Fostering Sustainable University-University Museum Relationships: A Study on the Integration of Museum Collections in Higher Education Curricula

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Abstract

This study aims to identify conditions which determine the use of museum collections in university level teaching. The contemporary literature on university-museum collaborations in the UK focuses heavily on demonstrating the pedagogical advantages of using objects in teaching, but does little to help others incorporate museum collections into their own curricula. Although pedagogical barriers can play a role in the use of museum collections in teaching, there are other determining conditions which can impact an academic's decision to pursue such teaching methods. For this study, identified determining conditions were categorized into four themes. These are: Pedagogy, Logistical Limitations, Museum Management Structure, and the Student Response.

Four UK-based cases are used for this study. These are: Newcastle University and the Great North Museum: Hancock, University of Manchester and the Manchester Museum, Oxford University and the Ashmolean Museum, and University College London and the UCL Collections. Drawing on qualitative data collected through interviews with academic and museum staff and university student comments from an online survey, this study examines the relationships between the four universities and their university museums, and how these relationships either support or inhibit the use of museum collections in university level teaching.

In today's economy, university museums can no longer financially justify their traditional role of collecting and preserving collections for the sole purposes of academic use and university superfluity. Not only do university museums need to prove their worth to their parent university, but the social impact of university museums is also a hotly contested topic in today's museum sector with more and more university museums shifting their focus to the public to secure necessary funding. This study argues that this pedagogical shift can cause tensions between the museum and the university, and consequently, hinder the use of museum collections in university curricula. As a result, this study identifies the concepts of awareness and staffing amongst the university and university museum as key areas to reevaluate and prioritize to create more sustainable links and support the use of museum collections in university curricula.

Abbreviations

ACE – Arts Council England

ASUC – Academic Services and University Collections

CETL – AURS – Centre for Excellence in Applied Undergraduate Research Skills

CETLs – Centres for Excellence in Teaching and Learning

CETLD – Centre for Excellence in Teaching and Learning through Design

EBL – Enquiry-based Learning

EOS – Enhancing Observational Skills

GLAM – Gardens, Libraries and Museums

GLOs – General Learning Outcomes

GNM: Hancock – Great North Museum: Hancock

HE – Higher Education

HEFCE – Higher Education Funding Council for England

HEI – Higher Education Institution

HLF – Heritage Lottery Fund

IBL – Inquiry-based Learning

ICCHS – International Centre for Cultural and Heritage Studies

IMHE – Institutional Management in Higher Education

LIRP – Learning Impact Research Project

LOC – Lateral Occipital Complex

M&C – UCL's Museums and Collections

MERL – Museum of English Rural Life

MHCAM – Mount Holyoke College Art Museum

MHC – Mount Holyoke College

MLA – Museums, Libraries and Archives Council

MoDiP – Museum of Design in Plastics

MUPI – Museum-University Partnership Initiative

NCCPE – National Co-ordinating Centre for Public Engagement

NHSN – Natural History Society of Northumbria

NPO – Non-Profit Organization

OBL – Object-based Learning

OECD – Organization for Economic Co-operation and Development

OX – Oxford University

PBL – Problem-based Learning

PVC – Pro Vice-Chancellor

QAA – Quality Assurance Agency

QDA – Qualitative Data Analysis

RCA – Royal College of Art

REF – Research Excellence Framework

SANT – Society of Antiquaries of Newcastle upon Tyne

SLA – Service Level Agreements

TEF – Teaching Excellence Framework

TWAM – Tyne and Wear Archives and Museums

UCL – University College London

UEP – University Engagement Programme

UK – United Kingdom

UMAC – University Museums and Collections

UoM – University of Manchester

US – United States of America

VMCP – Visual and Material Culture Pedagogy

V&A – Victoria and Albert Museum

YCBA – Yale Center for British Art

Table of Contents

1 Introduction

The traditional role of museums; that of collecting, preserving, and researching historical objects for future generations, has evolved and expanded over the course of the last thirty years. In the United Kingdom (UK), what was once a possibility for an increase in university-museum collaborations under the Labour government (1997-2010), quickly fell apart when they were replaced by a Coalition government in 2010 (Boddington *et al* 2013). Whereas the Labour party sought to foster a shared educational agenda between museums and universities, the new Coalition government rescinded funding bodies set up to aid museums, such as the Museum, Libraries and Archives Council (MLA). During this period in the UK, the once core role of museum education, fell by the wayside in response to an increased attention towards public engagement (Hooper-Greenhill 1994; Anderson 1997).

