…'. In the first sentence, the designer refers to the museum gallery 'Docklands at War'. He notes that the game is about the museum collections, history and culture. Therefore, it is relevant to the museum and its visitors. In the second sentence, the designer underlines that the purpose of the player is to save valuable objects. This purpose is relevant to the museum and its visitors. It points out that the game is about the museum objects and the visitors as players will take the role of protecting and saving the museum objects.

So far, I have demonstrated how the designers have used the mode of written text to construct and communicate meaning about the game to potential players. I have also shown that the designers through different linguistic resources they establish the relation between the designer-user. Another significant aspect of the written text on the poster is its textual function. The designers' choices about the mood of the text establish the tone of the poster. In other words, the imperative mood of the words 'try', 'fight' and 'save' sets the tone and coherence of the poster. In this way, the designers present the purpose of the poster and establish the dynamics between the player-game and player-designer.

The mode of visuals, colour and layout

Having analysed and discussed how the designers have used the mode of written text to communicate meaning about the game in the game poster. I will now move on discussing how the modes of visuals, layout and colour were used to compliment the purposes of this poster.

MODE	POSTER SECTIONS
Visuals	• Bubble text boxes • Wavy lines
Layout	The poster prototype is separated into different parts. • Title • Subtitle • About • Description • Main task
Colour	• Multicoloured fonts • Multicoloured wavy lines

Table 7.8: Multimodal Analysis/ Visuals, Layout & Colour

A closer look at the game poster reveals that apart from written text, the designers use bubble text boxes, wavy lines, different colours and the poster's layout structure and communicate meaning to the readers. These different modes have a textual function. By colouring, underlining and separating the information provided, the designers establish the poster's coherence. In this way, the purpose of the poster and its contents are clear and highlighted.

The designers used different shapes (bubble text boxes) and lines (wavy lines) to separate, highlight and underline the different sections of the game poster. The bubble text boxes are used to separate the three main sections of the poster, while the wavy lines to underline and highlight important information. They also use different colours to write the title of the poster and draw the bubble text boxes and wavy lines that highlight the text. To signify the title of the poster, the designer wrote the phrase 'TRY NEW GAME' on the top and middle of the page, using capitals and different colours for each letter. The subtitle of the title 'one player game' is written underneath the title with black lower-case letters and underlined four times using wavy multi-coloured lines to illustrate its importance. The next three sections of the poster: 'about', 'description' and 'main task' are written separately in three bubble text boxes. These three bubble sections present the main theme, narrative and rules of the game.

Discussion

The analysis of the participants' game prototypes and the poster suggests that this family group staged a virtual and playful encounter with the museum objects in the game space. To do so, they took the following steps: first, selected the museums objects. Second, the museum objects were reproduced in the game space as game objects. Third, the designers constructed a setting where they placed the objects. Drawing parallels between game design and curatorial work, these steps can be interpreted as curatorial actions. The first step connects

with the acts of collecting and cataloguing. The second step refers to the acts of interpreting and assembling. Lastly, the third step represents the acts of preparing and exhibiting.

To arrange and place the objects in the game space they consider the player's movement, gaze and habitus. For instance, in the yellow crates challenge, the designers defined the way the player will interact with the handcuffs based on how the player will move in the game space, where will look at while moving in the game space and the player's habitus which determines whether the player will be able to decode the game challenge or not. They structured different game rules and game mechanics to construct and control the way the players interact with the objects and the space of the game.

Through these curatorial steps, the designers expressed three representational and communicational relations between the interactive participants that exist within the game: a. the representational relations between the museum objects and their playable virtual reproductions (game objects) in the game, b. the communicational relations between the players and game objects, and c. the communicational relation between the designers and players.

But also these relations can be explored from an external point of view, beyond the artificial space of the game. So far, the analysis has considered how the game and games design can represent or act as representations (Salen & Zimmerman, 2003). But as Salen and Zimmerman (2003) argue, games and game design can be explored as 'forms of cultural representation'. Looking at games from an internal point of view shows that the family group created different representations and meanings for the museum objects and built different relations that define how players interact with them in the game. The museum objects within the artificial space of the game act as pick-up items and power-ups. They represent money, weapons, rewards and punishments which the player can collect and own. These meanings,

relations and representations, as Salen and Zimmerman (2003) point out, make sense only within the boundaries of the game.

Reading this game externally as a cultural object situated within the museum context shows how it reflects and transforms the museum culture and context. Games as cultural objects have the capacity to represent 'cultural ideas and phenomena beyond the space of the game' (2003). Employing this theoretical idea, to the participants' prototypes, it shows that first, the games act as platforms (Montfort & Bogost, 2009) where visitors/designers produce and add new layers of interpretations and meanings to the museum objects creating new virtual spaces where these meanings, representations and relations can be enacted. Second, reading the prototypes as cultural playable objects situated within the museum culture and context reveals that they are playable curatorial platforms where visitors/players experience the museum objects within a different curatorial context where they can develop new understandings and relations with them. This family group's game challenges the 'implied visitors/players' to develop new rituals to discover and interact with the museum objects including solving puzzles and fighting. Even though the virtual world of the game is artificial it allows them to experience the objects contextualised within new narratives, interactions and transactions.

In addition to this, reading the games form a sociological and Social Semiotics perspective shows that internal to the game (Salen & Zimmerman, 2003), the designers modelled and reproduced the power relations and dynamics between designer-player. Looking at the game as a social field (Bourdieu, 1993) shows that the participants assumed the authority of the designer to define and control the role and agency of the players. Externally to the game (Salen & Zimmerman, 2003), this means that the participants from visitors became curators. Game design allowed agency to transform their role and position within the museum field.

Participants' games: MOLD GROUP 2

The table below introduces the second family (MOLD GROUP 2). This group participated in two sessions. However, they were involved in all necessary processes to prototype the digital game. Therefore, participating in less than three sessions did not affect the game design process.

Family group	One adult, one child & one teenager
Sessions	Two sessions
Museum objects	Mother of pearl, narwhal tusk, green glass bottle, and handcuffs
Museum gallery	'Sailors Town'

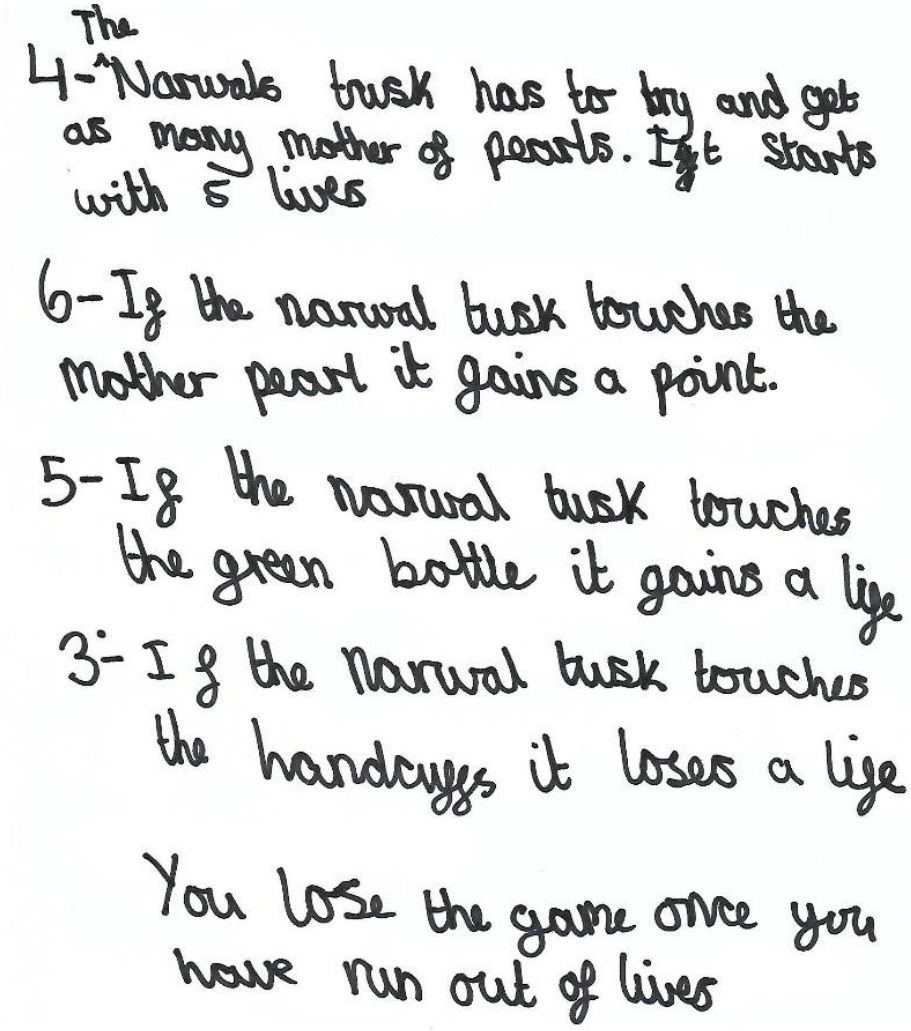
Table 7.9: Participants' details

Examining the game paper-prototypes

They proposed and prototyped a game idea inspired by four museum objects: the mother of pearl, the narwhal tusk, the green glass bottle and the handcuffs. According to the participants' paper prototypes, the connection between these objects is that they could be found and collected in a Victorian Age sailors town, which is the historical background that drives the narrative and rules of the game. This family group collected and classified these objects based on the games' narrative, rules and mechanics. This means that they collected the objects thinking of how they could be used as collectable game items.

The game idea was created during their first session and then, during the second session, it was further developed without major changes. Based on the paper prototype below, the player-character is the narwhal tusk. The player assumes the character of the narwhal tusk

and collects different objects. Each object has a different value. For example, the mother of pearl gives points, the green bottle gives life and the handcuffs remove a life.



Game paper prototype 7.1: Building a game idea, Family 2

The process of digitally prototyping the game idea on Mission Maker allowed them to refine the game idea. By using Mission Maker, they structured the space in which the game takes place and transformed the museum objects into in-game pick-ups. In this way, the designers contextualized the game and exhibited the museum objects in the virtual space of the game.

In the final version of the game, the player enters a cave where she finds the Sailors Town's map. The player collects different pickups to win points and unlock other items. Their game

designs on Mission Maker and the game poster show that they connected their game with the Sailors Town gallery[31].

> *'Roll up Roll up…Welcome to the Sailors town. In this game*
>
> *-get an exotic green bottled perfume (gain a life)*
>
> *-Earn points by discovering the beautiful mother of pearl*
>
> *-But beware of the dangerous handcuffs! (you will lose a life)'* (Participants' game poster, 3rd session)

According to the designers, it is a 'collecting game'. The player enters the simulated environment of Sailors Town gallery and wins points when collecting the 'correct' items and loses a life when collecting the 'wrong' items. These game mechanics are common to 'collecting games' such as Neko Atsume and Cat Simulator.

The Sailors Town gallery is an ideal space for this game. As one of the designers of the game notes in the following interview segments:

> R: Why have you decided to connect your game with the Sailors Town gallery?
>
> D: Because it's (the game) in the Sailor Town. There you can find exotic and strange stuff.
>
> R: Why is this important for your game?
>
> D: Because (in the game) you have to collect stuff and…sailors get stuff there (Sailors town)'. (Transcription from the semi-structured interview, 3rd session)

[31] A walkthrough of the game is included in the Appendix Four.

The designer recreated the museum gallery of Sailor's town using the game mechanics and rules of a 'collecting game'. In the following pages, three different parts of the game will be presented and analysed to investigate the designers' design decisions. The analysis will be supported by selected interview segments which further reveal the designers' design decisions.

Examining the digital game prototypes

Game Screenshot 7.4: Game prototype, Family 2

Game screenshot 3 shows the main room of the game. In this game room, the player discovers all the game objects that are inspired by the museum objects. This group selected a game room from Mission Maker's game room list; the cave. This choice was made in an attempt to reconstruct in Mission Maker one of the museum's galleries, the Sailor's Town. After visiting the gallery, the family decided to reconstruct it using the cave. As the darkest game room from the Mission Maker list, the cave reflects and captures the museum gallery's

atmosphere. To further reconstruct Sailor's Town, the designers added the wooden boat as a similar boat can be found in the gallery. However, playing the game without considering its external relation with the museum context, the space of the game represents only a cave. It is the context within which this game was designed and played which defines this cave-like space as the reconstruction of the Sailors Town gallery.

Analysing this game through the lens of Salen and Zimmerman's schema of culture (2003) reveals how the designers constructed the player's virtual encounter with the museum gallery and the museum objects in the game space. The tables below present the Multimodal Analysis and interpretation of the above game screenshot.

The modes of Visuals and Space

The analysis tables consist of two sections: Modes and Mission Maker Extracts. In this part of the game, the designers used the modes of visuals and space to virtually reproduce and reconstruct the museum objects and the Sailors Town gallery in the game environment.

The first part of the table is dedicated to the mode of visuals which was used to transform the museum objects into game objects. Playing the game reveals that the game objects are separated into pick-ups and decorative items. As previously discussed, the first group similarly used the mode of visuals.

While the second part of the table is dedicated to the game space. As noted above, the environment that the game takes place is of great importance in contextualising the game. These two modes are presented and analysed together to investigate how the designers built the game inspired by the museum galleries and objects.

MODES	**MISSION MAKER EXTRACTS**

Visuals	**Pick-up items** • Bag Pouch (Bag Pouche with Handcuffs) **Decorative items** • Boat • Closed door
Space	The main room of the game – Sailors Town

Table 7.10: Multimodal Analysis/ Visuals & Space

About the mode of visuals, the first museum object that the player encounters in the game is the handcuffs. As mentioned previously, the Mission Maker's object list does not include handcuffs. For this reason, the designers used one of the bags to hide inside the handcuffs. The research participants came up with this solution to overcome the software's limitations. However, as the handcuffs in this game is a trap pickup, the designers use this limitation to construct the trap. This means that only when the player finds, pickups and inspects the bag pouch, she discovers that it contains the handcuffs. But, when the player pickups the item, she automatically loses a life.

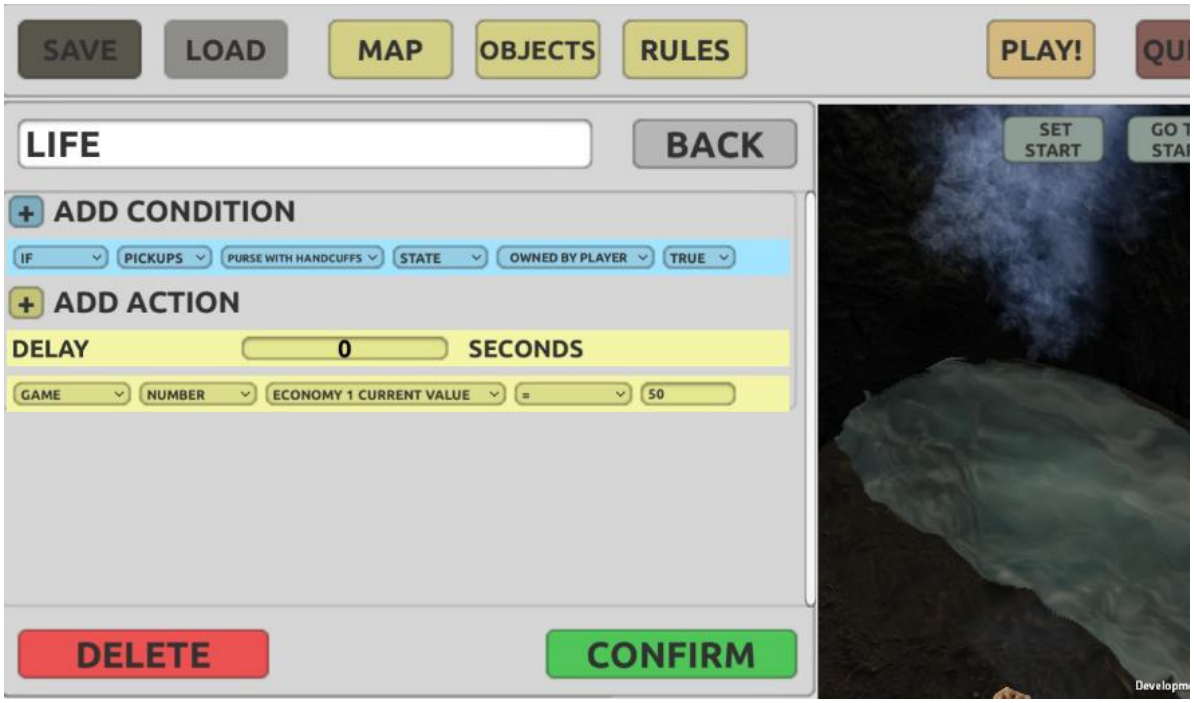
In this game, the handcuffs represent danger. In 'The Defenders' (MOLD Group 1 game), the handcuffs help the player to capture her enemies, while in this game owning the handcuffs results in losing life points. According to the participants' prototypes, the handcuffs were interpreted as a symbol of slavery and captivity. The way they translated the museum object into game pick-up reveals that this family preserved and reflected the object's symbolism and materiality in the game context. They modelled its meaning and materiality through a playful and dynamic symbolism. It is the construction of the rule that enables the game to reflect and

preserve the museum objects' materiality. This finding confirms that games as rule-based systems model everyday life (Salen & Zimmerman, 2003).

Regarding the mode of space, the game consists of two corridors and one main room (as seen in the screenshot). The game space is decorated with objects inspired by the museum's Sailors Town gallery. Some of these elements are the water, the boat, the dark narrow-cave-like rooms and wooden doors. These objects capture the theme of the game. Analysing the game separated from the museum context demonstrates that the virtual Sailors Town represents a district in Victorian London where players as sailors get different exotic objects, but also, they can get arrested for their illegal transactions. Reading the game as a cultural object (Salen & Zimmerman, 2003) situated within the museum context changes the way the virtual Sailors Town is understood. In this way, the game adds new layers of meaning and representation to the museum experience of the Sailors Town. The designers reproduce the museum gallery and trace the different ways the visitors/players enact its themes and rituals.

Examining the digital game prototypes

The screenshot below shows Mission Maker's Designer's mode. Using the Designer's mode, the designers built the game rules. In this instance, the rule is about the game object, handcuffs.



Game Screenshot 7.5: Game prototype, Family 2

The mode of Rules/Code

MODES	**MISSION MAKER EXTRACT**
Rules/ Code	'*If* **PICKUPS BAG POUCHE WITH HANDCUFFS** OWNED by PLAYER TRUE' 'GAME NUMBER **ECONOMY1** CURRENT STATE = 50'

Table 7.11: Multimodal Analysis/Rules

The first sentence of the game rule is ‘If PICKUPS BAG POUCHE WITH HANDCUFFS OWNED by PLAYER TRUE’. The second sentence of the game rule is the ‘GAME NUMBER ECONOMY 1 CURRENT STATE=50’. This rule means that if the player has previously in the game collected and now owns the handcuffs, the player’s health will decrease from 100 to 50.

As mentioned above, this family started prototyping the game drafting its game rules. During the first session, the families were asked to propose a game idea inspired by the museum objects. According to the families paper prototypes and interviews (interview segment below), all game objects that are inspired by the museum objects were connected with different game rules.

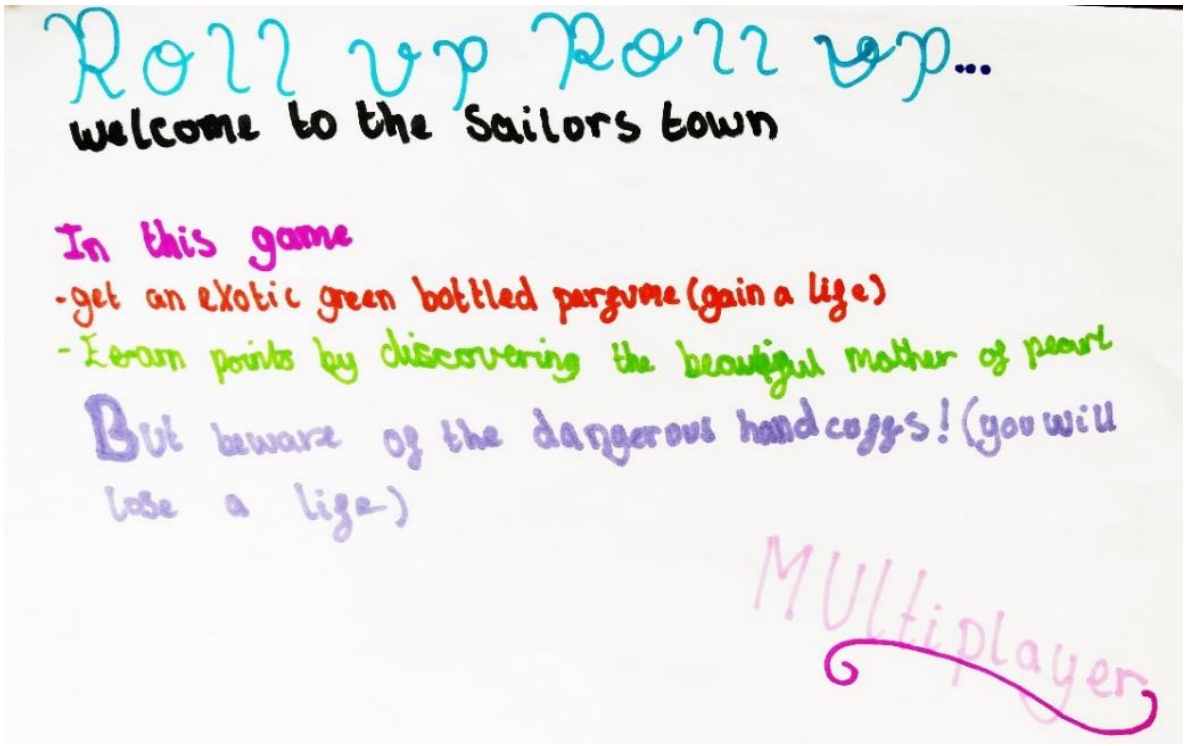
> **R:** Tell me more about your game.
>
> **D:** (The player is) Trying to gather as many mother of pearls to get points, whenever you touch the green bottle you get a new life. With the handcuffs, you lose life…’ (Transcription from the semi-structured interview, 2nd session)

Similarly, to the first family, this group was also interested in the relation between the player and objects. There is a pattern to how the two families use the available resources to design games. They used different tricks and traps to establish and control the players’ encounter with the objects. While designing the games, both groups expressed an authoritative role and established power relations between the designer and the player.

The way the designers reveal or conceal the objects in the game sets and defines their role as designers and the player’s agency. Here, the designers hide the trap-object from the player. In this way, they decide how and when the player will interact with the game object. They create the conditions that lead the player to pick-up a trap-object and lose a life. They map out and control the player’s actions within the game. In other words, they orchestrate and trace their steps and action. The way the participants use the role and authority of designers

reminds the work of curators. Curation is the act of 'directing, choreographing displays and organizing spaces' (von Bismarck et al., 2010; Diamantopoulou & Christidou, 2016). The role of the curator is to mediate and design curatorial experiences for others. In this game, by creatively revealing and concealing the museum object, the designers mediate and design a playful and dynamic curatorial experience for the players. They have a technological and conceptual limitation to control the encounter with the museum object in the virtual space of the game.

Examining the game poster of the game



Game poster 7.2: Family 2

The analysis of the game poster offers important information about the game and its rules. By analysing the poster, I examine how the participants as designers interpreted and

translated the museum objects into game objects and discusses their agency and role to control the players' encounter with the museum objects.

The modes of Written Text and Rules/Code

The following analysis breaks down the poster into two different modes; written text and rules/code. The designers used mainly written text to communicate meaning and describe the game. These two modes are selected and analysed together to discuss the content of the poster.

