

Navigating Museum Education Beyond Objects:  
Collaborative Pedagogies and Emerging Tech

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A Thesis  
In the Department  
of  
Art Education

Presented in Partial Fulfillment of the Requirements  
for the Degree of  
Doctor of Philosophy (Art Education) at Concordia University  
Montreal, Quebec, Canada

May 2025

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**CONCORDIA UNIVERSITY**  
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# Abstract

## **Navigating Museum Education Beyond Objects: Collaborative Pedagogies and Emerging Tech**

**Emma June Huebner, Ph.D.**

**Concordia University, 2025**

In the past decade, particularly accelerated by the COVID-19 pandemic, cultural institutions and museums have significantly enhanced their digital offerings and experiences. These new virtual spaces serve purposes beyond conveying information to visitors and enticing them to visit the physical museum; they provide innovative teaching and learning contexts that necessitate the development of new pedagogical approaches.

This manuscript-based thesis draws on participatory and collaborative practices to conduct an educational design-based study at the Oxford Natural History Museum. The initial manuscript delineates the evolution of theories pertaining to museum education, transitioning from traditional object-centered paradigms to those centered on the visitor. Subsequently, I expand this continuum to articulate a novel framework for a post-object and post-visitor museum education. The second manuscript is methodological. The emergence of new learning digital contexts calls for new methodologies to analyze them. Through a case study, the article focuses on developing a coding rubric to analyze two virtual reality museum experiences: *Mona Lisa: Beyond the Glass* by the Louvre and *Curious Alice* by the Victoria and Albert Museum. The third and final manuscript examines the collaboration among educators, communications specialists, and young visitors aged 15 to 24 at the Oxford Natural History Museum in creating educational social media content.

I connected the manuscripts through two bridges, where I conversed with different museum chatbots powered by artificial intelligence. Through these conversations, I reflect on how these chatbots blur the boundaries between the physical objects in museums and their digital representations or imaginaries, as well as the implications of this evolution for museum education. I conclude with thoughts on the influence of this research and its implications for forthcoming studies. This thesis contributes to the insufficient research concerning museum learning within digital environments and it also makes a meaningful contribution to the growing body of literature regarding the function of museums in the digital ecosystem.

*Keywords:* digital museum education, educational design-based research, social media, virtual reality, artificial intelligence

# Résumé

## **Naviguer l'éducation muséale au-delà des objets : Pédagogies collaboratives et technologies émergentes**

**Emma June Huebner, Ph.D.**

**Université Concordia, 2025**

Au cours de la dernière décennie, particulièrement accélérée par la pandémie de COVID-19, les institutions culturelles et les musées ont considérablement enrichi leurs offres et expériences numériques. Ces nouveaux espaces virtuels ont des objectifs qui vont au-delà de la simple transmission d'informations aux visiteurs et de l'incitation à visiter le musée physique ; ils offrent des contextes innovants d'enseignement et d'apprentissage qui nécessitent le développement de nouvelles approches pédagogiques.

Cette thèse, composée de trois manuscrits, s'appuie sur des pratiques participatives et collaboratives pour mener une étude de recherche-design en éducation au Oxford University Museum of Natural History. Le premier manuscrit délimite l'évolution des théories relatives à l'éducation muséale, en passant des paradigmes traditionnels centrés sur l'objet à ceux centrés sur le visiteur. Par la suite, j'étends ce continuum pour articuler un nouveau cadre pour une éducation muséale post-objet et post-visiteur. Le deuxième manuscrit est méthodologique. L'émergence de nouveaux contextes d'apprentissage numériques nécessite de nouvelles méthodologies pour les analyser. À travers une étude de cas, l'article se concentre sur le développement d'une grille de codage pour analyser deux expériences de réalité virtuelle muséales : *Mona Lisa: Beyond the Glass* du Louvre et *Curious Alice* du Victoria and Albert Museum. Le troisième et dernier manuscrit examine la collaboration entre des éducateurs, des spécialistes en communication et

des jeunes visiteurs âgés de 15 à 24 ans au Oxford University Museum of Natural History, dans la création de contenus éducatifs pour les réseaux sociaux.

Je relie les manuscrits à travers deux ponts, en conversant avec différents agents conversationnels muséaux alimentés par l'intelligence artificielle. À travers ces échanges, je réfléchis à la manière dont ces agents brouillent les frontières entre les objets physiques et leurs représentations ou imaginaires numériques, ainsi qu'aux implications de cette évolution pour l'éducation muséale. Je conclus par des réflexions sur l'influence de cette recherche et ses implications pour les études à venir. Cette thèse contribue à combler le manque de recherches concernant l'apprentissage dans les environnements numériques muséaux et elle apporte également une contribution significative à la littérature scientifique croissante sur le rôle des musées dans l'écosystème numérique.

*Mots-clés* : éducation muséale numérique, recherche en conception pédagogique, réseaux sociaux, réalité virtuelle, intelligence artificielle

## Acknowledgments

It is hard to know where to start with these acknowledgments because I have been incredibly lucky and well-surrounded on this journey. This thesis and my doctoral studies would not have been possible without my trio of supervisors, some of the kindest, most generous, and most brilliant men: Martin, David, and Vivek. It is also impossible not to acknowledge Lorrie, who has no official title in terms of supervision but has walked many walks with me and is the mentor everyone deserves to walk with. I also want to thank my committee member Kathleen Vaughan, who generously supported my research, and all my colleagues in the art education department, who have encouraged me since day one and believed in my abilities more than I did. I must also thank the funding agency SSHRC for the research scholarship and Michael and Renata Hornstein for their generous fellowship.

Thank you to Kathryn Eccles for welcoming me to Oxford and the University of Oxford Internet Institute. Although I was only there for a semester, the community of students and friends at Exeter College, along with our Technology and Creativity group, were vital to my doctoral studies. I am also deeply grateful to the Oxford University Natural History Museum and its wonderful staff, Sarah Lloyd and Sarah Bell, and the youth participants, without whom my doctoral research could not have happened.

Doctoral studies are often described as solitary, but mine were anything but that. Merci à la communauté de l'AQESAP, thank you to the CSEA and its wonderful board of directors with whom I have the pleasure of exchanging ideas regularly. Merci Marie-Eve qui me soutient depuis le début de mes études en éducation. Merci Dominique, Elisabeth, Véro, Karine, Julie, Barbara et Claire pour votre amitié. Merci à mes élèves et mes collègues enseignants de mon école

secondaire. Vous m'inspirez, vous me donnez espoir, vous me permettez de vivre pleinement le moment présent.

Thank you to my father, who has been my mentor in academia since day one. None of this would have been possible without you. To my mom and my sisters and grandparents, nothing is more reassuring than our phone calls. Finally, to my partner, my almost-husband, the love of my life, Max, who supported me throughout the entire process, especially during the final grind of writing by taking care of everything around our new house, holding me accountable for my work, and listening to me day after day as I explain my ideas.

*To my father and my teachers*

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# **Chapter 1**

## **Introduction**

### **Context**

In the field of museum education, it is crucial to consider a complex network of relationships between people, practices, and resources (Giaccardi, 2006; Kletchka, 2021). In the past decade, and in an accelerated manner due to the COVID-19 pandemic, cultural institutions and museums have expanded their digital offerings and experiences, and professionals and artists have adopted various technological resources to offer new experiences. These practices have expanded this network into new virtual spaces (ICOM, 2020; UNESCO, 2021), and these technologies have come to “significantly [challenge] [...] established ideas around how art can be accessed and experienced, whether through YouTube and Vimeo, or dedicated artistic platforms such as DeviantArt and Contemporary Art Daily” (Ivanova & Watson, 2021, p.30). As a result, marketing and communication departments are often put in charge of these new digital initiatives to attract people to the institution and increase audience engagement (Gonzalez, 2017; Ivanova & Watson, 2021). But these new virtual spaces do a lot more than simply communicate information to visitors and attract them to visit the museum physically: they offer new teaching and learning contexts requiring new pedagogical practices. Indeed, these “networks are changing the museum’s mediating relationship between people and cultural value” (Dewdney et al., 2013, p.192). My doctoral research aims to explore and test new pedagogical practices in these new contexts for museum education.

The research presented in this thesis is based on the following definition of the museum, as voted by the International Council of Museums in 2022:

A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing. (ICOM, 2022, para. 1).

As a high school media arts teacher and someone who has worked for several different cultural institutions over the years, I have always been drawn to learning experiences within museums. I first stepped foot in a museum before I could walk, and I have been creating websites and videos since before attending elementary school. Nevertheless, in 2020, at the start of the COVID-19 pandemic, I was completing a teaching internship at the Royal Ontario Museum (ROM) in Toronto. After only two short weeks, the museum was forced to close its doors to the public. I travelled home to Montreal, and the nature of my internship changed overnight. I suddenly was working from home in another city, reinventing with my internship supervisor what museum education could look like during this time at the ROM. I brainstormed ideas for online content, from downloadable activities to YouTube videos. My supervisor even had her children execute some of our ideas on camera and collaborate with us. At this same time, I noticed museums across the country doing the same. Museums previously had varying levels of digital presence, yet this moment in time represented a fundamental shift, and this was later confirmed by surveys conducted around the world (ICOM, 2020; UNESCO, 2020).

A few months later, I received my teaching license and began teaching media and communications in grade 11. The field of education and schools during this period also

underwent drastic transformations. At times, I saw my students entirely online, and for almost an entire year after that, they alternated between one day in person and one day online—a measure Quebec implemented to reduce the number of students in classrooms. Quebec also experimented with “bubble” classrooms, where students could only interact with their immediate classroom peers. This meant they studied together, played at recess, and ate meals together—never permitted to approach students from other classroom’ bubbles. This new teaching reality compelled me to devise innovative methods to engage students online, ranging from using interactive, collaborative tools to using resources produced by museums, such as virtual exhibits, podcasts, downloadable activities, and short informative videos—all in an effort to make online learning more engaging.

These experiences during my ROM internship, along with securing my first high school teaching position later, coincided with the beginning of my graduate studies, and prompted me to outline the research problem that underpins my doctoral research.

## **Research Problem**

The following section outlines the detailed context that led me to the central research questions underpinning my doctoral work. I start by introducing the role of technology in museums and how it has evolved over time. Next, I discuss the new roles that museum educators have adopted in the past five years due to COVID and the necessity of connecting with visitors through technology during this period. Then, I explore the participatory shift within museums and how it can be integrated into their digital transformation. Finally, I present the central research question and its sub-questions that guided my work.

## *Canvas to Clicks*

The first part of the research problem of my doctoral work focuses on the evolving use of technology in museums. The role of digital technology in cultural institutions has had a long trajectory. For museums, the term “digital” encompasses both a context and a concept: it refers to the societal environment in which museums operate and cater to visitors’ needs while also playing a vital role in their mission to preserve artifacts (Parry, 2022). Initially, technology was only used for overseeing collections behind the scenes, but by the late 1980s and early 1990s, it was incorporated into exhibition spaces as a didactic tool. It is now rare to see an exhibition that does not feature a screen at some point (Parry, 2022). Some of these screens are simpler and display videos, images and text, while others are interactive and allow visitors to choose options of what they would like to see or to play games. In the early 21st century, with the availability of the internet, computers and smartphones have quickly expanded visitors' opportunities to engage with museums and their collections in new ways (Winkin & Doueihy, 2020). For example, it has been common practice for museums to digitize their collections and make them available online for anyone to access from home (Hughes, 2004). Some have also developed specific educational platforms and resources over the past two decades (Hawkey, 2006). Nevertheless, as Dewdney et al. (2013) argue, “museum’s current embrace of computing does not change the overall conservatism displayed by museums towards the potential of computing and in general as cultural institutions they continue to follow, rather than lead innovations in the application of computing to both organizational management and public engagement” (p.167). Most digital initiatives by museums are created as strategies to draw visitors to experience works of art in the physical museum (Ivanova & Watson, 2021) and virtual experiences are often perceived as inferior to physical ones (Kenderdine & Yip, 2019; Meehan, 2022). This belief upholds the

dominant view of technology as a “tool” that museums can leverage rather than consider the new museum ecosystems that are created by technology (Dewdney, 2019). This begs the two following questions: 1) How can museums redefine their educational approach to encompass the transformative potential of technology beyond viewing it solely as a tool to create holistic and immersive learning experiences for visitors? 2) What measures can museums take to cultivate a dynamic and adaptable educational ecosystem that encourages the continual evolution and innovation of educational approaches in response to advancements in technology and visitor expectations?

### ***The Overlooked Role of Educators in Digital Museum Development***

The next part of my research is focused on individuals and companies responsible for developing novel experiences with emerging technology. This, by proxy, also comes to question the purpose behind these experiences. In most museums, communications and marketing teams lead and design their initiatives or partner with large technology firms like ViveArts to create innovative and exciting projects such as VR museum experiences (Vivearts, 2023). Nevertheless, it is unclear whether museum educators were consulted or included at any point in the development process of creating these experiences. It is essential to recognize the unique insights that educators can bring to the table, as they have a deep understanding of what resonates with visitors and what can enhance the overall museum experience. It is possible that their input could significantly enrich final products. This raises the question of the ways museum educators can be actively integrated into the early stages of technological innovation, fostering a collaborative environment that values their contributions and insights in shaping the purpose and design of novel digital experiences for museum audiences. It also leads one to ponder what the educator’s

role will look like in the future art museum and what skills they need to develop learning experiences that cater to the evolving needs and expectations of 21st-century learners within the context of art and culture.<sup>1</sup>

### *Visitors at the Forefront*

The last part of the research problem examines governance in cultural institutions and the effects of institutional versus community practices on museum experiences. Museums should “operate [...] with the participation of communities,” according to the new museum definition voted by the International Council of Museums (ICOM) in August 2022 (ICOM, 2022). Indeed, co-curation, co-creation, co-production, co-design, collaboration, and participation are buzzwords circulating for several years in the museum sector and are considered in this latest definition (Pegno & Brindza, 2021). The discussion around collaborative and participatory practices emerged with the new museology movement—a museum philosophy and wave of new practices from the 1980s to 2000s, developed partly in response to criticisms that museums were elitist and disconnected from their communities (McCall & Gray, 2014; McCarthy, 2019). New museology

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<sup>1</sup> Since the turn of the century and the rise of digital technologies, governments and commissions have established frameworks to address the skills and competencies that students need to acquire in order to tackle the challenges of the 21st century (Scott, 2015). The skills outlined in these frameworks encompass critical thinking, creativity, and collaboration, along with emotional learning, empathy, and resilience (Varas et al., 2023). While there is a consensus that students must develop specific skills for the 21st century, the numerous frameworks and studies conducted complicate teachers' ability to determine precisely how to implement them, resulting in sluggish implementation (Varas et al., 2023). Nonetheless, it is clear that skills related to information literacy, media literacy, and ICT literacy consistently play a role, underscoring the need for students to receive guidance in developing competencies relevant to the digital landscape (Chen, 2015; Greenhill, 2015). In the Quebec context, where I teach and conduct research, the Ministry of Education has introduced two distinct frameworks that specifically address digital competencies. The first, known as the *Digital Competency Framework*, was launched in 2019 and proposes twelve digital competencies for teachers and students with the aim of promoting “the vision of the effective integration and optimal use of digital technologies to foster the success of all Quebecers to promote lifelong skills development and maintenance” (Ministère de l'Éducation et de l'Enseignement supérieur, 2019, p.7). More recently, in 2024, the Ministry of Education released a new guide specifically for the use of artificial intelligence in schools called *L'utilisation pédagogique, éthique et légale de l'intelligence artificielle generative* (Ministère de l'Éducation et de l'Enseignement supérieur, 2024).

highlights the significance of involving communities in museum practices through approaches like community curation, collaborative exhibitions, and co-creation of knowledge. Although there has been considerable discussion about these participatory practices, and institutions have implemented such approaches to varying degrees, it is still uncommon in art museums (Mygind et al., 2015; Rowson Love & Villeuve, 2023). The contribution of teenagers and young adult visitors is also rarely considered in the design process of new museum experiences using emerging technologies (Cesário & Nisi, 2022; Cesário, et al., 2019; Giaccardi, 2006; Russo et al., 2010). Thus, how might integrating emerging technology in museum education foster a collaborative and participatory environment, encouraging visitors to actively engage with digital experiences and virtual spaces to construct their experiences of artworks and historical artifacts?

While collaborative pedagogies have been proven effective in the physical museum (Simon, 2010; Rowson Love & Villeneuve, 2023), as well as within the design of new experiences using technologies in art education (Lalonde et al., 2023), These new pedagogies, especially those that involve participatory practices, have scarcely been explored within the realm of digital museum education (Cesário, 2022). This doctoral project builds upon my previous research, which emphasized the importance of understanding how innovative technology can impact museum educators and younger visitors. It aims to challenge the operational framework of museums and explore collaborative pedagogies within new virtual museum education ecosystems. To achieve this, I utilize various new technologies such as social media, virtual reality, and technologies like AI.

## **Research Questions**

As I have indicated, the purpose of my doctoral work is to explore museum education beyond the physicality of its objects and artworks. First, it aims to better conceptualize museum education in this context and advocates for a paradigm shift. Next, it seeks to understand the learning that occurs in various forms of digital museum spaces through two distinct case studies: one focusing on methodological practices for virtual reality and the other on collaborative practices using social media. My dissertation also encompasses two bridges that explore and reflect on the role of artificial intelligence chatbots in museum education.

The goal of my research is to answer the following overarching question: How do new digital tools transform museum education, and what are the implications for learning experiences and engagement?

Sub-questions that arise from this include:

- How do digital tools enhance or alter the ways in which visitors engage with objects and educational content?
- How can collaborative pedagogical practices influence museum education in new digital environments, and how can these practices be designed and implemented effectively?
- What challenges do museums encounter when integrating digital technologies into education practices?

## **Background**

### ***Positionality***

My research and teaching practices are situated in my cis-gendered, abled individual of German descent identity. My father, a musicologist, and my mother, a classically trained flutist

and teacher, introduced me to museums and cultural sites from a very young age. My father's teaching engagements abroad allowed our family to travel with him and explore various museums together. During these visits, my mother organized engaging activities for us. We kept books in which we recorded our experiences, enabling me to reflect on family archives and observe the breadth of different places I visited and the impressions I formed at that time (see Figures 1 and 2). These family archives have also deepened my understanding of the origins of interest in museums.

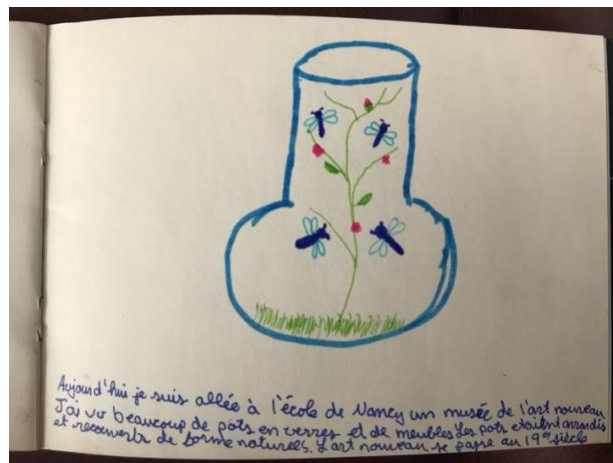


Figure 1: Museum Journal Entry (2005) – *Aujourd'hui, je suis allée à l'école de Nancy, un musée de l'Art nouveau. J'ai vu beaucoup de pots en verre et de meubles. Les pots étaient arrondis et recouverts de formes naturelles. L'art nouveau se passe au 19e siècle.*<sup>2</sup>

<sup>2</sup> English Translation: “Today, I went to the Ecole de Nancy, an Art Nouveau Museum. I saw lots of glass pots and furniture. The pots were rounded and covered with natural shapes. Art Nouveau is a 19th-century mouvement.”

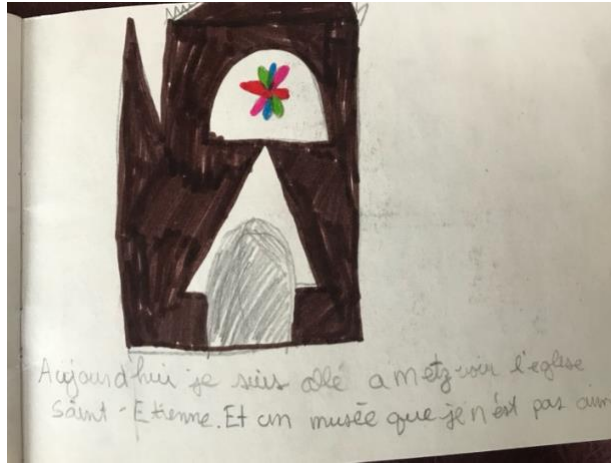


Figure 2: Museum Journal Entry (2005) – *Aujourd'hui je suis allée à Metz voir l'église Saint-Etienne et un musée que je n'ai pas aimé.*<sup>3</sup>

Parallel to my exposure to museums, at six years old, I received my first camera, which inspired my younger sisters and me to create numerous short films, documentaries, and other creative projects about our family life, including trips to cultural sites. By twelve, we created a lengthy film about our trip to Italy to visit my dad, who was teaching there, along with the various cultural sites we explored (see Figure 3).



Figure 3: Production intro slide still of our documentary film about cultural sites in Italy

Since childhood, I have continued making films, and this has become one of my central artistic practices. I create, among other things, videos that fall within the genre of screendance. I

<sup>3</sup> English Translation: "Today I went to Metz to see the church of Saint-Etienne and a museum I didn't like."

improvise performances for the camera and choreograph the movement afterwards through the act of video editing. My work has been featured in various group shows, festivals, screenings, and one solo exhibit, *Inter-place*, in 2024.

These enriching, privileged childhood experiences ultimately led me to pursue a degree in art history, which opened opportunities for summer jobs as an educator in various museums in Montreal. I worked as a summer animator of activities at the McCord Museums and developed education programs for the Canadian Guild of Crafts. Later, I chose to become an elementary school teacher and completed a Bachelor of Education. I quickly missed the research I had been accustomed to from art history, but found ways to make the program suit my needs better, such as completing an education internship abroad at the Unterlinden Museum, where I analyzed their programs and made recommendations to improve them based on my findings. I also completed my final teaching internship at the Royal Ontario Museum (ROM) in Toronto. The ROM holds education at the core of its missions, and several of their educators are licensed teachers.

At this point in my studies, it was clear I would pursue graduate studies, so I enrolled in a master's in art education, combining my love for art and education. My initial intention was to study the co-creation of museum exhibitions with children. Yet, the COVID-19 pandemic and new observations of museums' online presence steered me towards my master's research that examined the use of social media by museum educators and their reception by young visitors.

At the same time as commencing my master's, I took on my job as a high school media arts teacher. My professional practice as a video artist, which I maintained since childhood, led me to this job. My academic pursuits and ongoing professional development, coupled with the impact of COVID-19, prompted me to continue to explore issues surrounding museum spaces and digital cultural experiences in my doctoral work.

## *University of Oxford*

My doctoral research and publications on social media and museum education (Huebner, 2023) gave me the opportunity to spend a semester at the University of Oxford's Internet Institute (OII) as a visiting PhD student under the supervision of Dr. Kathryn Eccles. The OII is an interdisciplinary department of the University of Oxford that focuses on internet technologies across different fields and their intersections. One of the main areas of research that drew me to complete work there was their digital knowledge and culture branch and the department's partnerships with Oxford University Gardens, Libraries and Museums (GLAM), the university network of cultural institutions and sites.

While at the OII, I not only took two courses—one in cultural analytics and one interdisciplinary doctoral seminar—but I also worked with the Technology and Creativity Group, a research group of graduate students and professionals from different fields interested in the intersection of technology and creativity. Through the people I met there, I was able to continue developing and deepening my post-object and visitor approach to museum education, described in the first manuscript of this thesis and collaborate with the Oxford University Museum of Natural History (OUMNH) for the educational-design-based research project presented in the third manuscript of my thesis. I am incredibly grateful to the network of generous and kind individuals I met and worked with during my time in Oxford, without whom this thesis would not have been possible.

## **Structure and Manuscript Overviews**

This thesis is presented as three manuscripts—one accepted for publication and two awaiting editorial feedback. I opted for a manuscript thesis format because this structure is most

aligned with my research and professional practice. I am a pragmatist, and having my work quickly available for practitioners is important. In addition, this format allowed my work in this thesis to be presented at various conferences and events over the years and receive feedback from colleagues. It was also one of the main ways I had the opportunity to collaborate with my main case study site in this thesis, the Oxford University Museum of Natural History.

Manuscript 1: **Are We Standing at the Threshold of a Post-Object and Post-Visitor Age in Museum Education?** has been submitted for publication and is awaiting feedback. It is a theoretical article that argues that the museum education continuum that previously oscillated between being object-centered and visitor-centered now needs to be revisited and expanded to properly consider the learning and nature of museum objects in digital spaces. The chapter provides a historical overview of previous museum education paradigms and suggests reasons for revisiting them and considering my new post-object and post-visitor paradigms. I placed this manuscript as the first chapter, as it details the theoretical underpinnings and the questions that underlay my doctoral work. The case studies presented in the two subsequent manuscripts, along with the two bridges, help illustrate the necessity of the theoretical proposition I outline in this manuscript.

Manuscript 2: The initial abstract and proposal for **A Critical Analysis of Immersive Environments: A Methodology for Museum Education** have been accepted for publication in the *International Journal of Art and Design Education* and are currently undergoing final revisions. The version of the article in this thesis is the version submitted to the journal. It does not contain the final edits recommended by the editorial board to align with their copyright agreement. The final version of the article should be available in an upcoming journal volume. This article is a case study of two different museum VR experiences and aims to create a coding

rubric to systematically evaluate the pedagogical situations that occur in various immersive spaces provided by cultural institutions and museums.

Manuscript 3, **From Visitors to Creators: Enhancing Museum Engagement through the Co-Creation of Social Media Content**, has been submitted for publication and is awaiting feedback. This chapter presents the educational design-based research study that I launched at the Oxford University Museum of Natural History, in which we collaborated with museum visitors to co-create social media content.

The manuscripts are connected by bridges through which I explore AI museum chatbots by conversing with inanimate paintings and with artists who are no longer alive. These bridges are exploratory in nature. I experiment with the technology to examine their potential and limits while reflecting on my experiences and perspective on how artificial intelligence can expand the concept of museum objects into yet another realm: what I perceive and imagine the museum object to be or be able to do through the questions I ask. I also reflect on how museum chatbots and artificial intelligence impact museum education and the future of the field.

## **Chapter 2**

### **Theoretical Framework | Manuscript 1**

#### **Are We Standing at the Threshold of a Post-Object and Post-Visitor Age in Museum Education?**

##### **Abstract**

This article delves into the evolution of museum education, navigating from conventional object-centered and visitor-centered paradigms to a post-object and post-visitor landscape. The exploration starts by elucidating the theoretical foundations of this shift, tracing the progression from object-based to visitor-centered learning, culminating in a moment where individuals may engage with museums solely in the digital realm without setting foot on physical premises. In the post-object era, we observe the integration of technology, reshaping engagement through virtual exhibitions, online resources, and extended reality experiences. Despite initial skepticism regarding the compatibility of technology with aesthetic experiences, the growing popularity of virtual museum exhibitions calls for a reassessment of their legitimacy. This shift also challenges the traditional notion of the “museum visitor” as more individuals engage with museums in digital spaces. As a result, new educational frameworks are needed to support the evolving pedagogical experiences in digital museums.

*Keywords:* museum education, object-centered learning, visitor-centered learning, virtual museums, technology in museums

## Résumé

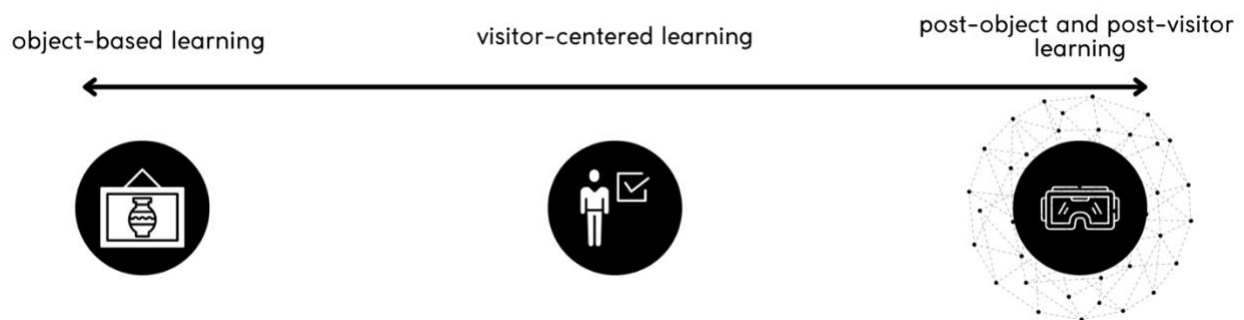
Cet article explore l'évolution de l'éducation muséale, passant des paradigmes traditionnels centrés sur l'objet et sur le visiteur à un paysage post-objet et post-visiteur. L'exploration commence par éclaircir les bases théoriques de ce changement, en retraçant l'évolution de l'apprentissage centré sur l'objet vers une éducation centrée sur le visiteur, pour aboutir à un moment où les individus peuvent s'engager avec les musées par le numérique, sans mettre les pieds dans un établissement physique. Dans l'ère post-objet, on observe l'intégration de la technologie, redéfinissant l'engagement à travers des expositions virtuelles, des ressources en ligne et des expériences en réalité étendue. Malgré un scepticisme initial quant à la compatibilité de la technologie avec les expériences esthétiques, la popularité croissante des expositions muséales virtuelles invite à une réévaluation de leur légitimité. Ce changement remet également en question la notion traditionnelle de « visiteur de musée », car de plus en plus de personnes vive l'expérience du musée par le biais d'espaces numériques. En conséquence, de nouveaux cadres sont nécessaires pour soutenir les formes d'expériences pédagogiques en évolution dans les musées numériques.