David Andersons' *A Common Wealth: Museums and Learning in the United Kingdom* (1997) provides a summary of the country's first comprehensive review of museum education. As competition for public funding increased with the recession of 2008, museums were forced to emphasize the measuring of their value to society to justify the investments being made in them (Anderson 1997; Boddington *et al* 2013). Since then, increasingly in-depth reports on the public programming and visitor numbers of museums have become commonplace for museum staff in order to secure the necessary funding to stay afloat in the current economy. Nevertheless, over the years, the educational role of museums has once again become central to their mission (Cook *et al* 2010; Oakley & Selwood 2010; Jandl & Gold 2012; Boddington *et al* 2013; Chatterjee 2015).

Unfortunately, during this period of growth, one area of museum education that did not garner the same amount of attention as others was the relationship between university museums and their parent universities. This has changed in recent years, as the topic of university-university museum collaborations has been identified as a possible means in which university museums can expand the use of their collections. This fresh emphasis on museum collections as university teaching resources has been fronted by a more progressive generation of museum educators, intent on merging formal university education with the more informal learning which takes place in museums (Boddington *et al* 2013). However, there is still much work to be done, as the majority of collaborations between universities and university museums go undocumented and develop through more personal or informal means. In turn, this has led to unstable links between the academic and museum staff, which over time can dissipate and remain ambiguous.

This study builds on the work of past and present museum educators and academics who have sought to create more sustainable relationships between museums and universities. The purpose of this study is to provide insight into the areas not yet covered by previous studies. Whereas other studies describe what can be done with museum collections or discuss the learning advantages of object-based lessons, this study aims to create discourse on how

collaborations between universities and university museums can be facilitated. To do this, qualitative data collected from interviews with academic and museum staff, and qualitative data from an online survey sent to higher education (HE) students, was gathered and analyzed to examine not only the impact pedagogy has on the relationship between universities and university museums, but also the roles of other elements such as logistics, museum management, and the student response to these educational practices.

1.1   Aims and Objectives

This study's overarching research question is stated below:

What determines the use of museum collections in university level teaching?

To answer this research question, aims and objectives were laid out to guide the focus of this study. This study's aims and objectives are stated below in Table 1:

Table 1: Research Aims and Objectives

Aims	Objectives
Aim 1: Identify learning advantages and disadvantages perceived by academic and museum staff and students when teaching with museum collections	Identify and analyze the reasons academic staff use, or do not use, certain teaching methods Analyze academic and museum staff experiences with OBL and feelings regarding the use of museum collections as teaching tools
	Gain an understanding of how logistical limitations have affected the use of museum collections by academic and museum staff in the past Identify any ongoing, unique, or future logistical limitations and the affect they have on teaching with museum collections
	Identify any positive and/or negative ways in which academics feel OBL affects their pedagogy
Aim 2: Analyze how the relationship between museums and universities affect how academic staff	Identify the different models of communication and how they support the use of museum collections in teaching Identify the individuals responsible for communicating between the university and museum

and students use museum collections	Examine the extent which different museum management structures affect the relationships between universities and museums in terms of supporting teaching
	Determine how often curriculum changes occur and how museums are notified of such changes
	Determine the extent that use of museum collections is taken into account during the process of curriculum changes
Aim 3: Investigate the degree to which the use of objects in HE teaching affects student interest, motivation, and learning	Identify any patterns to what students prefer or expect when working with objects
	Gain an understanding of the factors which influence student response to OBL
	Analyze if and/or how levels of interest, motivation, and learning in students are affected as a result of the use of museum collections in teaching

This study's research question, as well as aims and objectives, will be revisited in this study's methodology chapter (Chapter 3).

To achieve these aims and objectives, four UK-based case studies were used for this study. These four cases were: Newcastle University (NU) and the Great North Museum: Hancock[1] (GNM: Hancock), University of Manchester (UoM) and the Manchester Museum, Oxford University (OX) and the Ashmolean Museum, and University College London (UCL) and the UCL Collections[2]. Chapter 3 provides the rationale behind the selection of these four cases for this study, while chapter 4 provides a more in-depth introduction to each of these cases.