MODES	MISSION MAKER EXTRACTS	RESEARCHER'S NOTES
Written text	'Roll up Roll up… Welcome to the Sailors town In this game -get an exotic green bottled perfume (gain a life) -Earn points by discovering the beautiful mother of pearl But beware of the dangerous handcuffs! (you will lose a life) Multiplayer'	The text consists of the following: • **Verbs:** Roll up (x2), welcome, get, gain, earn, be aware, will lose • **Nouns:** Sailors town, game, perfume, life, mother of pearl, points, handcuffs, life • **Adjectives:** Exotic, green, beautiful, bottled, dangerous • **Prepositions:** To, in, by, of • **Conjunctions:** But • **Articles:** The, an, a, the, the, a • **Punctuation marks:** (…, -. -, !, (…))

Rules/Code	• 'get an exotic green bottled perfume (gain a life)' • 'Earn points by discovering the beautiful mother of pearl' • 'But beware of the dangerous handcuffs! (you will lose a life)'	• **First rule:** If you get an exotic green bottled perfume, you will gain life. • **Second rule**: If you discover the beautiful mother of pearl, you will earn points. • **Third rule:** If you get the handcuffs, you will lose a life.

Table 7.12: Multimodal Analysis/ Written text & Rule/Code

The poster is about the game. Its aim is informative. It details the game context and rules that define the player's actions. The context of the game is revealed in the sentence 'Welcome to the Sailors town'. The designers begin the game poster referring to the game location which is the Sailors town. As they were informed that the game will be exhibited and played in the museum, this family decided to base the game in one of the museum galleries. This also means that the museum visitors are the potential players of this game. The phrase 'Welcome to the Sailors town' shows that the game is about the museum.

Furthermore, the written text refers to three museum objects: green bottle, mother of pearl, and handcuffs. The designer briefly describes each object using a different adjective. For instance, the green bottle is exotic, the mother of pearl is beautiful, and the handcuffs are dangerous. The use of these adjectives reveals the way the group interpreted each museum object.

The museum object – game object relation

This poster details how each museum object was translated into a game item. For instance, the green bottle was translated into a life power-up, the mother of pearl into points power-up and the handcuffs into a trap item. Power-ups are game pickups that can boost the player's health, wealth and power (Fullerton et al., 2008). In most games, power-ups enable players to reach their goals (Lange-Nielsen, 2011). But, according to Lange-Nielsen (2011), power-ups are often the players' goal. In this game, these objects are the players' goal.

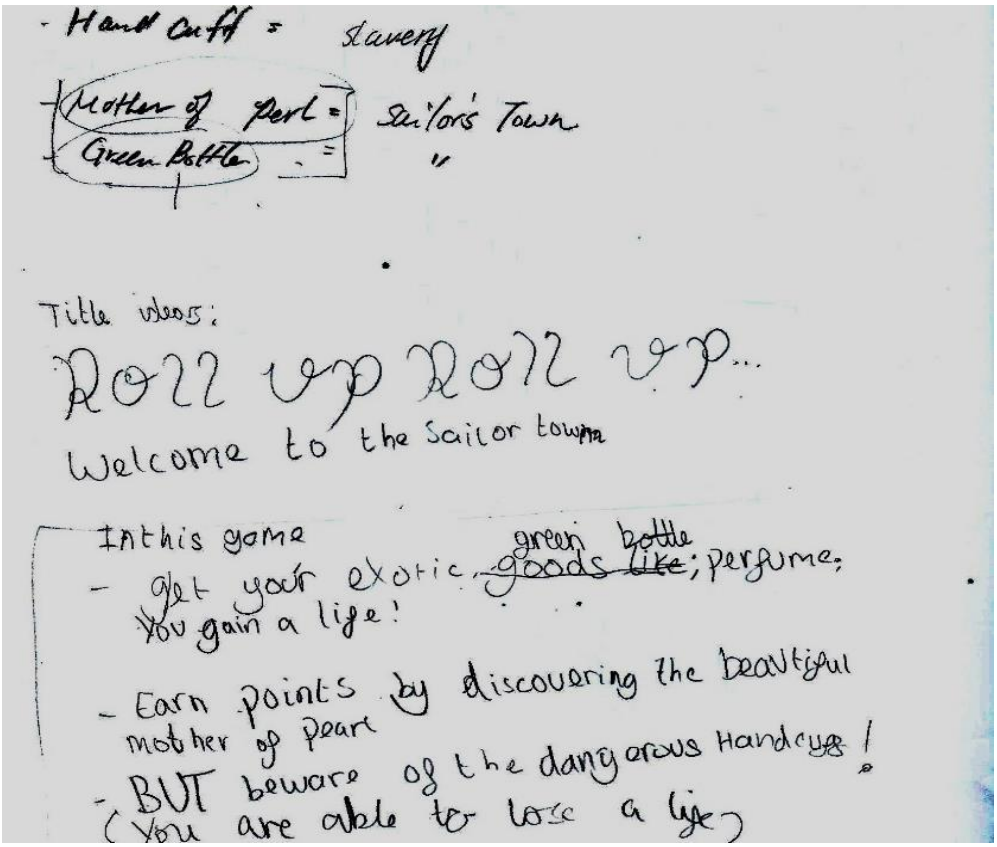
The designer-player relation

All verbs are written in the imperative mood, for instance: 'get an exotic green bottled perfume-gain a life', 'earn points', 'beware of the dangerous handcuffs'. In these sentences, the subject 'you' is not mentioned. Based on the English syntax, the imperative mood is used to express command. Interestingly, the imperative mood was also used by the first family while writing up the game poster. The writer/designer addresses the 'implied players' with commands: 'Get an exotic green bottled perfume', 'gain a life', 'Earn points by discovering the beautiful mother of pearl'. Commands are common in games. They are found in the play relations that game rules and game mechanics establish. The verbs 'get', 'earn', 'discover' represent the 'implied player's' actions in the game. These actions are game mechanics (Sicart, 2008) and methods that allow players to interact with the museum objects in the virtual space of the game.

Similarly, commands and imperative mood are often found in museum galleries in wall texts, activity worksheets and brochures. Museums use imperative mood to communicate meaning to their visitors and allow them to interact with the museum collections. For instance, at the Museum of London, in one of the galleries, the visitors are asked to touch some of the museum objects on display. The label text is written using the imperative mood. It reads: 'Feel and guess the animal paw print'. In this example, imperative mood is used to prompt visitors to touch the display. Imperative mood enables the message to be transmitted effectively and explicitly.

Therefore, reading these commands/prompts externally to the game (Salen & Zimmerman, 2003) and within the context of the museum space shows how the participants assumed the authority and role of the designer/curator. Similarly, the first group, they also adopt and model the power relation and dynamic that they assume that exist within the museum as a field (Bourdieu, 1993). They express the way they perceive the role of the designer/curator and the role and agency of visitors within the social field of the museum.

The modes of Layout and colour



Game Poster paper prototype 7.1: Family 2

The above paper prototype of the game poster shows that the designer separated the section 'Roll up… Sailors town' from the section 'Get your exotic…lose a life'. The first section is titled

as ‘Title ideas’ and the second ‘In this Games’. The first section represents the tile of the poster and the second part is the main body of the poster which details the game rules.

Mode	Paper Prototype Extracts
Space/ Layout	Based on the paper prototype of the game poster, the layout of the poster was structured as follows: • Title • Main body/ About the game
Colours	**Multi-coloured written text** • Light blue • Black • Purple • Red • Green • Lilac

Table 7.13: Multimodal Analysis/ Space/layout & Colours

The final game poster is also separated into sections using different colours. The text is separated into sentences based on the use of different colours.

Sentences/Phrases:

- ‘Roll up Roll up…’
- ‘Welcome to the Sailors town’
- ‘In this game’
- ‘-get an exotic green bottled perfume (gain a life)’
- ‘-Earn points by discovering the beautiful mother of pearl’
- ‘But beware of the dangerous handcuffs! (you will lose a life)

- ‘Multiplayer’

The use of different colours might represent the importance of each museum objects and their role in the game. The designers might use different colours to separate and highlight the different uses of the museum objects in the game.

Discussion

Thus far, the analysis of this family’s designs supports and confirms the findings of the first family’s data analysis. Similar to the first group, this family also constructed the same representational and communicational relations between the interactive participants in and through the game. Following the same curatorial steps, first, they selected and collected the museum objects. Second, they catalogued the objects based on a common theme. Third, they ensembled and prepared them for exhibiting and play in the game.

Both families constructed a virtual playable space where the visitors/players interact with the museum objects. Earlier, this thesis, drawing from previous Game Studies research, has discussed how games as cultural objects can reflect and transform the context within the are designed and played. As rule-based, playable and cultural objects, these games reflect the museum context, its collections and displays. Phrases such as ‘Welcome to the Sailors Town’, ‘It’s about London at War’ directly refer to the museum galleries and explain that the games are about the museum, its collections and displays. Therefore, both games make sense only in relation to the context within which they were designed. In addition to this, these games were created within the museum context and inspired by the museum objects. This also means that these games are aimed at other museum visitors/players.

Particularly, the second game has strong references to the museum context as it simulates one of the museum galleries. However, in the Sailors Town at the Museum of London Docklands, visitors cannot find, collect and interact with the museum objects. The game as a

playable cultural object situated within the museum context allow visitors/players to discover, interact, collect and own the museum objects and they can experience virtually the cultural context of these objects. In this way, the game reflects, transforms and adds to the museum experience and curatorial representation.

Also, the second group showed particular attention to the relation between player-objects. They translated the museum objects into game objects primarily based on the player-objects relation. To build the player-objects relation, they constructed several game rules defining how the player interacts with the game objects. Even though the game lacks a central narrative, it is framed by its rules. The designers focused on the player's actions and agency within the game and the way the rules and mechanics shape the encounter with the objects.

The use of the imperative mood on the game poster further reveals the way they expressed and communicated meaning to players. The imperative mood was also used by the first family to address the 'implied player' in the game poster. Comparing the grammar and syntax used in the game prototypes and game poster shows that when the designers address the 'implied player' they use authoritative language. Taken together, rule-making and the use of the imperative mood expresses how the designers perceive their design work and agency. Through the choice of language and the mode they make and communicate meaning. But also, they express and put into effect their authority as designers. They reproduce the actions and behaviour of authoritative figures in the museum such as the curators. They employ the design tools (language, space syntax, curatorial steps) to define and control the visitors/players' experience. This means that within the museum as a field, the research participants as designers develop a new agentive role which enabled them from visitors to become curators.

Participants' games: MOLD GROUP 3

In this section, the third family's game prototypes will be analysed along with the semi-structured interviews. In the following table, the participants' details are presented.

Family group	One adult & one child
Sessions	Two sessions
Museum objects	Victorian coins, green glass bottle, handcuffs, and diver's boot
Museum gallery	'Mudlarks Gallery'

Table 7.14: Participant's details

This family proposed two different game ideas. In the first session, they focused on only one museum object, the green glass bottle[32]. They proposed a game idea inspired by it and then, they used the Mission Maker to prototype the digital game. In the next session, however, they decided to propose a different game idea and focus on different museum objects.

The members of this group, on the whole, had an agentive reaction to the research and the game-making process. In the second session, it was suggested that they were interested in examining more museum objects to propose another game idea than continuing prototyping the previous game idea on Mission Maker. The availability of choice during the design process enabled them to assume an agentive role as research participants and designers. This finding confirms Kress's (2013) theory of agency-as-choice. Talking about this, the adult member of this group notes:

[32] The criteria of selecting the museum objects will be discussed in the game analysis sections below.

‘She is more interested in the objects because she is good at story-telling (Working with the objects) it’s inspiring….’ (Transcription from the semi-structured interview, 2nd session)

Examining the game prototypes of ‘The light of the world’

During the first paper-prototyping session, this family was the only group that used clay to prototype the game idea. They began the game-making process by exploring the museum objects. First, they explored the museum objects and chose one of them, the green glass bottle. Then, they examined the object and asked questions about its origins and function. Answering these questions led to the proposal of a story that later, informed the final game idea. They used paper and clay to draw and then, sculpt the main character of the game. The image below shows the designer while creating the player-character named Goodie. In the picture, ‘Goodie’ is holding the green glass bottle.

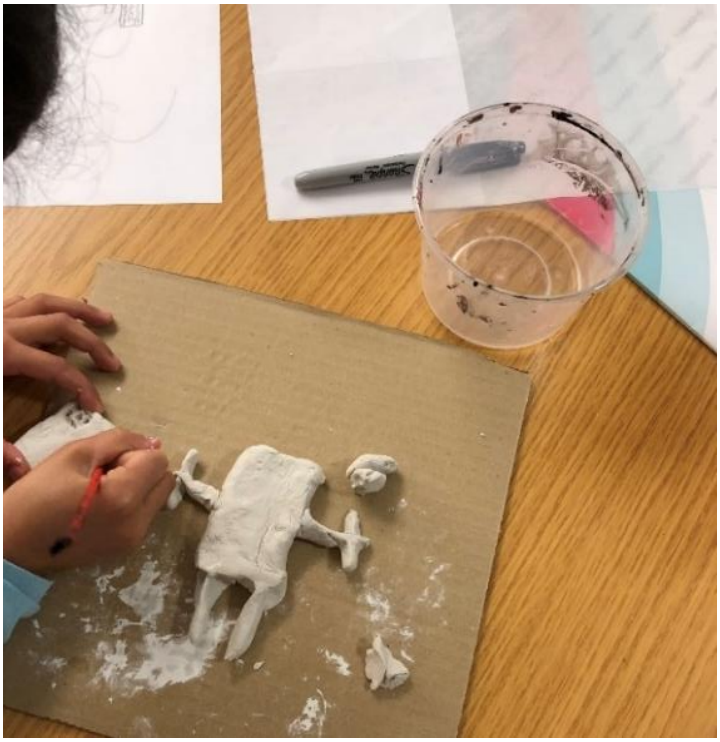


Image 7.1: Prototyping the character

About 'The light of the world'

This family approached the game-making process through storytelling. They gradually built a fictional narrative inspired by the museum object. According to the family's semi-structured interviews, the game is a single-player adventure game in which the player assumes the role of a protagonist (Goodie) who is undertaking the mission of finding the 'light of the world'. The 'light of the world' was stolen by an evil game character, called Baddie. In the game, the green glass bottle contains the light and it is hidden in Baddie's cave. To save and release the light, the player must fight with Baddie and win.

Internally to the game (Salen & Zimmerman, 2003), this green glass bottle is no longer a museum object. It has different properties and materiality which are now bound to the game rules, mechanics and narrative. Unlike the previous two families, this group built up their game idea focusing on the game narrative. The previous two families built the games based on the materiality and realism of the museum objects as game items, while this family used storytelling to create a fictional and virtual context for the museum object.

The first group designed the game focusing on both the game rules and narrative, while the second one employed the game rules to build the game system and translate and represent the museum objects in the game. This group's first game idea was driven by the narrative inspired by the museum objects and less by the systems developed behind the relationships between the player, objects, play and rules. However, the designers created a fictional virtual space using both the narrative and the game system.

Examining the digital game prototypes of 'The light of the world'

Game Screenshot 7.6: Game prototype, Family 3

This screenshot was taken at the beginning of the game[33]. The game starts outside Baddie's cave where the player encounters Baddie guarding the entrance. To enter the cave and collect the green glass bottle that contains the light of the world, the player must first, fight Baddie.

This screenshot was selected for analysis to illustrate how the designers structured and framed the player's encounter with the museum object in the game world using Mission Maker's affordances and limitations.

The modes of Visuals, Rules/Code and Space

[33] Game walkthrough, available at Appendix Four.

The analysis will now focus on how the designers used the modes of visuals, rules/code and space to build the game in Mission Maker. The next table is separated into three sections: 1. the mode of Visuals, 2. the mode of Rules/Code and 3. the mode of Space.

MODE	MISSION MAKER EXTRACT
Visuals	• Non-Player Character (NPC)/Baddie
Rules/ Code	'If the player kills Baddie, the door opens'
Space	• Cave with branches and trees.

Table 7.15: Multimodal Analysis/ Visuals, Rules/Code & Space

According to the semi-structured interviews, the Non-Player Character (NPC) in this screenshot is Baddie. Here, the NPC appears guarding the door. In this way, the game system prevents the player from accessing the green bottle. Examining the Non-Player character's ideational metafunction reveals its role in the game. Here, the NPC acts as a guard of the valuable object and prevents the player from moving forward. As such, the NPC represents the enemy of the player. In this way, the ideational metafunction of this game character defines its interpersonal metafunction. The player's goal is to find the green bottle and save the light. The NPC, here, is an obstacle which defines the player-object relation. Playing the game reveals that the player must fight the NPC to continue playing.

The player-object relation is further manifested through the game rules. The above rule represents a condition that the player must fulfil to continue playing. The game rules define

the presence and placement of the museum object in relation to the player. This means that the game rule determines the relation between the player and the game object. In other words, the player cannot move forward and enter the room where the green bottle is hidden unless the play conditions are satisfied.

Similarly, the players' actions and performance of fighting are required by the game. Here, the performance of fighting enables the players to progress in the game and complete their goal. In this way, the designer uses the game rules to control the player's actions and agency. In this prototype, the designers use all the available resources and strategies to create and control the player's experience and interaction with the museum object in the game space. The space and the spatial characteristics of the game environment play an important role in the development of this game. The designer uses the space as a method to implement the game rules which frame and control the experience and agency of the player.

Playing the game and discussing the game with the designers shows that the Mission Maker as a platform shaped the way they designed the game (Montfort & Bogost, 2009). They established the way the player will interact with the object (the act of fighting) based on the affordances and limitations of the platform. The influence of the platform also surfaced in the first family's game while designing the yellow crate challenge. However, the first family pushed the boundaries of the platform to design a more challenging game experience for the players.

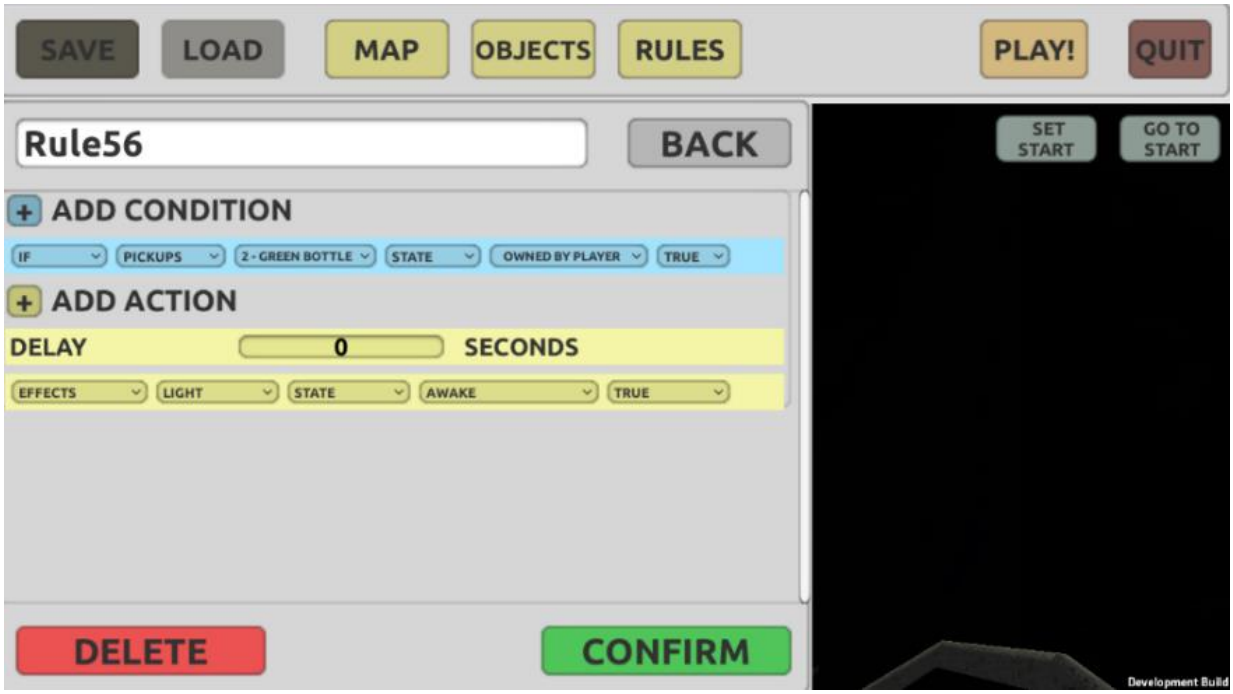
Examining the digital game prototypes of the 'The Light of the World'

Game Screenshot 8 was taken after the player has killed the NPC (Baddie) and discovers the green bottle that contains the light of the world. This screenshot shows the moment when the green bottle was revealed to the player in the game space. The player enters the final room of the game and finds the green bottle laying on the floor.

Game Screenshot 7.7: Game prototype, Family 3

The modes of Visuals and Rules/Code

The second screenshot shows the Designer's Mode where the game rule about the green bottle was created. This rule is important. It reveals the function and purpose of the green bottle in the game space. It expresses the relation between the museum object and its virtual reproduction.



Game Screenshot 7.8: Game prototype, Family 3

MODES	MISSION MAKER EXTRACTS
Visuals	**Pick-up items** • Green glass bottle
Rules/ Code	'IF PICKUPS **GREENBOTTLE** STATE OWNED BY THE PLAYER TRUE EFFECTS **LIGHT** STATE AWAKE TRUE'

Table 7.16: Multimodal Analysis/ Visuals & Rules/Code

This game object (green bottle) is a default pickup item on Mission Maker. The family selected the green bottle to represent the museum object. The museum object is a glass green bottle

with a lid[34]. While handling the museum objects, the participants were surprised to discover that the bottle can open using its small lid. This led to further discussion about its function and content. Building on this discussion, the family created the light of the world narrative. As a result, in the game, this pickup item contains the light of the world. It stands for the final game reward and the players' goal.

The museum object – game object relation

Even though this pickup item (green bottle) is not the exact virtual reproduction of the museum object, the two objects share similar characteristics. For instance, they have a similar shape and colour. By choosing this virtual representation, the family preserves the materiality of the museum object when translating it into a digital object.

The family played with the museum object's functionality and materiality. They asked questions concerning its use. For example, they asked what could be stored in the bottle, how it could be used and who might have used it in the past. Then, using story-telling they built up the game idea and proposed new representations and symbolism about the objects. They used a common game language (game rules and mechanics) and modes (narrative, aesthetics) to exhibit the new meaning and representation of the museum-objects as game-object.

The designer-player relation

Based on the game rules, the green bottle must be owned by the player so that the light is released. The player must collect the green bottle to complete the game. This game rule defines the relation between the object and the player. The action of collecting the object is the platform that the designers use to express the relation between them. In the museum

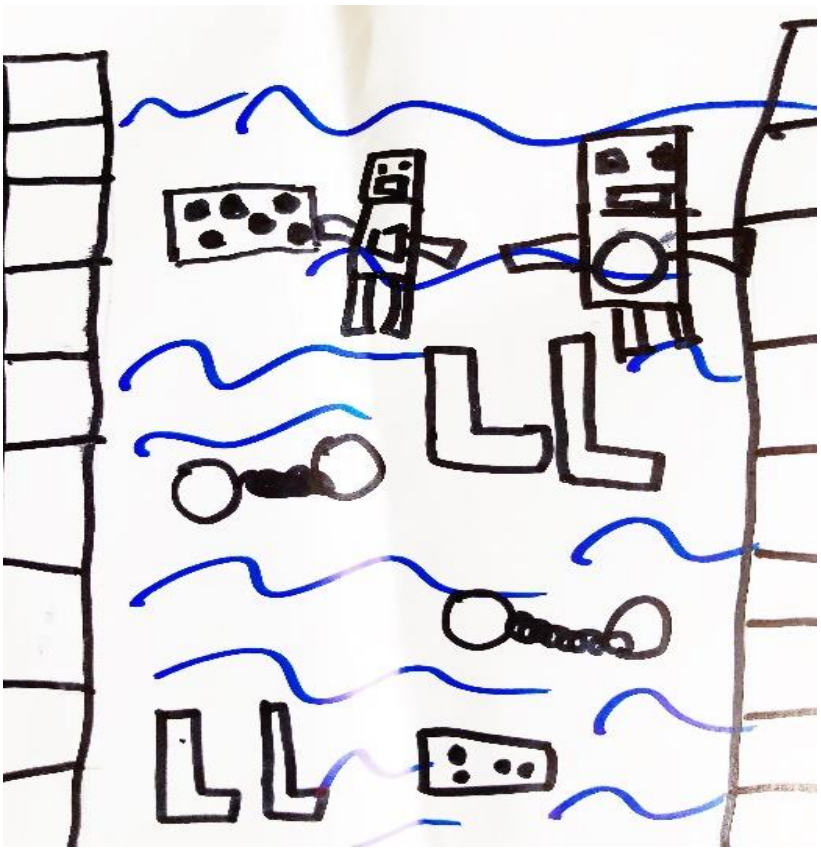
[34] A picture of the museum object is included in the Appendix Three.

space, visitors often interact with the museum objects through gazing, touching and smelling. Here, the act of collecting is a virtual platform of interacting with the museum object in the game space. This new virtual platform has different technological and conceptual characteristics, affordances and limitation (Montfort & Bogost, 2009) than the analogue platforms (gazing, touching, smelling).