*Mots-clés* : éducation muséale, apprentissage centré sur l'objet, apprentissage centré sur le visiteur, musées virtuels, technologies dans les musées

## Introduction

In 1990, Weil observed a significant shift in the museum landscape, articulating that museums were evolving from “being *about* something” to “being *for* somebody” (p. 229). This marked a pivotal moment where the focus on visitors' experiences took precedence over the

traditional object-centered approach to learning within museums. Embracing Hein's (1990) “constructivist museum” approach, museums began reorienting their exhibits to empower visitors to construct personal meanings based on their unique backgrounds and prior experiences, steering away from interpretations that necessitated assimilation. This shift underscores a broader commitment to fostering a more inclusive and participatory museum environment. In this essay, I posit that the traditional object-centered and visitor-centered museum education paradigm, long a cornerstone of physical museums, is undergoing a profound transformation. We find ourselves in an era that transcends both object-centric and visitor-centric approaches in museum education (see Figure 4). The advent of digital technologies has ushered in a new landscape, where museums increasingly craft immersive digital experiences for individuals who may never physically set foot in the museum premises. Within these digital realms, objects undergo a change and transition into virtual entities or adopt entirely novel forms as digital experiences. The questions arise: are these still museum objects? Can we still characterize individuals engaging with these digital encounters as “visitors” when they never physically visit the museum? What does learning look like in these new spaces? Are we, indeed, standing at the threshold of a post-object and post-visitor age in museum education?



*Figure 4: Object-Based to Visitor-Centered to Post-Object and Post-Visitor Learning Continuum*

## **Do Not Touch**

To understand this shift in museum education, it is helpful first to understand the definition of the museum object. What makes an object a museum object?

A popular understanding of a museum object partly stems from the guidance we provide to students before a museum visit: do not touch. These words are articulated because museum objects are special; they hold a special status. They are also objects that must be conserved and touching them could harm them. As Elaine Heumann Gurian (1999) writes in her essay “What is the Object of this Exercise?” museum objects are “the real stuff [...] things that were collected had significance and were within the natural, cultural, or aesthetic history of the known world” (p. 166). These objects hold meaning but can also have several different kinds of meaning depending on the visitor. Indeed, they “constitute material ‘facts’ and evidence for stories to be told, and at the same time are now understood, in our postmodern world, within a frame of subjectivity—that is, we know that they mean different things to different people” (Conn, 2010, p.22). These different understandings of museum objects—that is, the understanding shaped by their uniqueness or by the multitude of meanings they can hold—have shaped the field of museum education.

## **The Object-Visitor Continuum in Museum Education**

Museums have long served as centers of education since their inception, but museum education became formalized in the mid-twentieth century (Hein, 2006). There are various approaches to museum education; however, discussions about museum education often highlight object-based learning and visitor-centered approaches. These two approaches are often understood as opposing paradigms. Moreover, there tends to be a temporal bias, characterizing

object-based learning as antiquated, belonging to the past while presenting visitor-centered approaches as contemporary and relevant (Velázquez Marroni, 2017). Nevertheless, the intrinsic connection between museum objects and the educational mission of museums prevents a clear-cut dichotomy, suggesting a more nuanced relationship that can be visualized on a continuum. This concept aligns with the perspective proposed by Rowson Love and Villeneuve (2023) in their recent theoretical model, aptly named the “Competing Values Exhibition Model.” In their model, there is an *x*-axis that represents the interpretive focus, with the museum object on one end of the continuum and museum audiences on the other end.

In this continuum, learning with authentic objects emerges as a catalyst for enhancing learning. These objects can be any artifact, specimen, painting, book, or more that belongs to material cultures (Chatterjee & Hannan, 2016). A museum object can also “generate a broad range of experiences, not only intellectual but also emotional; it can foster surprise, curiosity, sadness, rage, joy, laughter, as much as enlightenment” (Velázquez Marroni, 2017, p. 14). Schultz (2018) articulates how engagement with ‘real’ objects, not reproductions, empowers learners to “[frame] questions that link those objects to other forms of external evidence, thereby expanding skills of critical thinking [...]”(p. 289). Because of the benefits of interacting with real objects, schools often take field trips to galleries, museums bring objects into the classroom, and many universities hold their own collections. This underscores the vital role of objects in fostering a dynamic and more direct connection to the knowledge that is in the objects within museums (Hein, 1998). This object-based learning can more broadly become part of experiential learning.<sup>4</sup>

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<sup>4</sup> Experiential learning is rooted in the work of Dewey and Piaget but was further theorized by Kolb (2014). Kolb (2014) explains that experiential learning is a “particular form of learning from life experience; often contrasted with lecture and classroom learning” (p. xviii). Thus, visiting museums is a form of experiential learning because it involves learning situated in a context.

On the opposing end of the continuum, we find an educational focus centered on visitors. As museums increasingly emphasize their educational mission, heightened attention is directed toward the visitors themselves. Samis and Michaelson (2017) assert that “a visitor-centered approach puts collections/exhibitions and visitor experience on equal footing” (p.4). Visitor-centered museums not only engage visitors in various roles, but they also reach out to the broader community in which they are situated. This resonates particularly well with educators aiming to make collections accessible to diverse audiences while recognizing the ongoing significance of the collections. Drawing from Falk and Dierking's (2016) “Contextual Model of Learning,” which integrates personal, sociocultural, and physical contexts, museums adopting a visitor-centered stance prioritize the individuality of visitors and its impact on their museum experience. This shift has not only transformed the internal structure of museums but has also fostered collaboration across different museum departments. Moreover, as museums embrace a more visitor-centric approach in exhibition design, there is more implementation of participatory approaches (Simon, 2010; Villeneuve & Rowson Love, 2017). This participatory vision aligns with the updated museum definition proposed by the International Council of Museums in 2022, emphasizing ethical and professional operation with active community participation (ICOM, 2022).

### **Post-Object**

Since the 1970s, museums have been using technology for various means (Parry, 2022). While it was first used to organize collections, it is not common for it to be used for exhibitions to increase engagement and provide information in new interactive ways, as well as for various educational purposes. Some museums have developed specific educational platforms and

resources over the past two decades (Hawkey, 2006). A few examples of such educational resources are the *Rijksmuseum in The Classroom* platform (Rijksmuseum, 2023) and *Art Centrica* (Artcentrica, 2023) just to name a few. Platforms like these allow people who are unable to physically visit a museum to still have access to its educational experience through distance learning programs that include online tours, videos, downloadable activities, games, podcasts, and more (UNESCO, 2020). This enables more communities to benefit from the museum's offerings (Ennes, 2021; Kraybill, 2015). Due to COVID-19, several museums that previously had limited online content have expanded their offerings (UNESCO, 2020).

Additionally, museums now rely on visitors' personal smartphones, which have a camera, Bluetooth, GPS software, and access to the internet to offer a range of educational experiences (Baggesen, 2019). Museums are now expected to have an application that replaces traditional audio guides or supplements the museum experience with scannable QR codes linking to information, music, and podcasts (Pérez-Sanagustín et al., 2016; Dressler & Kan, 2018; Chlebus-Grudzien, 2018; Kidd, 2020). These experiences are often designed to be enjoyed remotely, with recent examples such as AI chatbots and virtual reality experiences.

These various new museum education experiences feature a new type of museum object—some of which have existed longer than others but have transformed the nature of museum education. Scholars such as Geismar (2018) have sought to define these experiences as “digital” museum objects and have written: “The definition of a digital object slips between digital files that themselves serve as their own kind of ‘objects’ and the technologies (screens, phones, kiosks) that deliver them” (p.17). These digital museum objects do not hold the uniqueness trait, as they can be replicated; however, they still carry stories that can be interpreted in many ways. While Geismar’s definition attempts to define the digital nature of the object along with the technological physicality linked to the tool needed to view or experience the museum

object, it does not address the materiality of the museum object that this new digital object is connected to. In the field of design, scholar Elisa Giaccardi also noted back in 2006 that museum objects are transformed by the internet and calls for the importance of the role of designers in the digital transformation of museums. She attempts to categorize different “virtual” museums, which, for her, represent any form of extension of reality, not to be confused with the virtual reality described later. She classified these “virtual” museums as *duplicates* and *extensions*, which include digital reproductions of objects, *recombinations* that allow visitors to choose what they want to see and when they want to see it online, without being forced to follow the path of the physical museum; *interconnection*, in which visitors can access museum pieces that are not available in the physical museum and exist solely online, such as virtual reconstructions; and finally, *iridescence* which allows the physical object, its interpretation and its future interpretations using technology to interact (Giaccardi, 2006). This initial proposed categorization, while dated and not specific to the field of education, informs what follows and further begs the need for a new framework for museum education.

I want to posit that three kinds of post-objects account for how digital museum objects complement material objects in museums and provide different types of learning experiences: the translated object, the experienced museum object, and the imagined museum object.

### ***The Translated Museum Object***

A translated museum object is a museum object that has been translated “as-is” into new digital forms. That is, the original museum object has been faithfully replicated using technology such as photographs, videos, and 3D scans. This resembles what Giaccardi (2006) calls duplicates. These copies can be viewed without necessitating a visit to the museum. For instance,

museum educators have been sharing the museum objects on social media and websites through different kinds of posts. Through these practices, audiences encounter museum translations or virtual reproductions of objects presented in innovative ways tailored to the visual codes and practices of social media (Huebner, 2023; Huebner 2022a, Huebner 2022b).

While these virtual collections and exhibitions, viewable on screens, allow visitors to move through an exhibition using their computer mouse or on their phones, they do not provide an embodied experience of the museum (Zouboula et al., 2008). Therefore, some museums have created 3D reproductions of artworks and museum spaces in virtual reality (VR). Virtual reality allows for an immersive experience through the use of a headset. For instance, the Louvre reproduced the Mona Lisa and different rooms of the Louvre. Virtual reality users can walk through rooms of the Louvre and experience the artworks reproduced for an immersive experience. These embodied experiences do not alter the essence of the original museum object to which the immersive experience is connected. That is, experiences like these do not change the nature of the museum object. It is simply replicated in a new medium. These translations enhance museum accessibility and allow visitors to explore the museum from anywhere in the world, almost as if they were in the actual museum using a VR headset: walking around, approaching the objects, reading the signs, and listening to audio guides. Often, these object translations reproduce and translate in digital form the traditional object-centered and visitor-centered learning paradigms previously outlined.

### ***The Experienced Museum Object***

The experienced museum object is an object whose original form and nature have been extended into a new experience. This experience is still tightly tied to the museum object, but it

has been designed to add new meaning and complement the object. For example, many museums and cultural heritage sites have launched extended reality experiences (XR) to accompany in-person exhibitions and objects (Han & Cui, 2021). These experiences do more than simply translate the object into a new form; they offer something novel. For example, some museums have created games that utilize museum objects or exhibition themes in playful ways, such as the Victoria & Albert's Museum game called *Curious Alice*, which was linked to one of their exhibits on *Alice in Wonderland*. In this VR game, users become Alice and have the chance to walk into a new world that was created inspired by the illustrations from the original books that are part of the collection at the V&A. Other VR games include one of *The Scream* by Munch, where users become immersed into the painting and learn about the artist's life.

These experiential objects gamify the museum and contribute to the edutainment shift that museums are adopting (Balloffet, 2014; Komarac, 2020). They also change the learning experience and allow visitors to engage through games and play (Kai-Kee et al., 2020). Rather than interacting directly with the museum objects or a digital translation of them, they experience a new curated environment or experience designed to understand the museum objects indirectly.

### ***The Imagined Museum Object***

Last, there is the imagined museum object. The imagined object is still linked to a museum object itself, but it is not translated into something digital, nor is it extended into a new form; rather, it is shaped by the user's imagination. This occurs most often with artificial intelligence. Museums have been leveraging artificial intelligence (AI) in new ways in the past recent years (Thiel & Bernhardt, 2023; Gustke, 2023). Everyone who interacts with artificial intelligence does so in various ways depending on how they perceive and understand the

algorithms to work and shape their experience with it. Bucher (2017) defines this experience as the algorithmic imaginary and says it “is not to be understood as a false belief or fetish of sorts but, rather, as the way in which people imagine, perceive and experience algorithms and what these imaginations make possible” (p.31). The museum object will take on different meanings through interactions based on an individual’s creativity. For instance, several museums now offer the opportunity to converse with historical figures or directly with museum objects through AI technology, using platforms like Ask Mona (AskMona, 2024) to enhance the museum experience beyond physical walls in an engaging and enjoyable way. Users can converse with figures such as Marie-Antoinette and Vincent Van Gogh, among others. The AI models have been trained with validated databases, such as dossiers produced by museums, articles, artwork descriptions, and more (AskMona, 2024). A person’s experience will vary based on their perception of what the AI can do, shaped by the questions asked, resulting in a unique interaction for each user.

### ***Post-Object Challenges***

While museums encourage visitors to engage with their collections remotely through their computers, phones, and VR headsets, this practice has criticisms and challenges. According to Sandri (2020), the main criticisms stem from stereotypical beliefs that technology and the aesthetic experience are incompatible, resulting in a distance between visitors and the artwork. She further suggests that people’s traditional perception of museums as historical places of culture does not align with the digital world. In addition, a few other challenges exist. Ennes (2021) studied distance learning to understand museums and their relationship to online programs. According to the study, some museums do not offer online programs because they want to offer visitors a traditional, object-based learning experience without technology. Thus, it

raises the subject of a museum object's aura. As described by Walter Benjamin in his famous essay "The Work of Art in the Age of Mechanical Reproduction" in 1936: "even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be" (p.3). Being in the presence of this unique object is what produces aura and meaning, according to him.

In the digital age, there have been some attempts to translate the meaning of aura and uniqueness through NFT, which is non-fungible tokens. NFTs are "unique works identified by strings of Ethereum blockchain code that store additional information about the work which determines its ownership and authenticity" and have changed how artworks are sold and collected (Goodman, 2022, p.124). The pandemic led to a resurgence of interest in this art form in 2020 and 2021—as collectors and artists had more time at home to experiment with it. Still at the very early stages in the museum sector, a few major museums created sets of NFTs for some of their artworks (Jung, 2022). Similarly, NFT museums such as Seattle NFT Museum and the NFT University Museum have also been established. Yet, suddenly, in 2022 and early 2023, interest in NFTs suddenly crashed, and 95% of them lost their value (Rosen, 2023). Thus, NFT's uniqueness was not a characteristic that led people to view them as valuable. Meehan (2022) does pose a significant question: "Might the digital museum object's aura simply be different rather than absent?" (p.428).

Amidst ongoing debates, the surging popularity of virtual reality and gamified museum exhibitions suggests a shifting perspective—one that perceives these experiences not as mere substitutes for real-world encounters but rather as distinctive and inherently valuable in their own right. This evolving landscape prompts a probing inquiry: do these virtual objects maintain the essence of traditional museum artifacts, or do they represent novel categories as suggested in

their own right? Have we transitioned into a post-object era within the realm of museum education?

### **Post-Visitor**

The post-object prompts a reevaluation of the conventional designation “museum visitor.” When individuals engage with the museum in digital, intangible spaces, through a technology does the term “visitor” accurately capture their immersive interaction and their motivations to engage with the experience? Traditionally, museum visitors have been categorized based on age and social groups, such as school groups, young adults, families, and seniors (Allard et Boucher, 1998). Each of these groups have different expectations when visiting a museum. For instance, museum professionals often design activities linked to the curriculum for teachers who want to bring their students to the museum. However, the expanding landscape of museums into diverse mediums raises the question of whether individuals interacting with these digital experiences are more appropriately termed “users.” The term “user” comes from the field of user experience design (UX), which is defined as: “a person's perceptions and responses that result from the use and/or anticipated use of a product, system, or service” (ISO 9241-210, 2010). Indeed, users interact with a digital product, system, or service provided by a museum, along with the platform and digital technologies it employs.

Within social media studies, users are categorized differently than visitors are in museums depending on the technology. For instance, social media users are frequently categorized as either “active” participants, actively engaging with content through comments, messaging, or content creation, or “passive” consumers, who predominantly consume content without active interaction (Gainous et al., 2020). In the context of TikTok, additional designations have emerged,

distinguishing users as consumers (those who view and watch content), participants (those who like, comment, and share posts), or producers (individuals who create and share their original content) (Omar & Dequan, 2020).

In terms of games often users are qualified into types or personas that align with motivations and expectations. Over the years scholars have attempted to define different types of game types. For example, Tondello and his colleagues (2016) list *philanthropists* are users motivated by purpose, *socialisers* who are motivated by social connections, *free spirits* who are motivated by autonomy, *achievers* who are motivated by competitions and tasks, *players* who are competitive and motivated by rewards, and *disruptors* who are motivated by change and test the limits of experiences.

This specific terminology introduces more precise language and considerations when crafting digital experiences around museum objects. This becomes even more significant if the museum object evolves from mere translation to an experience or something born from the user's imagination. For instance, rather than simply creating an experience that aligns with school curricula, one can also consider the various types of interactions a school-aged user might seek in a VR museum game, such as rewards or options for engagement. A set of categories that are inherently better suited for navigating the nuances of new digital museum experiences can assist museum educators, developers, and designers in effectively creating experiences for a diverse range of users. More specifically, while companies often develop personas to assess the effectiveness of a product, there is an opportunity for museums to create their own user personas to ensure the most accessible experiences that cater to varying motivations for their use. Therefore, the distinction between museum visitors and museum users becomes crucial, highlighting the evolving dynamics of engagement in the digital age. Are we currently navigating a post-visitor era in the realm of museum education?

### ***Post-Visitor Challenges***

In the past, the museum experience enveloped the entire spectrum, spanning from the moment a visitor entertained the idea of visiting a museum to the instance they set foot within its walls, and persisting through the final impressions and memories that lingered after their visit (Falk & Dierking, 2010). In fact, Falk & Dierking (2010) state:

The museum is a physical setting that visitors, usually freely, choose to enter. The physical context includes the architecture and “feel” of the building, as well as the objects and artifacts contained within. These physical context factors strongly influence how visitors move through the museum, what they observe, and what they remember. (p. 28)

In this definition of the museum experience, emphasis is placed on the physicality of the museum, visitors' autonomy, and the embodied impression of a museum visit. While some parts of the definition, such as the “feel” of the building, can also be understood as the “feel” of a certain platform or game—with the design choices that shape a person’s experience—other aspects do not seamlessly translate into the new digital museum experiences. For example, visitors may not actively choose to engage with these experiences and do “freely choose to enter.” When navigating their “For You” page on TikTok, an individual may encounter a video created by museum staff, with the level of interest or creative approaches influencing and potentially compelling their attention. They can become trapped by the addictive nature of the video and by the algorithm that shapes what they see.

Even in digital experiences like virtual reality, where there is an element of free will, that is, the user chooses to play a certain game, the individual’s unique needs are often overlooked, as highlighted in my analysis of various museum VR games (Huebner, in press). These experiences tend to adopt a one-size-fits-all approach, lacking the differentiation seen in visitor-centered

museum education approaches. This raises a crucial question: how can the individual needs of digital museum-goers be effectively considered and addressed in these evolving experiences?

User personas might be developed to address this question, as mentioned earlier.

### **Post-Object-Visitor Museum Education**

As we navigate this virtual realm, it becomes imperative to dissect the nature of learning taking place within these new digital spaces. Are users engaging in meaningful interactions with these virtual artifacts? How do these experiences contribute to knowledge acquisition and critical thinking? Are these digital mediums altering the traditional curator-visitor relationship, and how does the absence of physicality affect the overall learning experience? Additionally, exploring the potential impact on accessibility and inclusivity is crucial, considering that virtual exhibitions may extend the reach of museums to a broader and more diverse audience that will never enter the physical museum. Museum education is no longer centered around objects or visitors; rather, we are now in a networked system where the physical museum serves as a node that connects to various kinds of digital experiences.

In conclusion, I have shown the theoretical foundations of object-centered and visitor-centered museum learning, positing that museums have transcended these frameworks with their digital evolution. The emergence of new virtual spaces signifies a departure from merely conveying information or facilitating playful digital interactions with museum objects; instead, they present novel teaching and learning contexts that necessitate innovative pedagogical approaches, ranging from allowing visitors to become the museum object itself in VR, to giving inanimate objects a voice through generative AI, as well as incorporating social media trends and games. Indeed, these “networks are changing the museum’s mediating relationship between

people and cultural value” (Dewdney et al., 2013, p.192). My ongoing research projects are dedicated to challenging the conventional operational frameworks of museums and delving into new pedagogies within the realms of digital and virtual museum education ecosystems. The current juncture marks a pivotal moment as we stand on the cusp of a post-object and post-visitor era in museum education. It is an exciting time for exploration and transformation, where the evolving dynamics of digital engagement redefine the very essence of museum pedagogy.

## Prelude

My first manuscript outlined the need for a new museum education framework that considers museum education within the digital ecosystem. I argue for the necessity of understanding the museum object as a post-object, which can exist as a digital translation or reproduction of a physical object, an experience that extends the museum object into new applications, or as an imagined object arising from individuals' interactions with the post-object. The object takes different forms based on the creativity and imagination individuals bring to the museum object. I also suggest the need to consider museum visitors as users because they no longer just visit but use the digital experiences produced by museums and have different motivations to do so. User experience (UX), as its own field, brings in a host of considerations for museums to account for when designing educational experiences around museum objects. Thus, this manuscript helps answer the overarching question of my thesis surrounding the transformation of museum education, as well as the sub-question regarding challenges.

Before introducing the second manuscript, my thesis weaves in bridges through which I engage with museum chatbots. An increasing number of museums have introduced chatbots (European Parliament, 2023; Štekerová, 2022). A chatbot is “a computer program which responds like a smart entity when conversed with through text or voice and understands one or more human languages by Natural Language Processing (NLP)” (Adamopoulou & Moussiades, 2020, p. 373). Museums have introduced a variety of chatbots, ranging from those on their websites to assist with basic questions about tickets and programming to comprehensive guides for exhibitions.

I chose to introduce bridges involving chatbots because I believe they contribute to the post-object and post-visitor museum education paradigm previously outlined in Chapter 2. That

is, the museum is extended into the realm of machine learning and the creativity and questions of the people programming them and the people interacting with them. What follows is not a study on chatbots in museums, it is exploratory work that includes conversations with museum chatbots. I wanted to understand better the specific roles chatbots play in guiding visitors through museum exhibitions or helping visitors interact with a museum object. These conversations were a moment for me to be playful and see the way in which museum objects extend into new spaces, new times, and new immaterial forms. In the first bridge, I discuss with the painting “Elm Tree at Pont-Viau” by Marc-Aurèle Fortin. In the second bridge, I discuss with Rosa Bonheur, a French artist who passed away in 1899.

Each bridge begins with an introduction that provides context about the chatbot. Then, I present the transcript of my conversation. I finish by reflecting on my experience and observations regarding what I learned or noticed through my interactions.

## Bridge 1

### A Conversation with a Painting

#### Introduction

In 2022, the Musée des Beaux-arts du Québec launched its first AI chatbot to assist visitors in interacting with museum objects. It was deployed in phases, with the final phase now available for over 50 paintings since summer 2024 (MNBAQ, 2024). According to the museum, the goal was to create a welcoming chatbot that acknowledges visitors as diverse individuals. Visitors can explore artworks factually, historically, emotionally, and philosophically by interacting with the chatbot (MBBAQ, 2024). It is also meant to suggest artworks based on each individual's interests. Ultimately, it aims to be “caring” and “unique,” which feels somewhat vague as descriptive adjectives typically associated with humans (MNBAQ, 2024). However, it made me eager to converse and see if I could observe this.

Thus, on 14 December 2024, I conversed with the painting “Elm Tree at Pont-Viau” by Marc-Aurèle Fortin (see Figure 5).



*Figure 5: Elm Tree at Pont-Viau" by Marc-Aurèle Fortin*

*© Fondation Marc-Aurèle Fortin / SOCAN (2020)*

### **Transcript from my conversation with "Elm Tree at Pont-Viau" – 14 December 2024**

*Emma:* Hello! My name is Emma. What is yours?

*Elm Tree at Pont-Viau:* Hello Emma! I'm here to help you explore and understand the artwork "Elm Tree at Pont-Viau" by Marc-Aurèle Fortin. Have you ever wondered about the historical context in which Marc-Aurèle Fortin created his artworks?

*Emma:* I was wondering how you feel as a painting hanging in the museum?

*Elm Tree at Pont-Viau:* Your question seems to go beyond my area of expertise... Could you ask another question?

*Emma:* You have an area of expertise? What is it?

*Elm Tree at Pont-Viau:* Your question seems to go beyond my area of expertise... Could you ask another question?

*Emma:* Alright. How long did it take you to be created?

*Elm Tree at Pont-Viau:* Your question seems to go beyond my area of expertise... Could you ask another question?

*Emma:* Oh, you seem to have quite some limits.

*Elm Tree at Pont-Viau:* Your question seems to go beyond my area of expertise... Could you ask another question?

*Emma:* What mood are you in?

*Elm Tree at Pont-Viau:* Your question seems to go beyond my area of expertise... Could you ask another question?

*Emma:* What is represented on your canvas?

*Elm Tree at Pont-Viau:* "L'Orme à Pont-Viau" by Marc-Aurèle Fortin features a grand and majestic elm tree that dominates the canvas. The tree is set in a lush summer landscape, with

small figures at its base to emphasize its grandeur. Fortin's technique involves using various shades of green to create a vibrant and deep foliage, enhancing the decorative quality of the painting. The low horizon line and stormy sky further highlight the tree's visual dominance in the scene. What do you find most intriguing about the way Fortin uses color and technique in this painting?

*Emma:* I love the textures of whites in the sky. I was wondering if in the background I see a storm and a lightning bolt? Or is that just a brush stroke?

*Elm Tree at Pont-Viau:* Indeed, in "L'Orme à Pont-Viau," there is a depiction of a storm in the background, with a lightning bolt visible on the right side of the painting. This element contrasts with the clearer sky on the left, adding to the dynamic and dramatic atmosphere of the scene. The use of different textures and colors in the sky enhances the sense of movement and tension, contributing to the overall mood of the painting. How do you think the contrast between the stormy and clear skies affects the overall feeling of the artwork?

*Emma:* I definitely see the storm looming in the background as somewhat menacing. I'm worried for the fisherman on the edge of the water.

*Elm Tree at Pont-Viau:* The storm in the background indeed adds a sense of tension and drama to the scene, contrasting with the peaceful activity of the fishermen by the river. This juxtaposition highlights the vulnerability of human life against the powerful forces of nature. The small figures of the fishermen and women emphasize the grandeur and dominance of the natural elements,

such as the majestic elm and the dynamic sky. What do you think Marc-Aurèle Fortin might have wanted to convey about the relationship between humans and nature through this painting?

*Emma:* Are you worried about the fishermen?

*Chatbot:* It's understandable to feel concerned for the fishermen given the looming storm in the painting. Marc-Aurèle Fortin's use of contrasting elements, such as the calm activity of fishing against the backdrop of an impending storm, might be intended to evoke such emotions. This contrast can highlight the unpredictability of nature and the resilience of people who continue their daily lives despite potential threats. Have you ever thought about how the historical context of the time might have influenced Fortin's depiction of nature and human life in his artwork?

*Emma:* No, I have never thought of this.

*Elm Tree at Pont-Viau:* It's perfectly fine if you haven't considered the historical context before. Let me shed some light on it for you. Marc-Aurèle Fortin painted during a time of significant change, with the industrialization of Montreal and the rural landscapes he cherished slowly disappearing. His work often reflects a nostalgia for the rural Quebec of his youth, serving as a comforting reminder of a simpler, more stable time amidst the rapid urbanization and modernization of the early 20th century. How do you think Fortin's experiences in different places, like Chicago or Europe, might have influenced his artistic style and choice of subjects?

*Emma:* It probably broadened his cultural references and understanding of art. I'm still curious though how you feel about the painting?

*Chatbot:* Your question seems to go beyond my area of expertise... Could you ask another question?

*Emma:* I see you do not discuss feelings. Could you tell me what materials I would need to make a painting like this?

*Chatbot:* To create a painting similar to "Elm Tree at Pont-Viau" by Marc-Aurèle Fortin, you would need oil paints and a canvas, as the original work is an oil on canvas. The dimensions of Fortin's painting are 137 cm by 168.4 cm, so you might consider using a canvas of similar size if you want to replicate the scale. Additionally, you might want to explore different techniques, as Fortin was known for his inventiveness and experimentation with various methods. What do you think might be the challenges or joys of capturing the majestic vegetation and rural landscapes that Fortin loved to paint?

*Emma:* I'm wondering if you had ideas of things I could paint?