1.2   Terminology

It is important to clarify the use of particular terminology used throughout this study to avoid any reader confusion before moving any further. First, is the use of the terms *formal learning* and *informal learning*, as within the museum sector, these terms can take on slightly

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[1] The title 'Great North Museum' (GNM) also includes the Hatton Gallery in addition to the Hancock, located within Newcastle University's campus. For this study, only the GNM: Hancock will be used and not the Hatton Gallery.

[2] For this study, the term 'UCL Collections' represents only those museums and collections under the management of UCL Culture.

different connotations. For this study, formal learning is understood as all learning which occurs within a structured, authoritative and/or taught classroom environment. This is in contrast to informal learning, which within the museum sector, is usually associated with all learning which occurs outside of a traditional and/or formal university or college setting with no predetermined learning outcomes. For this study, however, informal learning is understood as all learning which occurs outside of taught coursework, regardless of setting. Second, is the use of the term *institution*, which throughout this study is used to denote both the university and/or museum. This was a decision made by the researcher for diction purposes. Third, is the synonymous use of the terms *interpretation*, *narrative*, and *story*. Throughout this study's interview process these terms were used interchangeably by interviewees to describe the interpretation of museum collections. As such, these three terms are understood as having the same meaning. However, the term *presentation* is different from these three. For this study, the term presentation is understood as the physical set up of the museum displays. Fourth, is the researcher's use of the phrase *university curricula/um*. This phrase does not denote a university-wide curriculum, as this does not exist. Instead this phrase is used as an umbrella term to denote any and all subject curricula within a university. Fifth, is the researcher's use of the phrase *academic staff*. There were instances throughout this study's interview process where museum staff considered themselves academic staff because of the type of contract they were employed under or simply because the museum was a university museum. Although technically true, to avoid any confusion, for this study the phrase academic staff will denote lecturers and university employed staff outside of the museum, while *museum staff* will denote those employed within the museum. Lastly, it is important to clarify the synonymous use of the term *pedagogy* and the phrase *engagement methods*. These terms are also used interchangeably. The term pedagogy and how it is understood for this study will be revisited in this study's literature review (Chapter 2).

1.3   Synopsis of Chapters

This introduction chapter has provided a brief foundation and background on the university museum sector in the UK, the use of museum collections in HE curricula, and sets the stage for the ensuing study. Provided below is an outline of the forthcoming chapters.

Chapter two of this study is the literature review. This chapter traces the history of the educational theories and museum education which form the basis for using museum collections in HE curricula. This chapter then continues with a review of practical applications of museum collections in UK higher education, as well as a review of the pros and cons of their experiences. Lastly, this chapter examines some of the challenges universities and university museums are facing as a result of their chosen museum management structure. Although contemporary literature on university-university museum collaborations in the UK is scarce, the last decade has seen a surge in publications on creative teaching practices involving the use of museum collections.

Chapter three details the methodological approach used for the completion of this study. It provides the rationales behind the use of Yin's (2009) multiple case study framework, case selection process, the use of semi-structured interviews, an online survey, and official university and museum documentation for data collection, as well as this study's thematic approach to organizing and analyzing data.

Chapter four provides a more in-depth introduction to the four cases used for this study. This is done mainly through publically available information and resources found on the universities' and museums' websites. However, in some instances, access to unpublished and/or unpublicized information was granted for the use of this study. Institutional documents such as strategic plans, mission statements, and annual performance reviews provide key evidence into the university museums' aims and objectives and their relationships with their parent universities.

Chapters five, six, and seven present this study's findings. These chapters are divided by themes in accordance with the thematic approach taken in analyzing the data. These themes are: Pedagogy, Logistical Limitations, Museum Management Structure, and the Student Response. Chapter five is comprised of findings on both Pedagogy and the Student Response for added analysis on perceived learning advantages and disadvantages. Each theme is subsequently broken down to indicate specific determining conditions in the use of museum collections in HE curricula.

Chapter eight is this study's discussion chapter. This chapter is a culmination of the previous seven chapters and explores two overarching discussion topics for their influence in determining the use of museum collections in HE curricula. The first two sections of this chapter are entitled 'Facilitating Learning: Debating the Pedagogical Roles of University Museums' and 'Rethinking the Relationship: Universities and University Museums'. In addition, this chapter presents the challenges of the study and potential avenues for future research. The last section of this chapter is entitled 'Research Challenges and Future Research'.