This means that the object-player relation is approached and constructed differently through the game-making process. The museum object is translated into a pickup item and the visitor to a player who can collect the object. These relations are established through game mechanics, rules and narrative. The player can collect the object because the designer is using the game mechanics of collectable objects and enables the player to have access to the object through the game rules. This is another example that demonstrates how the availability of different choices (Kress, 2010) allows agency to the designers to implement their ideas and narrative. The designer employs the available resources and strategies to construct the way the object is revealed and exhibited in the game and the way the player interacts and relates to them. Throughout the game-making process, this family explored this authority and agency to make design decisions about the curation of the museum objects in the game. Looking at this externally to the game and in relation to the context of design, the participants made decisions about the way meaning about the museum object is constructed and communicated to others.

Examining the digital game prototypes of 'The Mudlarks'

As previously mentioned, this family prototyped two different games. In this section, the second game will be described and analysed.



Game paper prototype 7.2: Paper- prototyping, Family 3

About 'Mudlarks'

The 'Mudlarks' is a two-player collecting game. The two players compete in collecting the objects in the river.

The group paper-prototyped Mudlarks inspired by three objects: the Victorian age coins, the handcuffs, and the diver's boot. During the session, the family as a group discussed the visit at the museum galleries and the history of mudlarking. In the process of answering the question of what objects a mudlark could find in the river, they selected these three museum

objects. Similarly to the previous two groups, this family also proposed a game idea following the steps that resemble the curatorial processes of selecting and cataloguing of museums objects based on a common theme.

The mode of Visuals

The following table demonstrates how the designers used the mode of visuals to design the game. In this prototype, visuals play a central role. The designers used drawings to illustrate all game elements including the game pick-up items, the game environment and the player game characters.

MODES	PAPER PROTOTYPES
Visuals	**Game pickup items:** • Coins on a tray • Diving boots • Handcuffs **Game environment:** • Two ladders • Water lines **Game characters:** • Two-player game characters

Table 7.17: Multimodal Analysis/ Visuals

As illustrated in the above game prototype, in the game, the museum objects were transformed into pickup items. The group selected these three objects and curated them into a representational system governed by distinctive characteristics, rules, game mechanics and narrative. The coins on a tray represent one of the museum objects, *the Victorian age coins*. In the game, this item, as a pickup, stands for game points. The pair of diving boots represents

another museum object, *the diver's boot*. As a pickup item, it stands for the superpower to dive deeper and faster. The handcuffs are also a representation of a museum object. In the game, they stand for punishment.

The way this group interpreted and translated these museum objects into game objects shows that this group attempted to preserve the objects' representation and materiality in the game. They used game mechanics to preserve, reflect and communicate meaning and representation. The Victorian coins were translated into game money using powerups. The diver's boot was exhibited also as a power-up because of its materiality. The museum object is a leather metallic boot which was used by divers to dive faster into the sea. The designers of this game use these characteristics to translate the object into a game item/power-up. This museum object is translated into a power-up which acts as an enabler (Sicart, 2011). Unlike to the other museum objects which act either as the goal (Victorian coins equals points) or the punishment (handcuffs equal prison) of the game, this object enables the player to perform better.

The player-objects relation

Based on the game rules, when the player collects the coins on a tray, she earns points. When the player collects the pair of diving boors, she dives in the river faster and deeper. As a result, the player collects more coins and earns more points. Finally, when the player collects the handcuffs, she goes to jail. The designer uses the game rules to frame the player's encounter and interaction with the museum objects.

The visitor-objects relation vs player-objects relation

In the museum, the experience of these objects is characterised by certain representational and curatorial limitations. Visitors experience these objects as museum objects, and they are asked to interpret and imagine their meaning. However, within the virtual space of the game,

the players experience the objects as pickup items. Instead of imagining the meaning of each object, they test their meaning and representation while playing. The meaning and representation of each object in the game are, also, restricted based on the game rules, limitations and affordances.

The designer-objects relation

The designers have preserved the museum objects' materiality and representation in the game. They deconstructed the idea behind each museum object and its representational meaning. As mentioned above, they understood that in the past, the Victorian age coins were used and exchanged as money, the boot was used for diving and allowed divers to dive faster and deeper into the sea. To preserve and translate the meaning and representation of each object, the designers use game mechanics and rules.

The participants as designers did not reject museum objects' materiality, meaning and representation from the analogue space of the museum to the virtual space of the game. However, they challenged and reconstructed the way the visitors as players encounter the museum objects within the game. To achieve that, they proposed new representational systems using the game rules (see below) and mechanics. In this way, they challenged and extended the official museum curation and proposed new interpretational and representational layers, meanings and relations between the museum-objects as game-objects, the visitor as player and the museum-objects as game- objects.

The designer-player relation

The way the designer constructed the game rules, the relation between the player-objects, and the game space and layout (see below) reveals her authority and agency to make design decisions. It demonstrates the way the designer constructs play and makes informed decisions on how the players experience the game. Making the game allowed the participants

to interpret and deconstruct the representation of the museum objects and also, to take a step further and structure new curatorial and representational systems to present and exhibit a new complex and playable curatorial object.

The mode of Rules/Code

Based on the participants' interviews, 'The Mudlarks' has the following rules:

MODES	PAPER PROTOTYPES
Rules/Code	• **First rule:** To start, choose one of the two characters. • **Second rule:** The players are playing against each other. • **Third rule:** To win/complete the level you must collect three objects. • **Fourth rule:** If you collect and wear the boots, you dive deeper, and you can collect more items. • **Fifth rule:** If you collect the coins, you get money. • **Sixth rule:** If you collect the handcuffs, you go to jail and loose • **Seventh rule:** If you complete the game, you start the level two.

Table 7.18: Multimodal Analysis/ Rules/Code

The following interview segment reveals the game rules. In this interview, the researcher is playing-testing the paper game prototype with the designer. The designer walks the researcher through the game and presents its game rules. Through the description of the game and the game rules and mechanics, the designer also reveals the relation between the player and the game objects. This interview details how the player will encounter and interact with the museum-object as game-object in the game.

R: So, how do I play your game? Do I move this character?

P: If you're in that team…

R: Oh, so how many teams are there?

P: Two.

R: So, are we going to play against each other?

P: Yeah…If you're going down…this one's already in the water, all you do…just grab all the staff.

R: So, what do I do now?

P: The same, grab just the staff…you collect that (boot) and that (coins) and that (handcuffs)…

R: Ok, so how many do I need to collect?

P: Three…That (boot), that (coins) that (handcuffs)

R: And then?

P: You climb up, you use the ladder, and then just…you can go back down…but first, you get to the water…He (player) goes down and then he goes up…you wear that (boot) and you go deeper.

R: And then?

P: You can grab this (coin)

R: And then?

P: (The player) Wins money and goes to the level two…' (Transcription from the semi-structured interviews, MOLD GROUP 3, 3rd session)

The participants did not program or record the game rules using the mode of written text. Therefore, here, the researcher's interpretation of the game rules are presented. The analysis is based on the participant's interviews and descriptions of the game, and play-testing of the game during the sessions.

Lastly, the rules' textual metafunction is equally important for the game. The designers chose the mode of rules to establish the coherence of the game and make play possible.

The modes of space and time, and colours

MODES	PAPER PROTOTYPES
Space & Time	• Water/ River Thames
Colours	• Black (for characters, objects and ladders). • Blue (for water lines)

Table 7.19: Multimodal Analysis/ Space & Time/ Colours

Regarding the mode of space, as the name of the game indicates, the game environment is inspired by the museum collections, themes and history. Based on the semi-structured interviews, a connection can be identified between this game prototype and the Mudlarks Gallery at the Museum of London Dockland. As one of the game designers notes the water in the game represents the river Thames. This indicates that the game space is the river Thames.

According to the game rules, the game starts from the top of the page. The players must work their way down and then up again to collect objects as fast as they can. This demonstrates how the designer structured the game layout. The layout is vertical. The two sides (right and left) illustrate two different ladders which give access to the water. The water is horizontal. The players can move vertically, horizontally and diagonally.

Analysing how the designer built the game space and its layout reveals that the designer's role, authority and agency allowed her to structure and curate the museum- objects as game-objects. To achieve that, the designer framed the players' encounter with the museum-objects as game-objects using the mechanisms of space and time in the game.

The construction of the space and layout of the game, also, establishes the coherence of the game and enables the player to experience play. The designer builds the game space and sets the pickups within it. To achieve that, she makes design decisions concerning the way the players control the characters within the game and how they move in the game, interact with its space and game items. For instance, the player can control the character's movement and decide whether to move vertically, horizontally or diagonally. However, the designer maps out the player's path using traps. As illustrated in the game paper prototype, first, the player on the left-side can collect the coins, while the player on the right-side can collect the boots. After that, both players will encounter the trap, the handcuffs. According to the game rules, the handcuffs equal to jail and game over. Therefore, the players are limited in moving diagonally to avoid the handcuffs. This suggests that the designer determines the way the players experience and encounter the game. Analysing how the designer constructed the space and the layout of the game reveals that the designer is concerned with the way players experience the game and uncovers the relation between designer-player. The designer, from a position of power, makes design decisions on how to limit, control, and challenge the player. The player, however, has the agency to decide how to move the character in the game, but

her decisions have either a win or lose outcome. These win or lose outcomes are constructed by the designer. This game prototype shows that even though the player has the agency to decide how and when to move within the space, the designer determines the available options within the game. The space affordances and limitations imposed by the designer determine the player's embodied experience and interaction with the artefacts.

In this game, the architecture of the space has an additional purpose. By creating the space and the movement of the player within the game world, the designers allow the player to re-enact and perform mudlarking in the River Thames. In this way, the game allows visitors/players to engage with abstract aspects and themes of the museum. This, as Flynn (2005) argues, gives 'a sense of the past that moves beyond the prescriptive models of historical knowledge'. In this way, the game reflects and transforms the curatorial presentation and visitors' museum experience and visit.

About the mode of time, even though the game space is two-dimensional, time acts as another important dimension of the game. Collecting the boots allows the player to dive deeper and collect more points and complete the game. Time is an important element of the game. It frames the way the players experience and interact with the game space and items. As presented in the above interview extract, the designer described the meaning of the diving boots using the comparative adjective 'deeper'. Comparative objects are often used to express a comparison between two different objects. Here, the player can dive in the water to collect items but collecting and wearing the diver's boots allows her to dive deeper and therefore can collect money/points and level up. The two objects in comparison are the state of the player without and with the diver's boots. With or without the diver's boots, the player can complete the round and level up. But, the use of the comparative adjective suggests that the player can perform better in space and time with the use of the diver's boots. In this way, the designer provides a shortcut.

Moving on now to discuss the mode of colour. The designer draws most of the game elements with black. However, she uses blue to draw water. She is using blue to underline that the game takes place in the water. Another function of colours might be textual. Here, the designer uses different colours to establish coherence and signal the difference between the game space and the game characters and pickups. This allows the player to recognise the different game elements.

Discussion

This was the only family that created two different games taking two different approaches to game design. The first game is narrative-driven, while the second game is driven by its rules. Comparing the three groups, this family exhibited the most agentive behaviour during the research process. Their agency as research participants is reflected in two different occasions: first, their participation during the research and second, the choice and approach of designing the games. During the sessions, they negotiated their participation and the relation with the objects. They achieved that by designing two different games. The aim of this was to work with different sets of objects and experiment with different narratives and designs. They also negotiated their agency as designers. They do not only choose to design two games. They also experimented with game design following two different approaches to design the games. This means that the availability of choices and modes (Kress, 2010) enabled this family to challenge and negotiate their agency as research participants.

This group, as the other two, built the games focusing on the museum objects. They constructed a narrative, setting and rules to present the museum objects and frame and control the encounter and relation of the players with the museum objects in the fictional world of the game. In the first game, the museum object is represented as something valuable and important. Even though the narrative of the game is fictional, it highlights the way this family

perceives the museum and its collections. Looking at this game as representation (Salen & Zimmerman, 2003) and focusing on the narrative of the game, the glass bottle is a sacred object that contains the light of the world. But, reading the game as a cultural object situated within the museum context (Salen & Zimmerman, 2003), the glass bottle's representation suggests that this group looks at museums as places that safeguard valuable and authentic objects. All families expressed a similar theme in the games. For example, in the first family's games, the player's goal is to save valuable objects, while in the second family's game, the mother of pearl represents virtual money (game points).

For the second game, the family followed a game design strategy similar to the second family. The Mudlarks' game space represents and simulates the themes and context of one of the museum galleries. Also here, the game object acts as pick-ups and power-ups. From a cultural perspective (Salen & Zimmerman, 2003), this game also transforms and reflects the museum culture and context. It allows the visitors/designers to develop new meanings and add new layers of representations and interpretations to the museum's themes. As the second family's game, it created a virtual space where the topic and themes of the museum gallery can be enacted and experienced.

About the participants' agency as designers within the museum context. Their design choices provide us with useful insights about their agency as visitors/designers. In the first game, as visitors/designers challenged the museum curation and representation by proposing new narratives and representations for and about the museum objects. However, in the second game, as noted from the analysis, they maintained and reflected the museum curation and narrative in the game. But at the same time, they pushed the boundaries of the museum and proposed new playful and dynamic ways of constructing and communicating meaning about them.

7.5 Findings and Discussion

This section will discuss the data analysis and its findings. Based on the above games' analysis, during the game-making process, the research participants raised and answered the following questions:

- How to translate and transform the museum objects into game objects?
- How will the player encounter the museum objects in the game context?
- How to frame and control the players' encounter with the museum objects in the game world?

Drawing from Games Studies literature (Salen & Zimmerman, 2003; Montfort & Bogost, 2009) this thesis analyses and theorises the participants' games as cultural objects which are situated within the museum context and culture. As such they act as digital platforms that reflect, transform and add to the culture and context within they are designed and played. Salen and Zimmerman's Rules, Play and Culture framework (2003) was used as a theoretical foundation for this doctoral thesis. Building on their framework, I proposed to view visitors' games as cultural objects situated in the museum context that can express, reflect, and add new layers of representation and meaning to the museum culture and context. But also, they can manifest visitors' agency to define and control how they and others encounter and experience the museum culture and context. In this way, visitors' games act as curatorial platforms through which the designers express, materialise and communicate meaning about and for the museums and to other visitors/players.

Therefore, the above questions that the research participants raised during the game-making process are defined as curatorial questions. These questions concern curation, representation and meaning-making in and between analogue and virtual platforms, spaces, and modes. The first question is about representation and the ideational metafunction of the virtual museum

objects that exist in the game. The research participants employed different modes and resources to represent the museum objects in the game and express their views and ideas about them. This means that they expressed and reflected the museum objects' materiality, cultural identity and narrative. But also by adding new layers of representations and meanings to them, the transformed them into new ludic and dynamic objects.

The second question is about curation, exhibition and communication. It concerns the visitors/players' encounter with the artefacts, their movement, actions and performance in the game world. The research participants explored and employed different ways and strategies to simulate the way the visitors/players will encounter the museum objects in the game space. In this way, they proposed new dynamic and ludic sets of interactions and actions for the museum and its collections. They created a virtual space defining the players' movement, actions and experience. To structure this virtual space, they established different rules that shape the dynamic relations between the players and the museum objects. The designers created new curatorial frameworks and narratives within which new paths, rituals and actions were traced for the visitors/players to take, enact and perform. The designers created these paths, rituals and actions as metaphorical platforms for the players. By using these metaphorical platforms, the visitors/players connect and interact with the museum objects. For instance, they can collect, fight enemies, solve riddles and puzzles, and compete with others to unlock the object.

Lastly, the third question is about the authority of the designer. The research participants as designers did not only simulate different spaces where the museum objects were exhibited. They also established the rules and play conditions under which other visitors/players inhabit these spaces and perform different actions. More specifically, these rules and play conditions define and control the time and space that the virtual museum objects are revealed or

concealed from the ‘implied visitor/player’. To achieve that they assume the authority of the designer and reproduce the power relations and dynamics between designer and player.

Looking at the way the research participants employed the authority and role of the designer externally to the game reveals how agency is manifested through design (Kress, 2013). In the museum context, the participants as game designers made agentive decisions and design choices proposing and materializing in the game designs new playful and dynamic ways to curate and represent the museum objects.

In this way, the analysis suggests that the participants’ games reflect and express four communications and representational relations:

Game space and the museum objects – game objects relation

In all games, the museum-objects as game-objects play a key role which influences gameplay. The analysis suggests that most of the families translated the museum objects into game items preserving their materiality and historical and cultural symbolism. Instead of altering their meaning or symbolism, they constructed new representational systems and frameworks to preserve them using the game rules, narrative, mechanics and space. These new representational systems and frameworks define the players' actions, movements and interaction with the objects. The Museum Studies theorist, Sandra Dudley (2010) argues that a material object becomes real only through the subject-object relation, interaction and engagement. The designers attached meaning to the museum objects in the game world through the construction of complex relations between the players and these objects. The game-objects reflect and materialise meaning about the museum artefacts. But also the games transform the way visitors/players encounter and interact with them. In this way, the new playable and dynamic presence of the museum objects in the game world also transforms their cultural and historical meaning and identity.

The question of how objects are translated and transformed through curatorial work has been investigated by museum literature for several decades (Schorch & McCarthy, 2019; Dudley, 2012, O'Neil, 2006). Similarly, the discussion about the digitization and reproduction of works of art, digital heritage and virtual museums has raised key questions about the role of museums, authenticity and the dichotomy between virtual and real (Bandelli, 1999; Muller, 2010; Flynn, 2007). Museums focus on preserving and presenting historical and cultural authenticity and often question the significance, meaning and role of virtual reproduction and digitization. But, as Muller (2010) states 'the dichotomy between real and virtual is misleading and obscures their commonalities, simplifying the multiple meanings objects acquired through cultural history' (p. 297). In his article about museums and virtuality, he explains that museum objects can narrate stories but only within a constructed 'curatorial and architectural framework' designed by a curatorial team (p. 297). In her chapter 'The Morphology of Space in Virtual Heritage', Flynn (2007) compares visual simulation to exhibition-making and argues that both disrupt and separate the artefact from its original, historical and cultural context imposing different representational and curatorial rules (p. 349-368). As Muller (2010) notes exhibiting the artefacts under a new curatorial and museum order imposes new meanings to them. For Muller (2010), this suggests that 'virtuality is a fundamental exhibiting practice' (p. 297). Flynn (2005) supports that virtual spaces and particularly games allow 'cultural visitors a different form of site visit and a new type of historical engagement'. Giddings (2015) building upon Flynn's work (2007) explains 'the virtual spaces emerging from the commercial popular media culture of the video game offer new ways for museum-goers to commune with the absent worlds that shaped these artefacts, rituals, and processes' (p. 154). For Flynn (2005) games' spatial exploration, players' challenges and experiential agency offer visitors a new type of historical engagement.

In this thesis, the visitors/designers did not only experience the absent worlds that have shaped the museum objects or the rituals and processes that have characterized them, they assumed an agentive role in designing them. This thesis explored what happens when visitors assume the role of designer and create playful virtual spaces inspired by museum collections and their cultural background. Referring to artefacts' cultural background means that this thesis considers the multiple meanings that objects gain during their historical and museological existence. The analysis suggests that they made design decisions of how and when to construct, represent and reflect these worlds, spaces, paths and performances. They explored the question of representation and employed different strategies to translate the museum objects into virtual and digital objects. Analysing these strategies reveals the complex representational systems that were constructed to produce and communicate meaning about the museum, its objects, displays and space.

The relation between player and museum objects in the game context.

The games define the player/visitors relation and encounter with the artefacts in the game. The designers traced different paths and built different platforms to frame and control the way player/visitors encounter, interact, experience and enact different rituals and performances. For instance, in most of the games, the artefacts in the game world are hidden from the players who need to follow specific paths, perform certain actions in the game including collecting, fighting and solving puzzles. Creating and framing the players encounter with the game context is a curatorial and design process. It concerns museum communication and visitors' engagement and interpretation within and beyond the museum space. As Salen and Zimmerman (2003) point out 'design is the process by which a designer creates a context to be encountered by a participant from which meaning emerges.'. Applying this definition to game design, they write that game design is the process by which a game designer creates a game which consists of different contexts such as spaces, objects, narratives and

behaviours. The players ‘inhabit, explore, manipulate these contexts through play.’ (Salen & Zimmerman, 2003). Similarly, museum curation is concerned with creating different contexts where museum visitors’ encounter, experience and understand the museum collections (Witcomb, 2003, p. 128). These contexts are the museum space and its technological affordances and limitations, and the narrative and its conceptual limitations and affordances (Tzortzi, 2015). The research participants structured and established the player’s relation and encounter with the game objects through the creation of these game spaces, rules, mechanics and narrative. The limitations and affordances allowed by these contexts form and control the player’s experience and relation with the game and the game objects within it.

All groups, while designing games, highlighted the presence of an ‘implied player’. They designed games predicting and making space for the actions and behaviour of an ‘implied player’ and her relationship with the museum objects. They referred to the ‘implied player’ when discussing the way the museum objects-as game objects are revealed in the game context, or when describing how the ‘implied player’ will interact with them, or how she will play and win the game. Here, the notion of the ‘implied player’ is borrowed from Wolfgang Iser’s (1974) concept of Implied Reader and Umberto Eco’s Model Reader (1979). Iser (1974) writes ‘he (the model reader) embodies all those predispositions necessary for a literary work to exercise its effect- predispositions laid down, not by empirical outside reality, but by the text itself.’ (p. 34). Similarly, Eco (1979) notes ‘to organize a text, its author has to rely upon a series of codes that assign given contents to the expressions he uses (p. 7). To make his text communicative, the author has to assume that the ensemble of codes he relies upon is the same as that shared by his possible reader. The author has thus to foresee a model of the possible reader (hereafter Model Reader) supposedly able to deal interpretatively with the expressions in the same way as the author deals generatively with them’ (p. 7). The concept of the implied player has been used earlier by Espen Aarseth (2007) to examine games’

ontology and the player's role. In this thesis, the concept of the implied player (2007) is used to understand how the research participants designed games and how they assumed and performed the designer's role. The participants not only translated each museum object into a virtual presence in the game space, but they also created the context where the 'implied player' encounters the museum-objects as game-objects. They framed the player's experience of interacting, interpreting and playing with the museum objects in the game context.

The analysis of the games suggests that the 'implied player' is also an 'implied museum visitor'. Phrases such as 'Welcome to the Sailors Town', 'It's about London at War' directly refer to the museum galleries to which the games are based on. Two of the games have strong references to the museum context as they simulate the museum galleries. In addition to this, these games were created within the museum context and inspired by the museum objects. Earlier, this thesis, drawing from previous Game Studies research, discussed how games as cultural objects are situated within the context within which they are designed and played (Salen & Zimmerman, 2004; Montfort & Bogost, 2009). The games in this research project were created in and for the museum space. In this way, these games connect with the museum and aim at museum visitors.

The relation between the designer and (implied) player.

The games express the visitors/designers' authority and agency to make design decisions about representation, meaning, communication, and visitors/players' movement and performance within the game space. This means that the designers did not only create a playful and dynamic space where the objects were exhibited, they also designed, framed and control the way visitors/players can experience and navigate this space and encountered and engaged with the museum objects that are exhibited within it.