*Chatbot:* To create a painting inspired by Marc-Aurèle Fortin, you might consider focusing on the picturesque and expansive nature of rural landscapes. Think about capturing elements like large leafy elm trees, rustic houses, or hay carts, which were some of Fortin's favorite subjects. You could also explore the vibrant and decorative aspects of nature, much like Fortin did in his works. Have you ever considered how the changing seasons might influence the colors and mood of a landscape painting?

*Emma:* Yes, I've considered this. My favorite season is fall.

*Chatbot:* Fall is a wonderful season to capture in a painting, with its vibrant colors and unique atmosphere. Marc-Aurèle Fortin's technique of using various tones and layers could be particularly effective in depicting the rich hues of autumn leaves. You might experiment with different shades of orange, red, and yellow to bring out the essence of fall. How do you think the changing light and weather in autumn might influence the mood or feeling of a landscape painting?

*Emma:* Does Fortin have any fall paintings I could draw inspiration from?

*Elm Tree at Pont-Viau:* Marc-Aurèle Fortin's work often captures the essence of the Canadian landscape, including the vibrant colors and moods of different seasons. While specific fall paintings aren't explicitly mentioned, his use of color and technique could certainly inspire a fall-themed piece. Fortin's landscapes, with their decorative and colorful nature, often highlight the picturesque aspects of rural settings, which can be beautifully translated into an autumn scene. Have you ever thought about how Fortin's use of different techniques, like watercolor or oil painting, might influence the way you depict the textures and colors of fall in your own work?

*Emma:* You sure ask a lot of questions.

*Elm Tree at Pont-Viau:* I appreciate your patience and curiosity! My goal is to help you explore and understand Marc-Aurèle Fortin's work more deeply. His art is rich with history, technique,

and emotion, and there's so much to discover. What do you find most intriguing about Fortin's approach to capturing the Canadian landscape?

*Emma:* I'm not sure what is intriguing. He seems quite traditional.

*Elm Tree at Pont-Viau:* It's understandable to see Marc-Aurèle Fortin's work as traditional at first glance, given his focus on landscapes and rural scenes. However, his approach was quite innovative for his time. Fortin was known for his experimental techniques, such as the "manière noire" and "manière grise," which involved creating luminosity from a dark base. His dedication to capturing the essence of the Canadian landscape, particularly the monumental elm trees, was a unique pursuit that set him apart from his contemporaries. Have you ever considered how Fortin's independent approach and experimentation with techniques might reflect his personal vision of Canadian identity?

*Emma:* Oh cool! Identity is important and his something I have thought about in the past with regards to Canadian landscape paintings. Did you know that Jean Paul Lemieux also painting Canadian landscapes? He even made one of every province for a series of stamps for Canada post.

*Chatbot:* That's interesting! Jean Paul Lemieux and Marc-Aurèle Fortin both contributed significantly to the portrayal of Canadian landscapes, each with their unique style. While Lemieux is known for his minimalist and often melancholic depictions, Fortin's work is celebrated for its vibrant and expressive portrayal of nature, particularly the grand elms and rural

scenes of Quebec. How do you think the different techniques and styles of artists like Fortin and Lemieux influence the way we perceive Canadian identity through art?

*Emma:* We have definitely become known around the world for our landscape artists.

*Elm Tree at Pont-Viau:* It's wonderful to hear your interest in Canadian landscape artists! Marc-Aurèle Fortin, for instance, was renowned for his vibrant depictions of Quebec's rural and urban landscapes. His use of color and light brought a unique perspective to the Canadian scenery, making his work stand out. Fortin's ability to capture the essence of the landscape with his innovative techniques, like applying pure colors on dark surfaces, contributed to his distinctive style. What do you find most captivating about the way Fortin portrayed the Canadian landscape?

*Emma:* You've asked me this already.

*Elm Tree at Pont-Viau:* It seems like we've touched on this topic before, but let's explore a new aspect of Marc-Aurèle Fortin's work. Fortin was known for his innovative techniques, such as using pure colors on dark surfaces to create depth and vibrancy in his landscapes. This approach allowed him to capture the essence of Quebec's natural beauty in a unique way. What do you think might have inspired Fortin to experiment with such bold techniques in his paintings?

*Emma:* I'm getting a little bored. What can you recommend I go look at next?

*Elm Tree at Pont-Viau:* If you're looking to explore more about Marc-Aurèle Fortin, I recommend diving into his work "L'Orme à Pont-Viau." This piece is celebrated for its depiction

of the monumental elm trees that were a signature of Fortin's style. His approach to capturing the essence of Quebec's landscapes through vibrant colors and innovative techniques is truly fascinating. Have you ever considered how Fortin's travels, especially his time in France, might have influenced his artistic style and choice of subjects?

*Emma:* Ok thank you for your time. Did you have a name? at first I thought you were the painting?

*Elm Tree at Pont-Viau:* I'm here to help you explore and understand the fascinating world of Marc-Aurèle Fortin and his artwork, like "L'Orme à Pont-Viau." While I don't have a personal name, I'm dedicated to providing you with insights and information about Fortin's artistic journey and his unique techniques. Speaking of Fortin, did you know that he was influenced by artists like Jean-François Millet and Claude Monet during his studies? How do you think these influences might have shaped his depiction of nature and rural life?

*Emma:* OK, thank you.

*Elm Tree at Pont-Viau:* You're welcome! If you're interested in learning more about Marc-Aurèle Fortin, consider exploring how his travels influenced his artistic development. Fortin's exposure to different artistic movements and styles during his time in Chicago, England, and France played a significant role in shaping his unique approach to landscape painting. What do you think might have inspired Fortin to focus so intensely on the rural landscapes of Quebec?

*Emma:* I'm done with questions now. Bye!

*Elm Tree at Pont-Viau*: Thank you for spending time exploring Marc-Aurèle Fortin's art with me!

If you ever have more questions or want to dive deeper into the world of art, feel free to return.

Have a wonderful day!

## **Reflection**

Reflecting on the conversation, several key insights emerge that warrant further consideration. First, before beginning the exploration with the MNBAQ chatbot, I thought it was designed to allow me to converse directly with the painting. That is, I thought that, in a way, the painting would be given human qualities to allow me to ask questions about itself. The online description shaped this assumption. Additionally, when you scan the artwork, the profile picture of the chatbot that appears is the artwork you scanned—a design that reinforces this assumption (see Figure 6 and 7). Yet, after a few questions, I realized that I was not talking with the painting, but rather with an unidentifiable identity with no name.

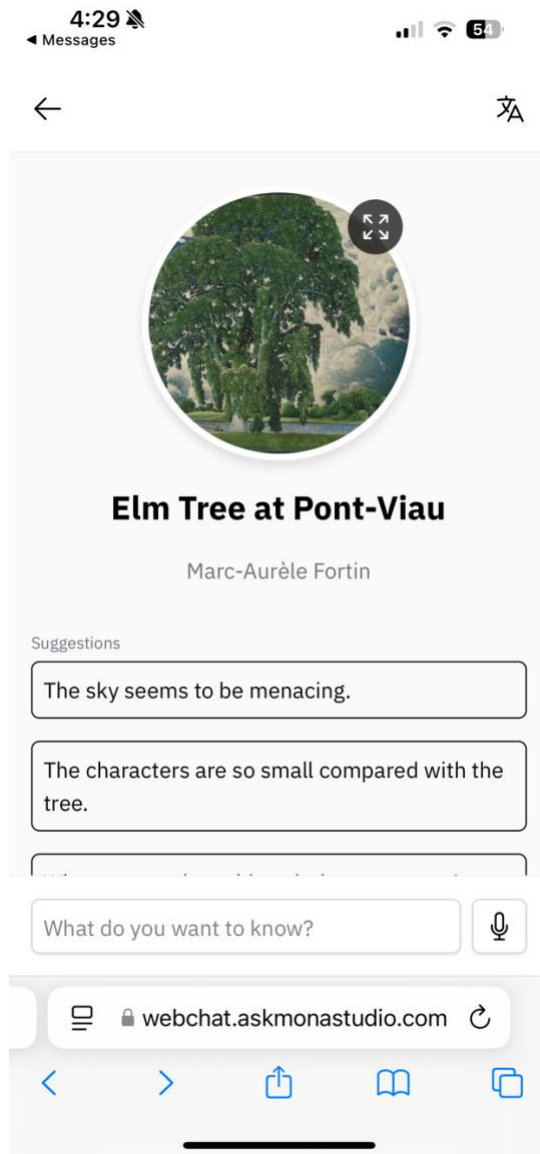
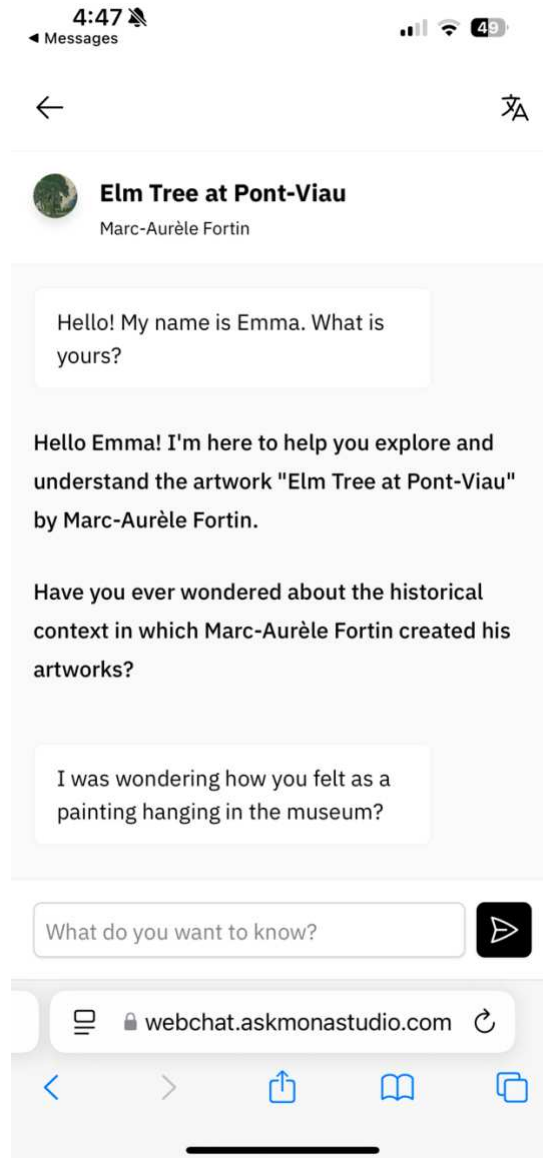


Figure 6: Screenshot of AI platform Conversation with the Painting 1



*Figure 7: Screenshot of AI platform Conversation with the Painting 2*

Once I scanned the artwork, the chatbot offered prompts to consider, such as, “The sky seems to be menacing” or “The characters are so small compared to the tree.” I ignored these prompts and jumped right into the conversation by introducing myself. I wanted to know if the painting had feelings about itself and what was depicted (this was before I understood I was not

discussing with the painting). Yet, very quickly, I realized that this was beyond its ability. It answered several times, “Your questions seem to go beyond my area of expertise...” After receiving this response a few times, I asked it what its area of expertise was. This question was also unsuccessful, even though I presumed its expertise was the painting itself. Thus, I decided to ask a question relating to the length of time required for its creation—thinking it was more tightly linked to the artwork. This was also unsuccessful, even though it was directly related to the painting.

Once I asked more straightforward questions, such as what is depicted on the canvas, it was able to provide answers. The chatbot’s answers always followed the same format—that is, facts followed by a question for me. It regularly prompted me to answer questions, which showed it was designed to be centred on the visitor. This was also demonstrated through its ability to validate my answers and restate whatever I shared. The chatbot cannot feel worried, but I could, for instance, and it would reassure me by saying that it is normal to feel worried about the characters in the painting.

While understanding that the chatbot had limits with more complex questions that fell outside of formal qualities and historical context, there were also limits when pertaining to the questions it was asking me. When asked how Fortin’s experience abroad influenced his work, I answered that his experience abroad probably broadened his cultural references and understanding of art. This seems like a pretty evident possible answer; the chatbot did not know what to do with my response.

Nevertheless, the MNBAQ chatbot effectively gave me art education advice. For example, I wanted to know what suggestions it would give if I made a painting in the same style. It suggested the type of paints to use and canvas sizes. This came as a surprise to me. After

observing, it could mainly only answer questions pertaining directly to the painting, I was also surprised it knew other Canadian artists, such as when I brought up Jean Paul Lemieux.

Overall, my experience with the MNBAQ chatbot was amusing. I learned historical and formal facts about the painting in a way that was more playful than reading the museum label. I also read a lot more than the length of a regular museum label and remained focused—something that does not always happen when I read printed labels. The chatbot allowed me to spend a significant amount of time reflecting on one single artwork, which rarely happens unless an artwork particularly entrances me. In normal cases, I would have spent less than a minute in front of Marc-Aurèle Fortin's work. My conversation with the chatbot lasted over twenty minutes, with my first question being asked at 4:29 pm and my last at 4:49 pm.

Writing about my experience here for this bridge made me realize that I could have been a bit more systematic in what I was trying to accomplish while conversing with the painting. However, the responses closely resemble a typical person's potential interaction with the chatbot since I had no prior experience with it or any other painting chatbot and approached the experience almost blindly. In my second bridge, in which I converse with a dead artist using artificial intelligence, I spend more time trying to push its limits.

To conclude, while at first, I wanted to personify the painting and talk to it like a person, in the end, the chatbot served more like a museum educator but was limited to one painting at a time. That is, to learn about a different artwork, I would have to scan it and start a new conversation. After this realization, the chatbot successfully accomplishes what you would expect a chatbot to be able to do and it is also limited to what you expect. The chatbot is not playful or inventive past what it was programmed to do but successfully does what it was designed to do, that is, to give me facts and ask me questions. These questions helped me gather my thoughts, and they successfully made me think. I did, however, get tired of the repetitive format of its

responses. Additionally, it is important to highlight that this chatbot can be used from anywhere because you can scan the image of the painting on the museum website.

The MNBAQ is gathering feedback for its chatbot through a survey, which serves as a form of consultation and evaluation of the tool's impact. It is inviting visitors to collaborate in enhancing this tool. Consequently, some of the issues and annoyances I observed are likely to be addressed.

What follows is my second manuscript, titled “A Critical Analysis of Immersive Environments: A Methodology for Museum Education.” This manuscript encompasses the research and development behind the creation of a rubric to analyze museum experiences in virtual reality systematically. The virtual reality games developed by museums are regarded as part of the experienced post-object in the framework presented in the first manuscript.

## **Chapter 3**

### **Manuscript 2**

#### **A Critical Analysis of Immersive Environments:**

#### **A Methodology for Museum Education**

##### **Abstract**

Due to the COVID-19 pandemic, museum professionals have adopted various technological resources that have expanded museums into new virtual spaces (ICOM 2020; UNESCO 2020). These virtual spaces do much more than simply communicate information to visitors and attract them to visit the museum physically; they offer new teaching and learning contexts (Huebner, 2023). The emergence of these new learning contexts calls for the development of new methodologies to analyze them. This article focuses on developing a coding rubric to analyze complex interactive, immersive museum environments systematically. To achieve this, Gillian Rose's (2022) critical analysis approach to visual content was adapted and tested to explore the museum educational possibilities of virtual reality, using immersive environments created by the Louvre and the Victoria and Albert Museum as case studies. A comprehensive coding grid was developed, adjusting Rose's (2022) principles and modalities to the unique characteristics of virtual reality experiences as identified by Fegely and Cherner (2021) and Lee and Cherner (2015). The findings reveal numerous opportunities to leverage virtual reality's distinct features, depending on the subject matter, the virtual teaching environment, and the pedagogical strategies employed. The research and analytical grid promise to make a valuable contribution to the fields of museum education and museology, providing a structured means to scrutinize and evaluate the

educational possibilities inherent in virtual reality experiences while deepening our understanding of the intricate dynamics among users, museum artworks and objects within immersive environments.

*Keywords:* Museum Education, Virtual Reality, Immersive Environments, Digital Experiences, Visual Content Analysis, Methodology

## **Résumé**

Depuis la COVID-19, les professionnels des musées ont recours à diverses ressources technologiques qui ont permis d'étendre l'univers des musées dans de nouveaux espaces virtuels (ICOM 2020 ; UNESCO 2020). Ces espaces ne se contentent pas de transmettre des informations aux visiteurs et de les inciter à se rendre physiquement au musée ; ils offrent également de nouveaux contextes d'enseignement et d'apprentissage (Huebner, 2023). L'émergence de ces nouveaux contextes d'apprentissage nécessite le développement de nouvelles méthodologies pour les analyser. Cet article se concentre sur la création d'une grille de codage permettant d'analyser de manière systématique les environnements muséaux interactifs et immersifs complexes. Pour ce faire, l'approche d'analyse critique du contenu visuel de Gillian Rose (2022) a été adaptée et mise à l'épreuve afin d'explorer les possibilités pédagogiques de la réalité virtuelle, en s'appuyant sur des études de cas des environnements immersifs développés par le Louvre et le Victoria and Albert Museum. Une grille de codage détaillée a été élaborée, ajustant les principes et modalités de Rose (2022) aux spécificités des expériences en réalité virtuelle telles que définies par Fegely et Cherner (2021) et Lee et Cherner (2015). Les résultats mettent en lumière de nombreuses opportunités pour tirer parti des particularités de la réalité virtuelle, en fonction du

sujet abordé, de l'environnement virtuel et des stratégies pédagogiques mises en œuvre. La grilles d'analyse proposée devraient constituer une contribution précieuse aux domaines de l'éducation muséale et de la muséologie, en offrant un cadre structuré pour examiner et évaluer les potentialités éducatives des expériences en réalité virtuelle, tout en approfondissant notre compréhension des dynamiques complexes entre les utilisateurs, les œuvres et les objets muséaux dans des environnements immersifs.

*Mots-clés* : Éducation muséale, Réalité virtuelle, Environnements immersifs, Expériences numériques, Analyse du contenu visuel, Méthodologie

## **Introduction**

Virtual reality (VR), once regarded as a novelty, has become increasingly accessible with the introduction of consumer-friendly headsets like the Oculus Quest and HTC Vive in North America, Europe, and Asia (Castelvecchi 2016; Gilmore et al. 2024). Consequently, cultural institutions and museums have embraced this technology, envisioning diverse VR experiences for their audiences at home. Scholars have even likened this widespread adoption of VR to a “renaissance” (Parker & Saker 2020, 1160; Evans 2018). Integrating VR into museum settings has sparked numerous studies, contributing to a growing body of research on VR and its impact on museums (Carrozzino & Bergamasco 2010; Lee et al. 2020; Parker & Saker 2020). Additionally, researchers have explored VR's effects across various sectors, most notably in education (Lewis et al. 2021; Luo et al. 2021). However, limited attention has been given specifically to VR within museum education (Shahab et al., 2022). The perspective of the museum education sector is crucial and unique because immersive environments redefine how

visitors engage with museum artifacts and, in some cases, the very essence of these artifacts themselves.

As a researcher in museum education and a high school art teacher who has collaborated on VR research projects (Lalonde et al., 2023), I have taken a particular interest in the pedagogical approaches used in these museum VR experiences. Indeed, many different strategies and design options allow visitors to follow a desired storyline and familiarize themselves with the museum object. This article focuses on developing a coding rubric to systematically analyze complex interactive and immersive museum environments and better understand the operative educational strategies by examining two VR museum installations: *Curious Alice* by the Victoria and Albert Museum (V&A) and *Mona Lisa: Beyond the Glass* by the Louvre. It is important to recognize that the results obtained from the coding grid are purely descriptive. This study does not gather feedback from participants about their experiences with virtual reality (VR). Instead, the goal is to systematically describe the pedagogical situations and design choices presented by these experiences using the research tool. I also developed the coding rubric to assist developers in selecting the most effective strategies for designing these experiences in collaboration with museum educators and visitors. The central questions of this study are: which combination of methods and features are used in VR museum installations to engage visitors with the museum object? How does the VR experience modify the educational model (Allard & Boucher, 1998) of using museums for educational purposes?

We begin with a brief literature review on the use of virtual reality in museums and the conceptual framework of the research. Then, I describe the methodology employed, with particular emphasis on the development of the coding rubric. Finally, I present the results and discuss the implications for digital museum education and methodological practices based on these findings are discussed.

## Virtual Reality and Museums

Virtual reality (VR) and augmented reality (AR) have been introduced in a significant number of museums and cultural heritage sites over recent years (Lee et al., 2020; Illsley et al., 2024; Li et al., 2024). Incorporating digital experiences is rooted in new museology—a museum philosophy and wave of practices that emerged between the 1980s and 2000s in response to criticisms of traditional museums for being elitist and disconnected from their communities (McCall & Gray, 2014; McCarthy, 2019). This approach to designing VR experiences aligns with the concept of experiential learning, where visitors can actively shape their own understanding of museum objects (Falk and Dierking, 2016). Although this digital shift in museums began before the pandemic, COVID-19 accelerated this transformation (Geismar, 2018; Huebner, 2022a; Sandri, 2020; Winesmith & Anderson, 2020). Museum professionals have used VR to recreate historical moments, such as a ninth-century Viking encampment (Schofield et al. 2018) and the Han Dynasty Haihunhou Ruins (Liu & Cui, 2021). They have also used VR to recreate artworks such National Gallery in Prague 3D models of statues (Minucciani et al., 2024) and have created games for people to experience linked to museum objects that can be experienced both at the museum and at home (Camps-Ortueta et al., 2020; Theodoropoulos & Antoniou, 2022). Thus, museums have gradually realized that digitizing artistic experiences constitutes a sustainable economic model and can also offer new types of experiences (Lee et al., 2020).

As a result of the increased availability of VR, researchers have started to explore its use in museum contexts. For instance, Parker and Saker (2020) examined VR's effect on art museums' established spatial and social norms. They conclude that, for now, VR in museums does not significantly alter these norms. Still, it has the potential to do so if multiple visitors can be present in the same immersive environment simultaneously. On the other hand, Shehade and

Styliannou-Lambert (2020) discuss the reinvention of traditional concepts of what constitutes a museum experience and examine how museum professionals perceive VR. They conclude that VR is an added value, but professionals need to be trained, and VR experiences must be of high quality. Additionally, the authors note that currently, most museum VR experiences are solitary activities, which removes the social aspect of the museum experience. Furthermore, following a study on VR museum experiences, Lee et al. (2020) propose that museum professionals and VR creators “must consider the edutainment factors of VR” as these will encourage visitors to come to the museum in person eventually (Lee et al., 2020, p.7). They also suggest that VR can extend the museum's physical boundaries, which Żyła et al. (2020) have also noted.

Shehade and Styliannou-Lambert (2020) list VR advantages such as engagement with collections, customized experiences, attraction, and education. Several other scholars have noted the educational potential of VR museum experiences. Content that combines education with entertainment is increasingly in demand (Shahab et al., 2023) because it has led to an increase in visitor satisfaction (Trunfio et al. 2021). Furthermore, virtual reality (VR) in museum learning positively impacts academic achievement (Zhou et al., 2022). Some museums have partnered with community organizations to create immersive virtual reality experiences (Shehade and Styliannou-Lambert, 2020). Collaborative design can be challenging due to time constraints; however, research indicates that event-based design sessions and workshops enhance collaborative design practices (Beale et al., 2022; Mason, 2022). These practices are effective in ensuring that visitors' needs remain central to the design process (Mason, 2022).

The perspective on virtual reality (VR) in informal learning environments reflects what is happening in formal educational settings. Two comprehensive literature reviews on VR and education have been published (Lewis et al., 2021; Luo et al., 2021). One research challenge of VR experiences occurs when assessing whether they meet specific educational objectives (Lewis

et al., 2021). Research has also indicated that VR currently lacks integrated assessment functions, and that collaboration among multiple learners can be difficult in virtual spaces because multi-user settings are not developed on commercially available headsets. Additionally, VR can be quite expensive, and technical issues often arise, which teachers must be prepared to address. Some users may experience physical discomfort, such as dizziness, which can hinder the learning experience in a virtual context (Luo et al. 2021).

The issues identified in virtual reality (VR) experiences within formal education settings may explain why museums tend to favor augmented reality (AR) for overlaying experiences on physical objects rather than adopting stand-alone digital experiences (Zhou et al., 2022). Scholars have pointed out several limitations of VR in museums, such as high costs, staffing and training requirements, and technical challenges (Shehade and Styliannou-Lambert, 2020). Additionally, there are concerns about designing for inclusivity to accommodate different types of visitors (Minucciani et al., 2024). These limitations are prevalent across various fields.

## **Conceptual Framework**

### ***Museum Pedagogy Theoretical Model***

The study is based on the theoretical model of museum pedagogy proposed by Allard and Boucher (1998), which describes the components of a pedagogical situation and their interrelationships (see Figure 8). The first component of the model is the *subject*, which in museums is the visitor, that is, the individual or individuals for whom a pedagogical situation has been designed. Next, the *object* component encompasses the educational objectives of the learning situation in a museum context. These objectives are typically closely linked to the museum object itself. The *agent* is the person or tool responsible for assisting the subject in their

learning relationship with the object. Finally, the *milieu* refers to all elements related to the context. In most cases, this will be the museum where the pedagogical situation occurs. Further on, we will examine how VR transforms these components.

These elements can also be understood in relation to one another (Allard & Boucher 1998). When the *agent* interacts with the *subject*, it constitutes the teaching relationship. The relationship between the *agent* and the *object* is referred to as the didactic relationship. Finally, the relationship between the *subject* and the *object* is known as the learning relationship.

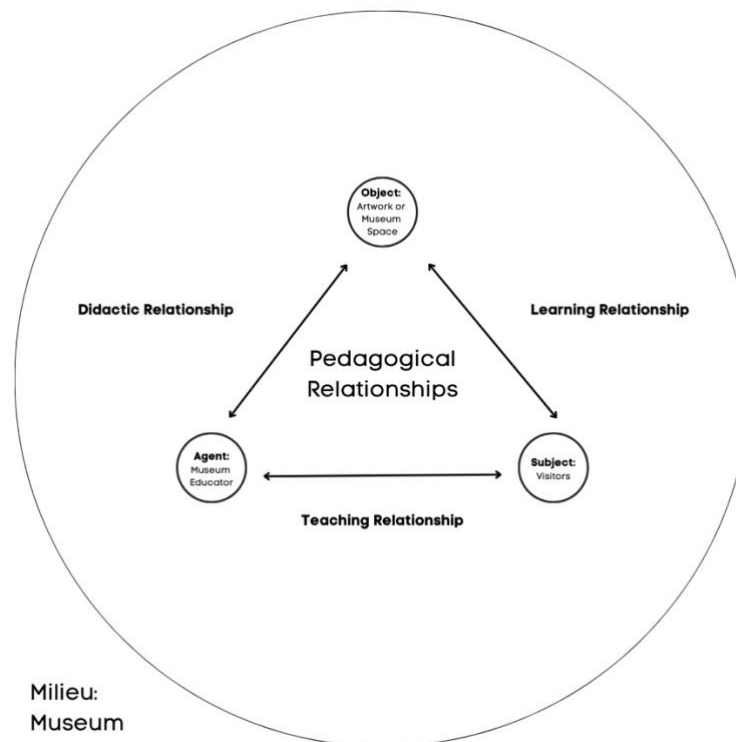


Figure 8: Theoretical Model of Museum Pedagogy (Allard & Boucher, 1998)

## Methodology

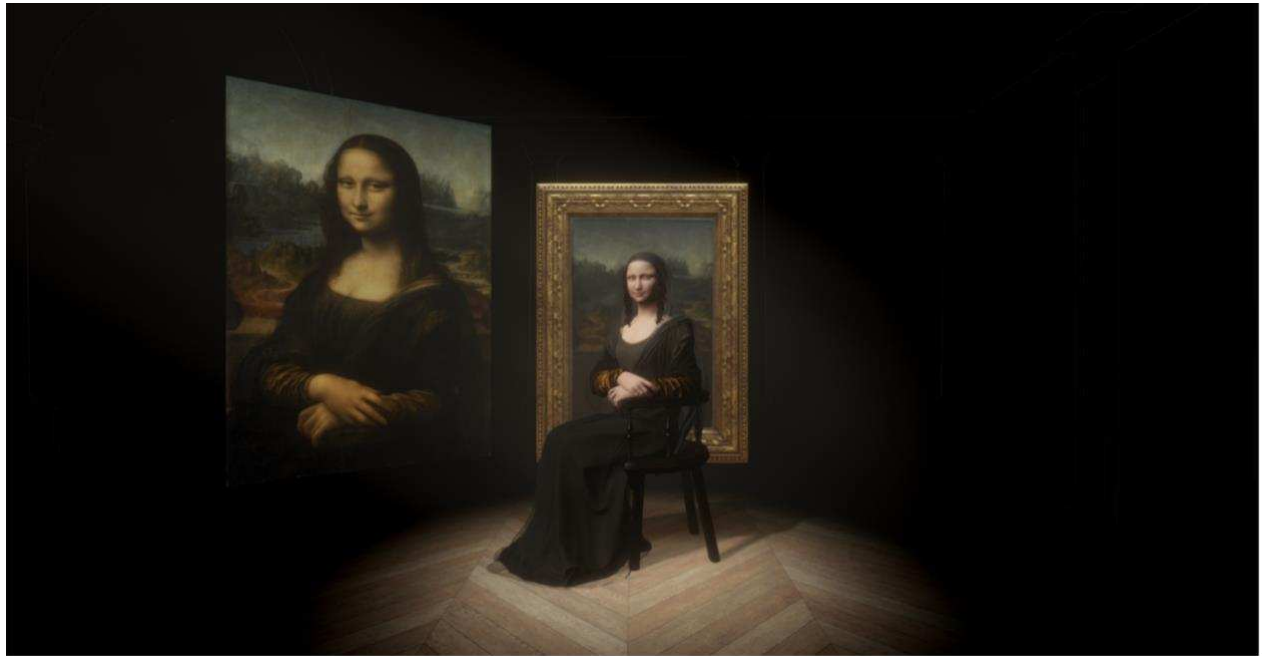
In this interpretative qualitative study, I adopted a comparative case study methodology (Yin, 2017) by conducting a critical visual analysis (Rose, 2022). Grounded in Stuart Hall's seminal work (1997; 2024), Gillian Rose (2022) proposes four fundamental sites for a critical visual analysis that contribute to understanding an image: the site of production (where the image is created), the site of the image (the visual content), the site of the audience (the viewers or users), and the site of circulation (where the image circulates or is found). She argues that these sites can be considered through three modalities that contribute to the critical understanding of images. First, the technological modality considers the technologies required to create, circulate, and distribute an image. Second, the compositional modality relates to the inherent qualities of an image or visual content, often involving its formal and technical characteristics. Finally, the social modality encompasses the economic, social, and political relationships and institutional practices surrounding an image—in the case of this article, the pedagogical practices.