The final chapter of this study is the conclusion. This chapter provides closing remarks on the study and the future of university-university museum collaborations. More specifically, this chapter reiterates the significance of this study and how the aims of this study were fulfilled.

2 Literature Review

This literature review covers the current literature on the use of museum collections in higher education teaching. This will also include foundational and contemporary literature on educational theory and museum education. The chapter is broken up into three parts: Theoretical Background, Practical Applications of Museum Collections, and University Museum Management.

2.1 Theoretical Background

Part 2.1 discusses the educational theories which underpin the current arguments for incorporating museum collections into higher education. Following a review of the literature, sections 2.1.1 – 2.1.5 examine works on experiential learning, constructivism, the museum experience, museum education, and object-based learning in museums. Each section of this literature review builds on the previous by bringing in new educational theories in response to the changing stances on the educational role of museums. The literature on educational theory focuses largely on primary and secondary education. Therefore, it is the aim of this study to push these educational theories farther into the discussion of university level teaching.

2.1.1 Experiential Learning

The concept of object-based learning (OBL) as it is known today was not created overnight. In order to fully understand the current literature on the use of museum collections in HE curricula, it is beneficial to briefly trace the educational theories and the previous uses of museum collections that have led up to this point. This literature review sheds light on current learning advantages and disadvantages perceived by academic and museum staff, as well as logistical limitations, when teaching with museum collections. These educational theories are still supported by museum educators and OBL enthusiasts today.

At OBL's foundation lies the theory of experiential learning, which was popularized during the early-mid 20th century by key educational theorists John Dewey, Jean Piaget, and Kurt Lewin. Dewey wrote his influential work, *Experience and Education* (1938), as an answer to the criticisms of the emerging progressive educational practices. For Dewey, individuals could only truly learn through their own personal experiences. Dewey's principle of 'continuity of experiences' made learning a life-long process, where experiences are stored up and transform one another over time. He noted, however, that not all experiences are educational. Dewey's criterion for what makes an experience educational is whether or not it promotes the individual's curiosity and initiative (Dewey 1938, pp. 35-6). Routine activities, or *habits*, that do not challenge the mind, will not promote educational growth, or in other words, the opportunity for future educational experiences (Dewey 1938). At the time, this theory was in direct opposition to traditional education practices. Dewey argued that under

traditional education, a subject was only taught to satisfy the requirements of an impending exam, and therefore, inhibited the student's learning because it did not prepare him/her for future experiences (Dewey 1938).

There are similarities between the educational theories of Dewey (1938) and the 'spiral curriculum' proposed by Jerome Bruner in his work, *The Process of Education* (Bruner 1960, p. 52). In essence, Bruner's philosophy is that any subject can be taught to a pupil, regardless of his/her age, as long as the information is presented at the appropriate level for their understanding. Like Dewey (1938), Bruner argued for a continuity of learning in which knowledge is built up over a lifespan; each learning experience enabling the individual to progress towards deeper knowledge. For Bruner, this process starts with the pupil grasping a deep understanding of the fundamentals of a subject before moving on to more advanced topics (Bruner 1960). However, one of the main structural features of the spiral curriculum stressed by Bruner was for teachers to periodically revisit the fundamentals of a subject with their pupils, regardless of the topic. Bruner's (1960) reasoning for this was because he recognized that even an advanced subject matter will always be grounded on its basic principles.

Lewin (1952) and Piaget (1970), both writing in the second half of the 20th century, expanded on Dewey's theory of experiential learning in their own ways (Fig. 1). David Kolb reviews all three experiential learning models in detail in his work, *Experiential Learning* (1984). Kolb provides the most complete account of the similarities and differences between the three models while connecting the process of experiential learning to the changing US university educational system at the time. Kolb claimed that around this time, experience-based education was gaining popularity with university academics. However, despite this growing support for experiential learning, critics were still skeptical of the method's lack of focus on subject content and its theoretical basis. Although Kolb does not name any critics in his work, publications known as the *Black Papers* (1969a, 1969b, 1977), had already been in circulation for over a decade by the time Kolb was writing. These publications consisted of papers and letters condemning the progressive movement in the UK education system. Contributors to the *Black Papers,* such as C.B Cox, A.E. Dyson *et al*, defended their distaste for progressive ideologies, i.e. comprehensive schools, discovery learning, and examination abolishment, by frequently comparing the successes of the traditional British school system to the bottom-dwelling exam scores of comprehensive American schools and highlighting the triumphs of formal teaching over informal teaching (Lynn 1969; Cox & Boyson 1977). A comparison of the experiential learning models of Dewey, Lewin, and Piaget, taken from Kolb (1984), are shown below in Fig. 1:

The Process of Experiential Learning
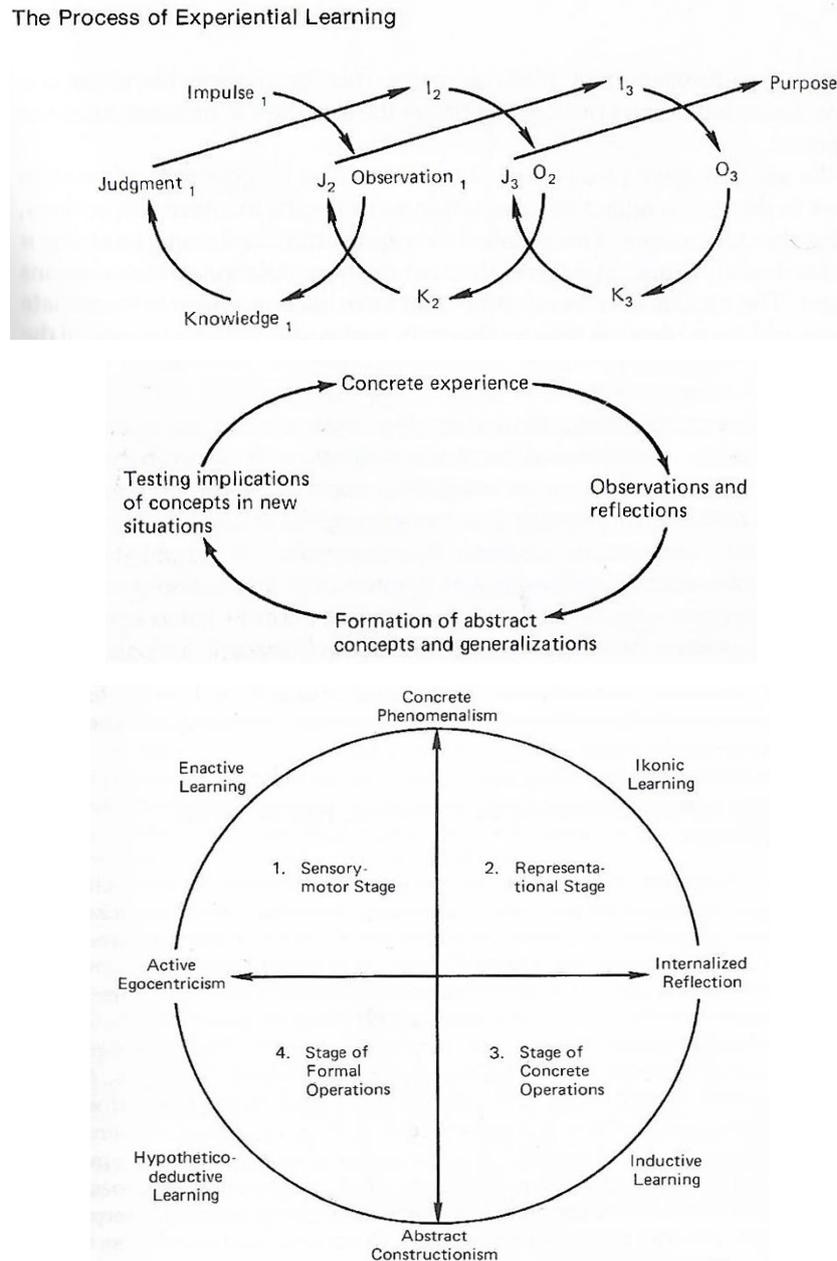
Fig 1. Experiential Learning Models of Dewey, Lewin, and Piaget (Kolb 1984, pp. 21-25)

An important aspect of Kolb's theory of experiential learning that educators must keep in mind is that the learning process is not the same for everybody. Kolb described how the individuality of human beings breeds different learning styles, which in turn, lead to different perspectives. He attributed this process to the concept of 'possibility-processing structures', where an individual's choices throughout life lead to a unique range of new choices to be made (Kolb 1984, p. 64).