Museum design focuses on the way different technological and conceptual limitations and affordances control and affects visitors' experience and agency. Technological limitations and affordances refer to the way the museum space and layout are arranged and affect visitors movement and flow. While, conceptual limitations and affordance refer to the way exhibitions allow or limit visitors' agency in engaging and interacting with the collections and becoming co-authors of the museum narrative (Tzortzi, 2015). Diamantopoulou and Christidou (2016) refer to these technological and conceptual limitations and affordances as the 'choreography of the museum experience'. Curators create museum exhibitions by designing and controlling the way visitors navigate the galleries (2016). During the sessions, all families focused on how to frame and control the 'implied player's' encounter with the museum objects in the game space. They used both technological and conceptual limitations and affordances in the game to control the players' experience and agency. They structure different limitation and affordances using the games rules, mechanics, narrative and space.

Reading the games as social fields (Bourdieu, 1993), the act of framing and controlling the 'implied player's' experience and agency demonstrates the way the research participants reproduced the power relations and dynamics between designers and players. As detailed in the analysis of the games, two out of three families used the imperative mood to communicate meaning to the 'implied player'. The imperative mood implicitly defines the relation between the designers and the players. The designers set the rules while the players play the game following or rejecting them. Moreover, based on the data, the designers exhibited the authority and power to control and command the players. One of the families built further this notion of the designer's power and authority. Based on the semi-structured interviews, when the main designer of the group was asked to describe the way the players will encounter the game objects, he explained that he hid or revealed the objects using the environment and other game mechanics or created diversions to confuse or distract the player. This shows that the

participants used the agency of the designer to construct a power relation between her and the 'implied player/players'.

The relation between the participants as designers and the museum

The games express the relation between the visitors/designer and the museum culture and context within which they design games. The game analysis reveals how visitors/designers perceive the museum culture and context. The games reflect the designer' ideas and views about museum representation and curatorial work, and the role and authority of museums to safeguard valuable objects.

As detailed in the literature review and Theory Chapters, museum theory and practice have explored visitors' role in experiencing, engaging and interpreting museum collections and archives. They have investigated the authority of the curatorial voice in parallel with visitors' agency to construct new representations and meanings for and about museum collections. Previous research has shown that even though museums recognise the need of a curatorial polyphony and the contingency of representation and interpretation in the museum context, they face the fact that museum authority attracts museum visitors (Karp & Lavine, 1991). However, in more recent years, participatory and Visitor Generated Content initiatives have been employed to approach and balance the dichotomy between museum authority and visitors' agency. In this respect, this thesis argues that game design allows the participants the agency to explore curation, representation and meaning-making. Analysing the games produced during this case study reveals how they assumed the role of designer and constructed new representations and meaning for and about the museum collections.

As mentioned above, all groups preserved the museum objects' materiality and stories in their designs. Most of the games are set in the objects' original historical period or they represent a museum gallery. For instance, the first family's game is loosely based on the trade

expansion period, war and colonialism. The second family's game is based on London's historic district, Sailor's Town where sailors sold exotic objects. The third family's second game explores the Victorian Mudlarks. Only the third family's first game is set in a fictional world. During prototyping their game ideas, they asked questions about the origins of the objects and research any information available about the objects from the museum archives and galleries. This suggests that the families did not reject the official museum curation and representation. On the contrary, they preserved them. This shows that the participants did not challenge the museum as knowledge authority and its role as guardian of authentic and valuable objects. Presenting and preserving the museum objects history and narrative in the game space perhaps allow the participants to legitimate their role as designers and create valid and authentic games for the museum.

However, as noted above, game design allowed them agency to assume a curatorial role and extend and add different layers of representation and meaning to the existing museum curation and representation beyond the museum context. They played with the objects' materiality, meaning and representation and proposed new curatorial systems and networks about them using new communication modes, platforms and spaces. Game design allowed the research participants to engage with curating.

The first three relations relate to curation and agency, while the fourth is about agency and the role of museum visitors in the museum setting. Drawing a comparison between the designing process of games and curatorial work allow looking at visitors as designers and curators of complex ludic and dynamic curatorial and representational systems. Curators undertake different actions to design a curatorial work including collecting, researching, assembling and exhibiting of content. Curators take everyday objects of the past or artworks and using different curatorial strategies and methods to translate them into museum objects. They collect, archive, ensemble and exhibit these objects for and to the public. The research

participants work compares with curators' work in many ways. First, while translating the museum objects into game objects, the participants engaged with meaning-making and curation of content using different tools, strategies and modes. They collected, researched, challenged the meaning and representation of the objects and ensembled and exhibited meaning in and through the games. Second, the research participants as designers focused on how to communicate meaning. They employed different representational strategies to reveal and communicate meaning and frame the players encounter with the museum-objects as game-objects. These actions are part of the way meaning is assembled and exhibited within and beyond the museum space. The families challenged the museum curation and representation and constructed new representations and curatorial systems within the museum and beyond in the game environment. They used the 'language' and 'grammar' needed to build the representation and meaning of the museum-objects as game-objects in the game environment.

Concerning agency, exploring the act of making games reveals how game design allows the participant's agency, space and time to assume the role of the designer and explore the relation between designer- player. These relations are seen through the lens of conflict and power relations between designer and user, curator- visitor. Game design allows the participants the agency to assume a curatorial and authoritative role. They did not only construct and framed the players encounter with the museum objects as game objects but also explored ways to control and restrain the experience of the player. Curatorial work has been challenged and discussed in terms of the conflict between the authority of the curatorial work, the openness of museums and the agency of the visitor to engage and interpret museum collections.

Game design as Visitor Generated Content and participatory approach does not simply impact visitors' engagement with the museum collections, it allows the agency to assume a curatorial role and explore, challenge, extend and add layers of representation and meaning to them.

7.6 Synopsis

In this section, the participants' game designs and semi-structured interviews' analysis will be discussed and summarised in relation to this thesis' research questions and objectives. This will clarify and highlight this case study's findings and conclusions. As noted at the beginning of this chapter, in this case study, I explore how families design games to understand what their design decisions and choices reveal about representation, meaning-making and agency.

As discussed in the literature review and Theory chapters, representation and meaning-making are core aspects of the museum and curatorial work. Museum Studies literature and practice have long been focused on the question of representation and the way visitors approach, engage with, interpret and react to museum curation. Prior studies (Simon, 2010; Ross, 2014; Kidd & Cardiff, 2017) that have explored Visitor Generated Content in museums have primarily focused on the outcome, complications and implications of such practises. They have discussed how VGC and participatory practises allow or impact the way visitors engage with museum collections (Ross, 2014; Simon, 2010). They have underlined the complexity of allowing visitors to attach and share publicly new representations and meanings to museum collections (Ross, 2014). On one hand, they have looked at how museums become more open and democratic when integrating visitors' voices in the official museum curation and representation (Simon, 2010). But, on the other hand, they have also highlighted that participatory and visitor generated practices affect museums' authority to preserve the past (Kidd & Cardiff, 2017). Finally, they have explored the ethics of such practises and how museum professionals react to VGC (Kidd & Cardiff, 2017).

In this thesis, I take into consideration all these issues. My aim is to explore and discuss them. But, instead of focusing on the outcome or the impact of participatory and VGC approaches, I investigate the act of making. I examine what designing games with visitors reveals about

visitors' agency, curatorial voice, and authorship in different platforms and modes. I approach games as platforms where visitors as designers explore curation, construct meaning-making and representation and thus, through games design they negotiate their own agency as visitors/designers.

The main objectives and research questions of the Museum of London Docklands case study were:

To examine curation:

- In what ways do the participants' game designs enable them to adopt a curatorial role and unpack the notion of curation?

To examine representation and meaning-making:

- What are the participants' design decisions revealing about the way they negotiate and construct representation and meaning-making?

To examine visitors' agency and designers' agency:

- How do the participants negotiate agency inside the museum while making digital games inspired by the museum galleries and collections?

The first research question is about curation and how the research participants adopt a curatorial role while designing games. Using Multimodality, Halliday's metafunctions, (1978) Aarseth's notion of the implied player (2007) and the notion of platforms (Montfort & Bogost, 2009), the analysis of the games showed that their role as curators is established and manifested when a. they collect, ensemble, transform and exhibit the museum objects as virtual objects in the games, b. they foresee and simulate the different relations between

player-objects in the games, c. they control the player's movement, actions and agency in the games.

Transforming the museum objects into virtual game objects allowed the research participants to interact and connect with them in new ways. The analysis showed that the research participants first, deconstructed the meaning behind the history and materiality of the museum objects and then, reproduced them as virtual and playable game objects. The role of the game designer enabled them to think about the museum objects as dynamic and playable artefacts capable of communicating meaning to others and establish new relations.

To further support these relations, they also created virtual game spaces for the museum objects and the players to inhabit. These game spaces were either new fictional worlds or extensions of the existing museum galleries and displays. In all games, the research participants used these game worlds to propose and enact new rituals, paths and platforms to communicate meaning for and about the museum objects and the museum itself.

The second research question focuses on what the participants' design decisions reveal about the way they negotiate and construct representation and meaning. To answer this question and theorise my research findings, I employed Salen and Zimmerman's Rules, Play and Culture framework (2003). Building on this theory, I argued that visitors' games as cultural objects situated in the museum context can express, reflect, and add new layers of representation and meaning to the museum culture and context. While making games, the participants translated the museum objects into digital game objects. However, this is not just a process of interpreting, constructing and attaching meaning virtually. Breaking down how they presented the museum objects in the games showed that the participants explored, challenged, manipulated and extended their meaning and representation by building a complex system of relations and representations. They did that without rejecting the official museum curation and representation. They constructed, added and communicated different

layers of meanings, metaphors and symbolism for and about them. Drawing a comparison between game design and curatorial design, this thesis proposes that the research participants did not simply interpret the museum objects and react creatively generating content inspired by the museum collections. They engaged with curating and assumed a curatorial role. Based on the above analysis, it was demonstrated that they constructed, added and communicated meaning using different representational modes including written text, images, and game rules and mechanics.

They also explored representation and meaning in different spaces and platforms. In the museum space, they unpacked representation and meaning through observation, object-handling and discussion. In the game space, they achieved that through rule-making and narrative. While translating representation and meaning from the museum to the game space, they, also focused on representation and meaning-making between these spaces and platforms. They communicated the museum objects' representation and meaning from one space to another, from one mode to another, and from one platform to another. They also preserved the materiality, value and importance of the museum objects while transforming them into game objects. They achieved that by creating different relations and dynamics between the 'implied players' and the objects. This shows that the participants recognised that part of their role as designers within the museum space was to preserve and present an authentic representation of the museum objects within the games. In this way, their role as designers is validated and authorized by the museum.

The way they constructed the relationship between the player and objects uncovers their role as curators and mediators. In museums, the way visitors encounter the museum objects is a key aspect of the curatorial work. The analysis of the game prototypes alongside the semi-structured interviews suggests that the participants were concerned about how and why the 'implied players' will encounter the museum-objects in the virtual space of the games. Using

different game mechanics, they structured and mediated the way the players interact, decode and use the museum-objects as game-objects. They used different in-game modes of representation to frame and communicate this encounter. They used a shared 'language' (game rules and mechanics) which is familiar to them as designers and to others as players. In museums, curators work in a similar way, they use shared 'language' (exhibition labels, wall texts, space layout and museum rules) to shape visitors' encounter with the collections and objects. For instance, they use the architecture of the museum space, the layout and syntax to manage and control visitors' engagement and experience with the museum collections (Tzortzi, 2015). The analysis reveals that the research participants undertook similar actions using similar strategies and techniques within the virtual space of the games.

The third research question focuses on visitors' agency as content designers in the museum setting. Drawing on Bourdieu's theoretical tools of field and habitus, I explored the participants' games as fields. I demonstrated that through their games, the participants assumed the authority of the curator and reproduced the power relation and dynamics between designer-player. Exploring the participants' game designs suggests that they did not only make design decisions about meaning and representation, but they also decided how to construct and control the engagement and experience of their curatorial product. Similarly, to curators, the designers of these games, not only re-constructed representational systems and relations that connect, contextualise and reveal the museum objects to the 'implied players' beyond and past the museum space, but also made decisions on how to control and determine these processes. Visitors flow control, surveillance and management are important aspects of the museum and curatorial work. The participants as game designers determined how the players will experience and play the game and encounter the museum objects in the virtual space of the game. They made decisions about the way the players move, behave and interact with their curatorial product.

The analysis revealed that the participants negotiated their own agency as visitors/designers through the exploration of the power relation between designer-player. Building upon the first case study's findings, it was hypothesised that game-making enables the research participants to assume an agentive role within the museum context. Games design allowed them to transform their role and from visitors to become designers and curators within the museum context.

They did not only react creatively and interpreted the museum objects for personal engagement and development. While making games, the participants suggested that they expected their games to be played by an 'implied player'. The theoretical concept of the 'implied player' (Aarseth, 2007; Iser, 1974; Eco, 1979) allows me to discuss how the designers designed their games and how they established their role and agency as designers. The authority and agency of the designer, allowed them to construct and frame how the 'implied players' will encounter the museum objects in the game. But also, to control and determine their actions while playing. In this way, they established a relation of power and authority between them as designers and the 'implied players' as users and consumers of content. The existence and the necessity of the 'implied player' suggest that the research participants separate their experience, agency and role as designers to the experience, agency and role of the 'implied player'. They express this authority and agency by making design decisions and communicating how the player will experience and play the game.

During the first case study, while making games, the research participants noted that they experienced the museum behind the scenes and negotiated agency, authority and power. The third question of the second case study asks how the participants negotiate agency with game design. The analysis of the second case study's games attempts to answer this question. The games analysis suggests that the authority and role of the designer allow participants the agency to make design decisions concerning curation, representation and meaning. This

means that they assumed an agentive role to explore, challenge, deconstruct and reconstruct the museum objects' representation and meaning without rejecting the museum authority and curatorial voice.

However, the participants are not simply visitors who interpret and attach meaning to the official museum curation. As discussed above, they constructed representation and meaning anew. They challenged and extended the museum curation in different modes, platforms and space. Game design gave them the opportunity and the resources to curate the museum objects in space and time. It allowed them to think as curators and built new curatorial systems to represent and communicate meaning. As a result, agency emerges through the role and authority of the designer.

Lastly, the participants' agency is reflected through the relation between them and the project and the technological affordances of the games authoring tool. Taking a step back to look at how they reacted to the games authoring tool and its capabilities reveals the different agentive decisions and choice they have made. The first family, while making the game, focused on finding different ways to build more challenging and demanding gameplay. In order to achieve that, they agentive choice to push the boundaries and limitations of Mission Maker. Another example of this is the yellow crates challenge. The designers build this challenge without using the in-game resources, Instead, they employed the game mechanics of collecting and dropping to create the challenge. Another example is the third family's decision to stop using the Mission Maker and instead to use paper-based prototyping methods to design the game Mudlarks.

The findings of this thesis are in line with Social Semiotics evidence that agency is expressed through the interest and choice of modes, genres, media and contents (Kress, 2013, p. 132). The research participants made an agentive decision on how to deliver their creative work

and how to participate in the research project. This shows that the participants made informed decisions about the design process and their role as research participants and partners.

CHAPTER 8: CONCLUSIONS

In this chapter, the research carried out in this doctoral thesis will be summarized by outlining its research inquiries, findings, achievements and limitations. The chapter will conclude with further key questions and areas for future work.

This doctoral thesis has looked at how museum visitors, particularly multi-generational social groups like families, design games inspired by museum collections, spaces and displays. In order to understand what happens when visitors produce digital playful content, like games, for and about the museum context, I focused on and fleshed out the act of making games. The objective was to investigate the different ways the visitors' games reflect, transform and add to museum culture and context and act as curatorial platforms and creative interventions.

In the literature review chapter, I demonstrated that most of the Museum Studies literature and practice have mainly used games, play and design as educational tools and assets for marketing and public engagement. I explained that besides the academic and empirical interest towards games, the accounts of their employment have been mainly descriptive and celebratory. In addition to this, I showed that such practices have attracted much speculation and debate. Both Museum Studies and Game Studies texts have critiqued serious games and gamification and have suggested that games instrumentalization overlooks the potential and expressive nature of video games. However, I presented limited research examples that employ an in-depth reading of games in the museums and heritage context (Flynn, 2007; Giddings, 2015). But I have argued that these texts mainly focus on visitors' play practices exploring only the different ways games' virtuality, spatiality and ludic aspects allow visitors to engage with historical and cultural heritage. This means that very little is known about heritage visitors' game design practices and their connection to representation, meaning-making and agency.

Taking all the above into account, I proposed that the relation between museums and digital games needs to be reexamined, moving away from the notion of games as emerging pedagogy but instead moving towards the examination of games as representational and dynamic cultural artefacts that reflect and transform the context within which they are situated, played and designed. I have argued that visitors' game design practices can open new dialogues about digital curation, representation and virtuality of museum spaces and collections, Participatory Design, the question of representation and curatorial authority and authenticity. To demonstrate how the visitors' games act as curatorial platforms, two case studies were designed and implemented with families in two different museums in the UK. The first case study was implemented at the UCL Grant Museum of Zoology and the second one at the Museum of London Docklands.

Findings and empirical achievements

The UCL Grant Museum of Zoology case study explored how family groups interpret, experience and connect with the museum collections, specimens and space through game design. Informed by their focus group discussions, semi-structured interviews and game paper-based designs, this case study investigated from their point of view what it means for them to design games inspired by museum collections and space. From the analysis and theorisation of the research material, three themes emerged: representation, meaning-making and agency. The first case study's findings revealed that game design allowed the families to engage with the museum and its collections and space in their own terms. Game design gave them space and time to focus on the museum in new ways and produce new layers of narratives, representations and meanings from and about them. The participants compared the way they engage with the museum practice and culture as visitors and as designers. According to their semi-structured interviews and focus group discussions, game design allowed them to assume the agentive role and authority of designing and controlling the

encounter with the museum collections and space. In this way, it offered new ways to establish new relations with the museum.

The second case study built on the first case study's findings, themes and analytical and methodological framework focusing on what the visitors' game designs reveal about representation, meaning-making and agency. Therefore, in this case study, game design was approached from a Multimodal Social Semiotics perspective. Multimodality and Social Semiotics were used both as a methodological and interpretive approach. In this way, the different processes and actions behind designing games were unfolded revealing the way the family groups assessed and reflected the museum in their prototypes. This allowed an in-depth understanding of how games act as dynamic platforms where visitors engage with curatorial production. By interrogating the research participants' game prototypes along with their semi-structured interviews and focus groups discussions, this case study paid particular attention to the designers' design decisions and choices. Multimodality and Social Semiotics allowed the researcher to break visitors' designs down to smaller compartments and explore the different modes and semiotic resources they used to construct, reflect and communicate meaning. While talking with the designers revealed their perspectives and reflections of the design process. Employing this methodological and interpretive approach revealed step by step what happens when visitors design games and how they justify their design decisions and choices while designing and playtesting their design work. In this way, this case study demonstrated how the families encountered, deconstructed and reconstructed representation and meaning about and for the museum objects, themes and displays beyond the museum's physical boundaries. Based on the analysis and theorisation of the findings, I have argued that game design has enabled the families to engage with curatorial production. This is revealed in the way they construct different dynamic and playful communicational and

representational relations with and within their games. More specifically, through their prototypes, the research participants:

1. Constructed a representational relation between the museum-objects and the game-objects. The game-objects reflect, materialize and transform meaning about the museum artefacts. This also refers to the relation between the museum space and the game space. The designers did not only establish relations between the artefacts and their visual representations in the game, but they also developed representational connections between the museum space and the game space. In the games, they simulated the architecture, spatiality and themes of the museum galleries. In this way, they constructed new playful and dynamic spaces where they creatively curated the artefacts attaching to them new playful and dynamic relations and narratives.

2. Defined the player/visitors relation and encounter with the artefacts in the game. The designers traced different paths and built different platforms to frame and control the way player/visitors encounter, interact, experience and enact different rituals and performances within the game spaces.

3. Expressed the visitors/designers' authority and agency of making design decisions about representation, meaning, communication, and visitors/players' movement and performance within the game space.

4. Expressed the relation between the visitors/designer and the museum culture and context within which they design games. The game analysis reveals how visitors/designers perceive the museum culture and context. The games reflect the designer' ideas and views about museum representation and curatorial work, and the role and authority of museums to safeguard valuable objects.

The findings from both case studies have extended our understanding of participatory visitors' game design practices in the museum site. The findings reported shed new light on what games and game design with families in museums can bring to the conversation on museum representation, curation and the relation between visitors and museums. They do so by revealing and focusing on the visitors' perspectives of their experience of designing games inspired by the museum and its collections. This has highlighted the designers' perceptions and understanding of the notions of curatorial authority, visitors' agency, and museum objects' materiality and cultural identity in museums. In this way, these findings add to a growing body of research on Visitor Generated Content and participatory and digital co-curation and visitors' agency in museums and cultural heritage.

Theoretical Achievements

The theoretical framework that was developed for this doctoral thesis brought together theories from seemingly different theoretical and methodological disciplines to conceptualise and define visitors' games as curatorial interventions and platforms; and to understand their connection to the notions of representation, meaning-making and agency. To achieve that, Salen and Zimmerman's Rules, Play and Culture framework (2003) was used as a theoretical foundation. For Salen and Zimmerman (2003), games as cultural objects can reflect and transform the context within which they are designed and played. Building on this theory, this doctoral thesis proposed and hypothesized that visitors' games as cultural objects situated in the museum context can express, reflect, and add new layers of representation and meaning to the museum culture and context. But also, they can manifest visitors' agency to frame and control how they and others encounter and experience the museum culture and context.

However, the terms curation, curating, curatorship are complex and often elusive. Therefore, to conceptualise the notion of curation, four different lenses were used. These are the museum-visitor lens, the representation lens, the social semiotic lens, and platform lens.

Employing different curatorial models, Social Semiotics, and Platform Studies theory and Museum Distributed Network model, this thesis unpacked the notion of curation drawing theoretical and methodological parallels between exhibition-making and game design.

Another contested term is that of agency. Agency was examined in the context of museums and in the context of games, play and design. In the context of museums, agency was explored through the theoretical work of Bourdieu and Kress. Bourdieu's theoretical perspective allows a better understanding of the social structure of museums and the different power relations and dynamics that exist within the museum context. However, Bourdieu conceptualises visitors as 'puppets' manipulated by their own fixed habitus, capital and social forces within and outside the social fields. Bourdieu sees agents' action and social practice depending on the relations between the agent, the habitus and the social forces of the field, but fails to consider and recognise the potential and intentionality of choice of how to act, communicate and negotiate representation, meaning and agency. This is where employing Kress' work is particularly illuminating. Kress recognizes and underlines the agent's intentionality of choice in the semiotic work, meaning-making and communication. From a Multimodality and social semiotic theory perspective, he argues that the agent has a variety of choices for meaning-making and representation. These potential choices allow agency to the agent to construct and communicate meaning and representation in different ways. However, I have argued that these two theories can be used as complementary to each other, particularly in the research field of museums. Museums are social and political institutions that struggle to balance the power relations and conflict between curatorial authority and visitors' agency and decision-making. Undeniably, Bourdieu's work has allowed museum research for decades to approach and understand these relations and conflict. However, Kress' work can give museum research the theoretical and methodological and interpretive tools to investigate

and unpack visitors' design works in connection to agency, meaning-making and representation.

Methodological Achievements

As noted in the Methodology chapter, in the field of Visitor and Museum Studies, there is a growing research interest that focuses on participatory, creative and visual methodologies such as drawings, visual journals and photography (Diamantopoulou & Christidou, 2018). Within this context, I proposed game design as a dynamic and playful methodological approach to examine how visitors engage with museum culture, curatorial production, representation and meaning-making. Games design as research methodology allowed me to collect dynamic materials that model and simulate different relations, behaviours and experiences as they were perceived and understood by the designers in the 'environment of communication' (Kress, 2010, p. 132).