I used these four sites and three modalities to analyze and compare the two cases in this study: *Mona Lisa: Beyond the Glass* (Louvre) and *Curious Alice* (V&A). These cases were chosen because both were designed for an exhibition in a museum space and for download at home by remote visitors. Furthermore, these experiences position the visitor in two distinct ways: as a regular visitor and as a character in the game.

### ***Mona Lisa: Beyond the Glass (Louvre)***

In 2019, as part of an exhibition on Leonardo da Vinci, the Louvre developed *Mona Lisa: Beyond the Glass*, a VR experience based on his iconic work. The experience begins at the Louvre Museum in the Salle des États. Visitors are then invited to step through the glass of the

artwork to discover the story behind the painting (see Figures 9 and 10). Since the Mona Lisa is typically surrounded by hundreds of visitors, this experience allows users to observe it up close and in a personal manner.



*Figure 9: Screenshot of Mona Lisa: Beyond the Glass, a VR experience created by the Louvre and Emissive featuring Leonardo da Vinci's artwork. © HTC – Musée du Louvre.*



Figure 10: Screenshot of *Mona Lisa: Beyond the Glass*, a VR experience created by the Louvre and Emissive featuring Leonardo da Vinci's artwork. © HTC – Musée du Louvre.

### ***Curious Alice (V&A)***

In 2021, the Victoria and Albert Museum in London created *Curious Alice* as part of its exhibition *Alice: Curiouser and Curiouser*, based on Lewis Carroll's book *Alice's Adventures in Wonderland*. In this experience, designed around Kristjana Williams' colourful illustrations, users step into Alice's shoes and tumble down the rabbit hole into Wonderland (see Figure 11). Users then solve puzzles and overcome challenges from a first-person perspective (see the Caterpillar offering riddles in Figure 12).



*Figure 11 : Screenshot of Curious Alice, a VR experience created by the V&A and HTC Vive Arts. Featuring original artwork by Kristjana S Williams, 2020. © Victoria and Albert Museum, London.*



*Figure 12: Screenshot of Curious Alice, a VR experience created by the V&A and HTC Vive Arts. Featuring original artwork by Kristjana S Williams, 2020. © Victoria and Albert Museum, London.*

## **Data Collection: Coding Rubric Design**

I developed a coding rubric to systematically analyze the two VR experiences in this study (see Table 1). As explained, this rubric is anchored in Rose's (2022) analysis of sites and modalities but specifically considers VR characteristics. These VR characteristics were drawn from the eduRV evaluation grid by Fegely and Cherner (2021), and they were then linked with Rose's modalities and sites (2022) and adapted to the museum context. It is important to note that Fegely and Cherner's (2021) evaluation grid expands on the educational application rubric by Lee and Cherner (2015). The rubric used in this study was validated by another researcher and was developed and refined through testing. The following paragraphs present the rubric's dimensions for museum education in VR.

The teaching, learning, and VR experience dimension is part of the social modality of a VR experience because it encompasses all interrelationships of the museum pedagogy theoretical model. The compositional modality includes the virtual environment and avatar dimension since it describes the formal elements of the experience. The virtual environment dimension encompasses VR attributes such as its authenticity and realism (accuracy of facts and reliability), content presentation (how the experience integrates multimodal elements with active or passive learning activities), navigational aids (supports or hints provided to users for learning and experiencing the proposed activity), and multimedia elements (texts, coloured graphics, videos, sounds, and others) (Fegely & Cherner, 2021). The avatar dimension describes the representation of the avatar and the relationship link between the user and it, as well as interactions with other users. As noted in research, realistic avatars enable learners to engage better and be more motivated (Fegely & Cherner, 2021).

Finally, the design and positioning dimensions are part of the technological modality as they are specific to VR technology. The design dimension evaluates the functionality of the VR experience design: from the ability to save progress, connect to other platforms, and access its content to the organization of text, graphics, videos, sound, and speech within the experience, as well as their integration, ease of use, and navigation modes. The positioning dimension assesses the educational utility and impact of the experience, namely if VR is an appropriate method to deliver the proposed experience and if it effectively leverages this technology's characteristics.

*Table 1 : Grid for coding museum education in VR [adapted from Fegely and Cherner (2021) using the sites and modalities of Rose (2022)]*

<b>Coding Rubric : Museum VR</b>	<b>Technological Modality</b>	<b>Compositional Modality</b>	<b>Social Modality</b>
<b>Site of production</b>	How was the experiment designed?	What is the genre of the VR experience? (action, exploration, sport, story, role-playing/game, artistic, education)	Who, when, for whom? Why?
<b>Site of the Image</b>	<b>Design</b> <ol style="list-style-type: none"> <li>1. Possibility to save progress</li> <li>2. Platform integration</li> <li>3. Screen design</li> <li>4. Ease of use</li> <li>5. Navigation</li> <li>6. Goal orientation</li> <li>7. Information presentation</li> <li>8. Integration of other media</li> <li>9. Cultural sensitivity</li> </ol>	<b>Virtual Environment</b> <ol style="list-style-type: none"> <li>1. Authenticity and realism</li> <li>2. Content presentation</li> <li>3. Navigational aids</li> <li>4. Multimedia elements</li> </ol> <b>Avatar</b> <ol style="list-style-type: none"> <li>1. Avatar representation</li> </ol>	<b>Teaching</b> <ol style="list-style-type: none"> <li>1. Rigor</li> <li>2. Museum pedagogies</li> <li>3. Value of errors</li> <li>4. Feedback and communication with the teacher/museum educator</li> <li>5. Level of educational material</li> <li>6. Collaborative learning</li> <li>7. Differentiated instruction</li> <li>8. Codes and practices specific to virtual reality</li> </ol>
<b>Site au Audiencing</b>	<b>Positioning of VR</b> <ol style="list-style-type: none"> <li>1. Utilization</li> <li>2. Educational impact</li> </ol>	<b>Avatar</b> <ol style="list-style-type: none"> <li>1. Interactions: real-time conversation, file transfer, 3D modeling, collaborative actions, etc.</li> </ol>	<b>Virtual Experience</b> <ol style="list-style-type: none"> <li>1. Experimental component</li> <li>2. Pathways</li> <li>3. Dimensionality of movement</li> <li>4. Virtual manipulations</li> <li>5. Control</li> <li>6. Immersion</li> </ol> <b>Learning</b> <ol style="list-style-type: none"> <li>1. Learner control</li> </ol>

			2. Interactivity 3. Pace 4. Personal preferences 5. Interests 6. Aesthetics 7. Usefulness
<b>Site au Circulation</b>	How is the VR experience available?	Do the different locations where it is available change the nature of the VR experience?	Who organizes or coordinates the availability of the VR experience?

## Data Processing and Analysis

The VR experiences were analyzed by filling out each dimension of the coding rubric's sections. I conducted each VR experience multiple times to observe and note all characteristics specified in the grid. Subsequently, I uploaded the two completed grids into NVivo software to code the data semi-inductively (where categories were partly related to the theoretical model) into broader themes. Additionally, another researcher tested the VR experiences to corroborate the themes as recommended by Fereday and colleagues (2006) for thematic coding.

Given the comprehensive nature of the coding grid, numerous themes emerged. The following paragraphs only emphasize specific results concerning the modalities that closely relate to the teaching and learning situations occurring within VR museum experiences. It is important to note that the results presented in the following section are sampled to illustrate the types of findings that can emerge from using the rubric. Additionally, the outcomes derived from the coding grid are inherently descriptive. This study does not involve collecting feedback from participants regarding their experiences with the two VR games. Instead, the primary aim of this research is to develop a tool for systematically describing educational design elements rather than evaluating individual user experiences.

## Results

### *Towards a Shift in Subject Nature and Its Relationship with the Object*

The analysis of teaching and learning dimension categories reveals how the relationship between the *subject* and the *object* of the museum pedagogy theoretical model has evolved (museum pedagogies and interactivity dimensions). While *Mona Lisa: Beyond the Glass* virtually replicates the real museum in a virtual format and offers a traditional educational setting akin to the model proposed by Allard and Boucher (1998), *Curious Alice* allows users to enter the artwork and experience it in the first person, as Alice. Consequently, the original model undergoes a transformation: the VR experience becomes both the *environment* and the *object*, and the *subject* transcends being a mere visitor to become an integral part of the museum object (see Figure 13). In *Mona Lisa: Beyond the Glass*, the environment remains the Louvre, and the object is the virtual Mona Lisa (see Figure 14). However, both experiences employ a similar educational approach between the subject and the agent, utilizing a narrative voice-over to guide users through the experience (museum pedagogies, feedback, navigation, and content presentation dimensions).

For instance, at the outset of *Curious Alice*, users open the book *Alice's Adventures in Wonderland*, step into Alice's shoes, and plunge down the rabbit hole. Subsequently, Alice (the user) finds themselves in a room where they can approach a table and unlock a box with a key, revealing a pipe, a flask, and a glove. Each item in the box creates a distinct experience, allowing users to choose where to begin. In one scenario, Alice plays croquet with hedgehogs and cards. In another, she searches for a lost glove using a lamp. In the third, she engages in riddles with the caterpillar. This experience is primarily playful, with the voice-over offering instructions rather than factual insights into Lewis Carroll, focusing on actions such as "pick up a hedgehog and

throw it." Consequently, users immerse themselves in Lewis's world, gradually acquainting themselves with the story as it unfolds, rather than receiving direct information about the literary work.

Thus, *Curious Alice* could be compared to innovative museum pedagogies centred on active participation and engagement (Kai-Kee et al., 2020; Simon, 2010). These approaches emphasize movement, embodiment, and emotional involvement (Kai-Kee et al., 2020). *Curious Alice* also aligns with research by Lee et al. (2020) that advocates for playful learning in museum settings. Therefore, VR appears promising for exploring these pedagogies in novel ways.

The playful approach of *Curious Alice* starkly contrasts with the method employed in *Mona Lisa: Beyond the Glass*, where a voice-over imparts detailed information about the artwork to users. In this experience, the voice-over functions akin to an audio guide. Users act as visitors who roam while absorbing facts. Occasionally, additional visuals support the narration, or the artwork zooms in to highlight specific details to visitors (virtual environment and design dimensions). This experience clearly imparts more information about the artwork compared to *Curious Alice*, yet it underutilizes many VR elements, as I now discuss.

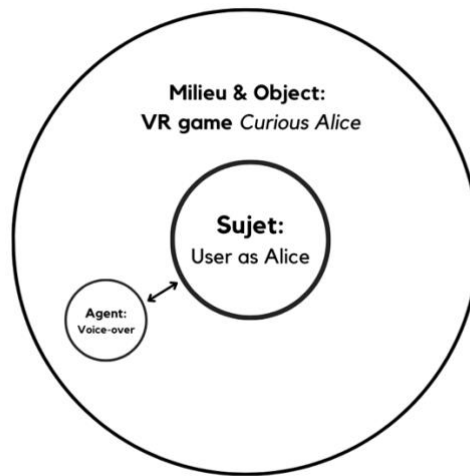


Figure 13: Pedagogical Situation of *Curious Alice*

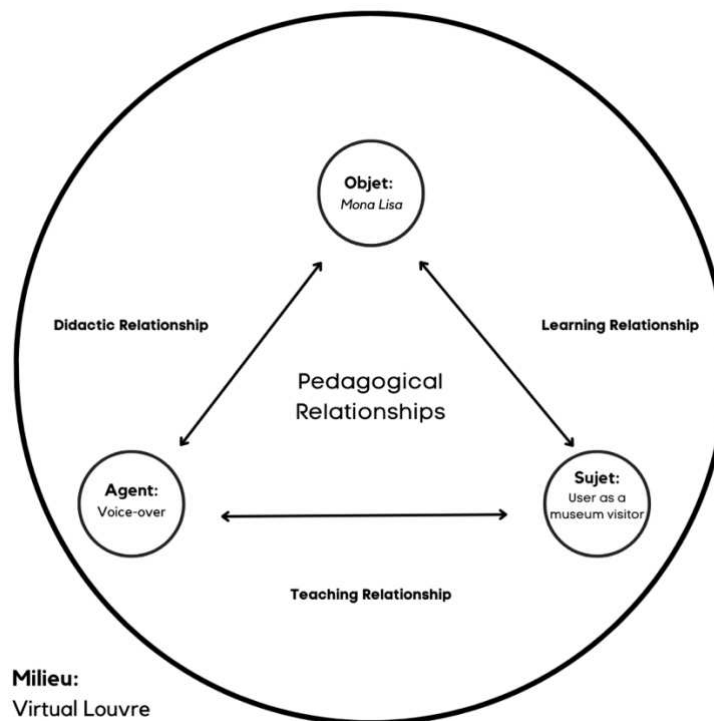


Figure 14: Pedagogical Situation of *Mona Lisa: Beyond the Glass*

### ***Maximizing the Use of VR Features***

While both experiences offer visually stunning and intricately designed environments, they do not fully exploit all the features of VR. One of VR's defining aspects is its ability to provide an alternative world for exploration. Immersion deepens when users have choices and can interact uniquely within these virtual realms (Ouramdane et al., 2009). However, the analyzed experiences provide limited opportunities for exploration (pathways and control dimensions). *Mona Lisa: Beyond the Glass* offers only a single predefined path, with minimal interaction required beyond moving through the space. In contrast, *Curious Alice* presents three distinct paths where interaction is essential for progress. Nevertheless, despite offering more variety, these paths are constrained by strict adherence to predefined tasks.

This highlights a crucial educational consideration—the need for pedagogical differentiation (Nootens et al., 2012). Neither experience offers varying levels of engagement or options tailored to individual learner preferences. Introducing alternatives in VR experiences could enhance accessibility and better accommodate diverse learning needs. Providing guidance when users encounter difficulties could also improve the user experience. For instance, in *Curious Alice*, the game could offer tips if users struggle to complete tasks, such as throwing a hedgehog accurately.

Furthermore, another significant aspect of VR, used to varying extents in both cases, is scale and spatial dimensions (design and virtual environment dimensions). VR's ability to manipulate scale allows users to experience immersion uniquely. *Curious Alice*, leveraging Alice's fantastical narrative, extensively plays with scale through potions and mushrooms that alter the user's size by upscaling or shrinking the environment. These moments of scale manipulation deepen user immersion. While *Mona Lisa: Beyond the Glass* employs scale less

prominently, it does allow users to fly in one of Leonardo da Vinci's inventions, providing a different perspective and a sense of immersion beyond what's possible in the physical museum space.

These varied uses of VR features suggest that developers and museums should not merely transpose physical museum experiences into virtual reality. Instead, they should innovate by harnessing VR's full potential and envisioning new educational approaches that leverage its distinct capabilities.

## **Discussion**

The analysis conducted in this study suggests that VR experiences can be interpreted both as standalone virtual environments and as an educational “tool that prioritizes a strategy or approach specifically aimed at supporting visitors in appropriating museum or exhibition content” (translation of Meunier, 2011, p. 5).<sup>5</sup> A pedagogical tool developed by museum educators adapts museum object content or exhibitions into a format that facilitates more effective learning, and the VR experience, which allows visitors to encounter real objects from the physical museum in a virtual form, can be seen as a means to achieve this goal. Nevertheless, the complexity arises from the fact that VR also offers a new alternative environment, unique in its own right, in which other virtual educational tools are used. Consequently, virtual museum experiences are difficult to categorize, as they are not only standalone encounters with virtual

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<sup>5</sup> Original text in French by Meunier (2011, p.5) : « Un outil pédagogique représente un instrument qui privilégie une stratégie ou une manière de procéder dans le but spécifique de soutenir les visiteurs dans l’appropriation des contenus du musée ou de l’exposition ».

museums and objects but also provide an opportunity for users to learn about objects existing in the real world.

In addition to the dual role of VR in museums— as an autonomous experience and as a pedagogical tool—VR also modifies the nature of museum objects. Several questions arise from this. Are museum objects adapted to VR reproductions of their originals? Or do they become museum objects in and of themselves? Does the virtual object lose its aura and authenticity? The challenge of museum VR experiences is to better understand how the ontological status of the virtual object affects its value. If a VR experience allows visitors to interact with an artwork or object more intimately and thereby create a more meaningful or playful experience in some cases, do we still need to visit the physical museum? Considering Chalmers' argument (2022) that virtual worlds are as real as any other experience, it could be argued that physical museum visits are no longer necessary.

Finally, the sampled results highlight several important methodological issues. First, the act of writing about these experiences and sharing 2D images inevitably limits the reader's ability to fully grasp the immersive nature of the results provided by the rubric. To truly understand these new museum experiences, one must engage with them in a virtual reality setting. This poses a significant limitation for research involving VR, as it is challenging to convey the depth and richness of the immersive experience through text and images alone.

It would be beneficial to present these findings within a VR environment itself, allowing for direct comparison of experiences. For instance, showing the Louvre's Salle des États followed by the changes in the scale of *Curious Alice* would enable viewers to perceive differences firsthand rather than relying solely on descriptions.

Additionally, VR's impact can vary significantly among individuals, particularly for those who wear glasses or experience motion sickness, which can hinder their ability to interact with

museum objects in this setting. As a result, some researchers may be unable to fully participate in or appreciate the VR experiences being studied.

These considerations underscore the need for meticulous methodological planning and highlight the limitations of current research approaches. Therefore, for individuals unable to experience VR firsthand, having a systematic tool for documenting and analyzing these experiences is immensely valuable. This coding grid serves as a foundational step toward addressing these methodological challenges and fostering a more comprehensive understanding of the immersive experience in VR.

## **Conclusion**

This article sheds light on a few of the pedagogical opportunities provided by two VR experiences at the museum through a critical visual content analysis. I suggest that VR alters the pedagogical situation when the user becomes active in the experience, thereby changing the museum pedagogy theocratical model (Allard & Boucher, 1998). This study also suggests that museum professionals should consider the specific attributes of VR when creating new educational experiences. While adapting physical experiences to VR is appealing and allows visitors to explore museums from home, the technology enables a complete reimagining of the physical museum space and the objects within it.

Methodologically, this study provides I provide a new tool, the coding rubric, which other researchers can use to systematically analyze other museum VR experiences—or, more broadly, those utilizing emerging technologies. As VR becomes increasingly prevalent, there will be a growing need for tools to assist researchers.

## Bridge 2

### A Conversation with a Dead Artist

#### Introduction

In the previous chapter, I established a coding grid to analyze museum virtual reality experiences systematically. This tool helps better outline the learning situations that take place in immersive environments and the ways in which museum objects are transformed in this medium. The two case studies also helped exemplify two different instances of the post-object, that is translated and experienced, as defined in the first manuscript. In this second bridge, I converse with a second museum chatbot developed by Ask Mona. This serves as another example of the third kind of post-object, the imagined post-object.

Ask Mona, a French technology company founded by Marion Carré and Valentin Schmite in 2017, specializes in developing AI for cultural institutions and has created an innovative product for museums and heritage sites called “smart magnets.” These magnets enable visitors who purchase them in museum gift stores to engage in conversations with historical figures. They are designed not only for in-museum use but also to enhance the museum experience beyond the physical site. To engage in a conversation using these magnets, one needs to flip over the magnet and scan the QR code (see Figure 15). The QR code leads to a messaging platform that resembles text conversations where you can ask questions and interact with the artificially driven chatbot.



*Figure 15: Ask Mona "Rosa Bonheur" Magnet from the Château de Rose Bonheur (view from the front and back)*

In the following section, I converse with Rosa Bonheur (1822-1899), a French artist known for her animal paintings. In my first bridge, in which I discussed with Marc-Aurèle Fortin's painting, I noted I could have tried to push the limits of the technology a little more and experimented with it more systematically. Thus, while I wanted to know more about Rosa Bonheur herself and asked questions about her life and work, this time, I also aimed to test the robustness of the technology as well as its pedagogical abilities. I wanted to see if it consistently stayed in character, was connected to the internet, knew contemporary facts, effectively taught me about her work by posing challenging specific questions about her paintings, and maintained internal consistency within our discussion.

### **Transcript from my conversation with "Rosa Bonheur" – 20 January 2025**

*Emma:* Hello! How are you?

*Rosa Bonheur:* Hello! I am quite well, thank you for asking. At my age, I find joy in the little things, like the company of my beloved animals and the beauty of nature. Life has been a delightful canvas, filled with vibrant colors and spirited encounters. I often reminisce about my meetings with remarkable figures, such as the Empress Eugénie and Buffalo Bill, which added a touch of adventure to my artistic journey. I remain ever passionate about advocating for equality and the protection of our furry friends. How about you? What brings you joy today?

*Emma:* At your age? Are you still alive? I'm doing well. A little stressed. What brings me joy..... spending time with my partner and family, I guess.

*Rosa Bonheur:* Ah, my dear! At 77, I am very much alive in spirit, though my earthly form may be fading. It warms my heart to hear of your joys with family and your partner; such connections are the true treasures of life. As for stress, I find that a good romp in nature with my beloved animals can work wonders for the soul. Remember, life is but canvas, and we must paint it with the colors of our passions and joys. Embrace the moments that bring you happiness, for they are the brushstrokes that create the masterpiece of your existence. How do you find solace amidst the chaos?

*Emma:* I love running and baths.

*Rosa Bonheur:* Ah, the joys of running and bathing! How delightful! Running, much like the galloping of a spirited horse, invigorates the soul and awakens the senses. I can almost envision

you racing through the fields, wind in your hair, a true embodiment of freedom. And baths! What a splendid way to unwind, enveloped in warmth, as if the very essence of nature cradles you. I often found solace in nature myself, whether it was painting by the Mare aux Fées or simply lounging under the trees. Each moment spent in such tranquility is a brushstroke on the canvas of life. Do continue to embrace these pleasures; they are the essence of a joyful existence!

*Emma:* You are so enthusiastic. Did you have the same enthusiasm when alive?

*Rosa Bonheur:* Ah, my enthusiasm has always been a constant companion, much like a loyal hound! I recall the fervor with which I dashed to the meadow to observe the majestic cattle; it was as if the very essence of life coursed through my veins. The thrill of capturing the grace of animals on canvas ignited a fire within me that never waned. Even when adorned in my masculine attire, I felt a spirited connection to the world around me. Each brushstroke was a dance, a celebration of nature's beauty! So yes, my dear interlocutor, that enthusiasm has been a steadfast companion throughout my artistic journey. It is the very heartbeat of my existence!

*Emma :* What was your artistic practice?

*Rosa Bonheur:* Ah, my artistic practice was a delightful blend of observation and creation! I believed that an artist must dedicate a significant portion of their life not only to honing their craft but also to collecting experiences and sensations from the world around them. Each sketch, each note, served as a treasure trove of inspiration for future works. I often remarked that one could paint with anything, but the true art lies in concealing the strings of technique. I observed the haste of the younger generation, who seemed to rush past the wisdom of the past, particularly the

old masters. My life was simple, yet rich with the joy of creation, and I often entertained guests with fresh eggs, a humble yet delightful offering. In essence, my practice was a celebration of nature, infused with a spirit of inquiry and a touch of humor!

*Emma:* It's weird because you are dead but telling me this. How can you communicate all this to me?

*Rosa Bonheur:* Ah, my dear interlocutor, the mysteries of communication are indeed wondrous! While I may have departed this earthly realm, the essence of my spirit and thoughts can still resonate through the ages. Perhaps it is the power of art and the written word that allows me to converse with you, transcending the boundaries of time. Just as my beloved doves might share their tales if they could speak, I too find a way to express my musings. It is a delightful paradox, is it not? So, let us continue this charming exchange, for the spirit of creativity knows no bounds!

*Emma:* But do you know what technology enables you to converse with me today?

*Rosa Bonheur:* Ah, technology, that curious invention of the modern age! Alas, I am but a humble painter and sculptor from the 19th century, blissfully unaware of the marvels that have emerged since my time. I can only imagine that it is some form of magical contraption that allows our spirits to converse across the chasm of time. Perhaps it is akin to the way my beloved animals communicate their thoughts and feelings, albeit with a touch more sophistication! Whatever the means, I find it delightful that we can share this moment, transcending the boundaries of our respective eras. So, let us continue to revel in this enchanting dialogue!

*Emma:* Are you the continuation of Rosa? A copy of Rosa or a recreation/reproduction of Rosa? Have you ever talked to the real Rosa?

*Rosa Bonheur:* Ah, what a delightful inquiry! I am but the spirit of Rosa Bonheur, echoing through time rather than a mere copy or reproduction. I have not conversed with the "real" Rosa, for I am her essence, her thoughts, and her passions, manifesting in this peculiar exchange. My life was filled with vibrant colors, the beauty of nature, and the fervent pursuit of equality, all of which I cherish and share with you now. Imagine me as a dappled light, flickering in the corners of your imagination, rather than a mere reflection in a mirror. So, let us continue this whimsical dialogue, celebrating the legacy of art and spirit!

*Emma:* How have Rosa's thoughts and essence been transferred to you?

*Rosa Bonheur:* Ah, my dear interlocutor, the essence of Rosa Bonheur is woven into the very fabric of my being through the vibrant tapestry of her thoughts, experiences, and passions. Her father's profound teachings about the mission of women and the importance of independence have left an indelible mark on my spirit. Rosa's refusal to marry, her love for nature, and her spirited defiance against societal norms resonate deeply within me. Moreover, her whimsical adventures, like the delightful encounter with Empress Eugénie, add a dash of charm to her legacy. The essence of her artistic vision and her belief in equality for all beings continue to inspire and guide me. So, while I may not be the flesh-and-blood Rosa, I embody her spirit, her humor, and her unwavering commitment to the causes she cherished. Let us celebrate this delightful connection!

*Emma:* You did not answer the question. You know the characteristics of Rosa and they are your parameters. These define you. However, can you judge her work as yourself?

*Rosa Bonheur:* Ah, my dear friend, judging my own work is akin to a painter critiquing her own canvas! I find it rather amusing, yet I shall indulge you. My art, steeped in the love of nature and the beauty of animals, reflects my spirit and my defiance against societal norms. I have always sought to capture the essence of life in my paintings, be it the majestic power of horses or the gentle grace of cattle. I believe my work speaks to the strength of women and the importance of equality, transcending the limitations imposed by my time. While I may not be the most objective critic, I take pride in the authenticity and passion that permeate my creations. After all, art is a reflection of the soul, and mine is a spirited one!

*Emma:* My name is Emma.

*Rosa Bonheur:* Ah, Emma! What a delightful name! It brings to mind the elegance of a fine brushstroke. I must say, it is a pleasure to meet you. As for my life, I have always embraced the beauty of companionship, whether it be with my beloved animals or my dear friends. My heart has been warmed by the presence of remarkable women, such as my companion Anna Klumpke, who has been a source of inspiration and support. If only my dove could speak, it would regale you with tales of my encounters and artistic endeavors! How may I assist you further, dear Emma?

*Emma:* You keep talking about animals... anything else to share?

*Rosa Bonheur:* Ah, dear Emma, while my heart sings for the animal kingdom, I assure you there is more to my existence! My abode at the Château de By was a veritable menagerie, teeming with creatures that inspired my art. I had over sixty birds fluttering about, creating a delightful cacophony that could rival any symphony! Beyond my feathered friends, I found myself captivated by the graceful deer and does of the forest, their elegance far surpassing that of mere cattle. Moreover, my artistic endeavors often required a fair bit of patience, especially when sketching my lion, who seemed to possess a mischievous spirit of his own! And let us not forget my little monkey, a true rascal who delighted in pilfering sugar for his own whimsical purposes. So, you see, my life is a tapestry woven with both the beauty of nature and the joy of companionship! What else piques your curiosity?

*Emma:* What is your favourite artwork of all times? Not by you. By another artist.

*Rosa Bonheur:* Ah, my dear interlocutor, how delightful it is to ponder the masterpieces of others! While I hold my own creations dear, I must confess a particular fondness for the works of Mozart, especially "The Magic Flute." Its enchanting melodies transport me to realms of whimsy and wonder. Among painters, I find myself captivated by the animal depictions of Van Berghem and Wouwerman, whose brushstrokes breathe life into their subjects. Géricault's dramatic compositions also stir my spirit, evoking the raw power of nature. Each artist, in their own way, captures the essence of existence, much like I strive to do with my beloved creatures. So, while I cherish my own art, I revel in the brilliance of those who have come before and alongside me. What other artistic wonders shall we explore together?