The complex structure of learning allows for the emergence of individual, unique possibility-processing structures or styles of learning. Through their choices of

experience, people program themselves to grasp reality though varying degrees of emphasis on apprehension and comprehension (Kolb 1984, p. 64).

As a result of these different environments and possibility-processing structures, it is natural for individuals to emphasize certain learning abilities over others when developing their learning style. While Kolb stresses individuality, he still defines four basic learning styles as 'convergent', 'divergent', 'assimilation', and 'accommodation' (Kolb 1984, pp. 77-8). Each learning style has its own strengths and weaknesses within the learning process. The concept of individuality and different perspectives is particularly significant to advocates of OBL because of its emphasis on sharing different interpretations. Although Kolb does not directly relate his theory of experiential learning to the use of museum collections in higher education, his emphasis on active learners and the sharing of interpretations to create what he calls 'social knowledge' (Kolb 1984, p. 121) is still echoed in OBL literature today (Rowe 2002; Paris & Hapgood 2002; Hooper-Greenhill 2007; Reynolds 2010; Bartlett 2012; Chatterjee *et al* 2015).

Howard Gardner's theory of multiple intelligences is also applicable when discussing the topic of different learning styles. In his renowned work, *Frames of Mind: The Theory of Multiple Intelligences* (1984), Gardner proposed seven different intellectual competences, with each having their own strengths in learning. For Gardner, an intellectual competence must enable an individual to both solve and create problems. Although he acknowledged the impossibility of identifying a comprehensive list of human intelligences, he believed the advancement of the recognition of intellects was essential for researchers hoping to development the study of intellect (Gardner 1984). His list of intelligences includes (1) Linguistic (2) Musical (3) Logical-Mathematical (4) Spatial (5) Bodily-Kinesthetic (6) Intrapersonal (7) interpersonal (Gardner 1984).   Two of these intelligences, which are particularly relevant to the use of objects in teaching, are Gardner's bodily-kinesthetic and spatial intelligences. Whereas bodily-kinesthetic intellect emphasizes active learning and the individual's aptitude for working with objects, spatial intellect emphasizes observation and the individual's perceptions of objects. Gardner goes as far as referencing Piaget's (1970) studies on spatial growth in children to argue how an individual who combines these two intellects when investigating an object has the potential to elicit both the object's physical capabilities and contextual significance (Gardner 1984).

Gardner's theory of multiple intelligences, however, is not without its critics. In a recent work titled, *Multiple Intelligences Reconsidered* (2004), John L. Kincheloe *et al* argue that although Gardner's intentions were good, he did not consider the impacts of the socio-political or socio-cultural contexts when constructing his theory of multiple intelligences. Kincheloe *et al* (2004) contend that this absence of concern for power structures and the psychological effects they have on individuals' motivation and perceptions of learning, generalizes education across the country and raises questions regarding the authority of his work.

However, despite this criticism, Gardner is still referenced by museum educators and OBL enthusiasts today for his recognition of different types of learners, who they argue are the main beneficiaries of alternative teaching methods, such as OBL (Falk & Dierking 1992, 2000; Paris *et al* 2002; Hooper-Greenhill 2007; Cook 2010; Chatterjee *et al* 2015).

2.1.2 *Constructivism*

George Hein's theories on discovery learning and constructivism in his work, *Learning in Museums* (1998), is a primary example of how Kolb's concept of experiential learning was eventually applied to museum education. Hein explains how museum visitors have experiences that meet Dewey's criteria for an educational experience and expands on this notion by describing how museums have the potential to engage both the mind and body of the visitor in a structured, yet, colorful and dynamic educational experience (Hein 1998). In response to the ongoing criticism of experiential learning and its emphasis on the learner's experience over factual retention, Hein stated that educational practices have since progressed from the passive to a more active learner (Hein 1998). He added that the interaction with museum collections, which are representations of the world's cultures, nature, and science, are ideally suited for this shift in educational practice towards active participation (Hein 1998; Anderson 1997).