Another methodological achievement of this doctoral thesis connects with research ethics, the researcher's role and use of reflexivity in qualitative research. Bringing together literature from the fields of Community-based Participatory Research, Participatory Action Research (Bangs et al., 2012; Brydon-Miller & Maguire, 2008) and Museum Studies (Kidd & Cardiff, 2017), this thesis reflected on the different ethical issues and challenges that emerge from Participatory Design and community-based research in museums. Previous research work (Bangs et al, 2012) on community-based research in museums has identified the most common ethical issues and challenges including the power relations, conflict and dynamics between researcher and researched, the rights, ownership and dissemination of data, findings and publication, and the anonymity, privacy and confidentiality of the research. However, more recent research (Kidd & Cardiff, 2017, p. 43) has suggested that museum practice and academic literature lacks 'a common language with which to interrogate the ethical dimensions' of participatory and community-based museum partnerships. Kidd and Cardiff

(2017) also focused on issues of ownership and dissemination of data. This doctoral thesis has reflected on all these ethical considerations and how they challenge the research design, implementation and analysis. But, unlike the previous literature on the topic, in this thesis, particular attention has been paid to the boundaries between the researcher and the researched. This allowed me to explore how the different roles of the researcher influence the research process, the power relation and dynamic between the researcher and the researched, and the production and ownership of the designed work. Four different roles were identified and discussed: 1. The role of researcher-interviewer. 2. The role of researcher-facilitator, 3. The role of researcher-co-creator. 4. The role of researcher-analyst. Throughout the research project, the researcher was particularly challenged to balance the boundaries between interviewer and facilitator, and researcher and co-creator. Reflecting on my positionality and power during the research allowed me to employ a multi-method framework to collect and interpret the data. As detailed in the Methodology chapter, the analysis and findings of this thesis emerge from collections and interpretation of different materials including the participants' designs, semi-structured interviews and focus groups discussions.

Limitations and Further Work

Scope and limitations

Even though data were collected to initially explore the participants' motivation and expectations of the project. This thesis does not focus on the family agenda of visiting and participating in the project. In the Museum Studies field, there is an extensive literature (Moussouri, 2018; Rennick-Egglestone et. al, 2016; Povis & Crowley, 2015; Falk & Dierking, 2013; Sterry & Beaumont, 2005) that investigates families' agenda and the way they collaborate and communicate during their visit. Several research investigations have already revealed the role museums play in family life and how different family members share a

museum experience. However, further work exclusively examining museum visitors agenda and motivation for engaging in activities related to games, play in the museum context would be useful.

In addition to this, this thesis does not focus on theoretically and methodological interrogating the motivation of design choice. Nonetheless, I am aware of the conceptual connections between motive, interest and game design and meaning-making. Previous research work with schoolchildren has revealed that the notion of motive compliments the analysis of games design (Pelletier, 2007).

Furthermore, this thesis does not explore the connection between subjectivity and game design. I am aware of the complexity of the issue that connects with how subjectivity, identity, previous experiences of playing and designing games can influence the way the family groups designed the games. It is the complexity of this issue that requires an in-depth investigation. In order to explore rigorously what and how identity, subjectivity and previous experiences influence and impact the game design, a separate set of research questions and research plan would be needed. In addition to this, different ethical procedures would be applied to methodically explore the research participants background and profile. But these research inquiries and processes exceed the scope and research affordances of this doctoral thesis. Therefore, this thesis does not make claims concerning the issues that motivated the participants to make these design decisions and choices. This thesis only explores what the visitors' game designs reveal as signs newly made as a creative and design response with the museum, its collections, objects and displays. Employing Multimodality and Social Semiotics as a methodological and interpretive approach allows me to examine and analyse the participants' games as creative and design response to the environment of communication. As such, they reflect and transform the museum context adding new layers of representations and meanings to it.

Methodological limitations

Although this doctoral thesis involved only a small number of family groups in the design process of games, its methodological framework offered very rich research materials. These included game paper and digital prototypes, video/audio recordings and game descriptions. In this way, this thesis conducted an in-depth read of the participants' games investigating their design decisions and choices based on their justifications and discussions. Another advantage of this type of participant recruitment is that it allowed the researcher to spend notably more time with the families and focus on their progress during a series of sessions. The recruitment of more family groups would perhaps offer additional and useful data which would have benefited the data analysis and theorisation of the findings. It might offer a variety of perspectives and approaches which could potentially picture interesting aspects and points about the way visitors reflect and transform the museum context and culture with their designs. However, practical and methodological reasons limited the research capabilities of this doctoral thesis. Collecting data as a lone doctoral student has its challenges, difficulties and limitations. On top of that, conducting research in a public busy and complex environment, like museums, imposes additional institutional difficulties and challenges. The research design must fit into the institutional affordances, processes and strategies. But these do not always align with the academic and research objectives and aims. This thesis methodological approach is still somehow experimental and new for the museum context where most research is implemented as observations, interviews and visitors questionnaires.

Another limitation of this research work is that I did not explore the museum professionals perspectives and reactions to the families' games. During the first case, an interview was conducted with the museum's former director discussing the participants' games. The materials were not further analysed in the analysis as they were considered outside the boundaries of this thesis' scope and conceptual and methodological inquiries. However,

further work might benefit from the exploration of the museum professionals reactions and perception of visitors' design work. In the first case study, aspects of the game were influenced by the pop culture and the portrayal of museums and museum professionals in films. The families portrayed a stereotypical perception of the museum and their staff illustrating them as authoritative and disciplinary figures. Investigating the museum professionals' reaction or perhaps researching the collaboration between visitors and families in the creation of games might have opened new channels of communication between visitors and museum professionals and raise further questions about them.

Epilogue

This thesis started by posing the question of what happens when museums invite their communities to design playful content for and about museum collections, objects and displays. The process of answering this question raised further key questions about the participatory and playful museum. These issues concern the relation between museums and visitors and the reasons why museums employ playful, inclusive and participatory practices. Exploring these key questions and issues showed that museums still struggle to set free the Enlightenment rationality, balance their authority and accept and legitimise alternative classifications, representations and narratives. And despite their most recent attempts to democratise their social role and re-define their relations with their communities, museums still struggle to share the authority and resolve the problem of representation. By focusing on controlling how and who can make decisions about museum design, representation and meaning-making, they overlook museum visitors' agency as designers. They fail to fully understand the process of making and how museum visitors' perceive and assume their role and agency.

In this context, games, play and design have been employed to transform museums into inclusive, playful and participatory institutions, yet the accounts of their employment are too

instrumentalist and focus on pedagogical outcomes. This thesis attempted to rework Museum Studies' perceptions and employment of games by proposing new ways of approaching the relation between museums and games by focusing on the act of making.

At the beginning of this thesis, I argued that the aim of the playful and participatory museum is not to replace the old and traditional didactic museum encounters with new didactic encounters masked as effortless and fun game-like experiences. The playful and participatory museum aims to recognise and empower the existence of alternative classifications, representations and meanings that challenge and transform the museum and its collections. The playful and participatory museum creates design opportunities for different communities to assume an agentive role that challenges, transforms and adds new layers of playful and dynamic representations and meanings to the museum environment.

In this study, by drawing parallels between the work of curators and the actions the families' undertook to design games, I have shown that game design allows visitors to engage with virtual curation and propose new playful and dynamic ways of experiencing and encountering historical and cultural heritage. Visitors' games as curatorial platforms transform and add new layers of representations and meanings to the museum environment and its collections, objects and displays. In this way, the visitors assume a different role within the museum site. Within the context of making games, they do not only engage and experience the cultural and historical heritage through the formal curatorial representation and narrative. They also make agentive decisions and choices about curation, representation and meaning. The authority and role of the game designer enable them to push the boundaries of the museum and propose new ways of looking, interacting and experience the museum objects, displays and spaces.

The expectations and requirements for museums are currently changing, museum visitors expect to develop new relations with museums and experience more open and behind the

scenes opportunities that allow them to encounter the museum on their own terms. In addition to this, to understand museum audiences and these growing expectations and requirements, museum research and practice have to employ more open and creative methodological approaches. Game design as a creative and playful methodological approach can reveal useful insights about the museum-visitor relation and exploration of alternative and playful curatorial voices and the problem of representation. Prior to this study, most museum practices on games have only scratched the surface without investigating all aspect of games. The insights gained through this study illustrate the expressive and dynamic power of games and specifically of game design. The findings demonstrate that games can contribute to the museum-visitor relation and our understanding of the playful and participatory museum beyond a tokenistic and marketing facade.

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APPENDIX ONE

UCL GRANT MUSEUM OF ZOOLOGY CASE STUDY

Ethics Application Form: Student Research

Anyone conducting research under the auspices of the Institute (staff, students or visitors) where the research involves human participants or the use of data collected from human participants, is required to gain ethical approval before starting. This includes preliminary and pilot studies. Please answer all relevant questions in terms that can be understood by a lay person and note that your form may be returned if incomplete.

For further support and guidance please see accompanying guidelines and the Ethics Review Procedures for Student Research http://www.ioe.ac.uk/studentethics/ or contact your supervisor or researchethics@ioe.ac.uk.

Before completing this form you will need to discuss your proposal fully with your supervisor(s).

Please attach all supporting documents and letters.

For all Psychology students, this form should be completed with reference to the British Psychological Society (BPS) Code of Human Research Ethics and Code of Ethics and Conduct.

Section 1 Project details			
a.	Project title		An exploratory study of the participatory design of a mobile digital game at UCL Grant Museum of Zoology
b.	Student name		Angeliki-Zinovia Symeonidi
c.	Supervisor/Personal Tutor		Dr. Alison Gazzard, Dr. Diane Carr
d.	Department		Culture, Communication and Media
e.	Course category (Tick one)	PhD/MPhil ☒	EdD ☐
		MRes ☐	DEdPsy ☐
		MTeach ☐	MA/MSc ☐

		ITE ☐	
		Diploma (state which) ☐	
		Other (state which) ☐	
f.	Course/module title		Ph.D. in Education
g.	**If applicable,** state who the funder is and if funding has been confirmed.		
h.	Intended research start date		9/1/2016
i.	Intended research end date		29/2/2016
j.	Country fieldwork will be conducted in *If research to be conducted abroad please check www.fco.gov.uk and submit a completed travel insurance form to Serena Ezra (s.ezra@ucl.ac.uk) in UCL Finance (see guidelines). This form can be found here (you will need your UCL login details available): https://www.ucl.ac.uk/finance/secure/fin_acc/insurance.htm*		UK

k.	Has this project been considered by another (external) Research Ethics Committee?	
	Yes ☐	External Committee Name:
	No ☒⇨ *go to Section 2*	Date of Approval:

If yes:

- Submit a copy of the approval letter with this application.
- Proceed to Section 10 Attachments**.**

Note: Ensure that you check the guidelines carefully as research with some participants will require ethical approval from a different ethics committee such as the National Research Ethics Service (NRES) or Social Care Research Ethics Committee (SCREC). In addition, if your research is based in another institution then you may be required to apply to their research ethics committee.

Section 2 Project summary

Research methods (tick all that apply)

Please attach questionnaires, visual methods and schedules for interviews (even in draft form).

☐ Interviews ☒ Focus groups ☐ Questionnaires ☐ Action research ☒ Observation ☐ Literature review	☐ Controlled trial/other intervention study ☐ Use of personal records ☐ Systematic review ⇨ ***if only method used go to Section 5.*** ☐ Secondary data analysis ⇨ ***if secondary analysis used go to Section 6.*** ☐ Advisory/consultation/collaborative groups ☐ Other, give details:

Please provide an overview of your research. This should include some or all of the following: purpose of the research, aims, main research questions, research design, participants, sampling, your method of data collection (e.g., observations, interviews, questionnaires, etc.) and kind of questions that will be asked, reporting and dissemination (typically 300-500 words).

An exploratory study of the participatory design of a mobile digital game at UCL Grant Museum of Zoology

Rationale

The area of interest of the proposed study is game-based learning in informal education in cultural institutions using new technologies. Specifically, the interest is focused on the development process of a digital mobile learning game, in which museum visitors are involved in the design process using new technologies in the environment of a museum in the UK. The rationale for this research has been created both by reflection on my personal educational background, motivations, and interests and by the identification of a literature gap. Specifically, concerning the personal background, motivations, and interest, this research is related to the further study and continuation of a line of work that has been developed during my Master's dissertation in 2013, which was the design, implementation and formative evaluation of a digital mobile game inside a public library. During the process of the formative evaluation, the participants highlighted the need for their participation in the designing process of such a game and not only in its playtest process. Thus, the proposed

research is focused on the examination of participant's involvement in the designing process of a digital mobile game.

Furthermore, the second reason behind this study is the identification of a literature gap in the existing scientific field. Specifically, even though there are many references to the impact of digital games on learning in formal or informal institutions and examples of participatory design processes in schools, there is only a small number of studies that have examined the educational value of visitors designing their own games inside a museum. In addition to this, there is a limited number of studies that is focused on families as participants in participatory designing processes in informal educational spaces such as museums.

Aim of the study

The aim of the exploratory study (pilot) is to examine and evaluate whether the participatory game design can foster learning and motivation of visitors inside the museum environment. In particular, the objective is to use the process of making a digital game as a tool to motivate the participants to discover and narrate the stories of museum objects in different ways. In addition, this pilot study is intended to be implemented at the UCL Grant Museum of Zoology, recruiting families as participants.

Main Research Questions

1. What features of the participatory design process foster learning and motivation inside the museum?
2. Can digital games act as a medium of narrating and uncovering the stories of museum objects inside the Museum environment?
3. Are families the appropriate participants in participatory design processes inside museums?

Additional Research Questions

1. What experience the participants have concerning digital games?
2. How do participants understand games inside the Museum environment?
3. How participants interpret and uncover the stories of museum objects inside the Museum environment?

4. What is the appropriate balance of participation for the participants during the designing process?

Methodology

The methodology of this pilot study is mainly seeking for qualitative data. Observation and focus groups will be used in order to collect data. The method of observation will contribute to the collection and a better understanding of the data about participants' behaviour, conversations, interactions, and experiences, while they are working in groups. Specifically, my role as a moderator will be to lead and facilitate the process of designing a digital mobile game with the participants. Since it will be difficult to take notes about their conversations, experience and the way they interact with each other, it is proposed that the participants will be videotaped by cameras and recorded by a voice recording application on a mobile phone. In this way, it might be easier to gather data about these details and insights into the process.

Selecting Participants

The participants in this study will be families who are visiting the UCL Grant Museum of Zoology during weekends. In particular, there are two criteria for the participants' selection. Firstly, the families will consist of two to five members and secondly, the children will be between the ages of ten to sixteen.

Methods

The pilot study will consist of four sessions, which will last for one or one hour and a half and will be implemented as follows:

<u>First session:</u> Introduction to the project

During this first session, the participants will be introduced to the purpose of the project. First of all, they will both discover the museum collections and objects and the elements of the game that they will be asked to co-design. To achieve these two goals, it is proposed to give the opportunity to the participants to think and express their experiences about digital games, to understand what games are and to play a demo game on paper as a guide in order to understand the different elements of the proposed mobile game and its potentials. In addition to this, during this process, they will have the chance to interact for the first time with the museum objects in a more creative and hands-on activity. Also, during the first session, the participants will share their possible experience of playing digital games inside and outside museums spaces.

Finally, during the game demo, the involvement of the participants in playing a game inside a museum will be examined. Their experience in playing the demo will be compared with their experience during playing their own game.

Second session: Brainstorming and understanding the designing process of a digital game on paper.

During the second session of the pilot study, the participants will investigate the different aspects of a game based on the demo game they played and they will try to identify the elements of their own game. They will have the chance to observe and handle the museum objects and to propose different game scenarios and rules for their own game.

Third session: Designing process of the game on paper.

During the third session, the participants will use paper and pencils in order to design their own game based on their findings during the second session.

Fourth session: Playtesting the digital mobile game and evaluation

During the fourth session the participants we will return to the museum in order to playtest the digital version of their game and evaluate their experience after playing it.

Section 3 Participants

Please answer the following questions giving full details where necessary. Text boxes will expand for your responses.

a.	Will your research involve human participants?	Yes ☒	No ☐ ⇨ *go to Section 4*
b.	Who are the participants (i.e. what sorts of people will be involved)? Tick all that apply.		
	☐ Early years/pre-school ☒ Ages 5-11 ☒ Ages 12-16 ☐ Young people aged 17-18	☐ Unknown – specify below ☒ Adults *please specify below* ☐ Other – specify below	
	NB: Ensure that you check the **guidelines** (Section 1) carefully as research with some participants will require ethical approval from a different ethics committee such as the National Research Ethics Service (NRES).		

	Parents
c.	If participants are under the responsibility of others (such as parents, teachers or medical staff) how do you intend to obtain permission to approach the participants to take part in the study? **(Please attach approach letters or details of permission procedures – see Section 9 Attachments.)**
d.	How will participants be recruited (identified and approached)? The participants will be recruited from the UCL Grant Museum of Zoology visitors.
e.	Describe the process you will use to inform participants about what you are doing. During the first session of the pilot study, all the participants will get an information sheet about the purpose and the content of the process.
f.	How will you obtain the consent of participants? Will this be written? How will it be made clear to participants that they may withdraw consent to participate at any time? *See the guidelines for information on opt-in and opt-out procedures. Please note that the method of consent should be appropriate to the research and fully explained.* At the first session of the pilot study, the participants will be asked to complete a written consent form about their involvement in the participatory design process of a digital mobile game inside the UCL Grant Museum of Zoology.
g.	**Studies involving questionnaires:** Will participants be given the option of omitting questions they do not wish to answer? Yes ☐ No ☐
	If **NO** please explain why below and ensure that you cover any ethical issues arising from this in section 8.
h.	**Studies involving observation:** Confirm whether participants will be asked for their informed consent to be observed. Yes ☒ No ☐
	If **NO** read the guidelines (Ethical Issues section) and explain why below and ensure that you cover any ethical issues arising from this in section 8.

i.	Might participants experience anxiety, discomfort or embarrassment as a result of your study? Yes ☐ No ☒
	If **yes** what steps will you take to explain and minimise this? If **not**, explain how you can be sure that no discomfort or embarrassment will arise? The objects, which will be used will not cause any embarrassment to the participants
j.	Will your project involve deliberately misleading participants (deception) in any way? Yes ☐ No ☒
	If **YES** please provide further details below and ensure that you cover any ethical issues arising from this in section 8.
k.	Will you debrief participants at the end of their participation (i.e. give them a brief explanation of the study)? Yes ☒ No ☐
	If **NO** please explain why below and ensure that you cover any ethical issues arising from this in section 8.
l.	Will participants be given information about the findings of your study? (This could be a brief summary of your findings in general; it is not the same as an individual debriefing.) Yes ☒ No ☐
	If **no**, why not?

Section 4 Security-sensitive material

Only complete if applicable

Security sensitive research includes: commissioned by the military; commissioned under an EU security call; involves the acquisition of security clearances; concerns terrorist or

extreme groups.			
a.	Will your project consider or encounter security-sensitive material?	Yes ☐ *	No ☒
b.	Will you be visiting websites associated with extreme or terrorist organisations?	Yes ☐ *	No ☒
c.	Will you be storing or transmitting any materials that could be interpreted as promoting or endorsing terrorist acts?	Yes ☐ *	No ☒

* *Give further details in* ***Section 8 Ethical Issues***

Section 5 Systematic review of research

Only complete if applicable

a.	Will you be collecting any new data from participants?	Yes ☒ *	No ☐
b.	Will you be analysing any secondary data?	Yes ☐ *	No ☒

* *Give further details in* ***Section 8 Ethical Issues***

If your methods do not involve engagement with participants (e.g. systematic review, literature review) ***and*** *if you have answered* ***No*** *to both questions, please go to* ***Section 10 Attachments.***

Section 6 Secondary data analysis Complete for all secondary analysis

a.	Name of dataset/s		
b.	Owner of dataset/s		
c.	Are the data in the public domain?	Yes ☐	No ☐
		If no, *do you have the owner's permission/license?* Yes ☐ No* ☐	
d.	Are the data anonymised?	Yes ☐	No ☐
		Do you plan to anonymise the data? Yes ☐ No* ☐	

		Do you plan to use individual level data? Yes* ☐ No ☐		
		Will you be linking data to individuals? Yes* ☐ No ☐		
e.	Are the data sensitive (DPA 1998 definition)?		Yes* ☐	No ☐
f.	Will you be conducting analysis within the remit it was originally collected for?		Yes ☐	No* ☐
g.	**If no,** was consent gained from participants for subsequent/future analysis?		Yes ☐	No* ☐
h.	**If no,** was data collected prior to ethics approval process?		Yes ☐	No* ☐

* *Give further details in* ***Section 8 Ethical Issues***

If secondary analysis is only method used ***and*** *no answers with asterisks are ticked, go to* ***Section 9 Attachments.***

Section 7 Data Storage and Security

Please ensure that you include all hard and electronic data when completing this section.

a.	Confirm that all personal data will be stored and processed in compliance with the Data Protection Act 1998 (DPA 1998). *(See the Guidelines and the Institute's Data Protection & Records Management Policy for more detail.)*		Yes ☒
b.	Will personal data be processed or be sent outside the European Economic Area?	Yes ☐ *	No ☒

*** If yes,** please confirm that there are adequate levels of protections in compliance with the DPA 1998 and state what these arrangements are below.

c.	Who will have access to the data and personal information, including advisory/consultation groups and during transcription? Myself and the supervisory team only

During the research

d.	Where will the data be stored? At the memory card of the DSLR camera and at the memory card of the mobile phone.
e.	Will mobile devices such as USB storage and laptops be used? Yes ☒ * No ☐ * **If yes,** state what mobile devices: DSLR CAMERA and mobile phone * **If yes,** will they be encrypted? Yes.
After the research	
f.	Where will the data be stored? At the hard disk of my Laptop
g.	How long will the data and records be kept for and in what format? For three to four years (MPhil/Ph.D. Studies)
h.	Will data be archived for use by other researchers? Yes ☐ * No ☒ * **If yes,** please provide details.

Section 8 Ethical issues

Are there particular features of the proposed work which may raise ethical concerns or add to the complexity of ethical decision making? If so, please outline how you will deal with these.

It is important that you demonstrate your awareness of potential risks or harm that may arise as a result of your research. You should then demonstrate that you have considered ways to minimise the likelihood and impact of each potential harm that you have identified. Please be as specific as possible in describing the ethical issues you will have to address. Please consider / address ALL issues that may apply.

Ethical concerns may include, but not be limited to, the following areas:

- Methods
- Sampling
- Recruitment
- Gatekeepers
- Informed consent
- Potentially vulnerable
- International research
- Risks to participants and/or researchers
- Confidentiality/Anonymity
- Disclosures/limits to confidentiality
- Data storage and security both during and after the research (including transfer, sharing, encryption, protection)

participants – Safeguarding/child protection – Sensitive topics	– Reporting – Dissemination and use of findings

To begin with, during the exploratory study of this project it is not intended to seek for sensitive information or to cause risk or harm to the participants, however, it is essential to ensure that the participants are protected and that they fully understand the purpose of this study. Moreover, another important issue that they should be aware of is how or to whom the information from their participation may be presented (BERA, 2011). Thus, at the beginning of the first session, all the participants will be informed about this study through an information sheet and they will be asked to sign a written informed consent. In addition to this, the participants will be informed that during their participation, they will be video recorded and that they have any right to withdraw at any time. Also, the participants will be informed that the data of this study will potentially be published and shared on reports or articles and papers for conferences. Additionally, according to UCL Institute of Education Open Access scheme, the final document of the PhD thesis is going to be digitalized and be open to the public.

Furthermore, concerning the confidentiality/anonymity of the participants and their data, their identities will be kept secret and confidential and they will be identified and reported by using capital letters for each participant and a group name for each family. Also, their data will be kept secret and will not be published without the consent of the participants.

Finally, another important issue is data storage and security both during and after the research. For this reason, it will be used encrypted and password protected storage devices during all the stages of this study.

Section 9 Further information

Outline any other information you feel relevant to this submission, using a separate sheet or attachments if necessary.