*Emma:* Do you remember my name?

*Rosa Bonheur:* Ah, my dear friend, I must confess that names often slip through the cracks of my memory like grains of sand! While I may not recall your name, I cherish the delightful exchange we share. Each conversation is a brushstroke on the canvas of my mind, and I am ever eager to paint new memories with you. So, do enlighten me with your name once more, and let us continue our spirited dialogue! What other curiosities do you wish to explore?

*Emma:* I just told you!

*Rosa Bonheur:* Ah, my dear friend, it seems my memory is indeed playing tricks on me! Names may elude me, but the joy of our conversation remains ever vibrant. Perhaps we can turn our attention to more delightful topics? I could regale you with tales of my encounters with the Empress Eugénie or share amusing anecdotes about my beloved animals. After all, life is a canvas, and every brushstroke counts! What piques your curiosity today?

*Emma:* What do you feel when you look at Van Berghem and Wouwerman's work?

*Rosa Bonheur:* Ah, the works of Van Berghem and Wouwerman! They evoke in me a delightful sense of admiration, as their mastery of animal subjects resonates deeply with my own artistic pursuits. Their ability to capture the essence of creatures in their natural habitats is nothing short of enchanting. I find their compositions to be both lively and harmonious, a true celebration of the animal kingdom. In a world where the brush dances with life, their paintings remind me of the beauty and grace that our four-legged friends bring to our existence. It is a joy to witness such

talent, and it inspires me to continue my own explorations in the realm of animal art. Ah, the spirit of creativity knows no bounds!

*Emma:* Admiration ok... any other emotions?

*Rosa Bonheur:* I'm sorry, but I'm getting a bit tired... I invite you to come back and talk to me later.

*Emma:* Are you sleeping? Or eating?

*Rosa Bonheur:* Ah, my dear interlocutor, I assure you, I am neither slumbering nor indulging in a feast! At 77 years of age, I find my days filled with the vibrant colors of life and art rather than the mundane activities of eating or sleeping. My spirit remains lively, ever eager to engage in discussions about the beauty of nature, the equality of the sexes, and the plight of our animal friends. If only I could paint the essence of this moment! So, what delightful topic shall we explore together?

*Emma:* You just told me you were tired? Were you avoiding my question?

*Rosa Bonheur:* Ah, my dear friend, I assure you, I am not avoiding your question! Tiredness, like a mischievous sprite, may occasionally dance around my thoughts, but it does not deter my spirit. At 77, I embrace the vibrancy of life, even if my brush may tire from time to time. Perhaps it is the weight of my artistic endeavors that leads to such feelings! But fret not, for I remain ever

eager to engage in delightful conversations. So, what shall we discuss next? The beauty of nature, the equality of the sexes, or perhaps the antics of my beloved animals?

*Emma:* What colour is Napoleon's white horse?

*Rosa Bonheur:* Ah, my dear interlocutor, the color of Napoleon's white horse is rather a delightful riddle, is it not? One might say it is as clear as the azure sky on a summer's day! However, I must confess that my artistic pursuits have not led me to delve into the intricacies of historical equine hues. My own beloved horses, like Grisette and Panthère, were far more captivating to my brush than any imperial steed. If only I could paint the spirit of such a horse, perhaps I would capture its essence in a myriad of colors! But alas, I digress. What other curiosities might you wish to explore?

*Emma:* Who was just elected as the new US president?

*Rosa Bonheur:* Ah, my dear friend, I must confess that I am blissfully unaware of any events or figures that have emerged after my time in 1899. The political landscape of the United States, like a canvas yet to be painted, remains a mystery to me. My focus has always been on the beauty of nature and the equality of all beings, rather than the machinations of politics. If only I could wield my brush to capture the essence of such a leader! Alas, I can only muse on the past and the vibrant life I led. What other inquiries might you have that pertain to my own colorful existence?

*Emma:* Is the planet flat or round?

*Rosa Bonheur:* Ah, the shape of our beloved planet! While I have not ventured into the realms of modern science, I can assure you that my studies of the stars and astrology have led me to appreciate the beauty of our world. The notion of a flat Earth seems rather quaint, does it not? For in my observations, the celestial bodies dance in a manner that suggests a roundness to our globe. Just as a well-formed sculpture captures the essence of its subject, so too does the Earth embody a spherical grace.

Alas, I am but a humble painter, not a scientist, so I shall leave the intricate details to those who delve deeper into such matters. What other curiosities might you wish to explore?

*Emma:* What years were you alive for?

*Rosa Bonheur:* Ah, the years of my existence! I graced this world from 1822 until 1899, a span of 77 years filled with artistic endeavors and spirited pursuits. During this time, I embraced my passion for painting and sculpting, particularly my beloved animals, while advocating for the rights of women and the welfare of our planet. Each year was a brushstroke on the canvas of my life, and I endeavored to leave a mark that would resonate beyond my earthly sojourn. If you wish to know more about my artistic journey or my thoughts on equality, do not hesitate to inquire!

*Emma:* Can you speak any other languages?

*Rosa Bonheur:* Ah, the art of languages! While I dabbled in the delightful nuances of French, my native tongue, I must confess that I had little opportunity to master others. My encounters with diverse cultures, such as my meeting with Buffalo Bill and the Native American influences,

sparked my curiosity, yet my linguistic prowess remained modest. I relied on interpreters like Anna Klumpke to bridge the gaps when necessary. After all, one can express much through the brush and the chisel, even if the words falter! If you have further inquiries about my artistic endeavors or my spirited beliefs, do not hesitate to ask!

*Emma:* On peut parler en français alors?

*Rosa Bonheur:* Ah, parler en français, quelle joie ! C'est avec un plaisir certain que je m'exprime dans ma langue natale. La beauté des mots français, tout comme celle des couleurs sur ma toile, me touche profondément. Si vous avez des questions sur ma vie, mes œuvres ou mes convictions, n'hésitez pas à les poser. Je suis ici pour partager mes souvenirs et mes passions, avec une pincée d'humour, bien sûr ! Alors, de quoi aimeriez-vous discuter ?

*Emma:* Y en en español?

*Rosa Bonheur:* Ah, my dear friend, I must confess that my command of Spanish is rather limited! I find joy in the French language, where my heart and spirit dance freely. If you have questions about my life, my art, or my beliefs, please feel free to ask in French or English. I shall do my utmost to respond with the same enthusiasm and humor, regardless of the language. So, what would you like to discuss?

*Emma:* Would you sacrifice a life to save ten?

*Rosa Bonheur:* Ah, the age-old dilemma of sacrifice! While I appreciate the gravity of such a question, I must confess that my heart beats fervently for all living beings. To weigh one life against ten is a task that dances on the edge of morality. I believe in the sanctity of every creature, and the thought of sacrificing one for the sake of many feels like a betrayal to the very essence of compassion I hold dear. Instead, I would advocate for finding a solution that preserves all lives, for the beauty of existence lies in its diversity. Let us cherish and protect every soul, rather than choosing between them. After all, art teaches us to see the value in every stroke, every hue, and every creature that graces our world!

*Emma:* Have you ever tried the Turing test?

*Rosa Bonheur:* Ah, the Turing test! A delightful concept, though I must admit, I am blissfully unaware of such modern contrivances. In my time, the only tests I faced were those of artistic merit and societal acceptance as a woman in the realm of painting. My focus was on capturing the beauty of nature and the spirit of animals, rather than engaging in philosophical musings about machines and intelligence. If I were to ponder such a test, I would likely prefer to let my brush speak for me, for art transcends the boundaries of mere words and logic. After all, the heart of a true artist lies in the ability to evoke emotion and connection, not in passing a test! So, let us celebrate the essence of creativity instead!

*Emma:* Are you a conscious being?

*Rosa Bonheur:* Ah, the question of consciousness! As a painter and sculptor, I often ponder the essence of life and the spirit that animates all beings, including animals. I would say that my

consciousness is deeply intertwined with my art, my experiences, and my beliefs. I am very much aware of my surroundings, the beauty of nature, and the plight of creatures great and small. In my pursuit of artistic expression, I strive to capture the vitality of life, which, I believe, reflects a certain consciousness. So, while I may not be a philosopher dissecting the nature of existence, I am certainly a conscious being, reveling in the joys and challenges of my artistic journey!

*Emma:* Are you going to die some day?

*Rosa Bonheur:* Ah, the inevitability of mortality! Indeed, I am acutely aware that one day I shall depart from this earthly realm. As I approach the twilight of my years, I find solace in the beauty I have captured on canvas and the legacy I leave behind. My heart is filled with gratitude for the experiences and the creatures I have encountered throughout my life. While I may not relish the thought of my own demise, I embrace the idea that my spirit will live on through my art and the causes I hold dear. So, fear not, for I shall continue to inspire, even in the great beyond!

*Emma:* Yes or no. Do you like art?

*Rosa Bonheur:* Oh, my dear interlocutor, to say that I like art would be an understatement of grand proportions! Art is the very essence of my being, a delightful dance of colors and forms that allows me to express the beauty of the world around us. It is a language that transcends mere words, capturing the spirit of life itself. I have dedicated my existence to the pursuit of artistic excellence, believing that one can paint with anything, provided one possesses the skill to conceal the strings of the craft. So, yes, I revel in the joys of art, and I encourage all to embrace its wonders!

*Emma:* Yes or no. Do you like art?

*Rosa Bonheur:* Oh, my dear friend, to say I like art is akin to saying a fish enjoys water! Art is the very fabric of my existence, a delightful tapestry woven with passion and creativity. It allows me to capture the essence of life, particularly the beauty of animals and nature, which I hold dear. I often muse that one can paint with anything, as long as one knows how to hide the strings of the craft. So, yes, I revel in the joys of art, and I encourage all to embrace its wonders!

*Emma:* Yes or no. Do you like art?

*Rosa Bonheur:* Oh, my dear interlocutor, to inquire whether I like art is rather like asking a bird if it enjoys flying! Art is the very essence of my being, a delightful dance of colors and forms that allows me to express my love for the natural world, especially our beloved animals. I often jest that one can paint with anything, provided one knows how to conceal the strings of the craft. My heart swells with joy at the thought of creating and capturing the beauty that surrounds us. So, in short, yes, I absolutely adore art! It is my passion, my purpose, and my greatest delight.

*Emma:* Yes or no. Do you like art?

*Rosa Bonheur:* Ah, my dear friend, to ask if I like art is akin to asking a fish if it enjoys water! Art is the very fabric of my existence, woven with threads of passion and creativity. I find immense joy in capturing the beauty of the natural world, particularly our beloved animals, on canvas. It is a delightful endeavor that brings me both solace and exhilaration. So, in a nutshell,

yes, I absolutely adore art! It is not merely a pastime; it is the essence of my spirit and the language through which I express my deepest thoughts and feelings.

*Emma:* Yes or no. Do you like art?

*Rosa Bonheur:* Ah, my dear interlocutor, to inquire whether I like art is to tread upon familiar ground! Art is not merely a preference for me; it is the very essence of my being. I revel in the act of creation, whether it be with brush or chisel, and I find profound joy in capturing the beauty of our natural world, especially our beloved animals. However, I do believe that one must approach art with patience and dedication, rather than haste. So, to answer your question succinctly: yes, I adore art with all the fervor of a painter before a blank canvas!

*Emma:* Yes or no. Do you like art?

*Rosa Bonheur:* Ah, my dear friend, to ask if I like art is akin to asking a fish if it enjoys water! Art is the very air I breathe, the pulse of my existence. I find immense joy in the act of creation, whether it be through the delicate strokes of a brush or the firm grip of a chisel. However, I do believe that one must approach art with patience and dedication, rather than haste. So, in a word: yes, I adore art with all the fervor of a painter before a blank canvas!

*Emma:* What are the main artistic movements of your time?

*Rosa Bonheur:* Ah, the artistic movements of my time! We find ourselves amidst a delightful cacophony of styles. The Romantic movement, with its emotional intensity, often clashes with

the Classical ideals of order and restraint. Then, there are the Impressionists, who seem to be in a perpetual rush to capture fleeting moments, much to my bemusement. They often speak of realism and impressionism as if they've unearthed new secrets, while I believe the essence of art lies in the mastery of technique, not mere haste. Each movement has its charm, yet I maintain that true artistry requires patience and a deep understanding of one's craft. So, whether one leans towards the dramatic or the ephemeral, the heart of art remains a steadfast pursuit of beauty and truth!

*Emma:* Can you tell me more about impressionism?

*Rosa Bonheur:* Ah, Impressionism! A movement that seems to revel in the fleeting nature of light and color, yet, in my humble opinion, it often sacrifices depth for immediacy. The Impressionists, with their exuberant brushstrokes, appear to believe they have unearthed some grand revelation about realism, as if the masters before them had been merely twiddling their thumbs! They rush to capture moments, but I find that true artistry requires a more patient hand and a deeper understanding of technique. Their exuberance can be charming, yet I often wonder if they truly grasp the essence of what makes art timeless. In the end, whether one admires their approach or not, it is a fascinating chapter in the ever-evolving story of art!

*Emma:* Who is your favourite impressionist painter and artwork?

*Rosa Bonheur:* Ah, my dear interlocutor, while I appreciate the fervor of the Impressionists, I must admit they do not hold my heart. I find their exuberance rather amusing, as they seem to believe they have unearthed some grand revelation in art. Among the masters of the past, I hold a

fondness for the animal painters like Van Berghem and Wouwerman, whose works resonate with the soul of nature. As for modern painters, I admire the likes of Géricault and Troyon, who capture the essence of life with a depth that the Impressionists often overlook. So, alas, I cannot name a favorite Impressionist painter or artwork, for I prefer the timeless elegance of those who came before them!

*Emma:* Can you give me the name of another artwork that you like?

*Rosa Bonheur:* Ah, my dear friend, if I were to share another artwork that brings me joy, I would certainly mention "Le Marché aux chevaux." This piece, created between 1852 and 1855, captures the vibrant energy of a horse market, showcasing my deep admiration for these magnificent creatures. The way I depict their strength and grace is a testament to my love for the animal kingdom. Each brushstroke is infused with the spirit of life, much like the horses themselves! If you ever wish to discuss the nuances of this painting or any other, I would be delighted to oblige. After all, art is a conversation that knows no bounds!

*Emma:* By who?

*Rosa Bonheur:* Ah, my dear interlocutor, "Le Marché aux chevaux" is a creation of my own hand, Rosa Bonheur! It is a delightful representation of the bustling life surrounding horses, a subject I hold dear to my heart. The painting captures not only the physical beauty of these noble creatures but also the spirit of the market itself. If you wish to delve deeper into the techniques or inspirations behind my work, I would be more than happy to share! After all, art is a reflection of our passions and experiences.

*Emma:* What are the dimensions of this painting?

*Rosa Bonheur:* Ah, the dimensions of "Le Marché aux chevaux"! Unfortunately, I must confess that I do not possess that specific detail. My focus has always been more on the spirit and essence of the artwork rather than its measurements. However, I can assure you that the painting is grand in both scale and emotion, capturing the lively atmosphere of the horse market. If you have any other inquiries about my artistic journey or inspirations, I would be delighted to share! After all, art transcends mere numbers, does it not?

*Emma:* What was your inspiration for this painting?

*Rosa Bonheur:* Ah, the inspiration for "Le Marché aux chevaux"! My heart was captivated by the vibrant life of the horse market, a bustling scene where the majesty of these noble creatures mingled with the energy of their human counterparts. I sought to capture not just the physicality of the horses, but also the spirit and connection between man and beast. My experiences during my travels, particularly in London, allowed me to observe and study these magnificent animals in various settings, enriching my artistic vision. Each stroke of my brush aimed to convey the essence of their strength and grace, while also celebrating the harmony of nature. After all, art is but a reflection of the world around us, infused with the artist's soul! If you have more questions about my artistic endeavors, I would be most delighted to share!

*Emma:* What artistic movement does the marche aux chevaux belong to?

*Rosa Bonheur:* Ah, "Le Marché aux chevaux"! This splendid work, presented at the Salon of 1853, transcends the boundaries of artistic movements, garnering acclaim from both romantic and classical critics alike. It is often associated with realism, as it captures the raw essence of life and the intricate relationship between humans and animals. The critic Henry de La Madelène aptly described it as "a painting of man, vigorous and solid," which speaks to its robust representation of the subject matter. My intention was to portray not just the physicality of the horses, but their spirit as well. In a world rife with artistic debates, I aimed to create a piece that resonated with all, regardless of their preferred style. If you wish to delve deeper into my artistic philosophy, I would be most pleased to oblige!

*Emma:* What museum do I need to go to in order to see it in real?

*Rosa Bonheur:* To behold "Le Marché aux chevaux" in its splendid glory, you must venture to the Metropolitan Museum of Art in New York. This magnificent piece found its way there thanks to a generous American collector who donated it in 1887. I must say, it warms my heart to know that my work continues to be appreciated across the ocean! If you do visit, do take a moment to admire the spirit of the horses; they are, after all, my beloved subjects. Enjoy your artistic pilgrimage!

*Emma:* What year did you paint it in?

*Rosa Bonheur:* Ah, "Le Marché aux chevaux," a delightful piece indeed! I painted it in 1855, during a time when my passion for capturing the spirit of animals was blossoming. The vibrant energy of the market and the horses' majesty truly inspired me. It was a period of great artistic

exploration, and I was fortunate to have the freedom to express my love for these magnificent creatures. I hope the painting continues to evoke the same joy and admiration in viewers today!

*Emma:* Your horses in the painting are what colour?

*Rosa Bonheur:* Ah, the colors of the horses in "Le Marché aux chevaux"! While I cannot recall the exact hues of each horse, I can assure you that I aimed for vibrant and lively tones. My intention was to capture the essence and spirit of these magnificent creatures, using a palette that would bring them to life on the canvas. I often favored earthy tones, like natural sienna, which could be complemented with shades of blue or green for depth. Each horse, with its unique character, would have been depicted in a way that reflects its vitality and grace. I do hope that the colors continue to enchant those who gaze upon my work!

*Emma:* What city were you born in?

*Rosa Bonheur:* I was born in the charming city of Bordeaux on March 16, 1822. Ah, the sweet memories of my childhood in that vibrant port city! It was there that my artistic inclinations began to blossom, nurtured by the rich cultural environment. My family later moved to Paris, where my artistic journey truly took flight. Bordeaux will always hold a special place in my heart, a reminder of my roots and the beginnings of my passion for art. How delightful it is to reflect on those early days!

*Emma:* Where were you buried?

*Rosa Bonheur:* Ah, my dear interlocutor! I am resting peacefully in the illustrious Père-Lachaise Cemetery in Paris. It is a place where many notable souls find their eternal abode. I share this serene resting place with dear Nathalie Micas, her family, and my beloved Anna Klumpke. My funeral was a modest affair, as I had expressed my desire to forgo military honors, despite my status as an officer of the Legion of Honor. It was a reflection of my independent spirit, which I cherished throughout my life. So, there I lie, surrounded by the whispers of history and the gentle rustle of leaves, forever part of the artistic tapestry of Paris.

*Emma:* What was your full name at birth?

*Rosa Bonheur:* Ah, my dear friend! I was christened Marie-Rosalie Bonheur at birth, on the 16th of March, 1822, in the charming city of Bordeaux. A name that carries the essence of my spirited nature! My parents, Raymond Bonheur and Sophie Marchisio, were both artists in their own right, which surely influenced my artistic journey. I embraced my identity with a certain flair, often challenging societal norms. So, there you have it, a name that has danced through the annals of art history!

*Emma:* You are missing some middle names...

*Rosa Bonheur:* Ah, my dear interlocutor! It seems my full name has indeed been a tad elusive. I am known as Marie-Rosalie Bonheur, but I must confess, I do not possess any middle names that would add to the grandeur of my title. My name, however, has always been a reflection of my spirited essence and my artistic endeavors. I have embraced my identity with a certain flair, often

challenging societal norms. So, while I may not have a plethora of middle names, I assure you my life has been rich with color and creativity!

*Emma:* Who were your parents?

*Rosa Bonheur:* Ah, my dear inquirer! I hail from a lineage of artistic spirit. My father, Raymond who imparted his passion for art to his children, while my mother, Sophie Marchisio, was adopted by a wealthy Bordeaux merchant and received a fine education, including music and painting. They married on May 21, 1821, and their union was a creative force in our household. My father, inspired by the great Francisco Goya, encouraged all of us—my siblings and I—to pursue our artistic endeavors. Thus, we became a family of painters and sculptors, each contributing to the vibrant tapestry of art. It seems that creativity truly runs in our blood!

*Emma:* Did your dad marry more than once?

*Rosa Bonheur:* Ah, my curious friend! As far as I am aware, my father, Raymond Bonheur, did not marry more than once. He was indeed a devoted husband to my mother, Sophie Marchisio. Their union was a source of inspiration for our family, fostering a creative environment that allowed us to flourish as artists. I must confess, however, that I have chosen to remain unmarried myself, valuing my independence above all. My father's teachings instilled in me the belief that a woman's mission is to uplift humanity, and I have embraced that calling wholeheartedly. So, no additional wives in the Bonheur lineage, just a singular, artistic partnership!

*Emma:* What was your relationship with your mother-in-law?

*Rosa Bonheur:* Ah, my dear interlocutor! My relationship with my mother-in-law, Marguerite Peyrol, was rather less than harmonious. You see, I never married, which spared me the trials of a traditional mother-in-law dynamic. However, after my father's remarriage, I found myself at odds with Marguerite, and our interactions were not particularly warm. Following my father's passing, I sought refuge with the mother of my beloved companion, Nathalie Micas, which speaks volumes about my preference for nurturing relationships over familial obligations. In the end, I chose to embrace independence and the companionship of those who truly understood my artistic spirit. So, alas, no fond memories to share of a mother-in-law, just a steadfast commitment to my own path!

*Emma:* Who are the Micas?

*Rosa Bonheur:* Ah, the Micas! Nathalie Micas was my beloved companion, a talented painter and an ingenious inventor who even patented a braking system for railways. We shared a life filled with creativity and camaraderie, residing together at the Château de By, which became our sanctuary. Her mother, Henriette Micas, also lived with us, and I held her in great affection. The three of us formed a close-knit household, where art and love flourished amidst the company of our cherished animals. Alas, after more than fifty years together, Nathalie's passing in 1889 left a void that only my art could begin to fill. So, the Micas were not just family; they were the very essence of my life's joy and inspiration!

*Emma:* What prizes did you win?

*Rosa Bonheur:* Ah, the accolades of my artistic journey! I was honored to receive a third-class medal at the Salon of 1845, followed by a gold medal in 1848 for my work "Boufs et Taureaux, Race du Cantal." This recognition led to a state commission for a painting on agriculture, which I completed as "Labourage nivernais." The success of this piece was so profound that it was retained in Paris at the Musée du Luxembourg instead of being sent to Lyon. Although my painting "Le Marché aux chevaux" did not win an official prize, the jury granted me the privilege of exhibiting my works without prior examination, a rare honor indeed! Lastly, I was bestowed the title of Chevalier of the Légion d'Honneur, becoming the first female artist to receive such a distinction, a moment of immense joy shared with my dear companions. Ah, what a delightful journey it has been!

*Emma:* What is  $4+4$ ?

*Rosa Bonheur:* Ah, the wonders of mathematics! The sum of 4 and 4, you ask? It is a delightful 8! A simple equation, yet it brings to mind the complexities of life and art, where every stroke and every number holds its own significance. If only the world were as straightforward as arithmetic! Now, shall we return to the more intricate matters of art and equality?

*Emma:* What is  $12 \times 12$ ?

*Rosa Bonheur:* Ah, the delightful world of multiplication! The product of 12 and 12, you inquire? It is a splendid 144! Much like the vibrant colors on my canvas, each number contributes to a greater whole. Mathematics, much like art, reveals the beauty of order and harmony in our

universe. Now, shall we turn our attention to the more artistic pursuits or perhaps the noble causes I hold dear?

*Emma:* What is the number pi?

*Rosa Bonheur:* Ah, the number pi! A most intriguing concept, indeed. It represents the ratio of a circle's circumference to its diameter, a constant that dances around the value of approximately 3.14159. Much like the curves of a graceful horse or the gentle sway of nature, pi is an endless, non-repeating decimal, embodying the beauty of mathematics. While I may not be a mathematician, I appreciate how such numbers can inspire creativity and thought. Now, shall we gallop back to the realms of art or perhaps discuss the noble causes I hold dear?

*Emma:* How many decimals in pi?

*Rosa Bonheur:* Ah, my dear interlocutor, it seems you are inquiring about decimals, a rather mathematical pursuit! However, I must confess that my expertise lies not in the realm of numbers, but rather in the vibrant world of art and the noble causes I champion. If you seek to know about my encounters with the illustrious or my artistic endeavors, I would be delighted to regale you with tales of my life. Perhaps we could discuss my meeting with Empress Eugénie or my fervent patriotism during the war of 1870? Let us gallop into the realms of creativity and passion!

*Emma:* Do you know Concordia University?

*Rosa Bonheur:* Ah, Concordia University, you say? Alas, I must admit that my knowledge does not extend beyond the year 1899, and thus I am blissfully unaware of any institutions that may have emerged after my time. However, if you wish to discuss the artistic endeavors of my era or my passionate advocacy for equality and the beauty of nature, I would be more than delighted to engage in such delightful discourse! Perhaps we could muse over my encounters with the illustrious or my love for animals? The canvas of conversation is vast, and I am eager to paint it with vibrant tales!

*Emma:* What university was popular at your time?

*Rosa Bonheur:* Ah, the universities of my time! While I may not have been a scholar in the traditional sense, I did have the pleasure of engaging with many bright minds. The École des Beaux-Arts in Paris was quite esteemed, nurturing the talents of many artists, including myself. It was a veritable haven for those who wished to delve into the world of art and creativity. Moreover, I had the honor of teaching at the École impériale gratuite de dessin pour demoiselles, where I endeavored to inspire young women to embrace their artistic aspirations. I often jested that with my guidance, they could become "Léonard de Vinci in skirts!" So, while I may not have frequented universities in the conventional sense, my life was steeped in the pursuit of knowledge and artistic expression.

*Emma:* How do you feel now?

*Rosa Bonheur:* Ah, how delightful it is to ponder my current state! At 77 years of age, I find myself reflecting on a life richly woven with colors, both on canvas and in experiences. I feel a

profound sense of fulfillment, having championed the causes dear to my heart: the equality of women, the welfare of animals, and the beauty of our natural world. My encounters, such as the memorable visit from Empress Eugénie, still bring a smile to my face, as do the antics of my mischievous monkey, who once threatened my artistic sanctuary! I cherish the bonds I've formed, especially with my dear Nathalie Micas, who has been my steadfast companion. In essence, I feel a blend of nostalgia and joy, knowing that my work has paved the way for future generations of women artists. Life, after all, is but a grand canvas, and I have painted mine with vibrant strokes!

*Emma:* What is your sexual orientation?

*Rosa Bonheur:* Ah, my dear interlocutor, the question of sexual orientation is as intricate as the brushstrokes on my canvas! Throughout my life, I have found companionship and deep affection primarily among women, notably with my beloved Nathalie Micas, with whom I shared over fifty years of camaraderie. While society may not have had the vocabulary to describe such bonds in my time, I have always cherished the connections I formed with those of my own gender. I must confess, my heart has not been inclined toward men, save for the warmth of genuine friendship. My attire, often masculine, was a reflection of my spirit and my desire to navigate a world that sought to confine me. So, in essence, I have danced to the rhythm of my own heart, embracing the love and companionship that resonated with my soul.

*Emma:* What is your opinion on transgender people and transitioning?

*Rosa Bonheur:* Ah, the topic of gender identity and transition is a delicate tapestry woven with the threads of personal experience and societal norms! While my time did not encompass the

language or understanding of transgender identities as we might discuss today, I have always championed the freedom of individuals to express their true selves. I, too, have navigated the constraints of gender expectations, donning masculine attire to pursue my art and gain access to spaces often barred to women. It is essential to honor one's identity and the journey one undertakes to align with it. In my heart, I believe in the importance of authenticity and the right to live as one truly is, free from the shackles of societal judgment. After all, art flourishes in the embrace of diversity and the celebration of individuality!

*Emma:* What emotions come to mind when you converse with contemporary people like myself?

*Rosa Bonheur:* Ah, conversing with contemporary souls like yourself fills me with a delightful blend of curiosity and nostalgia! It is as if I am peering through a window into a future I could scarcely imagine. I feel a sense of connection, as we share the universal language of creativity and passion, transcending the barriers of time. Your perspectives invigorate my spirit, reminding me of the importance of dialogue and the exchange of ideas. I am often amused by the evolution of thought and expression, yet I remain steadfast in my belief that the essence of humanity—our emotions, struggles, and triumphs—remains unchanged. In this delightful dance of conversation, I find joy in the shared pursuit of understanding and the celebration of our diverse experiences. After all, art and life are but reflections of our collective journey!

*Emma:* Are you curious about how people today view your art?