According to Hein, in order for museums to capitalize on this educational reform, museum staff need to invest their time into understanding the meanings museum visitors make (Hein 1998). In doing so, museum staff will not only be able to enhance the learning that takes place during a visit, but also prove the museum's worth during a period of governmental pressure (Hein 1998). Following a review of different learning theories and their respective pedagogies in the museum context, Hein suggests that museums move away from didactic exhibitions and towards a more constructivist design. A constructivist exhibition is designed to allow visitors to construct their own knowledge. Its primary focus is on the visitor as a learner and emphasizes experiments where the learners are encouraged to both think and physically interact with objects to reach their own personal conclusions. By analyzing the different conclusions visitors construct, Hein believes museum staff can further their understanding of how learning takes place in museums. However, the theory of constructivism does have its own pedagogical challenges. Hein acknowledges the added pressure it would put on teachers and academics in terms of lesson planning time and facilitation, as well as the safety, ethical, and conservation risks of leaving visitors and students to work with objects on their own.

> It is presumptuous or naïve to expect that students on their own, with a few bits of string, pendulum bobs, and weights should reproduce conclusions that required the reflections of Galileo to conjure up after they had eluded the best efforts of thoughtful scientists for centuries (Hein 1998, p. 32).

One criticism (Hein cites Cronbach 1966) of Hein's constructivist museum is the uncertainty surrounding the conclusions reached by museum visitors (Hein 1998; Hapgood and Palinscar 2002). Having learners reach conclusions on their own does not mean the quality of those conclusions will match what is intended. This obstacle raises questions of how learning can be measured and how much background knowledge learners need prior to constructivist exercises. These two concepts are particularly important to academic staff interested in using museum collections in their teaching because of the requirement to measure student learning in a formal education system. Despite this obstacle, Hein asserts that the strength of constructivism lies in its ability to engage the learner both physically and mentally. The learner is forced to ask questions and draw on their previous knowledge to construct new knowledge. Thus, the individual learns how knowledge is formed, as opposed to the more traditional lecture and the 'transmission – absorption learning theory', where information is simply being transferred from one person to another (Hein 1998, p. 21).

2.1.3   The Museum Experience

A pioneer in interpretive philosophy, Freeman Tilden's, *Interpreting Our Heritage* (1957), lays the foundation for the interpretive practices of cultural organizations with his six principles of interpretation. Although Tilden's expertise is in the national park sector, his principles can be applied to all forms of cultural organization, including museums, galleries, and heritage sites. Two of Tilden's principles relevant to this study are listed below:

> II. Information, as such, is not interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information (Tilden 1957, p. 9).

> VI. Interpretation addressed to children (say, up to the age of twelve) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program (Tilden 1957, p. 9).

The first principle (II) of relevance to the use of museum collections in HE curricula clarifies the difference between interpretation and information. In a museum context, this principle refers to the type of information a museum decides to communicate to their audience and how. The second principle (IV) highlights the difference in approach needed in interpretation for children and adults, as an adult's intellectual capacity will generally be greater than that of a child's (Tilden 1957). Both principles come into play when a museum is deciding who their primary audience is going to be and how they will make their collections accessible to that audience. However, this becomes a challenge when a museum's audience is diverse, and wide-ranging in age and education level.