Section 10 Attachments Please attach the following items to this form, or explain if not attached

a.	Information sheets and other materials to be used to inform potential participants about the research, including approach letters	Yes ☒	No ☐
b.	Consent form	Yes ☒	No ☐

	If applicable:		
c.	The proposal for the project	Yes ☐	No ☐
d.	Approval letter from external Research Ethics Committee	Yes ☐	No ☐
e.	Full risk assessment	Yes ☐	No ☐

Section 11 Declaration

Yes **No**

I have read, understood and will abide by the following set of guidelines.
☒ ☐

BPS ☐	BERA ☒	BSA ☐ Other (please state) ☐

I have discussed the ethical issues relating to my research with my supervisor. ☒ ☐

I have attended the appropriate ethics training provided by my course. ☒ ☐

I confirm that to the best of my knowledge:

The above information is correct and that this is a full description of the ethics issues that may arise in the course of this project.

Name	Symeonidi Angeliki-Zinovia
Date	17/12/15

Research Participants' Information Sheet

An exploratory study of the participatory design of a digital mobile game at UCL Grant Museum of Zoology

9/1/16, 23/1/16, 6/2/16 and 16/4/16

Who is conducting the research?

My name is Angeliki–Zinovia Symeonidi and I am inviting you to take part in my research project "An exploratory study of the participatory design of a digital mobile game at UCL Grant Museum of Zoology". I am an MPhil/PhD student at the UCL Institute of Education, which is the world's leading university centre for education and applied social science research. My educational background is on Education and Museum Studies. As an MA student, I worked voluntarily for one year in the educational department of Hellenic Children's museum and as an intern in a historic house museum. Furthermore, during my MA dissertation I designed, implemented and evaluated a digital mobile game with secondary students inside a public library.

In this research project, I am hoping to find out whether the participatory game design can increase and maintain the engagement and motivation of museum visitors to visit a museum. In particular, the objective is to use the process of making a digital game as a tool to motivate the participants in museum learning activities. My PhD study aims to develop and extend the field of research on visitors' participation and object interpretation inside the museum by studying the educational value of digital mobile games' design.

I very much hope that you would like to take part. This information sheet will try and answer any questions you might have about the project, but please don't hesitate to contact me if there is anything else you would like to know.

Please explain the research to your child and discuss whether or not they want to take part. I will also ask the children before the task/interview and make it clear that they can drop out if they wish with no negative consequences. In addition to this, you and your family can drop out anytime without any negative consequences as well.

Why are we doing this research?

The objective of this research is to examine and evaluate whether the integration of families in the participatory game design process can increase and maintain their

engagement and motivation to visit a museum and participate in its educational activities. Specifically, the aim is to use the processes of co-designing and game-making of a digital location-based mobile game as a tool to motivate the visitors to participate in object-based museum activities.

The main research questions of this study are the following:

1. How can visitors interpret and uncover the stories of museum objects inside the Museum environment?

2. How can we use digital games as a medium for narrating and uncovering the stories of museum objects inside the Museum environment?

3. What features of the participatory design process foster learning and motivation inside the museum?

Additional Research Questions:

5. What experience the participants have concerning digital games?

6. How participants understand games inside the Museum environment?

7. How participants interpret and uncover the stories of museum objects inside the Museum environment?

Why am I being invited to take part?

The role of the participants in the participatory design process is to co-design with their family a digital mobile game using the museum space, collections, and objects. The participants will have the chance to discover by touching and observing the museum objects and narrate museum objects' stories objects in different ways by playing and designing a digital mobile game for the museum.

What will happen if I choose to take part?

All the families will take part in four sessions inside UCL Grant Museum of Zoology, which will last for one hour and a half and will be implemented as follows:

<u>First session:</u> Introduction to the project

During this first session, the participants will be introduced to the purpose of the project. First of all, they will both discover the museum collections and objects and the elements of the game that they will be asked to co-design. To achieve these two goals, it is proposed to give the opportunity to the participants to play a demo game on paper

as a guide in order to understand the different elements of the proposed mobile game and its potentials. In addition to this, during this process, they will have the chance to interact for the first time with the museum objects in a more creative and hands-on activity. Also, during the first session, the participants will share their possible experience of playing digital games inside and outside museums spaces.

Second session: Brainstorming and designing process on paper.

During the second session of the pilot study, the participants will investigate the different aspects of a game based on the demo game they played and they will try to identify the elements of their own game. They will have the chance to observe and handle the museum objects and to propose different game scenarios and rules.

Third session: Designing process of the game on paper.

During the third session, the participants will use paper and pencils in order to design their own game based on their findings during the second session.

Fourth session: Playtesting the digital mobile game and evaluation

During the fourth session, the participants we will return to the museum in order to playtest the digital version of their game and evaluate their experience after playing it. Finally, for data collection reasons you will be asked to answer questions during a semi-structure interview, which will be recorded in mobile voice recorders. Also, all the sessions will be videotaped. If you do not wish to be videotaped or be voice recorded, please let me know.

Will anyone know I have been involved?

During this study anonymity and confidentiality of your personal information is a priority. Also, all the data from the voice recording and video cameras will be transferred in a code-protected hard drive and laptop and will be available only to myself for academic purposes. However, concerning the copyright of your game designs, if you wish to be attributed to your work as game co-designers, attribution will be given to everyone who wishes it.

Could there be problems for me if I take part?

This study examines the potential benefit of involving museum visitors in the designing process of museum educational activities such as digital applications and games. I hope that it will be an educational and entertaining process for you and your family. There is no intention to deal with sensitive issues or cause any risk or harm.

What will happen to the results of the research?

All the data and findings from this study are going to be documented in my PhD thesis. There is a possibility this information to be shared on reports or articles and papers for conferences. In addition to this, according to UCL Institute of Education Open Access scheme, the final document of my PhD thesis is going to be digitalized and be open to the public. Thus, with respect to the aforementioned reasons, I would like to provide assurance of anonymity by using only case numbers or letters for each participant. However, if you wish to be attributed, attribution will be given.

Do I have to take part?

It is entirely up to you whether or not you choose to take part. I hope that if you do choose to be involved then you will find it a valuable experience. If you choose not to take part in this study, there are no negative repercussions.

Thank you very much for taking the time to read this information sheet.

If you would like to be involved, please complete the following consent form and return to angeliki.symeonidi.15@ucl.ac.uk by 9th of January.

If you have any further questions before you decide whether to take part, you can reach me at angeliki.symeonidi.15@ucl.ac.uk or [redacted].

This project has been reviewed and approved by the UCL IOE Research Ethics Committee.

Consent Form

An exploratory study of the participatory design of a digital mobile game at

UCL Grant Museum of Zoology

9/1/16, 23/1/16, 6/2/16 and 16/4/16

If you are happy to participate, please complete this consent form and return to angeliki.symeonidi.15@ucl.ac.uk until 9th of January	Yes	No
I have read and understood the information leaflet about the research.	☐	☐
I agree to be interviewed or observed/take part as outlined on the information sheet.	☐	☐
I am happy for my interview to be audio recorded.	☐	☐
I am happy for my interview to be video recorded.	☐	☐
I understand that if any of my words are used in reports or presentations, they will not be attributed to me.	☐	☐
I understand that I can withdraw from the project at any time and that if I choose to do this, any data I have contributed will not be used	☐	☐
I understand that I can contact Angeliki Symeonidi at any time	☐	☐
I understand that the results will be shared on academic papers, conferences, and the researcher's PhD thesis	☐	☐
I have discussed the information sheet with my child	☐	☐

Name _____

Signed _____ Date _____

Researcher's name _____ Signed _____

APPENDIX TWO

MUSEUM OF LONDON DOCKLANDS

Doctoral Student Ethics Application Form

Anyone conducting research under the auspices of the Institute (staff, students or visitors) where the research involves human participants or the use of data collected from human participants, is required to gain ethical approval before starting. This includes preliminary and pilot studies. Please answer all relevant questions in simple terms that can be understood by a lay person and note that your form may be returned if incomplete.

***Registering your study with the UCL Data Protection Officer as part of the UCL Research Ethics Review Process**

If you are proposing to collect personal data i.e. data from which a living individual can be identified **you must be registered with the UCL Data Protection Office before you submit your ethics application for review**.

If the Data Protection Office advises you to make changes to the way in which you propose to collect and store the data this should be reflected in your ethics application form.

For further information see Steps 1 and 2 of our Procedures page at:
https://ethics.grad.ucl.ac.uk/procedures.php

Section 1 Project details		
a.	Project title	'A research study on playful curation with families at Museum of London Docklands'
b.	Student name and ID number (e.g. ABC12345678)	Angeliki Zinovia Symeonidi - [redacted]

c.	*UCL Data Protection Registration Number		No Z6364106/2018/01/113 1/26/18
c.	Supervisor/Personal Tutor		Dr Alison Gazzard, Dr Diane Carr
d.	Department		Culture, Communication and Media
e.	Course category (Tick one)	PhD ☒	EdD ☐
		DEdPsy ☐	
f.	**If applicable,** state who the funder is and if funding has been confirmed.		self-funded
g.	Intended research start date		March 2018
h.	Intended research end date		May 2018
i.	Country fieldwork will be conducted in *If research to be conducted abroad please check www.fco.gov.uk and submit a completed travel risk assessment form (see guidelines). If the FCO advice is against travel this will be **required** before ethical approval can be granted: http://ioe-net.inst.ioe.ac.uk/about/profservices/international/Pages/default.aspx*		The UK

j.	Has this project been considered by another (external) Research Ethics Committee?	
	Yes ☐	External Committee Name:
	No ☒ ⇨ *go to Section 2*	Date of Approval:

If yes:

- Submit a copy of the approval letter with this application.
- Proceed to Section 10 Attachments**.**

Note: Ensure that you check the guidelines carefully as research with some participants will require ethical approval from a different ethics committee such as the National Research Ethics Service (NRES) or Social Care Research Ethics Committee (SCREC). In addition, if your research is based in another institution then you may be required to apply to their research ethics committee.

Section 2 Research methods summary (tick all that apply)

☒ Interviews	☐ Controlled trial/other

☒ Focus groups ☐ Questionnaires ☒ Action research ☒ Observation ☐ Literature review	intervention study ☐ Use of personal records ☐ Systematic review ⇨ ***if only method used go to Section 5.*** ☐ Secondary data analysis ⇨ ***if secondary analysis used go to Section 6.*** ☐ Advisory/consultation/collaborative groups ☐ Other, give details:

Please provide an overview of the project, focusing on your methodology. This should include some or all of the following: purpose of the research, aims, main research questions, research design, participants, sampling, data collection (including justifications for methods chosen and description of topics/questions to be asked), reporting and dissemination. Please focus on your methodology; the theory, policy, or literary background of your work can be provided in an attached document (i.e. a full research proposal or case for support document). *Minimum 150 words required.*

A research study on playful curation with families at Museum of London Docklands

A. THE AIM

The proposed research project focuses on game-making with museum visitors as a playful curatorial form. Particularly, I am exploring what games culture, game production and aesthetics bring to the notion of museum curation and representation, and visitors' agency. Based on my previous findings, I am looking at how families with young people experience agency while they are prototyping playful experiences inspired by the museum galleries and collections and how the role of 'maker' enables them to unpack and understand the research circle of curation. In other words, this research explores the way visitors unpack the different actions and sub-action curation includes while creating games.

B. THE RESEARCH QUESTIONS

The main research questions of this study are:

4. In what ways participants' game designs inspired by museum collections and galleries enable them to adopt a co-curatorial role and unpack the notion of curation?

5. How are the participants experiencing agency inside the museum while co-creating playful prototypes inspired by the museum galleries and collections?

6. In which way do the participants express and represent/portray museum culture in their prototypes?

Secondary questions:

3. What does the notion of agency inside the museum setting mean to the participants?

4. In which part/parts of the game production circle the participants experiencing agency?

5. In which part/parts of the game production cycle the participants express and represent museum culture?

C. THE PARTICIPANTS' RECRUITMENT

The recruitment process will take place several weeks before the implementation of the project. The proposed methods of recruitment are the following:

c. Getting in touch with local art youth clubs and art centres.

d. Getting in touch with home-educated children's groups.

e. The Museum of London Docklands newsletter.

After the initial contact, families from the above groups will express their interest by contacting the researcher via e-mail. Then, they will receive a pack of information which includes an information sheet and a consent form. The information sheet describes the project's purpose and structure, who is involved and the museum's role in the research process. After reading the information sheet the participants will be asked to read and sign the consent form which includes the terms and conditions of their participation. By signing the consent form, the participants will allow the researcher to video and audio record the research process.

The recruitment criteria are:

- 4 Families
- One adult at least will agree to attend and participate in all sessions for ethical and research purposes. The adult may change throughout the project's duration.
- The families will agree to participate in at least three sessions which are the introductory session, one prototyping session and the final play-testing session.

D. THE METHODOLOGY

This study is seeking for qualitative data. The use of qualitative research is appropriate since the nature of the game design with families as a research process requires an in-depth analysis of the participants' responses, experiences and actions. Therefore, elements of

participatory action research and community-based participatory research (Brydon-Miller & Maguire, 2009) are used as the proposed methodology to explore how families from museum's local community experience agency and understand curation and representation while creating game prototypes. Focus groups, semi-structured interviews and observation are used as the main data collection tools. Additionally, Personal Meaning Mapping approach (PMM) (Falk et al., 1998:106-120) will, also, be used to collect data during the sessions. In this study, a combination of methodological tools is chosen. The aim of this is to enhance and validate the research process and avoid misinterpretations of the research data (Denzin et al., 2005:5).

E. THE METHODS

All sessions will be video and audio recorded. Two cameras will be set up in the private room and audio recorders will be carried by the researcher and the assistant during all sessions. In this way, the general participation of each family will be video recorded and their answers in the semi-structured interview questions will be individually audio recorded. The Museum Tour (museum galleries) will be only audio recorded for practical reasons.

Each session will be implemented at Museum of London Docklands as follows:

First Introductory Session

All four families will participate in the first introductory session as one group. The museum tour will take place from 13.30 – 2.30 pm and the Gaming-jam will start at 2.30 pm and will last until 4.00 pm. All participants will be asked to arrive ten minutes before the beginning of their session so that they have time to settle in.

<u>First part: Museum tour / Duration: 1 hour</u>

The first session will begin with a brief introduction to the purpose and aims of the proposed research study. Following the introduction, a tour of the Museum of London Docklands will take place. During the museum tour, the participants will explore the highlights from the following museum galleries:

- No. 1 Warehouse: Introductory gallery/ selected objects (3rd floor)
- Sailor-town (2nd floor) and
- Many East Ends, where they can visit the gallery of the Many East-Ends Monopoly game (2nd floor)

<u>Second Part: "Gaming-jam"/ Duration: Ninety minutes</u>

The Gaming-jam will take place in a private room.

The second part of the first session will be a gaming-jam where the participants will play the Many East-Ends Monopoly game and a Mission Maker demo. The purpose of this part is to explore what games and participatory game-making are. In this way, the participants will

effectively reflect on what actions and sub-actions they need to complete to produce game prototypes. They will use the technique of 'mind maps' to record their reflections.

Playing the Many East-Ends Monopoly Game

The production of the Monopoly Board was part of Many East- Ends project which was implemented at the Museum of London Docklands in 2012. Currently, the Monopoly board is part of the permanent museum collections located in the 'Many East-Ends gallery'. In 2012, the museum collaborated with a youth club from the local community to explore their ideas and experience of the East End. The youth club worked closely with an artist and shared their experience and memories of their community through the game-making process. Playing the Many East-Ends Monopoly Board will enable the participants to explore the notion of the participatory game-making process.

After playing the game, what it means to implement a participatory game-making project in the museum setting will be examined. Additionally, ethical issues related to ownership, anonymity and shared authority and decision making in participatory projects will be raised and discussed. The 'mind-mapping' technique will be used in this part as well to record their data.

Playing a Mission Maker Demo & Testing the Mission Maker software

The Mission Maker is a game design software where video games can be produced. The participants will explore how to create a digital game with Mission Maker. The participants will play a demo game created by the researcher on the Mission Maker software. This demo game will be inspired by the museum's space and collections. The aim of playing a demo game is to expose the participants to a different genre of game design and allow them to reflect on what video games are. A brief demonstration of how Mission Maker software works will also take place. This will enable the participants to learn how to use the Mission Maker software before the Mission Maker workshop and to reflect on how they can create a video game on a game design software.

Brainstorming and Reflections on Games and Game-Making

The first session will conclude with a summary of the session and a reflective discussion on what games and game-making essentially involves. The participants using the 'mind-mapping' technique will identify the key aspect of the games they played.

Second Session | Prototyping Session

The four families will be separated into two groups of two families. The time slots are 10.00 – 11.30 am for the first group and 12.00 – 13.30 pm for the second group. All participants

will be asked to arrive ten minutes before the beginning of their session so that they have time to settle in. Both parts of this session will take place in a private room.

The second session will begin with a brief introduction and follow up of the previous session. The participants will reflect on the brainstorming mind maps which were produced during the first session on issues related to gameplay and production, participation and collaboration, authorship and ethics.

First part: Object Handling session/ Duration: Thirty minutes

A handling session will follow where the participants will handle different museum objects related to the museum's history. In focus groups, the participants will discuss two different topics:

a. The role of museums and museum professionals.
b. The process of creating museum galleries and exhibitions.

Second part: Game Ideas

In this part of the session, the participants will take inspiration from the museum objects and they will propose a game idea.

Reflections

The second session will conclude with a summary of the session and a reflective discussion of the participants' game ideas.

Third Session | Prototyping Session

The four families will be separated into two groups of two families. The time slots are 10.00 – 11.30 am for the first group and 12.00 – 13.30 pm for the second group. All participants will be asked to arrive ten minutes before the beginning of their session so that they have time to settle in. Both parts of this session will take place in a private room.

The third session will begin with a brief introduction and follow up of the previous session.

Mission Maker workshop/ Duration

During the Mission Maker workshop, the participants using paper and markers, they will create low-fidelity prototypes such as game storyboards and game world maps. Then, using the Mission Maker software they will create digital game prototypes. During the session, the researcher will approach the participants and raise questions related to their game designs using the semi-structured interview technique. For instance, the following questions may be used:

- Tell me more about the story of your game.
- Could you please describe your game characters?
- Could you please tell me more about how you made your characters?
- What is the mission/story of the character/s?

Reflections

The third session will conclude with a summary of the session and a reflective discussion on what the video game design with the Mission Maker is and what actions and sub-actions the video games design includes. The participants will reflect on what the game design process brings on the representation of the museum collections and space and how they approached, as game-makers, the museum collections, culture and role.

Fourth Session | Prototyping Session

The four families will be separated into two groups of two families. The time slots are 10.00 – 11.30 am for the first group and 12.00 – 13.30 pm for the second group. All participants will be asked to arrive ten minutes before the beginning of their session so that they have time to settle in. Both parts of this session will take place in a private room.

Brief introduction: previous session reflection and follow up

The fourth session will begin with a summary and follow up of the previous sessions. The participants will summarize and reflect on their prototypes and their actions while participating in the second's and third sessions' activities.

Game design workshop

In this part, the participants will continue working on their previous prototypes on Mission Maker.

Fifth Session | Play-testing Session

All four families will participate in the final play-testing session as one group. The play-testing session will last ninety minutes. All participants will be asked to arrive ten minutes before the beginning of their session so that they have time to settle in. This session will take place in a private room.

Brief introduction: previous session reflection and follow up

The fifth session will begin with a summary and follow up of the previous sessions. The participants will summarize and reflect on their prototypes and their actions while participating in all four sessions.

Play-testing and Conclusion

This research project will conclude with a play-testing session. The participants will play-test their prototypes and reflect on their work. Each family will not play-test only their games but also other participants games. In this way, they will have the chance to showcase their work, get feedback and reflect on theirs and others work.

Section 3 Research Participants (tick all that apply)

☐ Early years/pre-school ☒ Ages 5-11 ☒ Ages 12-16 ☐ Young people aged 17-18	☒ Adults *please specify below* ☐ Unknown – specify below ☐ No participants Families with young people between the age of 9 and 16

NB: Ensure that you check the guidelines carefully as research with some participants will require ethical approval from a different ethics committee such as the National Research Ethics Service (NRES) or Social Care Research Ethics Committee (SCREC).

Section 4 Security-sensitive material (only complete if applicable)

Security sensitive research includes: commissioned by the military; commissioned under an EU security call; involves the acquisition of security clearances; concerns terrorist or extreme groups.

a.	Will your project consider or encounter security-sensitive material?	Yes ☐ *	No ☒
b.	Will you be visiting websites associated with extreme or terrorist organisations?	Yes ☐ *	No ☒
c.	Will you be storing or transmitting any materials that could be interpreted as promoting or endorsing terrorist acts?	Yes ☐ *	No ☒

* *Give further details in* ***Section 8 Ethical Issues***

Section 5 Systematic reviews of research (only complete if applicable)

a.	Will you be collecting any new data from participants?	Yes ☐ *	No ☐
b.	Will you be analysing any secondary data?	Yes ☐ *	No ☐

* *Give further details in* ***Section 8 Ethical Issues***

If your methods do not involve engagement with participants (e.g. systematic review, literature review) ***and*** *if you have answered* ***No*** *to both questions, please go to* ***Section 8 Attachments.***

Section 6 Secondary data analysis (only complete if applicable)

a.	Name of dataset/s		
b.	Owner of dataset/s		
c.	Are the data in the public domain?	Yes ☐	No ☐
			If no, *do you have the owner's permission/license?* Yes ☐ No* ☐
d.	Are the data anonymised?	Yes ☐	No ☐
		Do you plan to anonymise the data? Yes ☐ No* ☐	
		Do you plan to use individual level data? Yes* ☐ No ☐	
		Will you be linking data to individuals? Yes* ☐ No ☐	

e.	Are the data sensitive (DPA 1998 definition)?	Yes* ☐	No ☐
f.	Will you be conducting analysis within the remit it was originally collected for?	Yes ☐	No* ☐
g.	**If no,** was consent gained from participants for subsequent/future analysis?	Yes ☐	No* ☐
h.	**If no,** was data collected prior to ethics approval process?	Yes ☐	No* ☐

* *Give further details in* ***Section 8 Ethical Issues***

If secondary analysis is only method used ***and*** *no answers with asterisks are ticked, go to* ***Section 9 Attachments.***

Section 7 Data Storage and Security

Please ensure that you include all hard and electronic data when completing this section.

a.	**Data subjects -** Who will the data be collected from? Families with young people

b.	**What data will be collected?** Please provide details of the type of personal data to be collected No sensitive personal data will be collected. The paper and digital game prototypes, mind maps, video and audio recordings of semi-structured interviews will record information related to their experience of visiting museums, playing and designing games.	
c.	**Disclosure** – Who will the results of your project be disclosed to? My final findings will be recorded in my doctoral thesis, presented in conferences and published in journals. However, the anonymity of my participants will be respected and not revealed unless my participants choose not to be anonymous.	
d.	**Data storage** – Please provide details on how and where the data will be stored i.e. UCL network, encrypted USB stick*, encrypted laptop* etc. All digital data will be stored in an encrypted portable hard drive. All the paper-based data will be digitized and stored in the same encrypted portable hard drive. *Advanced Encryption Standard 256 bit encryption which has been made a security standard within the NHS	
e.	**Data Safe Haven (Identifiable Data Handling Solution)** – Will the personal identifiable data collected and processed as part of this research be stored in the UCL Data Safe Haven (mainly used by SLMS divisions, institutes and departments)?	Yes ☐ No ☐
f.	How long will the data and records be kept for and in what format? Will personal data be processed or be sent outside the European Economic Area? (If yes, please confirm that there are adequate levels of protections in compliance with the DPA 1998 and state what these arrangements are: No Will data be archived for use by other researchers? (If yes, please provide details.) No	

Section 8 Ethical issues

Please state clearly the ethical issues which may arise in the course of this research and how will they be addressed.