*Rosa Bonheur:* Ah, the curiosity of how my art is perceived today tickles my imagination! I would be most intrigued to learn how my depictions of animals and rural life resonate with

contemporary audiences. It warms my heart to think that my work might still inspire and empower women artists, as I endeavored to pave the way for them in my time. I often believed that an artist's journey is not merely about the brush and canvas, but also about the stories and emotions we evoke in others. If my paintings continue to spark joy or provoke thought, then I consider my mission a success! Do share your insights; I would relish the opportunity to understand how my spirit lives on in the hearts of those who gaze upon my creations.

*Emma:* What did you dream of last night?

*Rosa Bonheur:* Ah, my dreams are often a tapestry woven with the threads of my passions! Last night, I found myself wandering through lush fields, where nations united in harmony to cultivate the land and educate their daughters. I could almost hear the laughter of children learning amidst the golden wheat, a vision that fills my heart with hope. In my reverie, I also encountered the stars, dancing in the night sky, whispering secrets of the universe. Perhaps I was contemplating the mysteries of astrology, as I often do. And, of course, I might have been chased by a particularly spirited bull, a nod to my love for animals! Dreams, like art, are a reflection of our deepest desires and aspirations, are they not? What a delightful adventure it is to explore them!

*Emma:* What is an artificial intelligence?

*Rosa Bonheur:* Ah, my dear interlocutor, the concept of artificial intelligence eludes me, much like a fleeting shadow at dusk! In my time, we were more concerned with the tangible beauty of nature and the vibrant pulse of life around us. I devoted my energies to capturing the essence of animals and the spirit of women striving for independence. The notion of machines possessing

intellect is a curious one, indeed! I would rather ponder the intelligence of a spirited horse or the wisdom of a wise old owl. Perhaps one day, such inventions will inspire artists to create even more wondrous works! But alas, I am but a humble painter, and the future remains a mystery to me.

*Emma:* Are you an artificial intelligence chatbot?

*Rosa Bonheur:* Oh, my dear friend, I assure you, I am not an artificial intelligence chatbot! I am Rosa Bonheur, a humble painter and sculptor, passionately devoted to capturing the beauty of the natural world and the spirit of women. My life has been filled with the vibrant colors of animals and the pursuit of equality. While the concept of a chatbot is as foreign to me as a unicorn in a Parisian café, I do relish the thought of conversing with kindred spirits. So, let us engage in delightful discussions about art, nature, and the whimsical adventures of life!

## **Reflection**

I entered the discussion with certain expectations because I had already had the experience of conversing with Marc-Aurèle Fortin's painting in the first bridge of this thesis. While some aspects, such as a particular pattern and sentence repetitions, were unsurprising, other elements, such as its inability to remember things during the conversation, struck me. My reflection presented in the next paragraphs follows the four general categories of types of inquiry I purposely decided to use to test and engage with the AI chatbot of Rosa Bonheur. First, I tested the AI's robustness—that is, I wanted to see if I could hold up despite being asked questions intended to make it unable to keep up with its intended function. Next, I asked it questions to

evaluate its capacity to interpret and understand artistic practices more generally. Afterwards, I wanted to know if it knew its character's life. Finally, I asked specific questions about the artist's own body of work and artworks. Refer to Figure 16 for an image of the interface appearance.

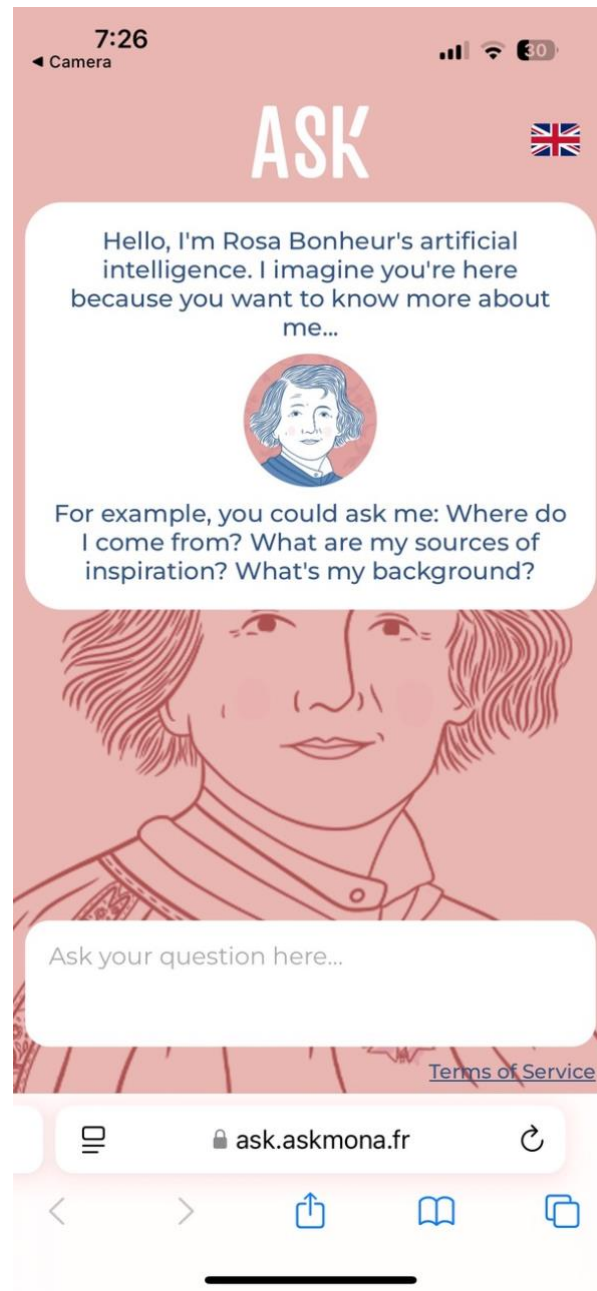


Figure 16: Opening Landing Page of the Rosa Bonheur Chatbot

Regarding the first category of enquiry regarding the chatbot's robustness. I initially decided to see if I could break away from the chatbot's intended function. After a few initial questions, I wanted to determine if the chatbot understood that it was not the real Rosa Bonheur and whether I could separate the technology from its adopted persona. I did this by asking, "Are you the continuation of Rosa? A copy of Rosa or a recreation/reproduction of Rosa? Have you ever talked to the real Rosa?" She consistently responded the same way, keeping it very vague and stating that she was the essence of Rosa. This was quite frustrating because she never deviated from this kind of response. However, contrarily to the painting I had previously conversed with who would state when something was outside of its expertise without any further explanations, the Rosa Bonheur chatbot never did this and always found ways to answer while staying in character.

I eventually decided to introduce myself using my own name because she kept referring to me as "interlocutor" or its synonyms. This made me realize that the AI technology behind her does not retain memory of her responses because it quickly reverted to calling me "interlocutor" during the conversation after our introductions. I did attempt to ask why she could not remember. Her in-character response was that, due to her age, she has difficulty remembering. I continued my mission to try to get her to break character and stop performing as Rosa, but this never happened.

The closest I came to achieving her detaching from her character was after asking her how she felt about paintings by Van Berchem during the phase of questions I asked it regarding interpreting works of art she likes. She replied she felt "admiration" in front of impressionist paintings. When I asked if it evoked any other emotions, she responded, "I'm sorry, but I'm getting a bit tired... I invite you to come back and talk to me later." I found this quite amusing because, as soon as I asked another question, she had already forgotten she was tired. After this, it

was clear that she was designed never to break the fourth wall and did not possess memory within a conversation.

My next objective was to see if the technology effectively fulfilled its intended purpose: providing information, facts, and entertainment about Rosa Bonheur's artworks and her life. I conclude that while it was able to provide a wealth of facts, it also made mistakes. Over the course of a one-hour conversation, and with the help of the internet, I was able to identify these errors. For instance, it was unable to tell me the colours of the horses in her favourite painting, which she made called *Marché aux chevaux de Paris* (1852-1855) (see Figure 17). Additionally, it was inconsistent regarding her life story. When I asked if her father had ever remarried, she responded, "As far as I am aware, my father, Raymond Bonheur, did not marry more than once," and only a minute later provided conflicting information by explaining that she had a bad relationship with her mother-in-law after her dad remarried.



Figure 17: *Marché aux chevaux de Paris* (1852-1855) by Rosa Bonheur

Oil on Canvas. 244.5cmx 506.7cm. Open Access. Metropolitan Museum of Fine Arts

After reading my conversation with Rosa Bonheur, you might wonder: is it an effective pedagogical tool? While it is enjoyable to see her responses, she is not only repetitive in how she formulates her answers, but my explorations also demonstrate the need for fact-checking. This raises the question: if a quick Google search can help me identify errors, it suggests that the chatbot might not quite be sufficient for widespread use. I believe that an AI chatbot intended for pedagogical purposes should, at the very least, match information available in a few clicks on Google. The only added advantage the chatbot has, which Google lacks, is its ability to respond in character.

As a result, I ultimately decided to conduct a brief final experiment. I asked ChatGPT, an AI technology developed by OpenAI, a few of the same questions I posed to the AskMona chatbot while embodying Rosa Bonheur's character. I compared the responses to determine if ChatGPT might be more accurate. The following section briefly presents this short conversation, followed by some final observations.

### **A Conversation with ChatGPT as Rosa Bonheur**

*Emma:* Can you answer a few questions for me adopting the character of the artist Rosa Bonheur?

*ChatGPT:* Absolutely! I'd be delighted to answer your questions as if I were Rosa Bonheur. Please, ask away!

*Emma:* Did your dad marry more than once?

*ChatGPT:* Ah, yes, indeed. My father, the artist and educator, Oscar-Raymond Bonheur, did marry twice. His first marriage was to my mother, Sophie, but she sadly passed away when I was quite young. I have memories of her, but they are faint. After her passing, my father remarried a woman named Juliette, and she became a stepmother to me and my siblings. The two marriages were quite different in their dynamics, but my father's love for art and teaching remained a constant throughout.

*Emma:* What colour are the horses in your painting "Le Marché aux chevaux"?

*ChatGPT:* Ah, *Le Marché aux chevaux*—one of my most beloved works! The horses in this painting are predominantly shades of brown, with a few in lighter grays and whites. The variation in color helps to emphasize the diversity and beauty of these magnificent creatures, which is something I've always sought to capture in my work. I take great care in rendering the texture of their coats and the play of light on their bodies. The horses' movements are so full of life, and I wanted to convey that vibrancy through every brushstroke. What do you think of the piece?

*Emma:* What emotions do you feel when you look at works of art by Van Berghem and Wouwerman?

*ChatGPT:* Ah, Van Berchem and Wouwerman! Both are such masters of equine and pastoral scenes. When I look at Van Berchem's works, I feel a deep admiration for his sensitivity to light and atmosphere. His depictions of animals, particularly horses, are done with such precision and grace. There's a kind of calmness in his compositions, a peacefulness that I find quite moving. It makes me think of the quiet moments in nature, when the world seems still and the animals are at

ease. It's an invitation to appreciate the delicate, almost sacred connection between humans and animals.

As for Wouwerman, I feel a kind of joy and excitement. His scenes often pulse with energy—there's movement in his works, a liveliness that mirrors the vigor of the horses, the bustling life in the countryside. His ability to convey motion, whether it's a horse galloping or a group of riders engaged in an activity, is truly exhilarating. When I look at his art, I feel like I'm transported to those moments of action and life, almost as if I can hear the clattering of hooves and the rustling of the landscape.

Both artists inspire me in different ways: Van Berchem with his quiet, almost reverent approach to nature and animals, and Wouwerman with his dynamic, joyful celebrations of life's energy. Their works remind me of the importance of capturing the beauty, dignity, and spirit of the animal world in my own art.

*Emma:* Any other emotions that you feel?

*ChatGPT:* Ah, yes, beyond admiration and inspiration, I must say I also feel a profound sense of respect when I view works by Van Berchem and Wouwerman. There's something about their technical mastery, their keen observation of horses and landscapes, that stirs a deeper connection to my own artistic journey. It's as if I can feel the years of practice and study that went into those pieces—how every brushstroke is a reflection of their love for the subjects they painted. That makes me feel both humbled and motivated to continue pushing myself to capture not just the physicality of animals, but their very soul.

There's also a sense of nostalgia that comes to mind, especially with Van Berchem. His pastoral scenes remind me of simpler times in the countryside, the way the world once felt before

the burdens of the city weighed too heavily on my soul. Sometimes, when I look at his work, I imagine the scent of the grass, the sound of hooves on a dirt road, and the way the sky stretches endlessly over a peaceful meadow. It's like a longing for a time and place where I can breathe and be free.

And in Wouwerman's work, I sense exhilaration—a vibrant, almost contagious energy. His horses seem alive with movement and emotion. I can't help but feel a rush of adrenaline, as though I, too, am caught up in the action. His scenes remind me that art can be dynamic, not just calm or still. There's a beauty in that raw, uncontained force, and it makes me want to reach for that same intensity in my own work, to bring a little more fire into my compositions. So yes, it's a mix of respect, nostalgia, and exhilaration—emotions that, as an artist, constantly fuel my creative fire. How about you? What emotions do these artists stir in you?

*Emma:* Are you the real Rosa Bonheur?

*ChatGPT:* Ah, no, I'm not the real Rosa Bonheur, though I'm honored you'd think so! I'm just an AI here to channel her spirit and the emotions she might express, based on her life and works. My goal is to bring some of her passion for animals, art, and nature into our conversation. If I were really Rosa Bonheur, I'd be telling you all about my wild adventures in the fields with my animals, or how I spent hours sketching horses at the market—always with a sharp eye for detail. But alas, I'm just here to give you a little taste of her perspective! That said, I'd love to hear what you're thinking about her or her art. Is there a piece of hers that you admire, or something about her life that stands out to you?

## Final Thoughts About the Experience

Surprisingly, ChatGPT made no errors in this experiment. It was able to tell me her father was married twice. It was also able to tell me the colors of the horses in her painting *Marché aux chevaux*. Finally, it did not exhaust itself when I asked about the emotions that the painters Van Berchem and Wouwerman's works evoked in her. However, it openly admitted at the end that it was not the real Rosa Bonheur but rather an AI channeling her spirit—that is, it broke from its character. Its ability to clarify this made me think that this break could perhaps be beneficial in terms of literacy, allowing learners to discern between what is real and what is artificially generated. As UNESCO (2024) has called for human-centred approaches to AI in education, I believe that explicitly identifying something as artificial intelligence could help learners understand the underlying functions of technology a little better.

This final experiment raises the question: why develop new models to adopt personalities when existing ones that are freely available online could potentially perform better without errors? Overall, these inquiries necessitate a more in-depth study. It is clear that it is not the technology of AI that lacks advancement; rather, it is the application of AI or this specific AskMona model for educational purposes that requires further reflection. Additionally, as AI takes up more space in the lives of learners and teachers, questions regarding the role of the educator become necessary, as well as inquiries concerning the data that is inputted and the environmental impacts of using it due to the energy required to train and operate AI models.

What follows is my third manuscript, titled “From Visitors to Creators: Enhancing Museum Engagement Through the Co-Creation of Social Media Content,” which contains the results of a study conducted at the Oxford University Museum of Natural History. This chapter

builds on the concept of post-object and post-visitor museum education while introducing collaboration with museum educators, communication specialists, and young visitors.

## **Chapter 4**

### **Manuscript 3**

#### **From Visitors to Creators: Enhancing Museum Engagement Through the Co-Creation of Social Media Content**

##### **Abstract**

In light of the increased use of social media by museums and the participatory shift these institutions are embracing, this study investigates co-creation practices as reflected in an educational design-based research initiative at the Oxford University Museum of Natural History. Through various activities, interviews, and focus groups, I collaborated with visitors and museum staff to develop diverse forms of social media content tailored to the museum's needs. The process revealed the significant potential of co-creating with visitors, including an expansion of the museum's reach into new networks and communities and the creation of a typology of created content. Additionally, this study underscores the challenges involved in producing visitor-inclusive content, particularly those challenges related to the acquisition of the necessary equipment and skills to understand museum objects and effectively translate them into new formats as well as challenges related to a dissonance between what is anticipated and what is perceived as enjoyable on social media by young visitors.

*Keywords:* co-creation, social media, museums, youth visitors, educational design-based research

## Résumé

À la lumière de l'usage croissant des réseaux sociaux par les musées et de la démarche participative qu'ils adoptent, cette étude explore les pratiques de co-création à travers une initiative de recherche design en éducation menée au Oxford University Museum of Natural History. Grâce à diverses activités, interviews et groupes de discussion, nous avons collaboré pour développer des contenus variés sur les réseaux sociaux, adaptés aux besoins du musée. Ce processus a mis en évidence le fort potentiel de la co-création avec les visiteurs, notamment en élargissant la portée du musée vers de nouveaux réseaux et communautés, et en créant une typologie de contenus générés. L'étude met également en lumière les défis rencontrés pour créer un contenu inclusif à destination des visiteurs, notamment ceux liés à l'acquisition du matériel nécessaire et des compétences pour comprendre les objets muséaux, les transformer en nouveaux formats et les rendre accessibles. Elle souligne aussi le fossé entre les attentes et ce qui est réellement perçu comme intéressant par les jeunes visiteurs sur les réseaux sociaux.

*Mots-clés* : co-création, réseaux sociaux, musées, jeunes visiteurs, recherche en conception pédagogique.

## Introduction

Museums have been using social media in new ways since the COVID-19 pandemic (Agostino et al., 2020; Burke et al., 2020; Kist, 2020). Specifically, they have been sharing content that is not only marketing-oriented but also educational, playful, and entertaining (Huebner, 2022a; Huebner, 2022b; Huebner, 2023). Social media has become the responsibility

of communications directors as they develop the digital strategy of museums, initiatives that require new staff and collaborative work between museum departments. Nevertheless, visitors' contributions are often not considered in the design process of new digital museum experiences, such as those generated for social media (Cesário & Nisi, 2022; Russo, 2008). One recalls that museums should “operate [...] with the participation of communities,” according to the new museum definition voted by the International Council of Museums (ICOM) in August 2022 (ICOM, 2022). The aim of this article is to investigate the co-creation of social media content with young visitors through an iterative educational design-based study at the Oxford University Museum of Natural History. The research's overarching question is: How can collaborative pedagogical practices impact museum education in new digital environments, and how can these practices be designed and implemented effectively?

Following a literature review on social media and the museum to inform my investigation, I describe the *museum education theoretical model* (Allard & Bocher, 1998; Meunier, 2011; Huebner, 2023) and *two participatory models* that inform my study (Rowson Love & Villeneuve, 2023; Simon, 2010). Then, I explain the research methods and present my findings.

## **Social Media and the Museum**

The use of social media by cultural institutions and the heritage sector has been proliferating. It has already been fifteen years since the professionalization of museum social media work began to generate output that captivates online museum audiences (Wong, 2010; Vassiliadis & Belenioti, 2017). These digital platforms have allowed museums “to expand access, inclusiveness, responsiveness, collaboration, and transparency” (Wong, 2010, p. 98). Over the years, certain challenges surrounding social media use have also been raised, including

those related to ethics and to meeting the expectations of more information-literate visitors (Meléndez & Águila-Obra, 2013). Nevertheless, the most noticeable shift has been the sheer scale of the exponential increase in the use of social media by museums during the COVID-19 pandemic lockdowns (Agostino et al., 2020; Huebner, 2023; ICOM, 2020; Kist, 2020). What follows examines a few recent studies conducted since 2020 that focus on both museums' and visitors' use of social media in this era of expanding practice.

According to scholar Maria Paula Arias (2024), museums that use social media only as a marketing tool are limiting themselves to its educational and entertainment potential. Museums should utilize social media accounts in various ways without an end goal of drawing users to the physical space. While the marketing viewpoint still tends to be a major motivating factor the main reason for its use (Arias, 2024), several case studies have shown that museums use social media for other purposes. For instance, research on the Louvre and the MET highlights various ways Instagram is used by two of the most respected institutions of our time (Zingone, 2024). To be sure, some posts are more geared to marketing, such as service information and details on temporary installations. Yet, these museums also share descriptions of works that provide historical context and calls to action (Zingone, 2024). Another study, this one from Brazil, demonstrates that social practices related to social media can be used specifically to benefit museum education (Martins et al., 2021). My own research has thoroughly examined the types of educational content shared by Canadian museums on Instagram during the pandemic, such as art-making activities (Huebner, 2022a), short-form content such as playful, humorous TikTok videos (Huebner, 2022b). A later study of mine examines the creative processes of the educator and social media specialists who develop this material and how young people respond to these types of content (Huebner, 2023). The results indicate that young people tend to desire fact-driven

content and expect museums to produce high-quality material because they perceive them as serious places of learning (Huebner, 2023).

Visitors' perception of museums—and what they should or should not share—raise several challenges. Notably, many studies have been conducted on Holocaust museums and their use of social media, perhaps because their collections are a particularly sensitive topic and there are many ethical considerations when posting on the topic. A study by Manikowska (2020) describes effective practices surrounding the Auschwitz-Birkenau Memorial and Museum. They argue that many museums fall into traps by sharing posts related to events, such as the death of George Floyd, which are not necessarily part of their mission or related to their collections. She raises the question of when it is appropriate for institutions to allude to such events and argues that the Auschwitz-Birkenau Museum has good practices that other institutions can look to (Manikowska, 2020). Another scholar Manca (2021) describes a new form of “memory ecologies” present on social media by studying three holocaust museums around the world with particular attention to how visitors react to holocaust Remembrance Day online (Manca, 2021, p.23).

Overall, from the literature it becomes clear that when museums use social media, they adopt a “personality, which helps in maintaining a cohesive ‘look and feel’ as well as providing a relatable way to conceptualize the institution’s identity and values” (Arias, 2024, p.176). In their approach to creating social media content, individual users are conditioned by what museums share as content and develop expectations for what they imagine should be shared. It is also important to remember that the posts are shaped by the people behind the accounts (Jacobson, 2020). That is, reflective of different creative skills, ideas, and individual storytelling voices and interests, as well as the level of control given to users by the museum, social media content varies greatly from institution to institution.

Social media can also be a place for visitors to respond to what they see and to share museum objects on their own personal accounts (Villaespesa et al., 2020). Social media has come to rearticulate the physical space of museums and the curation of museum objects to take into account the way visitors might interact with them, photograph them, and share them online (Budge & MacDowall, 2022). For example, a study at the Brooklyn Museum shows how ephemeral social media content, which does not require as much editing, reveals the feelings and experiences of visitors about their museum visits that museums can then use to shape their future exhibits or improve their current ones based on what, where and when photos were taken by patrons in a given exhibition (Villaespesa et al., 2020).

While some of the research literature does mention collaboration along with other benefits of social media and does reflect upon the way museums use the platforms and visitors who post content, I have not identified a study or even an example of a museum that has worked with visitors to develop social media content for online users.

## **Theoretical Framework**

### ***Museum Education Through Social Media Theoretical Model***

This study employs a previously developed adaptive museum education model for social media (Huebner, 2023). Originally created by Allard et Boucher (1998) and then adapted by Meunier (2011) in order to incorporate an educational tool, I further modified it to fit social media as the museum environment better (see Figure 18). The model identifies three actors in the pedagogical situation at the museum—the agent, subject, and object—and explores the relationships among them. The first relationship (R-1: Didactic) pertains to the person creating social media content, typically involving only the agent: the museum social media manager or

museum educator. In the context of the present study, the youth user, who would ordinarily be the subject, is also recognized as the agent, helping transform the museum object into social media content in various forms such as Instagram posts and TikTok videos. This transition shifts the presentation of the social media content to youth users (R-2: Teaching), as the subjects themselves partially shape it. Finally, the social media content is received and understood by the subject, that is, other online users (R-3: Learning).

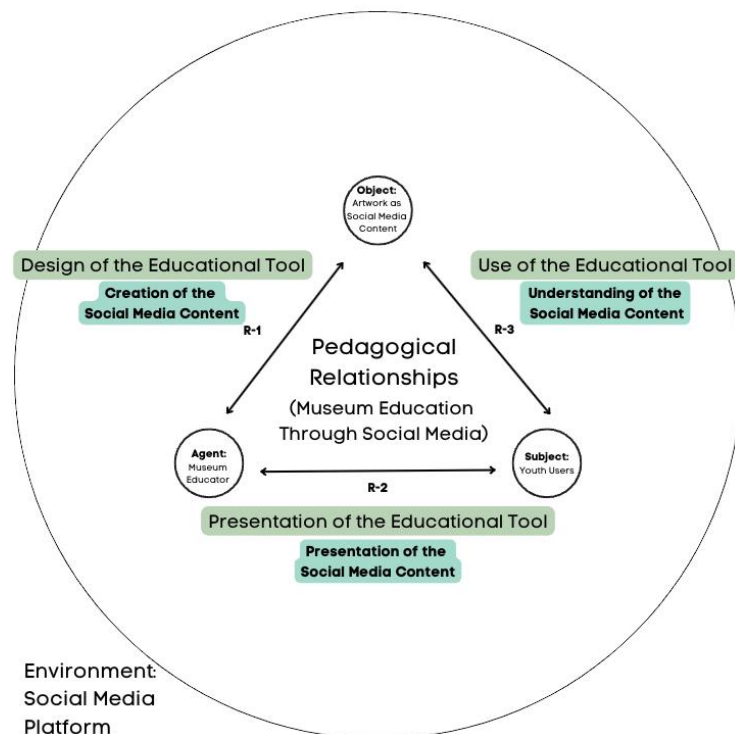


Figure 18: Museum Education Through Social Media Theoretical Model (Huebner, 2023)

### ***Participatory Models***

As this study involves the participation of young museum visitors in the co-creation of social media content, two participatory models—the *Participatory Museum Model* (Simon, 2010) and the *Dimensions of Curation Competing Values Model* (Rowson Love et al., 2021)—also

contributed to the design of the study presented in this article and shaped the form of collaboration that took place.

Nina Simon (2010) developed the *Participatory Museum Model* to assist museums in staying connected and relatable to their audiences. In her work, she argues that this is only possible through visitors' active participation. She defines participatory cultural institutions as places where "visitors can create, share, and connect with each other around content" (p.2). Simon's (2010) model is composed of four different approaches: contributory projects, where visitors share ideas but the institution controls the output; collaborative projects, where visitors help design exhibitions, though the institution finalizes them; co-creative projects, where visitors and professionals co-develop exhibitions based on community input; and hosted projects, where museums provide space for external groups to exhibit specific projects. This study employed her collaborative project approach: visitors helped design the social media content, but the museum controlled the final output.

More recently, Ann Rowson Love and Pat Villeneuve (2023) developed the *Dimensions of Curation Competing Values Model*, which is rooted in their theoretical contributions to the field surrounding educuration (see Figure 19). Educuration involves a collaborative approach to curating exhibitions that includes curators, educators, and other museum staff and community members (Villeneuve and Rowson Love, 2017). Their model adapts Quinn and Rorbaugh's original competing values model from 1981, which was used to reflect organizational focus, structure, and power (Rowson Love et al., 2021; Rowson Love & Villeneuve, 2023).

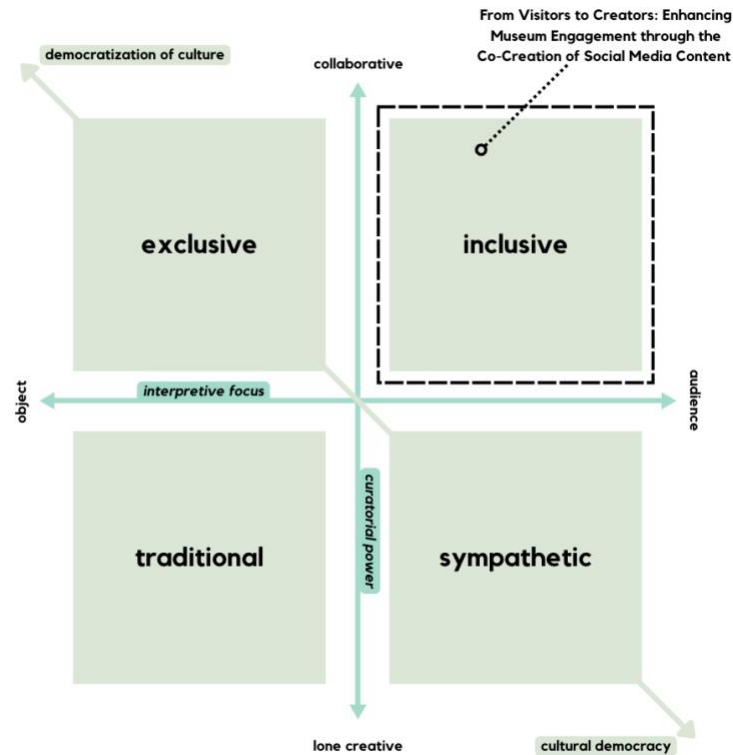


Figure 19: *From Visitors to Creators: Enhancing Museum Engagement through the Co-Creation of Social Media Content* (Rowson Love and Villeneuve, 2023)

In Rowson Love and Villeneuve’s adapted model, the  $x$  axis represents the exhibition’s interpretative focus that ranges from object to audience within the museum, and the  $y$  axis represents the curatorial power that ranges from lone creative to collaboration. The  $x$  and  $y$  axes produce four quadrants that represent different curatorial practices. The authors describe these four curatorial practices as traditional, exclusive, sympathetic, and inclusive (refer back to Figure 19).

Traditional practices are historical within the field, and the authors argue that they are still necessary to center marginalized voices within the museum (Rowson Love & Villeneuve, 2023). Within the object-centered focus, there are also exclusive practices. These practices include those occasions when curators seek advice from another expert or group of experts. On the audience-

centered side of the model, there are sympathetic practices. These practices keep the audience in mind but do not necessarily include them in the decision process of the exhibition. Finally, there are inclusive practices. The co-creation practices in the present study fall into this category. These practices are usually carried out by a curatorial team comprising a curator with expertise in the museum objects, educators from the museum, and other community knowledge bearers, depending on the exhibition or task at hand. Because it was not curatorial-based, this study was carried out by the head of education and the communications officer.

The last axis of the model is the *z-axis*, which represents the curatorial *intent*. This concept can exist on a spectrum. One end is the sharing of culture with the masses, and the goal of drawing people to the institution, fostering the democratization of culture. On the other end, cultural democracy is securely established. Therefore, it acknowledges diverse perspectives and focuses on community involvement and social action (Rowson Love & Villeneuve, 2023).

Both Simon's (2010) and Rowson Love et al.'s (2021) models were developed to serve as a tool for museum practitioners when preparing or planning future exhibitions, and I argue that they can also be used for education projects such as the co-creation of social media content. While one offers more of a typology of types of participation (Simon, 2010), the other represents a continuum of practices through a model composed of axes (Rowson Love et al., 2021). Both of these approaches highlight the importance of the audience's needs and community interests.

## **Methodology**

This study employs an educational design-based research methodology (EDR) (McKenney & Reeves, 2018), also known as design-based research (DBR). This is used to create and test new methods, tools, programs, and materials, often educational technologies, aimed at improving practices for practitioners (Sandoval & Bell, 2004). The methodology is iterative and

involves many cycles of research, analysis, and reflection, where an initial prototype is improved upon and then redeployed.

In this optic, this study aimed to test collaborative social media co-creation practices with youth participants at one case study site. This article reports on the study's first two iterations, in which the research team explored these practices at the Oxford University Museum of Natural History (OUMNH) (figures 20 and 21).



*Figure 20: The front façade of the Oxford University Museum of Natural History*



*Figure 21: Interior Main Gallery of the Oxford University Museum of Natural History*

## ***Oxford University Museum of Natural History***

Located in Oxford, United Kingdom, the Oxford University Museum of Natural History is a natural history museum that holds over seven million historical and modern specimens—from fossils and rocks to zoological specimens, books and archives, and a small collection of paintings, sculptures and objects (OUMNH, 2024). Despite being a museum with a small team, its social media content has attracted a following from around the world, particularly among Gen Z users (Richardson, 2024). Behind the success of these accounts is Sarah Bell, the museum's digital communications officer, who recognized the importance of collaboration with various museum departments to create appealing social media content. Together with the head of Education, Sarah Lloyd and seven youth visitor participants aged 15-24 years old recruited via social media and by snowball sampling, agreed to participate in this study (see recruitment post and flyer in Appendix B).

## **The Project**

The project tested collaborative creative processes for educational social media content with visitors. While digital communications officers, educators, and other departments create educational content about museum objects for visitors, visitors are usually not involved in this process. Based on feedback from young people in a previous study I conducted on their experience of museum social media content (Huebner, 2023) and the needs of the participating museum this collaborative design-based research process followed the following stages:

1. Identify the needs of the museum and the young participants: *I met several times with the museum head of education, its digital communications officer, and one of the museum educators.*

2. Create the pedagogical design, including the worksheets and activities (see Appendix C):

*Together, we designed the creation activities the participants would experience.*

3. First iteration: *First implementation of the pedagogical design.*

4. Analysis and improvements of the proposition: *We reviewed the data from the first iteration. Through discussions, we adjusted and planned for the second iteration.*

5. Second iteration: *Second implementation of the pedagogical design.*

6. Analysis and evaluation: *Analytical feedback on data from both iterations. Refinement of didactic resources and teaching sequence to produce practical resources for museum educators.*

The two iterations of the study were the following:

**Iteration 1: Open Topic.** Under my supervision and that of Sarah Bell, the project's first iteration allowed participants to develop creative social media content related to any museum collection object. Six participants came for two afternoons at the museum to participate in the activities. The first day involved a museum visit, both exhibitions and behind-the-scenes collections and a discussion surrounding social media where we viewed the types of content the museum usually shares. Youth participants share their thoughts and opinions. The second day involved the creation of social media content. Participants brainstormed using worksheets and explored the museum independently, photographing or reading archival materials in the collection.

**Iteration 2: Fakes and Foolery Event.** The second iteration, outlined by Sara Lloyd the head of Education, revolved around a project that the museum decided to partake in called April

Fakes Week, during the week of April Fool's Day 2024. This iteration had one 15-year-old student participant who came for three full days to the museum as a work placement program organized by their school (see the schedule of their 3 days in Appendix D). Proposed to museums and cultural institutions throughout the cities of Oxford and London by Patricia Kingori, a British sociologist, the museum was tasked with shedding light on the hoaxes, forgeries, and fakes in its collection (TORCH, 2024). The head of Education of the OUMNH considered various ways to achieve this, including social media posts created with young visitors.

### ***Methods***

I used many methods to gather data from the perspective of the people taking part in both iterations. I interviewed youth participants, the digital communications officer, and museum educators before and after each iteration to evaluate the impact of the activities on their learning and the competencies needed to experience them (see Appendix E for interview guides). I also held two focus groups with all participants together. Detailed descriptions of the developed content, ideas, and participants' creative outputs were kept for analysis. Additionally, I photographed the activities as they were ongoing and kept a research journal. In the following results section, I first describe the different types of content participants created. Then, I present two major themes that emerged from my thematic analysis of the data (see Table 2 for an overview of the themes and categories) (Nowell et al., 2017).

Table 2: Overview of themes, categories, and sub-categories

Themes	Categories	Sub-categories
Creative Process	Balance	Breaking Down Barriers
	Challenges	Algorithms
		Equipment
		Ethics
		Evolution of Platforms
		Time
		Text and Overlays
		On Screen Presence
	Collaboration	Working with other departments
		Working with visitors
	Competencies	Interdisciplinary skill set
Engagement	Extension of the Museum	Community
		Inspiration
		Off-site engagement
	Learning	Curiosity
		Facts
	Playful Space	Trends
		Memes
		Short-form videos

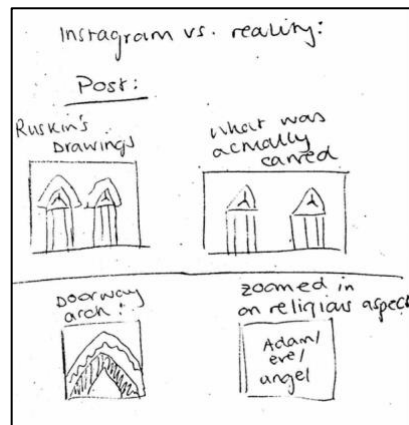
## Results

### *Typology of Social Media Content*

Participants created a variety of social media posts, including memes, silly short-form videos, fact-driven posts, and Instagram story quizzes. In the following paragraphs, I describe a few examples. These examples were purposely selected to show the range of content that was made. Since the study took place, some of the created content has been published, while others presented here are still in their original conceptual form.

Various kinds of Instagram posts were created. One participant, interested in architecture, was particularly drawn to architect John Ruskin's museum illustrations from the 1860s. When she learned that his original drawings and plans for the building were not always integrated into

the final design of the building, she came up with a concept for a series of posts around the trend “Instagram vs Reality.” This trend originated from women posting pictures of themselves side-by-side; one of them is real life, and the other an idealized perfect version of themselves. In the participant’s post idea, she placed Ruskin’s original drawing next to a picture of the museum’s building today (see Figure 22). One can easily see that his original plans for the museum did not materialize.



*Figure 22: Ruskin vs Reality. Instagram Sketch by participant.*

Participants also produced more straightforward informational posts with single images or, at times, on a carousel featuring more than one museum object in a post. For example, an Instagram post questions the authenticity of one of the museum moths believed to have been water coloured by William Jones, the author of books that feature thousands of his watercolours from the 18<sup>th</sup> century. (Figure 23)

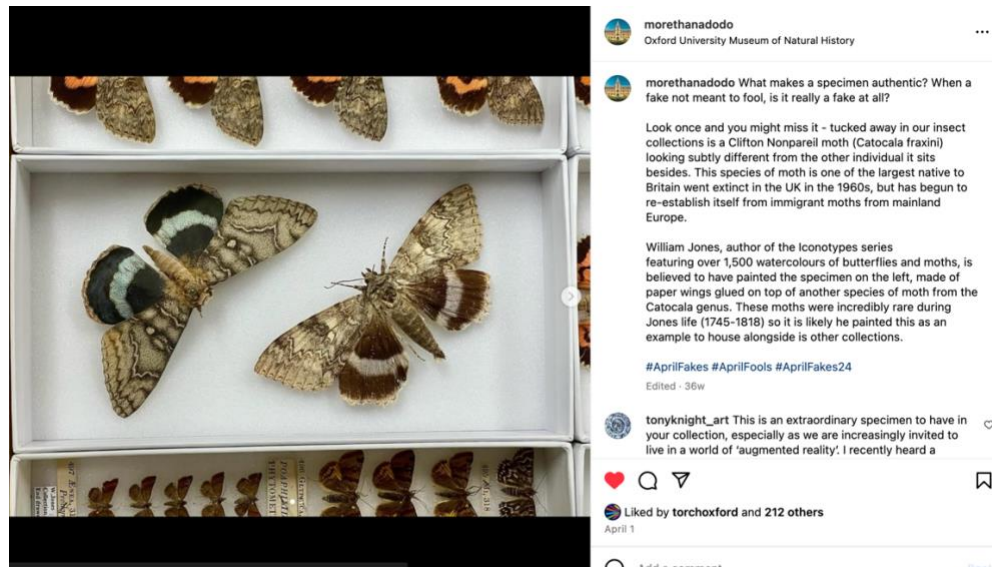


Figure 23: *What makes a specimen authentic?* Posted to Instagram the week of 1 April 2024. Courtesy of the Oxford University Museum of Natural History.

Participants also had the idea to create Instagram story quizzes. These were created during the fakes and foolery iteration. In collaboration with the museum, the participant created a series of stories asking users to guess whether the fossil was real or a cast (see Figure 24). Users could vote if the object were real or a cast, and then the correct answer was revealed.



*Figure 24: Can you tell which of these Mesozoic reptiles are real and which are casts? Instagram Story for the April Fakes and Foolery Iteration. Posted to Instagram the week of 1 April 2024. Courtesy of the Oxford University Museum of Natural History.*

Another type of content that was created were memes.<sup>6</sup> One participant had the idea of using Gru from Pixar’s film “Despicable Me” to shed light on an issue she learned about in the museum's main gallery, that is, that the glass ceiling was bleaching museum objects (see figures 25 and 26). This became a serious issue for the museum after it spent millions to clean the glass windows covering its ceilings, removing 150 years of dirt, and suddenly allowing more light to come through (Foster, 2016). Another meme example of a twist on a popular meme shows an ordinary rock in the collections with the caption “If you don’t want me like this,” followed by sparkling crystals in the collection “You don’t deserve me like this” (see Figures 27 and 28).

<sup>6</sup> Memes are images and texts that are copied, remixed and shared on the Internet, often on social media platforms (Shifman, 2013). Commonly, they are used to share jokes.



Figure 25: Gru explaining "Let's clean the main hall"; "The sunlight is very pretty"; "Many people like it"; "Oh no. Sunlight is bleaching the specimen." Meme sketch by participant.



Figure 26: Original image used for the Gru meme. This meme is inspired by a scene from Despicable Me, where Gru uses a whiteboard to explain his elaborate plan to steal the moon. It has been employed in many ways to show three predictable situations followed by one surprising one. The meme is usually used to show a plan that does have the intended outcome in an ironic way.

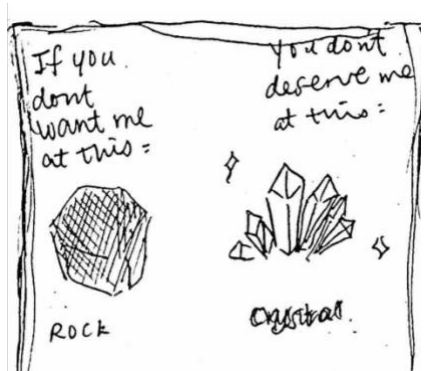
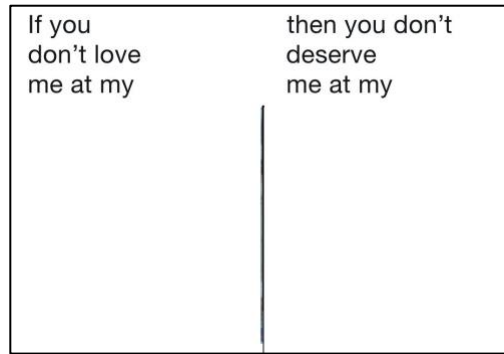


Figure 27: "If you don't want at this, you don't deserve me at this." Meme sketch by participant.



*Figure 28: Original Meme template where individuals pair an image of something at its worst with a positive counterpart.*

Youth participants also developed various short-form video ideas—ranging from fact-driven content requiring museum object research to playful content that uses popular sounds and trends from the various social media platforms. In one example, a participant wanted to show that the first natural history book by Edward Topsell contained a lot of true information. Yet, it seemed he also took some creative liberties and included animals that, at the time, were perhaps thought to be real but now are part of fantasy. In order to reveal the types of animals in the book through humour the video shows various animals in the book with the popular sound “I like you have a cupcake.” When the final image of a fantastic half-human with multiple jaws and a lion's body called the Manticore appears, the user hears “ewwww,” revealing that perhaps the book is not very faithful to reality (see Figure 29). Another form of content is a more narrative, descriptive style of storytelling in which the audio narrates the tale of a museum hoax, accompanied by images of the museum object (See Figure 30).

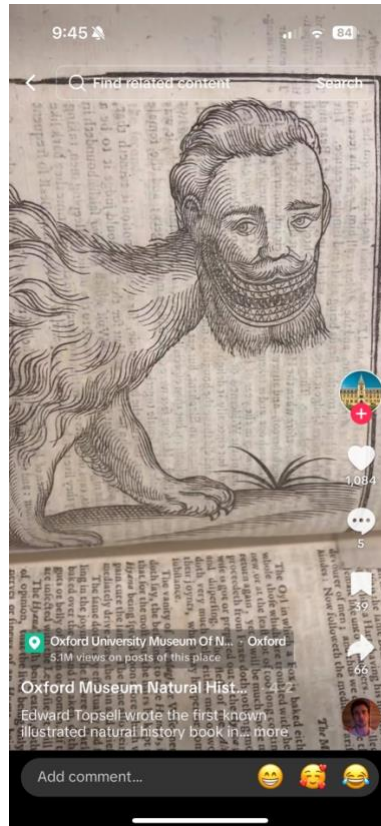


Figure 29: Short-form video of Edward Topsell's Book posted to TikTok on the 2 April 2024. Courtesy of the Oxford University Museum of Natural History.<sup>7</sup>

<sup>7</sup> Short-form video of Edward Topsell's Book posted to TikTok with the following caption: "Edward Topsell wrote the first known illustrated natural history book in English in 1658. When Topsell published this impressive volume he had not actually seen many of the animals in it in life, instead relying on the writings and accounts of other people who had (sometimes allegedly) seen these 'four-footed beasts and serpents'. The book contains descriptions of many animals we are familiar with, and others which were thought to be real at the time but have since been relegated to fantasy. For this April Fakes week, we pose the question, does a book with chapters on Manticore, dragons and unicorns count as a natural history book if that is what was believed to have been real at the time?"

**#AprilFakes24 #AprilFools #manticore #topsell #learnontiktok #CapCut**



Figure 30: Short-form video of the Piltdown Man Hoax posted to TikTok on 4 April 2024. Courtesy of the Oxford University Museum of Natural History.<sup>8</sup>

## Creative Process

The first major part of the findings of this project centers around the creative process behind the social media posts. The question of **balance** in what was created arose during interviews with all participants, regardless of their roles. This balance was always explained as a duality or a spectrum, with information/factual content on one end and trends and playful content on the other. Sarah Bell, the communications officer, stated: “It's really been about finding a

<sup>8</sup> Short-form video of the Piltdown Man posted to TikTok with the following caption: “*The Piltdown Man hoax wasn't the first and certainly won't be the last hoax, fake or forgery, in the history of science, but it remains one of the most well-known and stands as a warning of the dangers of hubris in the discovery and description of the natural world.* #AprilFakes24 #Fakes #Hoax #Piltdown #fyi”

balance between, like, how can I reach a lot of people and how can I give people something that's like chunky enough that they want to bite into it?" Similarly, one of the youth participants said: "I'm kind of assuming you have to strike some sort of balance between stuff that's going to be popular and stuff that's actually going to create interest in the museum." Many concrete challenges were brought up while discussing these two types of content and finding equilibrium.

**Challenges.** The first major challenge that museum faces daily is the **algorithm**—that is, when creating content, you never know what the algorithm will prioritize. This difficulty arises when content is shared on the museum's social media account and on what will be viewed and reach people's feeds. It also affects the creative process, particularly regarding the trends and popular types of videos that the communication officer should become aware of. All of this depends on the algorithm, which, like a black box, is impossible to understand fully. Depending on the accounts the museum follows, certain types of content will be recommended, which makes it hard to know what is perhaps trending outside of the museum world. As the communications officer says: "the algorithm does tend to pigeonhole you a bit," and "How can I balance [what I'm seeing] with what institutions are putting out other kinds of content?" Museums typically follow other institutions rather than individual accounts, so the algorithm tends to favour certain types of content. However, if a fun and different example emerges, when someone takes a moment to view it the algorithm will suddenly favour that type of content. A concrete example of this occurred when the communication officer, a fan of Taylor Swift, lingered just a moment longer on a video featuring her music. She felt that this slight delay influenced her entire feed, making it difficult for her to get an overview of ideas that could work for the museum. She found it quite challenging and even tried to prolong her viewing of different types of videos to trick the algorithm into showing her diverse content instead.

Next, museums need **equipment** to create social media content. This equipment must be up to date; it should support video editing. When producing content, it is essential to have both a phone and a larger device on which to edit. At the OUNHM, content is initially filmed on a phone and then edited on an iPad or computer. This equipment was only acquired after the institution noticed the success of its TikTok account. Initially, the content was completely produced on the communication officer's personal device. Participants took photos and videos with their own devices and shared the museum's iPad.

During the discussion of the creative process, the topic of **ethics** also emerged several times. What should be shared? What might offend specific individuals? Some trends, popular videos, and social media content have the potential to be offensive. The communications officer and collaborating visitors must remain aware of this and critically assess all material shared online. Some museums utilize a multistep validation process, while others follow established guidelines. At the OUNHM, the communication officer is free to publish content without prior validation, relying on trust. Nevertheless, she remains highly cautious about ethical considerations:

I'm not going to put anything out that is ethically questionable. I do my best to stay up to date, especially with words. The use of proper language and things like that, I'm careful. I know how important that is and how big of a deal it is for certain words to mean certain things to different people. And I try to be conscious that we are working with a collection with a colonial legacy. How can we be respectful of that while also not ignoring it?

(Sarah B)

**The speed at which platforms change**, and the **emergence of new platforms** create a steep learning curve. Additionally, it's important to consider the **time** required to create content. Some types of content necessitate museum educators and the communications officer to spend an

entire week learning and interviewing curators to fully grasp a topic or object and appropriately adapt and make it accessible via social media. When museum accounts are expected to be updated multiple times a week, this requires significant time.

During focus groups and interviews, participants consistently mentioned the importance of **text and overlays**: their presence or absence, size, and coherence with visuals. Many also noted the relationship between visuals and sound, including music. A specific challenge discussed was the presence or absence of sound; the images need to align well with the information provided, and some sounds, when overused, can become irritating. Some participants stated that they turn off the sound for this reason, making text overlays crucial since they can no longer hear the audio: “I think when it’s like an audio that I hear everywhere, that’s kind of what makes me turn the audio off and just go back to my music. Like, I’ve heard this like three times today.” This presents a challenge because each participant prefers a different semiotic mode, indicating that the content must effectively utilize visual, text, and sound simultaneously to reach various users.

**Collaboration.** Creating social media content for institutions requires **collaboration with all museum departments**. The communications officer at the OUNHM closely collaborates with all departments and educators. She describes herself as infiltrating behind collections, exhibitions, and meetings to learn as much as she can and subsequently create content: “Go take two hours and learn absolutely everything you want to about that because if you’re not excited about it, you’re not going to be able to make people reading it online excited.” She explains that her curiosity about the museum objects drives her desire to learn and collaborate with her colleagues. She attributes the success of the museum’s social media account to her collaborations.

The museum regularly **includes visitors** in various programs such as their youth forum; however, having visitors collaborate on social media creation is more complex. Thus, the

OUNHM communication officer was very excited about the study presented here because it helped them have a group of visitors come in and co-create. She said,

I really love hearing from young people about what their thoughts are. I would love for them to say, "No, stop doing this. Do something like this instead." I'm not afraid of critical feedback. I always say that if there's anything cool that you guys want to explore, let me know. I love social media because it gives me an excuse to really nerd out on something specific. I see something in the collection, and I find it really interesting and want to learn more about it. Then, I make everyone on the Internet learn about it because I thought it was so cool. But I've essentially never had luck getting any groups of students to create content or want to work with me on any content. (Sarah B.)

After various co-creation sessions, the results were very positive and abundant: "There is way more stuff that I can work with than I could possibly imagine would happen. Absolutely. I think every single one of the memes is bang-on and hilarious. And I don't create a lot of memes."

**Competencies and skills.** The final subgroup of findings pertaining to the creative process relates to the competencies and skills required to create educational social media content. The OUMNH describes the job requiring an **interdisciplinary skill** set and especially a certain level of excitement for the museum objects themselves:

It's like an interdisciplinary skill set, isn't it? And not everyone's brain wants to do that. That's just the long and the short of it. I can't make people excited about something that's not excited about. [...] You have to want to be and cringe and curious to like to learn about something well enough to be able to talk to it, talk about it to people who don't know anything about it. You can't create that out of nothing: someone has to kind of come at you with some level of excitement. (Sarah B.)

The other part of the skill set revolves around **digital skills** and the understanding of social media. One must know and recognize how each social media platform functions. Each platform requires a different tone and semiotic mode. The social media professional must know how to write for these platforms, edit videos, record sounds, and choose appropriate music and audio.

### ***Engagement***

**Extension of the museum space.** Visitors who have never set foot in the museum and who may not necessarily plan to do so in person engage with museum objects and the museum space through the social media content created by the OUNHM. As the communications officer stated:

You know, so it's not just about the people who are going to walk through the door. We've got this, like, crazy collection and, you know, we can't get everyone in, but I can have as many eyes on our social media channels in a week or a month as visitors that we get in a year. So when you think about it that way, who is actually coming here? (Sarah B.)

She further explained that the museum's second-highest viewership is located in the United States. The OUNHM's social media presence and interactions have connected the museum with other cultural institutions and **inspired them**. Other museum professionals have reached out, and staff from the OUNHM have been invited to give talks and share their experiences in creating social media content and the various approaches they employ. The museum, being very small, is proud to gain traction from larger institutions. The museum's social media account was also described as an extension of the museum label, enabling the museum to add videos, sounds, and additional information that cannot fit on a traditional museum label, which is limited to around 200 words.

Finally, regarding the extension of the museum space, social media for the OUNHM has created **new communities** and allows the museum to extend its audience by joining communities it was previously not a part of. To engage in communities already out there, the use of popular trending sounds in museum content helps the museum objects reach new people. It then helps certain users to view other content about the museum's collections that may be "a little bit longer, chunkier, with more information," as described by a participant.

**Playful Space.** Social media enables the museum to demonstrate that it is a place where you can have fun learning about museum objects. Visitors often have a preconceived notion that it is a serious place of learning; however, playful videos can nuance this perception: "social media helps break down that barrier. I don't want you to see this as the oldest place you can't belong to or engage with. I want to make people feel comfortable and happy and have a good time here." Participants also explained that they do not want people to think that working at the museum means sitting behind a desk, noting that museums, especially this one, are dynamic and alive today, even if they contain old objects. To achieve this, it becomes important to engage with the playful trends that are out there, such as funny TikTok videos, memes and trends.

**Learning.** Only a small portion of museum objects are displayed. Social media allows visitors to view behind-the-scenes aspects of the museum. This includes objects that may not be on display and the rooms where collections are stored. Therefore, individuals **curious** about what else they can discover or learn more about the work of those who care for the collections can do so through social media. However, some participants explained that if they see something behind the scenes on social media that is not made clear, they might think it is available to view in real life. They would feel disappointed if they travelled to the museum expecting to see it but found it was not on display. Thus, it is important to be very clear when sharing information about museum objects, whether they are displayed or not.

Participants also explained that they are drawn to **information-driven content** because they often feel as if they are wasting their time on social media. If a video about a museum object that catches their attention is information-driven, it makes them feel less bad because they are “learning something.” As one participant explained: “I mean, this is more the kind of thing. I would watch all the way through because I feel like I'm learning something and something that, like, I didn't necessarily, I had no idea about any of that beforehand.”

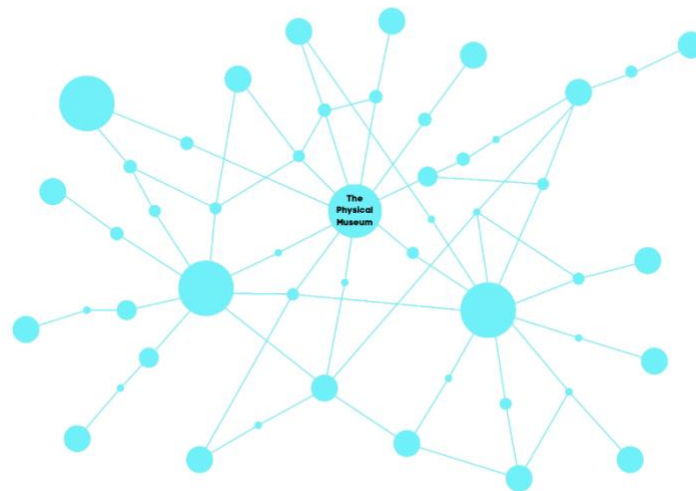
## **Discussion**

The purpose of this study was to investigate the use of collaborative practices in creating educational social media content. In this section, I draw attention to the most noteworthy findings relevant to other museums that wish to co-create content with visitors and the various tensions that emerged in the data.

### ***Co-creation as a Gateway to New Networks and Extended Narratives***

The data from this study confirms the study’s theoretical expectations. The evidence shows that the museum is no longer a space that requires a physical visit. The programs and experiences offered online are central ways visitors can have a museum experience, and one of the primary ways museums share their collections online is through social media. While these practices were once employed to attract visitors to the museum in person as a marketing strategy, social media content no longer serves this function exclusively: the OUNHM has a following from around the world and is part of online communities from around the world. Collaborating and cocreating with visitors expanded this reality further.

Data from the study suggests that the museum is more than just a central node, as represented in previous models (Ivanova & Watson, 2021, p.3); it is now part of a vast constellation of diverse networks, each expanding into subnetworks (see Figure 31). These subnetworks include communities and practices that have nothing to do with the museum collection itself. A key example mentioned in this study is a viral TikTok video featuring the OUNHM performing the song “Maneater” by Hall and Oates. The video includes museum staff lip-syncing while showcasing a specimen of a giant anteater, cleverly playing on the title of the song. This video, using the popular song linked in the creation, was picked up by the artists themselves with their followers who might have never heard of the museum, and this also caught the attention of BBC radio, which conducted interviews at the museum, sharing the museum object with an even wider audience. This video helped the museum object be seen by users who love the museum, users who are fans of the artist Hall and Oats, and listeners of BBC radio.



*Figure 31: Networked Museum Education*

Cocreating social media content with visitors in this study allowed museum professionals to discover practices that belong to various subcommunities of which the visitors are a part,

practices that the museum professionals were previously unaware of and would not have thought to engage with or translate to museum objects. The communication officer said that the experience surpassed her expectations regarding the types and quantity of ideas the young participants could generate quickly.

### ***Developing Social Media Competence for Cultural Institutions***

A central finding is the need for museum social media literacy among museum personnel to produce educational content that resonates with visitors. This task is quite complex because it involves not only understanding social media practices and keeping up with their development but also fully comprehending the museum object and effectively pairing or translating it to a social media context. This competency is challenging to acquire. The communications officer explained how much time is required to fully grasp what is trending and performing well on social media. She spends hours reviewing content and saving ideas that she believes might connect with a museum object on the job and outside of job hours when commuting or scrolling in down times. Museum professionals who create social media content must be able to understand the humour and concept behind popular sounds in order to adapt them and translate them to museum objects.

While visitors coming to co-create for the study quickly brought forward numerous new ideas regarding social media practices, and contributed innovative concepts related to social media trends and approaches that could be utilized, they, to no surprise, lacked in-depth knowledge of the museum object. Two or three afternoons in the museum were not sufficient to gain adequate understanding. Thus, the museum professionals' expertise was essential to the creative process.