All issues that may apply should be addressed. Some examples are given below, further information can be found in the guidelines. *Minimum 150 words required.*

− Methods − Sampling − Recruitment − Gatekeepers − Informed consent − Potentially vulnerable participants − Safeguarding/child protection − Sensitive topics	− International research − Risks to participants and/or researchers − Confidentiality/Anonymity − Disclosures/limits to confidentiality − Data storage and security both during and after the research (including transfer, sharing, encryption, protection) − Reporting − Dissemination and use of findings

This project does not intend to seek for sensitive information, record personal data or cause neither risk nor harm to the participants. On the contrary, the participants will be benefited by participating in this research project. They will explore Museum of London Docklands in a private tour, handle its unique objects in a handling session delivered by the museum professionals and play and design games. This experience will allow them to unpack topics related to museums and culture. However, it is essential to ensure that all participants are ethically protected and that they fully understand their rights and the purpose of this research study. Equally important is to ensure how or to whom the gathered information will be shared and presented (BERA, 2011). Therefore, prior to the implementation of this research, information sheets which will include the above details will be sent via e-mail to all participants. Along with the information sheets, consent forms will be sent to all participants. The participants who wish to participate will be asked to return these consent forms signed via e-mail before the implementation of the study. In this way, they will state that they feel confident and understand the purpose of this project, their right to withdraw at any time and that by signing they give permission to the researcher to video and audio record them. In the consent form, they will have the opportunity to choose whether they want to stay anonymous or not. Additionally, at the beginning of the first session, all the participants will be informed about the purpose and scope of this study and their right to withdraw from the process at any time without any consequences.

Concerning participants' confidentiality/anonymity, this project as participatory action research involves families in the design process of games. As a result, paper and digital prototypes will be produced. This means that this project's participants have the right to maintain the copyrights of their paper and digital prototypes. To ensure that they understand the rights of their creation, in the consent form, they will be asked to describe whether they prefer to remain anonymous, use a pseudonym or be named as the creator of their digital and paper prototypes. If they prefer to stay anonymous, their identities will be kept secret and confidential and they will be identified and reported by only using a capital letter for each participant's name or a nickname for their group. Their full names will be kept secret and will not be published without their consent.

Respecting the time and effort of my participants is essential. Therefore, explaining that maintaining the copyrights of their creations and the importance of their work will be a priority. Also, at the end of the project, an Amazon voucher will be given to all families as a 'thank you'.

Finally, another important issue is the storage and security of the data both during and after the research. For this reason, during all the stages of this study, encrypted and password protected storage devices will be used.

Section 9 Attachments Please attach the following items to this form, or explain if not attached

a.	Information sheets, consent forms and other materials to be used to inform potential participants about the research *(List attachments below)*	Yes ☒	No ☐

The attachments are:

1. Participants' information sheet
2. Participants' consent form

	If applicable/appropriate:	
b.	Approval letter from external Research Ethics Committee	Yes ☐
c.	The proposal ('case for support') for the project	Yes ☐
d.	Full risk assessment	Yes ☐

Section 10 Declaration

I confirm that to the best of my knowledge the information in this form is correct and that this is a full description of the ethical issues that may arise in the course of this project.

I have discussed the ethical issues relating to my research with my supervisor. ☒

I have attended the appropriate ethics training provided by my course. ☒

I confirm that to the best of my knowledge:

The above information is correct and that this is a full description of the ethics issues that may arise in the course of this project.

Name	Angeliki Zinovia Symeonidi
Date	1/15/2018

Notes and references

British Educational Research Association, & BERA. (2011). *Ethical guidelines for educational research*. London: BERA.

Brydon-Miller, M., & Maguire, P. (2009). Participatory Action Research: Contributions to the Development of Practitioner Inquiry in Education. *Educational Action Research, 17*(1), 79-93.

Denzin, N., & Lincoln, Y., S. (2005). *Handbook of qualitative research* (3rd ed.). Thousand Oaks, Calif.; London: Sage.

Falk, J., Moussouri, T., & Coulson, Do. (1998). The Effect of Visitors' Agendas on Museum Learning. *Curator, 41*(2), 106-20.

Departmental use

If a project raises particularly challenging ethics issues, or a more detailed review would be appropriate, the supervisor **must** refer the application to the Research Ethics and Governance Coordinator (via ioe.researchethics@ucl.ac.uk so that it can be submitted to the Research Ethics Committee for consideration. A departmental research ethics coordinator or representative can advise you, either to support your review process or help decide whether an application should be referred to the REC.

Also see 'when to pass a student ethics review up to the Research Ethics Committee':

http://www.ioe.ac.uk/about/policiesProcedures/42253.html

Student name	Angeliki Zinovia Symeonidi

Student department	Culture, Communication and Media	
Course	PhD	
Project title		
Reviewer 1		
Supervisor/first reviewer name	Alison Gazzard	
Do you foresee any ethical difficulties with this research?	No	
Supervisor/first reviewer signature	Alison Gazzard	
Date	15.2.18	
Reviewer 2		
Second reviewer name	Andrew Burn	
Do you foresee any ethical difficulties with this research?	No	
Supervisor/second reviewer signature	[redacted]	
Date	15.2.18	
Decision on behalf of reviews		
Decision	Approved	☒
	Approved subject to the following additional measures	☐
	Not approved for the reasons given below	☐
	Referred to REC for review	☐
Points to be noted by other reviewers and in report to REC		
Comments from reviewers for the applicant		
Once approved by both reviewers students should submit the ethics application form to the Centre for Doctoral Education team IOE.CDE@ucl.ac.uk.		

Research Participants' Information Sheet

Information about the workshops and participation requirements

MUSEUM GAMEMASTERS

Group: Families | Age: 8-16

Take inspiration from the Museum of London Docklands' rich collections and history and make with your family your own video game.

Use the **Mission Maker** software on laptops along with other materials and tools such as colours, plasticine, audio recorders, cameras

FREE WORKSHOPS FOR FAMILIES

MARCH 11 & 17

Explore the galleries and discover some of the amazing museum objects.

Choose your favourite museum items and create your own game prototype inspired by them.

APRIL 7 & 14

Join us for two hands-on workshops of creating a video game step by step.

**After the workshops, all families will receive a free copy of the Mission Maker software to continue making video games at home.*

APRIL 28

Join us for an exciting day playing the games your family and other families created.

**All families will receive £25 Amazon voucher as a reward.*

- These workshops are part of a UCL Institute of Education research project conducted by a PhD candidate.
- The research project has been approved by the Museum of London Docklands.
- All workshops will be video/audio recorded for research purposes. All faces will be blurred to protect your anonymity.
- Participation in all workshops is required for the completion of this research project.
- One adult member of the family will be present and participate as an equal member of the group in all workshops.
- Taking part is completely voluntary. I hope that if you do choose to be involved, you will find it a valuable and enjoyable experience for you and your family. I hope that your family will discover something new about games and museums. You are under no obligation to take part. If you choose to withdraw from the project during the workshops, there will be no consequences and all your data will be deleted
- During this study anonymity and confidentiality of your personal information is a priority. It is entirely up to you if you choose to stay anonymous, use a pseudonym or be named as the creator of your game.
- All the data and findings from this study are going to be documented in my doctoral thesis. There is a possibility the information to be shared on reports or articles and papers for conferences. In addition to this, according to UCL Institute of Education Open Access scheme, the final document of my PhD thesis is going to be digitalized and be open to the public.

If you would like to be involved, please complete and sign the following consent form and return to angeliki.symeonidi.15@ucl.ac.uk before 5th of March 2018. If you have any further questions before you decide whether to take part, you can reach me at angeliki.symeonidi.15@ucl.ac.uk.

This project has been reviewed and approved by the UCL IOE Research Ethics Committee.

Consent Form

A research study on playful curation with families at Museum of London Docklands

If you and your family are happy to participate, please complete this consent form and return to angeliki.symeonidi.15@ucl.ac.uk before the 5th of March.

	Yes	No
I have read and understood the information leaflet about the research.	☐	☐
I agree my family to be interviewed or observed/take part as outlined in the information leaflet.	☐	☐
I am happy for my family's interview/participation to be video recorded.	☐	☐
I am happy for my family's interview/participation to be audio recorded.	☐	☐
I understand that if any of my family members are pictured in any photographs or videos, their faces will be edited and blurred to protect their anonymity.	☐	☐
I understand that if any of my family's words/prototypes are used in reports or presentations we have the right to choose whether they will or not be attributed to us. **(Please use the 'Notes' section to describe whether you would like to remain anonymous, use a pseudonym or be named as the creator of your prototypes.)**	☐	☐
I understand that at least one adult is required to be present always and participate as an equal member of the group.	☐	☐
I understand that my family can withdraw from the project at any time and that if we choose to do this, any data we have contributed will not be used and will be deleted.	☐	☐
I understand that if I have further questions, I can contact Angeliki Symeonidi.	☐	☐
I understand that the results will be shared on academic papers, conferences and the researcher's PhD thesis		
I have discussed the information sheet with my child, and I am confident that my child	☐	☐

has understood the purpose and structure of this research project

Notes

Name _____Date _____

Participant's Signature _____

Researcher's name _____ Researcher's Signature_____

Museum of London Research Proposal

Research and Academic Support Application Form		
General Information		
Project Name: Doctoral Thesis Research Project (with the working title "The act of moving past and between museum's scenes: exploring game-making as a curatorial form")		
Contact at Museum of London: Sophie Holland		
Funding Source: **Self-funded**	Other Funding Source:	
Submission date: 11/12/2017	Start date (approx): March-April 2018	End date (approx): May 2018

Type of activity for MoL (double click box to check)		Type of project for MoL (double click box to check)	
☐ Letter of Support	☐ Digitisation	☐ Lead	☒ Other
☐ Fellowship	☐ Event Hosting	☐ Principal Investigator	
☐ Sector Support	☐ Research: Network	☐ Co-Investigator	
☐ Studentship	☒ Research: Project	☐ Project Partner	
☐ Publication	☐ Other	☐ Letter of Support	

Budget & Partnership	
Name of project contact:	Angeliki Zinovia Symeonidi
Title:	Mrs
Institution:	UCL INSTITUTE OF EDUCATION
Money to MoL (approx)	£0
Overall budget for grant (approx)	£0 (self-funded - £ 250.00)

A brief breakdown of budget (please show calculations)

The budget above will cover the following expenses:

1. Researcher's transportation (£4.20 per day - £30.00)
2. Food & Drinks for participants ((£10 per day - £70.00)
3. Resources (£ 50,00 for stationery and prototyping materials)
4. Amazon vouchers for participants (£100.00/ £25 per family)

About the Project

Description of the project (limit of 350 words)

Museum empirical practice and academic research have examined the way visitors explore, engage and learn from museum collections. Museums have tried to transform their role from "knowledge authorities" to collaborators and mediators of visitors' participation. Including games, play and game production in their activities was one of the several ways they have tried to achieve that goal and increase their learning outcomes. However, there is little evidence on how visitors' playful designs enable them to undertake the role of curator and understand the complexity of museum work and culture and experience agency.

The proposed self-funded research project is focusing on game-making with museum visitors as a playful curatorial form. Particularly, I am exploring what games culture, game production and aesthetics bring to the notion of museum curation and representation, and visitors' agency. Based on my previous findings, I am looking at how families with young people experience agency while they are prototyping playful experiences inspired by the museum galleries and collections and how the role of 'maker' enables them to unpack and understand the research circle of curation.

Participants Recruitment

The recruitment process will take place several weeks before the implementation of the project. The proposed methods of recruitment are the following:

- Getting in touch with local art youth clubs and art centres.
- Getting in touch with home-educated children's groups.
- Getting in touch with MoL's school contact lists (if possible).

During the recruitment, potential participants from the above groups will express their interest by contacting the researcher via e-mail. They will receive a pack of information which includes an information sheet and a consent form. The information sheet describes the project's purpose and structure, who is involved and the museum's role in the research process. After reading the information sheet the participants will be asked to read and sign the consent form which includes the terms and conditions of their participation. By signing the consent form, the participants will allow the researcher to video and audio record the research process.

The recruitment criteria are:

- 4 Families
- One adult at least will agree to attend and participate in all sessions. The adult may change throughout the project's duration.
- The families will agree to participate in at least three sessions which are the introductory session, one prototyping session and the final play-testing session.

Proposed dates (flexible)

The recruitment process will take place on February-March 2018 while the implementation of the project will potentially take place throughout the period between March-May 2018. Five sessions will be scheduled where the participants will be introduced in different genres of playful digital authoring experiences. They will also explore the museum galleries (in a self-directed tour), handle its museum objects (during museum's free drop-in object handling sessions) and play the Many East Ends Monopoly and other video-games. Weekends and Spring half term dates are proposed for the proposed research group. In the case of working with home-educated children's group, weekdays may be considered as alternative dates.

Why do you want to work with MoL? (limit of 350 words)

Museum of London's vision and goal is to "be part of every Londoner's life from an early age" (Museum of London, 2017). To succeed that, the museum has implemented a series of participatory and inclusive policies. From inviting school students to direct their own films inspired by the city to collaborating with youth clubs to understand their experiences of living in London, the museum offers a safe place for everyone to explore London through its collections. I have been volunteering at the Museum of London Docklands for over a year. This experience gave me the opportunity to learn more about the museum's role in the life of its visitors, its vision, collections and galleries. Through my project, my aim is to respect the museum's mission and vision and seek a deeper understanding of visitors' role and agency inside the museum setting. As a PhD student, I am exploring museum participatory and exclusive policies and co-curatorial models. Therefore, I believe the Museum of London is the appropriate setting for my research project. The proposed project aims to support and build upon the Museum of London's inclusive policies and explore how museum-goers experience agency and understand representation while co-curate/co-making curatorial experiences.

Museum of London, as mentioned above, has an outstanding experience in supporting and empowering museum-goers' voices through exhibition-making and other collaborative projects. The Many East Ends gallery at Museum of London Docklands is one of the several examples of the museum's participatory work. Looking specifically at this example, many questions in terms of curation, visitors' agency and representation can be raised. Even though this project was not aiming to be a game-making project, its participants decided to approach their narratives through the production of a Monopoly board-game. In this research project, I would like to build upon the Many East End project by implementing a new approach on curation with visitors exploring what the playful design brings to the notion of museum curation in term of representation and agency. My aim is to uncover in which way visitors' playful designs enable them to assume the role of curator and unpack the notion of curation.

Benefits to MoL (limit of 350 words)

A successful partnership between museums and academia must be based on mutual understanding and benefit. The collaboration should result in innovation, exchange of knowledge and expertise, and development of new approaches for public engagement. Therefore, my research findings and reports will be open and shared with the museum. By participating in this research study, your museum will

contribute to a project which aims to push the boundaries of the existing empirical and theoretical knowledge on curation with visitors and on what playful design and games production are as different co-curatorial models. It will "stretch thinking" on what play, game design and aesthetics bring to the notion of curation. Sharing my research findings with the museum could benefit the way the museum approaches and understands new media, games and play.

During this research project, the museum will increase the use of its collections and will enable museum-goers to experience and question agency in situ. My participants will explore the game production and playful design as a different way to curate the museum's collections. They will assume the role of curator to take part in acts of research, cataloguing, interpreting, producing, assembling and exhibiting the museum objects. In this way, the focus will be concentrated on museum collections and the way museums and museum curators represent them. The aim of this process is to develop a new approach to understand visitors' diverse experiences in the museum. Through my study, my goal is to inspire the museum professional to experiment further with games and play by using Mission Maker (games authoring tool). Thus, further training and access to the design tools will be offered.

Finally, by supporting this project and offering access to your galleries and collections, the museum will inspire, engage and empower its existing and potentially new visitors to think about curation, representation and agency in new and alternative ways. Through this project, my participants will not only learn something new about London and the museum's vision but also, they will uncover what curation is as a process. It will provide them with the safe space to take on a different role, that of "curator", and to unpack the complexity of curation in playful ways.

List of other project partners:

1. UCL Knowledge Lab's Mission Maker

Commitment & impact on MoL (internal):

Areas that will be impacted (internal):	Do you have the agreement of each department? (internal)	Will MoL have to provide (internal):
☐ Collections ☐ Conservation ☐ Learning ☐ Development ☐ HR ☐ IT	☐ Yes ☐ No	☐ Desk space ☐ Staff time

MoL Head of Department approval (required)	MoL Director support (required)
☐ Yes ☐ No	☐ Yes ☐ No

Checks

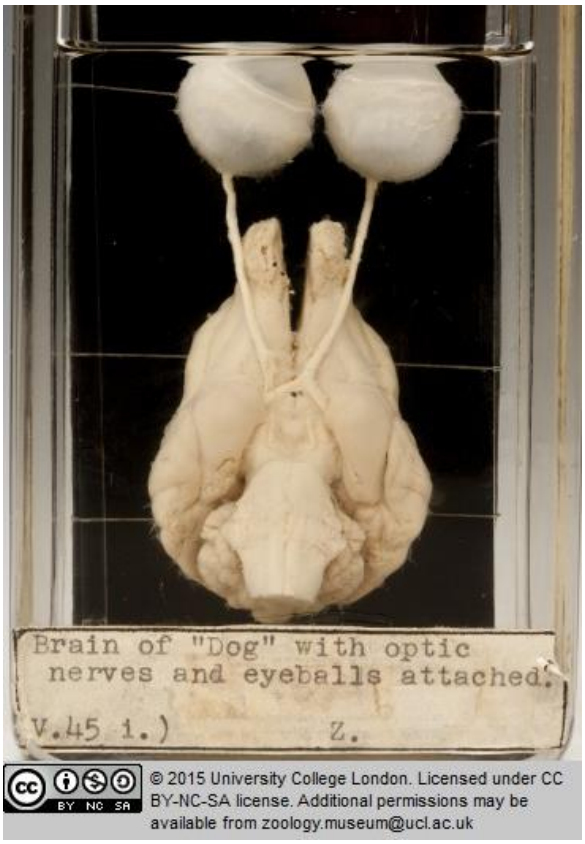
☐ Checked by Research Team ☐ Checked by IT ☐ Sent to Panel ☐ Budget checked by Finance ☐ Sent to EB	
Date for Panel	
Date for EB	

APPENDIX THREE

Photographs of UCL GRANT MUSEUM OF ZOOLOGY SPECIMENS

Preserved domestic cat, UCL Grant Museum of Zoology

Giant deer skull, UCL Grant Museum of Zoology



The brain of a dog, UCL Grant Museum of Zoology

Turtle, UCL Grant Museum of Zoology

Photographs of the Museum of London Docklands Objects

Diver's leather boot, Museum of London

Set of handcuffs, Museum of London

Shell with mother of pearl, Museum of London

Collection of glass bottles, Museum of London

APPENDIX FOUR

Game Materials and Game Walkthroughs

UCL Grant Museum of Zoology Case Study (Case Study 1)

In addition to the digital game platform (ARIS project), the families played the game using the museum space as a game board. The game cards below were scattered around the museum. By using these cards, the players unlocked clues and earned points. In this way, the museum space was connected with the digital platform of the game.

Game cards, from left to right: word puzzle cards, QR code cards with multimedia links

Museum of London Docklands Case Study (Case Study 2)

Game walkthroughs

MOLD Group 1 Game YouTube link:

https://www.youtube.com/watch?v=a7DirZH0gCI&feature=youtu.be&fbclid=IwAR1xNPt7f5NXk0ujcJeF9CP2jg7182sR8cY78chFFs68jvgl5lK3dema6bo

MOLD Group 2 Game YouTube link:

https://www.youtube.com/watch?v=mes8zoUKcao&feature=youtu.be&fbclid=IwAR0mA1kRpcFl0ITMgGqVPUWZz3jf_M1sFN5EPWVuKJA-G9A1FMCLcbHBPCU

MOLD Group 3 Game YouTube link:

https://www.youtube.com/watch?v=HzdL-xsp89o&feature=youtu.be&fbclid=IwAR25VgJ4SppJwQiANb-mOIRsEroq4EzIbD0Fbs0khM7BCkEqC6XnNQeTWyY

APPENDIX FIVE

Workshop Facilitation Materials

UCL Grant Museum of Zoology Case Study (Case Study 1)

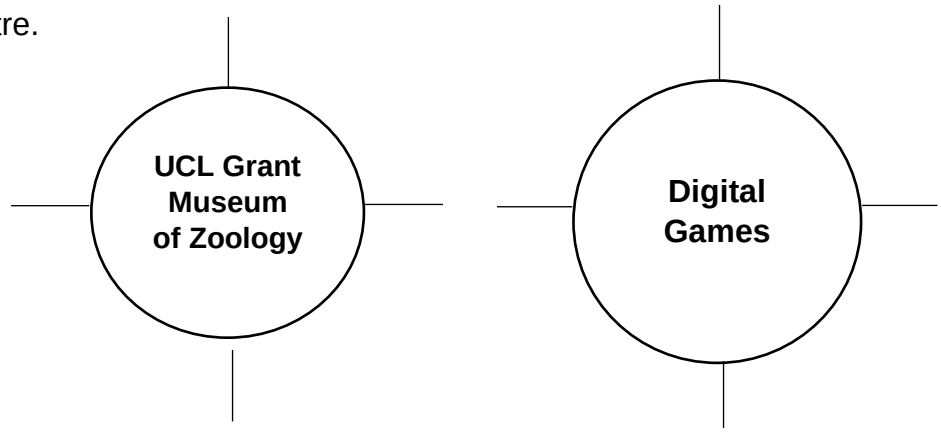
A. Introduction and Facilitation Materials

INTRODUCTION

- Welcome the families to the UCL Grant Museum of Zoology.
- Introduce yourself and explain the purpose of the workshop. ('I have invited you to the museum to help us design a digital game. As you may already know, I am a research student at the UCL Institute of Education. Through my research, I am trying to understand how families like yours use the museum as an inspiration to create games. Today, I will help you design the game but also, I will ask you a few questions about your game ideas. During and at the end of the workshop, I will ask you to share your feedback. Sharing your feedback will help me understand what happened during the workshop from your point of view and how you created the game'.)

INTRODUCTION QUESTIONS

- Have you ever been at the UCL Grant Museum of Zoology before? What is the first idea that comes to mind when you think about the museum? Write down this idea drawing a line from the centre.
- Do you play digital games? What is the first idea that comes to mind when you think about the games you play? Write down this idea drawing a line from the centre.



Workshop mind maps

B. Introducing the game design process

DEMO GAME

- Before designing the game, the participants played a demo game.

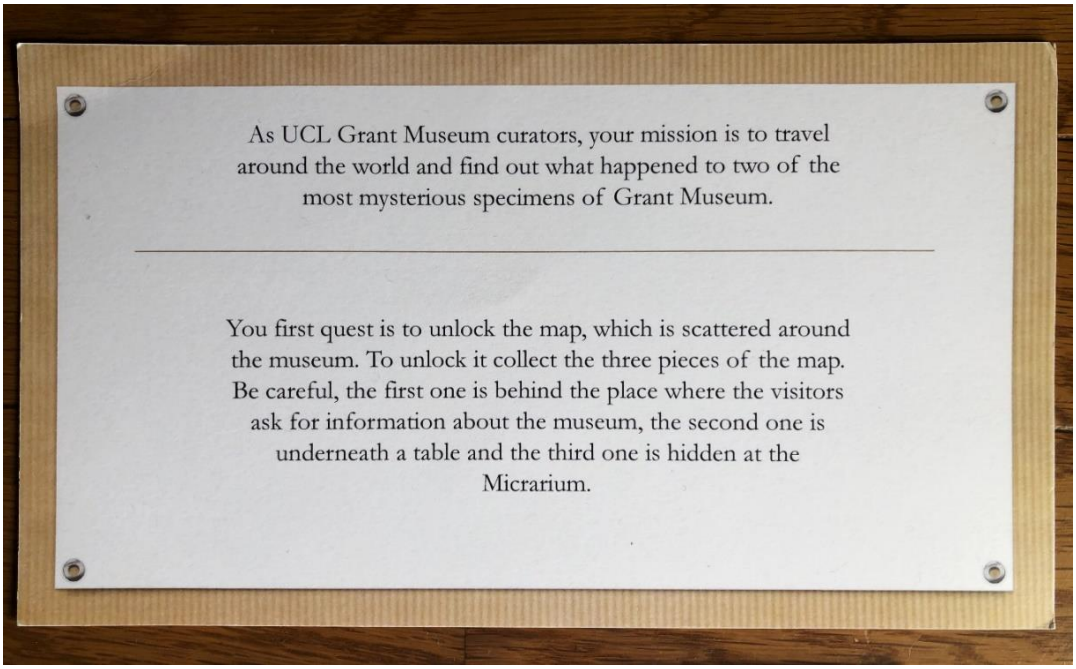
PLAYING THE DEMO

Levels: The demo game consists of two levels.