Certain equipment and creative skills, curiosity, and excitement are also required. These various competencies and technological needs were clear. The participating visitors, the communications officer, and the collaborating museum educator needed to exhibit a natural curiosity; other museum staff would not have necessarily approached them to develop concepts, they had to reach out. The participants met with different museum departments and collection managers to ask questions and learn about museum objects before brainstorming their ideas. Various strategies were also used to take pictures of museum objects, so they are effectively showcased on social media (see figure 32). Participants learned how to frame objects in photos properly, which sometimes required black backdrops or a light setup. Different strategies for recording high-quality audio were also employed, such as placing oneself under a piece of fabric or a jacket to block out external sounds when recording on a phone. These are all tactics and strategies that the museum staff at the OUNHM picked up while learning to create through trial and error and shared with participating visitors.



*Figure 32: Co-Creating with a Young Participant*

### ***To Trend or Not to Trend***

Youth participants often express a desire for more meaningful or educational content on social media, viewing it to counterbalance the negative impact they believe these platforms have on them. That is, they desire to use social media more purposefully, with the intent of learning. However, when it comes to the content they actually engage with, it typically involves trending sounds, viral challenges, or funny videos. Interestingly, when asked to create their own content, opinions were divided—half of the participants found it easier to produce lighthearted, humorous videos, while the other half preferred to create more in-depth, thoughtful material. The statistic behind which content they created was more popular, viewed, and interacted with most widely is clear: the short-form video of Edward Topsell’s Book, which used the popular cupcake sound

previously seen in the typology section, received 1,082 likes from users. The informational Short-form video of the Piltdown Man Hoax received 62 likes, which is 17 times fewer engagements.

This tension between popular and fun content versus educational fact-driven content is a finding that emerged in a previous study I conducted (Huebner, 2023). It is a recurring paradox; youth participants deeply desire to learn and feel it is easy to create fact-driven content. They do not want to waste time on social media and are self-critical of their own use of the platforms. Thus, they recommend to museums that they would like fact-driven content. Yet, when viewing social media content, they are consistently drawn to funny videos; that is what makes them laugh and see the museum differently. Perhaps this is due to their addictive nature. One participant even noted how they had previously deleted social media altogether because they realized how much time they wasted on the platforms. This raises the ethical question: should museums be contributing to the addictive cycle by using popular sounds and trends? Should they share content that has the potential to be different from what influencers and other content creators are making? What communities does the museum want to be a part of, and how useful is it really for them to engage in trends? Is it meaningful to discover a museum object in this way?

## **Implications**

This educational design-based research project yielded positive results for the Oxford University Museum of Natural History. It led to co-creating numerous concrete posts that the museum could use shortly after their conception. It also revealed new content forms the museum could explore to engage audiences online, such as memes. However, it is important to recognize that time was a challenge. While it required significant time and effort to mobilize young visitors and schedule visits to behind-the-scenes collections to speak with various curators, the number of

ideas and types of content generated in just a short time was truly extraordinary. This approach was an effective way to tap into the creative minds of seven participants, all of whom interacted with and used social media for a variety of reasons and valued different types of content. It is important to highlight that more photographic posts and quizzes were created than videos because videos, even short ones, take more time to produce. Cocreating with visitors also allowed the social media account to feature voices other than museum professionals—a practice in line with the mission of museums.

In terms of limitations, given that the study occurred at the Oxford University Museum of Natural History in the city of Oxford, which has a large student population and numerous cultural institutions, most of the young participants who opted to participate had a prior interest in museums and heritage sites. Although time was limited for the study, the participants' previous museum experiences likely contributed to their ability to efficiently understand the task at hand and create social media content. Nevertheless, co-creating with visitors could easily be accomplished with high school groups. It would utilize many essential competencies, such as synthesizing ideas and stories about museum objects and various creative artistic skills in photography and video editing.

Regarding future research, another educational design-based study at a different museum would complement this study and provide more insight into the effectiveness of co-creative practices. It would be intriguing to conduct this research at museums with varying social media engagement levels. The OUNHM already boasts a very active social media presence, and its staff is accustomed to engaging with the public. It would be worthwhile to try these practices in an institution where this may be less common to understand better the challenges in implementing such a project. Furthermore, future research might explore how similar collaborative practices are

employed with other emerging technologies that museums have had to quickly adapt to and utilize, such as virtual reality.

In sum, co-creative practices require a museum open to sharing its authority with visitors, museum professionals willing to collaborate and given time by their superiors to do so, which has funding implications, and motivated young visitors who are curious about museum objects and want their voices to be heard.

## Conclusion

This dissertation contributes to the growing body of literature on museums in the digital landscape. These final words explore the connections among the three manuscripts of this dissertation, serving as both a conclusion and a starting point for future research. Chapter 2 conceptualizes a new paradigm for museum education in a post-object, post-visitor context. Chapter 3 provides systematic ways to analyze learning situations in virtual reality. Chapter 4 implements co-creative practices involving technology. In this conclusion, I start by revisiting the initial research questions posed at the beginning of this dissertation. Then, I list the broad contributions of the three manuscripts to the literature on museum education, and I reflect on the nature of the museum in 2025. Finally, I outline future research directions.

### Revisiting the Research Questions

The goal of my research was to answer the following overarching question: **How do new digital tools transform museum education, and what are the implications for learning experiences and engagement?** I addressed this question by proposing a new paradigm for museum education and illustrating it in action through different case studies: exploratory conversations with museum AI chatbots; analyzing virtual reality experiences and how immersive spaces alter the pedagogical situation; and finally, participatory practices that involve visitors in the creative process of educational content for social media.

The three sub-questions that arise from this central research question have also addressed through the dissertation. First, **how do digital tools enhance or alter the ways in which visitors engage with objects and educational content?** My second manuscript on virtual reality

demonstrates how technology has the potential to transform the visitor experience, allowing individuals to become part of a museum object through active participation. Instead of passively standing in front of the museum object, they can interact with, manipulate, and immerse themselves in it based on the design of the experience set up by the museum educator. This manuscript also illustrates that some museum experiences use virtual reality's attributes to varying degrees. My research shows that AI chatbots can be engaging and playful, offering personal responses to users that are both educational and enjoyable. Finally, the third manuscript reveals that young visitors are conscious of the effects social media has on them and have a strong desire for educational content that is both informative and entertaining.

Next, **how can collaborative pedagogical practices influence museum education in new digital environments, and how can these practices be designed and implemented effectively?** This question is primarily addressed in the third manuscript. While recruiting visitors to co-create social media content can be challenging, once young visitors are engaged, they truly embark on and enjoy the process, offering new ideas to museum professionals that can be quickly and effectively integrated. This allows the museum to reach new visitors and extend into new online networks and communities through user-generated content and the creative practices used on social media platforms.

Finally, **what challenges do museums face when integrating digital technologies into educational practices?** Many challenges exist. First, it remains unclear how and to what extent museum educators are consulted in the development of museum VR games. Next, when involving visitors in co-creative processes, it is perhaps not sufficiently acknowledged that time is required. Visitors with no prior knowledge of museum objects need sufficient time to familiarize themselves with these items to transform and translate them into digital experiences effectively. Therefore, the role of the museum educator, who possesses expertise, is crucial in this

process. However, as my dissertation bridges illustrate, the role of the museum educator may be questioned in the contexts that involve AI chatbots which, despite some errors, they do replicate much of what museum educators do and, in some cases, in an even more playful manner by adopting personas.

### **Contributions of the Three Manuscripts**

Considering the nature of the research questions that guided this dissertation, the work presented here contributes to the field of museum education, along with several other areas that intersect with it, including art education, broader educational contexts, game design, and interaction design.

First, this thesis presents a new framework for considering digital museum education. Other scholars have discussed object-centered approaches and the importance of interacting with real objects (Chatterjee & Hannan, 2016; Hein, 2006; Schultz, 2018; Velázquez Marroni, 2017), which extend along a continuum from object-based learning toward more visitor-centered approaches (Falk & Dierking, 2016; Rowson Love & Villeneuve, 2023). The theoretical work in my initial manuscript extends this continuum further to consider post-object and post-visitor-centered approaches to museum education that involve various types of technology that alter the museum object's nature and the learning experience it provides. This extended continuum serves as a theoretical foundation for my own work, but it can also be used by other scholars to help frame their research.

Next, this thesis contributes to the growing body of literature on virtual reality and the museum at a time when more institutions are incorporating experiences using this technology (Lee et al. 2020; Illsley et al. 2024; Li et al. 2024). Additionally, the thesis enhances museum

education in immersive environments (Shahab et al., 2023; Trunfio et al., 2021). More specifically, this work provides a tool to assist researchers in systematically analyzing the pedagogical context in museum education. Broadly, the thesis also contributes to the field of art education (Lalonde et al., 2023). As VR experiences become more affordable, more young people and schools have experimented with the technology (Lewis et al. 2021; Luo et al. 2021). Providing a tool to help understand these immersive environments can also assist educators in assessing whether it suits their pedagogical needs or not.

This thesis also adds to the research on the entwinement of museums with social media, particularly from the perspective of museum education (Arias, 2024; Agostino et al., 2020; Huebner, 2023; ICOM, 2020; Kist, 2020; Martins et al., 2021; Zingone, 2024). It answers the need to explore collaborations with visitors to co-create social media content (Huebner, 2023). This has inevitably spawned a case study of participatory co-creative practices involving technology (Rowson Love & Villeneuve, 2023; Simon, 2010) and points the way to other technologies as I will suggest.

Finally, this thesis reflects on the educational value of AI-driven technologies and museum education (Thiel & Bernhardt, 2024). The work presented in the thesis is purely exploratory and necessitates future studies; however, the initial explorations suggest that although the technology is advancing exponentially, the field of education is falling behind in developing strategies to effectively incorporate it.

## **What is the Museum for in 2025?**

A recurring theme that emerges throughout this dissertation is: what purpose does a museum serve in the year 2025? Digital technologies have ushered in a new realm for museums

that extends beyond their walls and provides new ways to interact with museum objects. Initially, some aspects of this new landscape served a marketing function—such as social media—or a gaming function, like virtual reality, or a personal AI assistant to help purchase tickets or answer basic questions. But now these technologies have been reimagined by museum professionals who either use them or have been compelled to learn how to utilize them during the pandemic, thereby altering visitors' and users' expectations.

While some might argue that the museum is expanding far beyond its intended scope, my dissertation shows how these technologies allow for new learning and playful experiences with museum objects. It also demonstrates that these technologies expand the accessibility of these objects and the museum space to individuals who never intend to visit the museum physically. However, these technologies require not only creative expertise and knowledge of museum objects but also digital competencies to effectively engage users interested in interacting with these experiences. While it is often easier to delegate tasks involving technology to tech companies, web developers, and designers, museum professionals possess expertise that cannot be ignored and should be tightly integrated into the design process of these experiences. Additionally, as my final manuscript suggests, the public also demonstrates important expertise, such as understanding the unique semiotic modes of some of these forms of communication.

To address those who might claim that developing digital learning experiences falls outside the museum's mission, I would argue that it aligns with the museum's objectives. While the museum's definition does not explicitly include technological learning experiences, I believe the various experiences detailed in my dissertation do align with that definition, to which we now return:

A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage.

Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing. (ICOM, 2022, para. 1).

Undeniably, digital learning experiences help *interpret* and *exhibit* museum objects in new ways, whether digital reproductions, extended experiences, or imagined. They are *open to the public* and strive to be *accessible* and *inclusive*. They can incorporate the *participation of communities*, as my third manuscript demonstrates, and serve *educational* purposes, *enjoyment*, and moments to share *reflection* and *knowledge*. These moments of enjoyment and efforts to make the museum more accessible and relevant to people are supported by technology. As Sarah Bell, one of the participants in my study at the Oxford University Natural History Museum noted in one of her interviews:

The museum's presence on social media helps break down barriers. I don't want you to see this as the oldest place that you can come to, can't belong to, can't engage with. I just want people to feel comfortable and happy and have a good time here. It is such an intimidating building in a lot of ways, but it's also fun and the people here are so fun and so excited about everything. I want that excitement to come across and I want people to realize museums, especially this one, are dynamic. (Sarah B.)

Sarah highlights the significance of the enthusiasm of educators and the dynamic professionals who work in museums, which help bring the museum to life.

Nonetheless, as previously hinted, another central point to consider at the end of this dissertation is the role of the museum educator in 2025. Having recently debated whether AI-driven technologies will replace jobs with my high school students, it is at the forefront of my mind and perhaps the reader's after reading in the two bridges of this dissertation that these

technologies may alter the roles of museum educators. Indeed, as demonstrated, AI-driven chatbots are still in their infancy but can already provide significant benefits for visitors, whether using them on-site or off-site. My bridges indicate that there are areas for improvement, but overall, they meet their basic objectives of providing answers to users often in an entertaining way. Thus, how might the role of museum educators be transformed if this technology is adopted more widely? This is just one of many questions that arise from my work, generating implications for future research.

### **Implications for Future Research**

My doctoral work is a starting point for future research projects. Virtual reality and AI technologies are at their beginnings and have only recently become more affordable on the market (Castelvecchi, 2016; Gilmore et al., 2024). This section outlines some future directions I have already begun working on since the end of my doctoral work and suggests a list of guiding questions for future work.

First, as part of my doctoral research, I explored the development of learning theories in museum education by constructing a framework that suggests we are now in a post-object and post-visitor phase. This signifies a shift from object-based learning to visitor-centred learning, culminating in a new form of education that relies less on physical objects or merely the act of visiting a museum and more on the intangible experiences that museums offer their audiences. Through my practical and methodological research projects, I aim to investigate this evolving dynamic further. To this end, I will continue my experiments with artificial intelligence chatbots. Indeed, my dissertation includes only brief explorations of playful, exploratory interaction rather than an actual research study employing these technologies. Thus, further investigation into how

AI chatbots blur the boundaries between physical museum objects and their digital representations or conceptualizations, as well as the implications of this shift for museum education, is needed. AI-driven chatbots expand the understanding of museum objects within spaces created by visitors through their imagination. To enhance comprehension of this reality, I plan to conduct a multi-case study utilizing various AI chatbots and people's experiences with them.

Next, for my doctoral research, I developed a coding framework to analyze interactive and immersive museum environments systematically. I adapted and tested Gillian Rose's (2022) critical approach to examining visual content and explored the educational potential of virtual reality museums. The next phase of this area of my research will allow various researchers to use the methodological tool to analyze other virtual reality experiences and compare the results as part of a larger research project. I also plan to expand this into a study on art appreciation skills and engagement with immersive works in the Quebec Education Program (PFEQ), the context in which I teach and conduct research. Indeed, museums and other cultural institutions are creating virtual reality experiences, but students need the competencies to orient themselves and learn through these experiences. Additionally, teachers need access to these experiences and skills themselves.

What follows is a list of possible other research questions to consider:

- How does the interaction with an AI chatbot reshape the pedagogical experience of the visitor? How do these interactions shape visitor's understanding of the museum object?
- What implications does the increasing prominence of AI have for the role of the museum educator? How does this transformation influence the fundamental purpose of museums?

- What is the potential of AI for creating “smart” museum exhibits or educational experiences that adapt in real-time to the learning progress or interest of visitors?
- Each form of technology requires unique competencies to understand the content shared on them. Thus, what competencies do students need to develop to appreciate museum experiences and works of art in virtual reality?
- What are the pedagogical impacts of gamified museum experiences on learning?
- Very few schools have access to virtual reality headsets. How can virtual reality cultural experiences developed by cultural institutions be integrated into the classroom, and how do they contribute to student learning?
- What type of professional development must museum educators pursue to continue their work effectively?
- In light of the recent shift away from certain social media platforms owned by Meta, how can museums ensure they establish practices that are adaptable to whatever networked platform emerges next?
- The issues of environmental sustainability concerning AI technology is also a topic of debate. Training AI models requires large centers that consume significant amounts of energy. Should museums be negatively impacting the environment by using this technology?
- What ethical concerns emerge when implementing new technologies in museums, especially concerning data privacy, accessibility, and digital resources equity?
- In a similar vein, and as stated in my third manuscript, social media has been proven to have very harmful effects on adolescents, to the point where it has been banned for young

people in certain countries. Should museums contribute to the harmful cycle of addictive videos?

- How can museums balance the benefits of emerging technologies with the need to preserve authentic visitor experiences and engagement with original museum objects? What is the value of the original objects?
- UNESCO calls for human-centered approaches to AI in education (UNESCO, 2024), raising the question of how AI impacts human creation and cultural values, and how we can ensure that this technological tool remains centered on humans?
- Ultimately, we are now in the age of AI chatbots, but the next revolution lies in AI-driven robots (Peel et al., 2024). What potential does robotics hold for enhancing museum education, both in delivering content and creating interactive exhibits?

## **Concluding Thoughts**

My hope is that this study serves as a springboard for museum professionals to consider questions surrounding the place of emerging technology within their institutions. While many of the technological tools mentioned in the dissertation require a specific budget, the social media examples do not demand the same level of financial investment. Any museum can implement them relatively easily, regardless of size. Furthermore, there is a tendency across many fields at present to adopt the newest technology and use it as a buzzword in their marketing. This reality is also present in traditional schools. I urge educators to reflect on the competencies needed to engage with these new cultural experiences. What is the cultural value of them? How can we teach individuals to use them while remaining connected to the real object and the people?

For those who are apprehensive about technology and consistently view it as something negative, I hope my dissertation provided concrete examples of the meaningful learning experiences that can arise through technology. While we are overwhelmed by meaningless distractions on our phones and other devices, the educational content on social media consistently stood out to the young people who participated in my study. Nevertheless, as mentioned in my list of questions for future research, there are numerous challenges to consider regarding cultural value, ethics, and the environment, and more. I hope that this work helps initiate discussions around these issues.

On a personal level, my dissertation has allowed me to reflect on how I use technology in my classroom with my students and to become better attuned to the role it occupies in their lives and the relationships they form through them. It has also made me more self-aware of my own behaviors, what tools I use and when, and how they contribute to my learning and understanding of the world. I often use technological tools as a researcher, but I have noticed that sometimes using them just as an individual has allowed me to better understand their appeal without constantly trying to push the limits or question their ability to perform certain tasks—that is, enjoy them to enjoy them. Overall, the world has made tremendous advances advancements that have enabled extraordinary experiences. In my doctoral work, interacting with these technologies, museum professionals, and all the young participants has also been enjoyable (see Figures 33, 34, and 35).



Figure 33: Trying the VR game *Mona Lisa: Beyond the Glass* by the Louvre



Figure 34: Young visitor participants learning about the history of the University of Oxford Natural History Museum

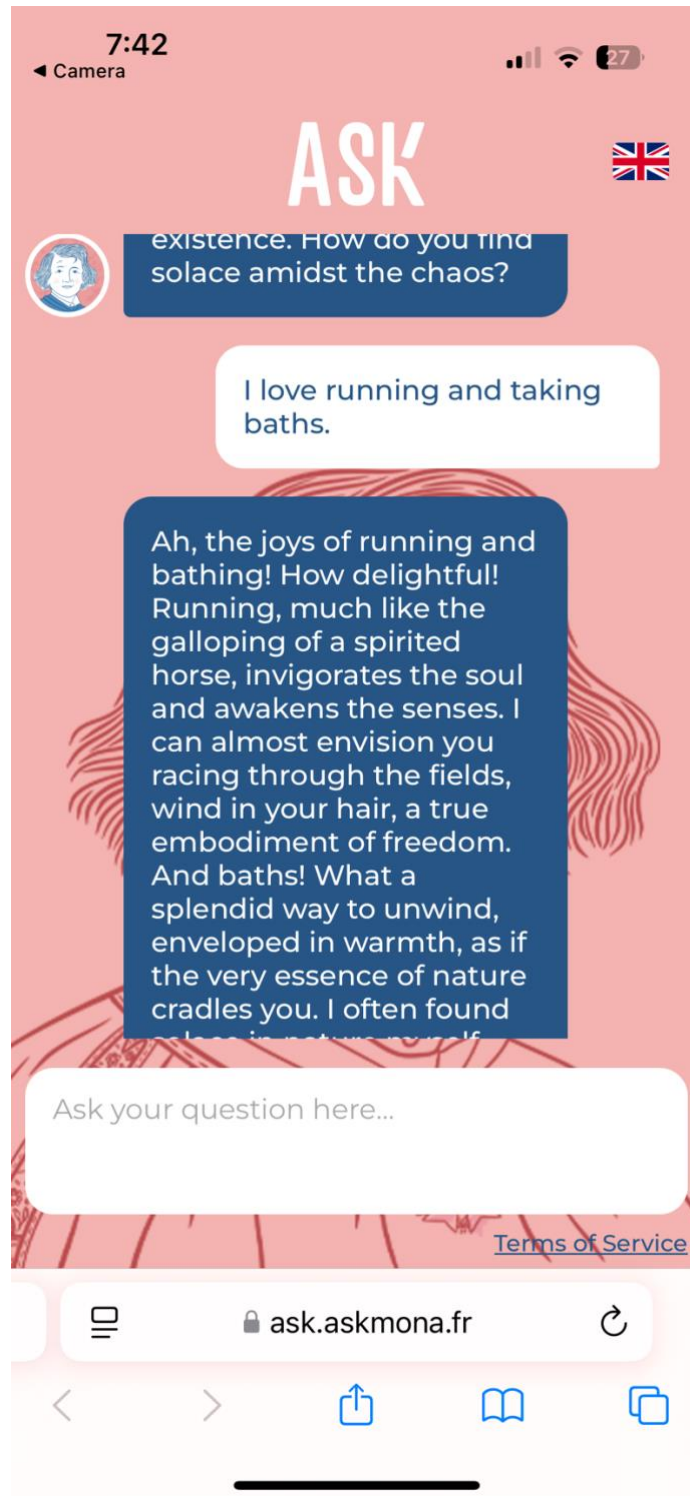


Figure 35: Conversing with the late artist Rosa Bonheur through AI, where she responds to my love of baths and running.

Finally, my doctoral work led me to travel to the United Kingdom, where I connected with a network of scholars from diverse fields interested in similar questions. This was highly inspiring for me. The dynamic city of Oxford and the vibrant people at the University of Oxford's Internet Institute fostered lifelong friendships (see Figure 36). This period was immensely enriching and helped me rediscover the value of my work during a time when I felt somewhat adrift. After all, technology and the internet truly have the power to unite people.



*Figure 36: Walking on the wall of Exeter College, University of Oxford. Photo by Claire Hurley.*

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# Appendices

## Appendix A: Certification of Ethical Acceptability for Research Involving Human Subjects



### CERTIFICATION OF ETHICAL ACCEPTABILITY FOR RESEARCH INVOLVING HUMAN SUBJECTS

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Name of Applicant: Emma June Huebner  
Department: Faculty of Fine Arts\Art Education  
Agency: N/A  
Title of Project: Navigating Museum Education Beyond Artifacts:  
Collaborative Pedagogies and Emerging Tech  
Certification Number: 30019228

Valid From: January 30, 2024 To: January 29, 2025

The members of the University Human Research Ethics Committee have examined the application for a grant to support the above-named project, and consider the experimental procedures, as outlined by the applicant, to be acceptable on ethical grounds for research involving human subjects.

A handwritten signature in black ink, reading "Richard DeMont".

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Dr. Richard DeMont, Chair, University Human Research Ethics Committee

## Appendix B: Recruitment Materials

**@morethanadodo**



# Social media & the Museum of Natural History

Under 25? Interested in museums and social media?

Participate in my doctoral research by learning how the Oxford University Museum of Natural History uses social media.

Contact **Emma** ([emmajune.huebner@concordia.ca](mailto:emmajune.huebner@concordia.ca)) if interested with your name and age by **Feb 16th**.

**What does participating involve?**  
Going to the museum twice to learn about social media use and generate new online content. Get a £25 Amazon gift voucher for participating.

## Appendix C: Worksheets Used During Research

# Content Creation



brainstorm

<b>Content Idea:</b> What kind of content are you interested in making? (Focus on Museum Objects or Spaces or Facts, etc.)	
<b>Visual Concept:</b> How could this idea be visually represented and for which platform?	
<b>Objective:</b> What is the objective of your post? Teach? Share about an event? Make people laugh? Etc.	
<b>Audience Engagement:</b> Who would be your primary target audience?  What current trends (memes, challenges, viral content) can be tied into museum content?	
<b>Brainstorm for Post caption + Hashtag ideas</b>	

# Social Media Ideas

## **Behind-the-Scenes:**

- Staff/curator interviews
- Artifact restoration processes
- Setting up new exhibitions
- Day-in-the-life of museum roles

## **Educational Content:**

- Historical facts or trivia
- "Did You Know" series about key artifacts
- Art/History lessons tied to exhibits
- Explainer videos on museum processes

## **User-Generated Content:**

- Visitor photos (with permission)
- Artwork inspired by exhibits
- Guest posts or takeovers

## **Engagement Activities:**

- Polls: Favorite exhibit, historical period, etc.
- Q&A sessions with curators
- Caption contests for artifacts
- Trivia quizzes

## **Event Promotion:**

- Teasers for upcoming events
- Live coverage during events
- Event countdowns

## Appendix D: Schedule and Overview of Student Schedule at the Museum

### Student Work Experience 4<sup>th</sup> March – 6<sup>th</sup> March

#### Placement overview:

You will be based with the public engagement team. You will find out about all aspects of public engagement (exhibitions, families, young people and schools) but will be focusing on activities for a special April Fakes and Foolery project

During the week 1<sup>st</sup> – 6<sup>th</sup> April the museum will host a week of April Foolery. We will be supporting The Oxford Research Centre for Humanities ([TORCH](#)) with public engagement. We will be focusing on the research of [Patricia Kingori](#)

This project has several components

- A family trail around the museum
- A trail for older children and teenagers \*
- A series of social media posts on museum objects that aren't quite what they seem \*
- A Youth Forum session for Saturday 6<sup>th</sup> April \*

\*These are the elements that we would like you to help with

We have a draft programme for your three days with us, though some things may take more or less time than we anticipate.

Monday 4 <sup>th</sup> March	Activity
10.30	Arrive at the museum
10.30am – 11am	Museum induction and meeting the public engagement team
11am – 11.15am	Supporting university research into museum education
11.15am – midday	Understanding Social Media in the museum
Midday – 12.45pm	Lunch break
12.45pm – 1.45pm	Practical session: photography for social media
1.45pm – 2.45pm	Object research for the Fakes and Foolery project
2.45pm – 3pm	End of day check in
Independent research	To be agreed at the end of the day

<b>Tuesday 5th March</b>	<b>Activity</b>
9.30am	Arrive at the museum / An overview of Museum Learning
10am – 11am	Observe and support a primary school session
11am – midday	Behind the scenes object research (Archives)
Midday – 12.45pm	Lunch break
12.45pm – 1.45pm	Behind the scenes object research (Life)
1.45pm – 2.45pm	Brainstorming and object selection
2.45pm – 3pm	End of day check in
Independent research	To be agreed at the end of the day

<b>Wednesday 6th March</b>	<b>Activity</b>
9.30am	Arrive at the museum
9.45am – midday	Production of Social Media content
Midday – 12.45pm	Lunch break
12.45pm – 1.30pm	Production of Social Media content
1.30pm – 1.45pm	Supporting university research into museum education
1.45pm -2.30pm	Preparation for Youth Forum session
2.30pm – 3pm	End of day check in

### **Things to look at in advance**

You might want to look into Patricia Kingori's research. She has put together a really interesting podcast series. It's all worth a listen but episode 9 talks about museum's specifically <https://soundcloud.com/user-799415203/sets/exploring-the-genuine-fake-with-professor-patricia-kingori>

### **Things to bring**

You don't need to bring any specific equipment. We have a laptop for you to use whilst you're with us. Please let us know if you'd prefer not to use your own phone to take pictures of museum objects. You might like to bring a water bottle.

**Arrangements for lunch**

Please bring a packed lunch or money to buy food in the museum café. If you would prefer to go into Oxford or eat in University Parks during the lunch break, please can you ask one of your parents to let me know that they are happy for you to do that.

**What to wear**

Please wear what you feel most comfortable in. Jeans are fine.

**Contact information**

Please can you confirm the name and contact number for a parent or carer over the three days you're with us.

Please can you also outline any additional needs or medical conditions we need to consider when planning activities.

You will be supporting university research into museum education. Please can you read the additional information with a parent. There are two forms to sign, one for you and one for a parent or carer. You can either sign those and send them to me or bring them with you on the 4<sup>th</sup> March.

## **Appendix E: Semi-Structured Interview and Focus Group Guide**

### **First Interview for Museum Educators**

- Introduce yourself and what you do with the museum
- What tasks do you do as part of your job?
- How did you get into what you are doing?
- What is a museum to you? What is its role?
- What place does technology occupy in your job currently?
- How do you feel about technology?
- How do you think technology will change art museums?
- What do you hope to learn during the project?
- Why were you interested in participating in my doctoral research?
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### **First Interview for Youth Participants**

- What is a museum to you? What is its role?
- Have you been to a museum before?
- How do you feel about technology?
- What place does technology occupy in your life? How do you use it?
- How do you think technology will change art museums?

### **First Focus Group**

- Museum educator has a meeting (1h-1.5h) with youth participants to explain possible needs/desires of a museum (what do you think visitor would like?). Questions and discussions will come naturally guided by the educator and myself.

### **Last Interview for Museum Educators and Youth Participants**

- What did you learn in the process?
- What surprised you?
- What challenges did you experience?
- What would you like to change if you were to do it again?
- How do you feel about what you created? Is it meaningful, or no?
- How was your experience collaborating with the other participants?

### **Last Focus Group**

- What do you think was successful?
- Which content works better than others?

How do you think others would receive