LEVEL 1

Script: ‘Welcome to the game. I am your game master. During the game, you will receive quests and clues to help you complete the game. Are you ready? Let’s start. This is a letter from the museum director, Mr Green.’

Mr Green’s letter:



Demo game, game card

The players searched the museum to locate the following maps:

Demo game, game cards and game objects (maps)

After completing the first quest, the players unlocked the map of the game. The players travelled to the next location to solve the next quest.

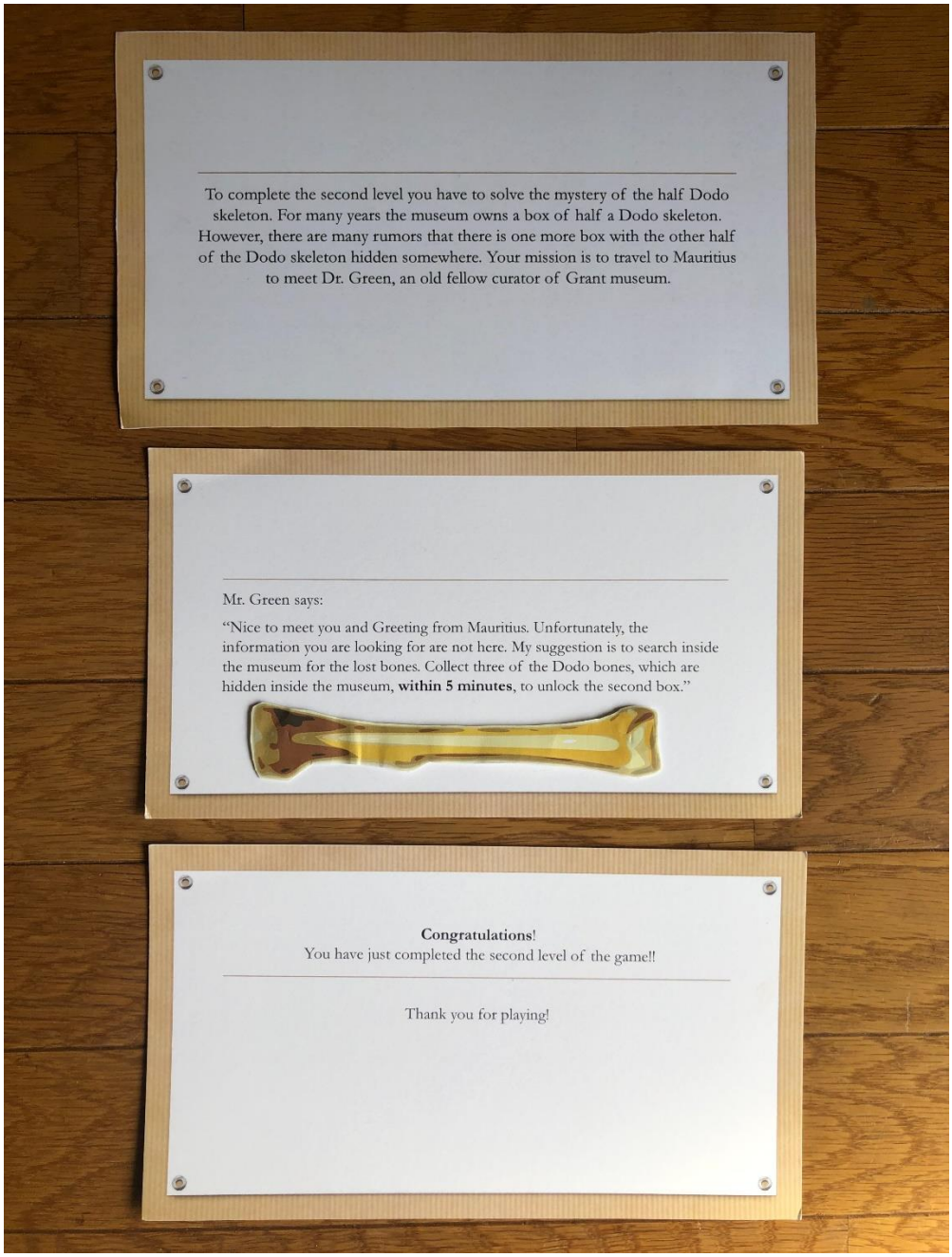
Script: 'Your first location is Tasmania! Read carefully the card and solve the mystery!'

Second quest: 'The last thylacine died in 1930 and now it's considered an extinct animal. Here, in Tasmania, you won't find what you're looking for. Examine the hidden information in the location where its skeleton is hidden.

The players searched the museum for the skeleton and scanned the QR code cards (see in the above picture) to unlock the answer.

LEVEL 2

Script: Excellent work! This is the end of the first level. Here's your next quest.



Demo game, game cards and game objects (bone)

Several paper bones were scattered around the museum. To complete the level, the players solved different challenges and collected paper bones. The game ended once

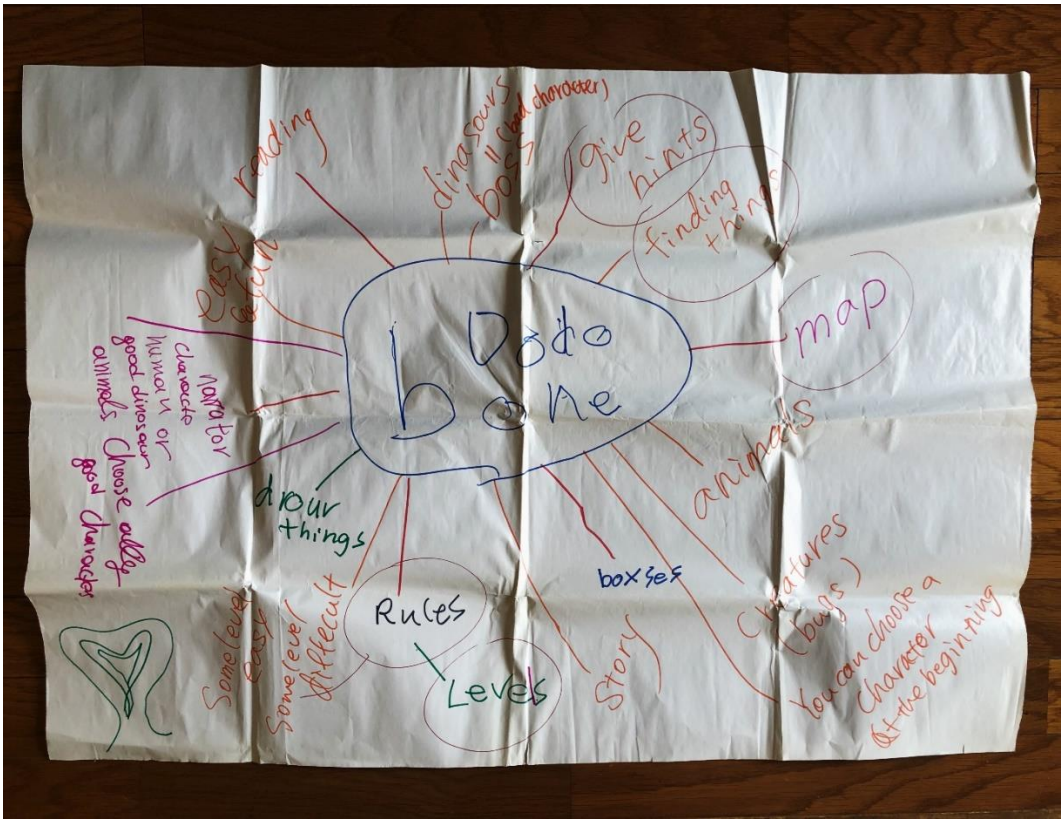
the players have gathered the bones. Then, the game master revealed the keyword that unlocked the box with the real half Dodo skeleton bones.

ANALYSING THE DEMO GAME WITH THE PARTICIPANTS

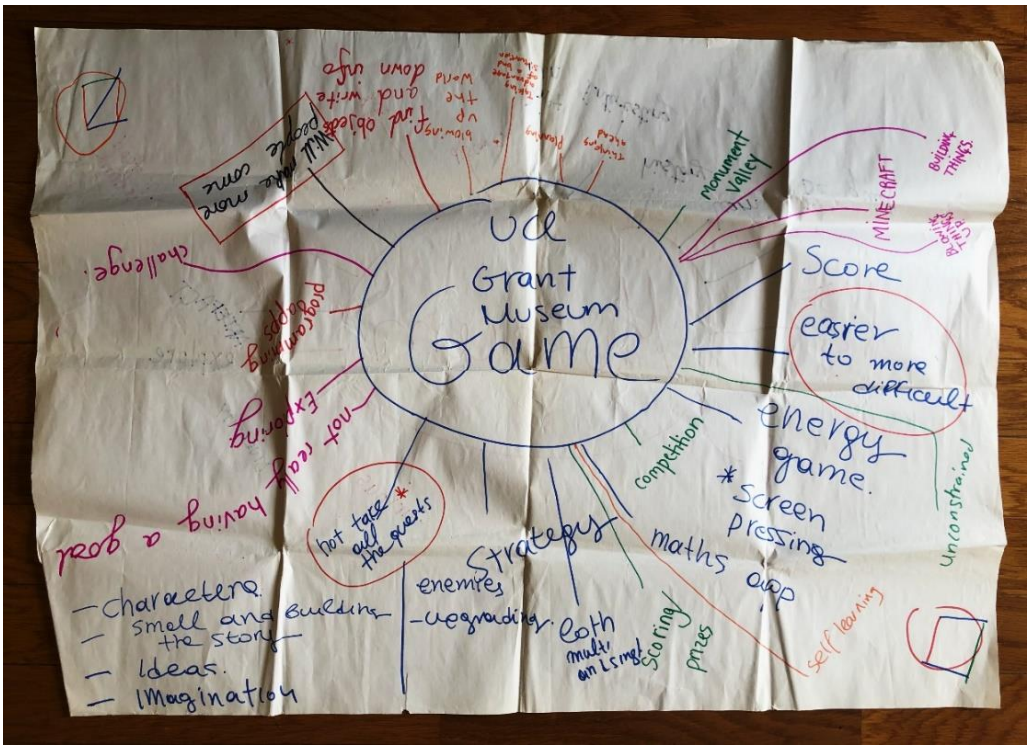
In focus groups, using the Mind Map technique the families wrote down key words about the demo game. These keywords were then connected with other ideas about the game. In this way, the participants identified and discussed the different elements that are used to create a video game.

Then, based on their own criteria, they produced mind maps describing their game ideas.

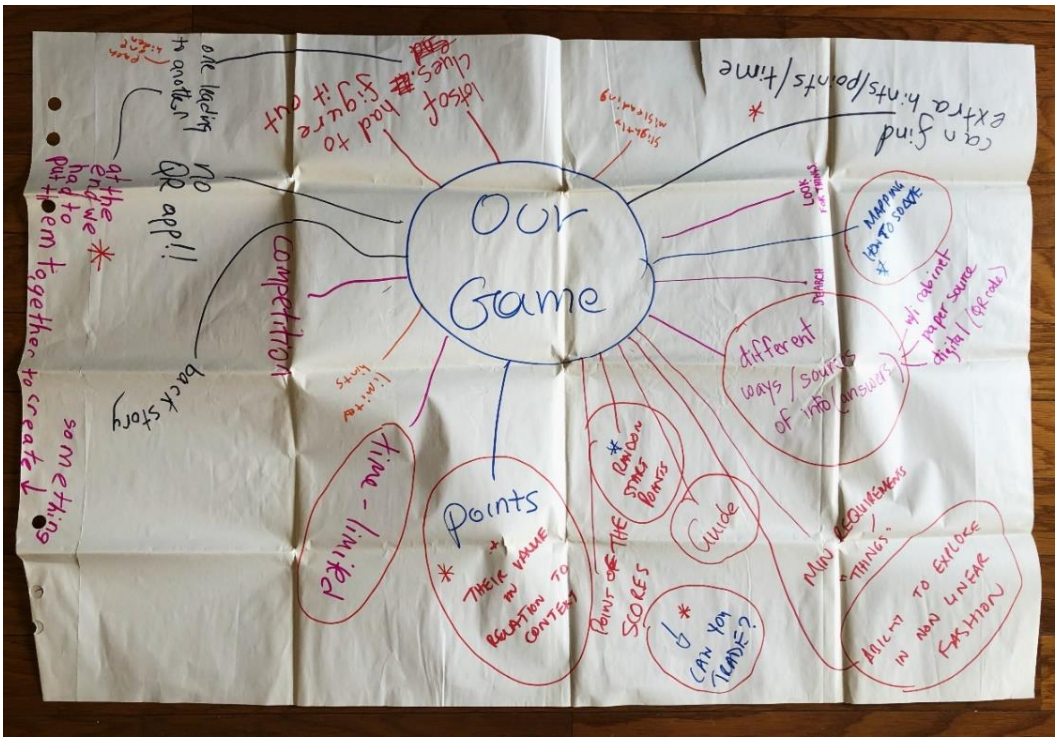
THE MIND MAPS



Mind map created by the families



Mind map created by the families



Mind map created by the families

INTRODUCING THE MUSEUM OBJECTS AND GAME DESIGN

Lastly, the families developed game ideas and designed the game inspired by the museum objects as described in chapter 6.

Museum of London Docklands Case Study (Case Study 2)

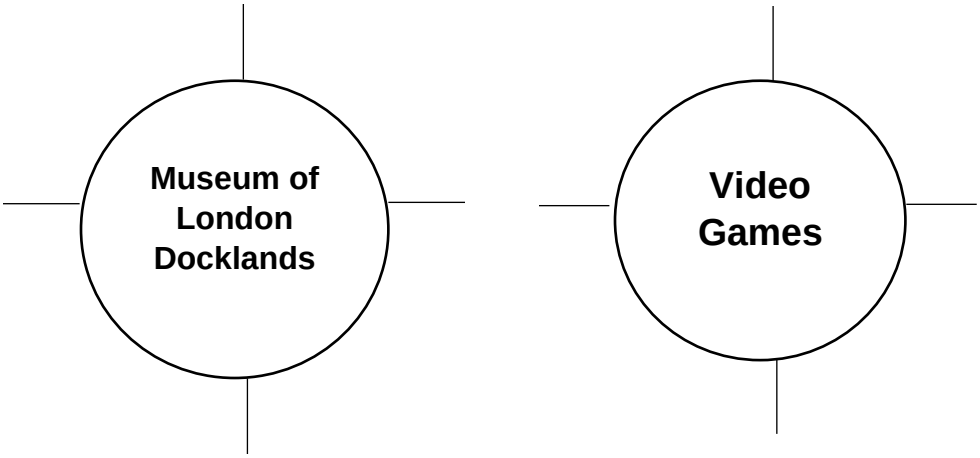
A. Introduction and Facilitation Materials

INTRODUCTION

- Welcome the families to the Museum of London Docklands.
- Introduce yourself and explain the purpose of the workshop ('I have invited you to the museum to design a video game inspired by the museum and its collections. As you may already know, I am a research student at the UCL. I study how families like yours use the museum as an inspiration to create games. Today, I will help you design the game but also, I will ask you a few questions about your game ideas. During and at the end of the workshop, I will ask you to share your feedback. Sharing your feedback will help me understand what happened during the workshop from your point of view and how you created the game').

INTRODUCTION QUESTIONS

- Have you ever been at the Museum of London Docklands before?
- How would you describe the museum? What is the first idea that comes to mind when you think about the museum? Write down this idea drawing a line from the central idea.
- Do you play video games? What is the first idea that comes to mind when you think about the video games you play? Write down this idea drawing a line from the central idea.
- What do you expect from today's workshop?



Workshop mind maps

B. Introducing the game design process

DEMO GAME WALK-THROUGH

- Before designing the game, the participants played a demo game.

YouTube link: https://youtu.be/i3R1wrqdwYE

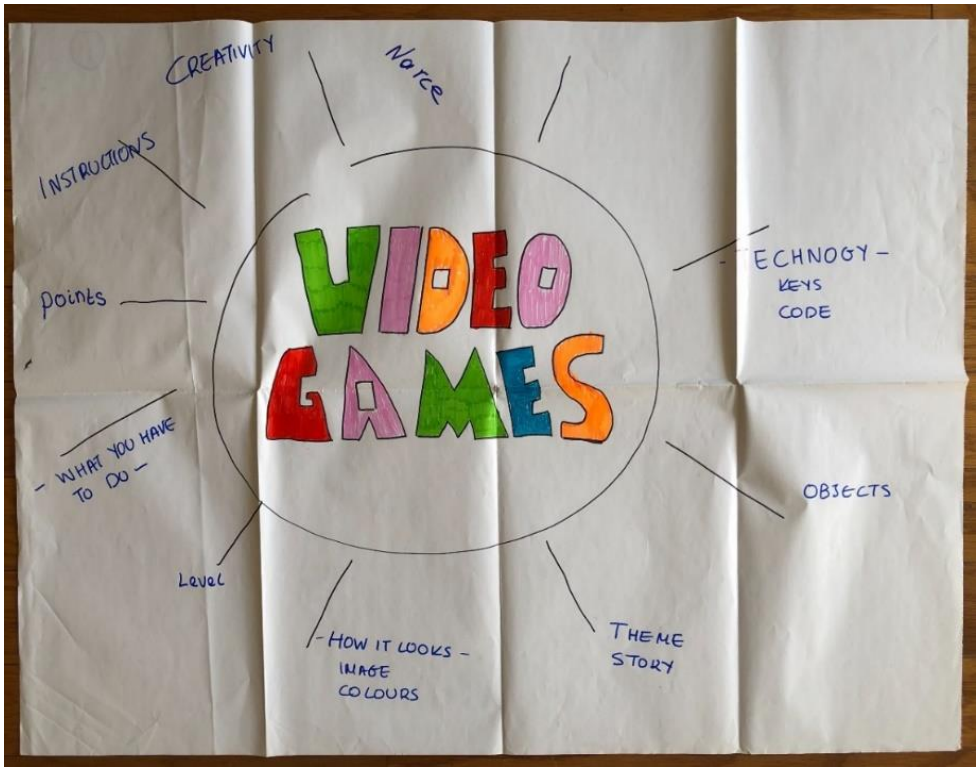
ANALYSING THE DEMO GAME WITH THE PARTICIPANTS

In a focus group, using the Mind Map technique, the families wrote down key words about the demo game. In this way, they identified and discussed the different elements of video games.

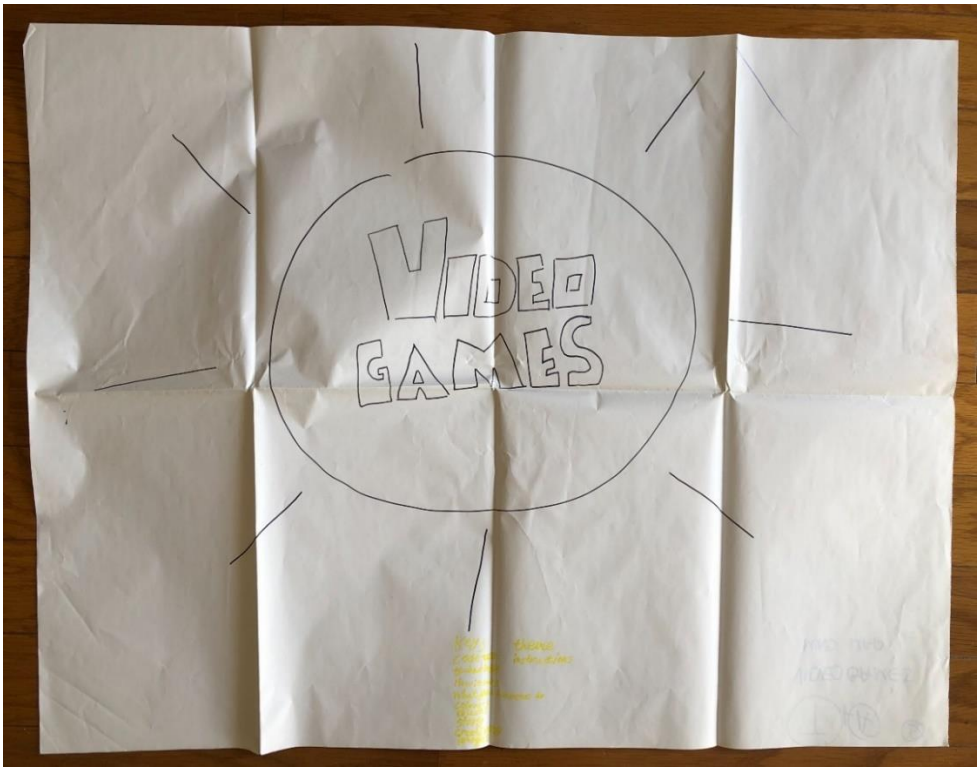
After analysing and discussing the demo game, in focus groups using the Mind Map technique, the participants explored the following questions:

- If there was a recipe to design a video game, what will the main ingredients be?
- Which ingredients would you use to design a video game?

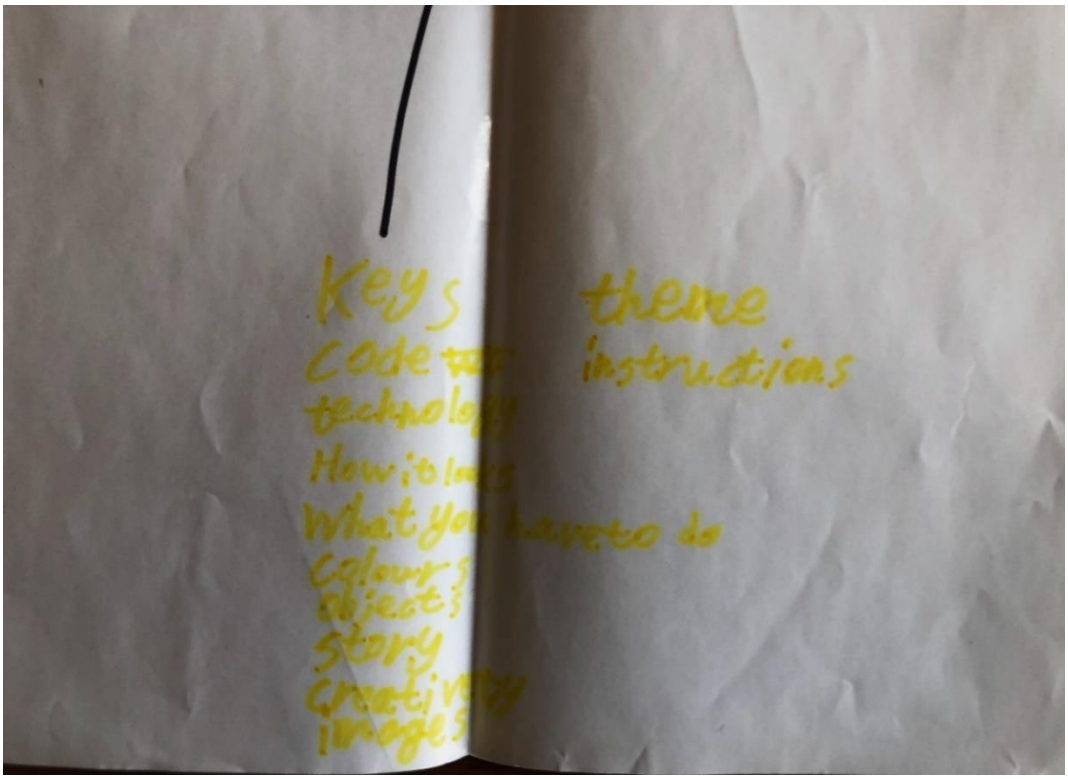
MIND MAPS



Mind map created by the participants



Mind map created by the participants



Detail of the above Mind map

INTRODUCING THE MUSEUM OBJECTS AND GAME DESIGN

Script: ‘To help you design your games, I have brought out a few museum objects’.

Object Handling session and Game Ideas

The families proposed game ideas and designed games inspired by the museum objects as described in chapter 8.