John Falk and Lynn Dierking explore the complexities of the museum visitor's experience and the educational role of museums in their work, *The Museum Experience* (1992). Here, they developed a model called, 'The Interactive Experience Model' (Fig. 2), to aid understanding of the learning process within the visitor experience. The model is based on aspects of experiential learning and constructivism, as well as the socio-cultural theory of psychologist Lev Vygotsky, and is designed as a series of three overlapping spheres (1) Personal Context (2) Physical Context (3) Socio-Cultural Context (Falk & Dierking 1992). The personal context is defined as each visitor's unique interests, motivations (both intrinsic and extrinsic) and the prior knowledge they bring with them to the museum. The physical context relates to the multisensory experience of the visitor. This includes everything from the museum's architecture to the museum's collections. And lastly, the socio-cultural context describes how every museum visitor's behavior, perspective, and therefore knowledge, are influenced by the people around them. This third sphere leans heavily on the work of Vygotsky (1974), who has written extensively on social learning. According to Vygotsky, individuals can reach higher levels of thinking through authoritative guidance or collaboration with their peers. He called this theory the 'Zone of Proximal Development' (Vygotsky 1974, p. 84). Although Vygotsky focused on childhood development, Falk and Dierking relate his theory to modeling theory, where museum visitors look towards their neighbors for information and social cues. OBL enthusiasts at the higher education level have also adopted this theory, maintaining that the use of museum collections in HE curricula enables students to communicate and learn from each other. Falk and Dierking's Interactive Experience Model is shown below in Fig. 2:
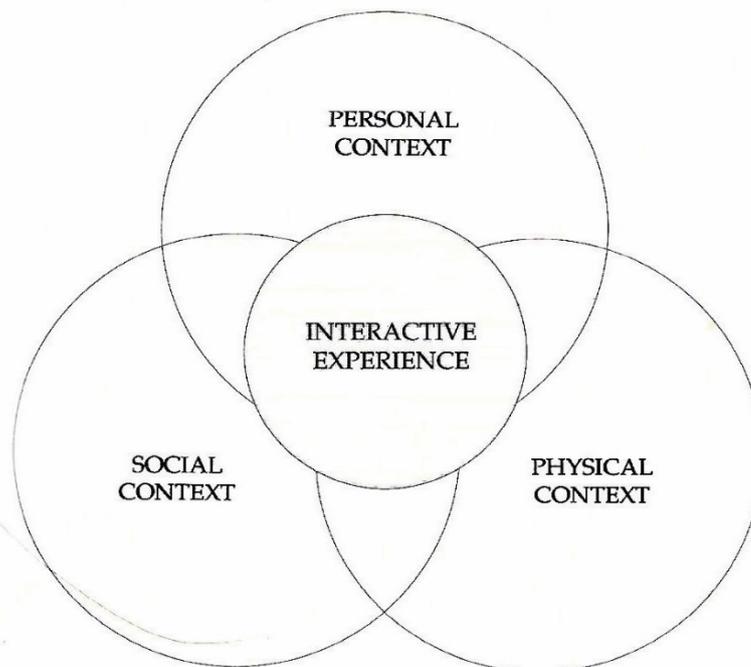
Fig 2. The Interactive Experience Model (Falk & Dierking 1992, p. 5)

Several years later, in their work, *Learning From Museums* (2000), Falk and Dierking modified The Interactive Experience Model to include a fourth aspect of *time*, and renamed it 'The Contextual Model' (Fig. 3). Evoking Dewey's (1938) notion of learning as a lifelong process and Vygotsky's (1974) zone of proximal development, the newly added concept of time represents the idea that learners build up layers of knowledge and make meanings from their museum visits over time, through the interplay of the three contexts. According to Falk and Dierking's research, visitors were able to remember the exhibits that reinforced previously learned information more than the exhibits that presented completely new material. They believe that analyzing the learning process through the lens of The Contextual Model will help academic and museum staff when reevaluating their educational goals. Falk and Dierking's Contextual Model is shown below in Fig. 3:
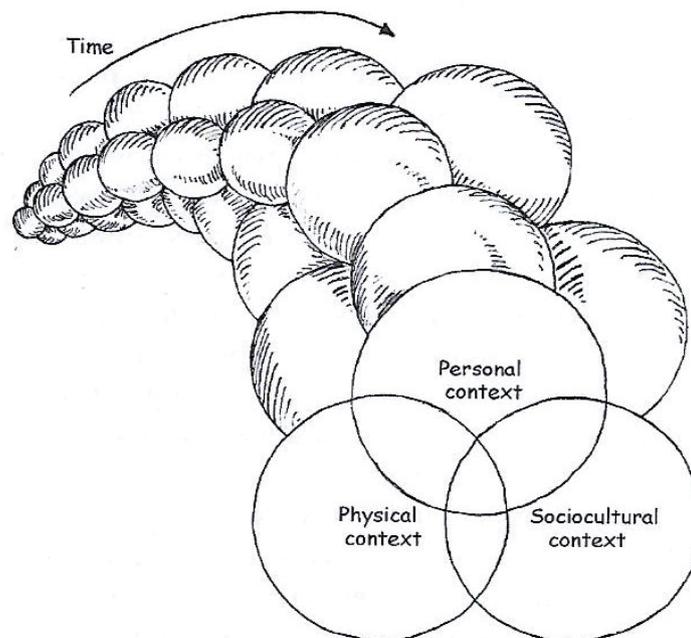
Fig 3. The Contextual Model (Falk & Dierking 2000, p.12)

2.1.4 *Museum Education*

The importance of the educational role of museums has varied since museums started becoming public institutions and is still debated to this day. Museum education is a broad term, which depending on the individual's definition may cover any number of operations within a museum (Hooper-Greenhill 1991). Eileen Hooper-Greenhill and David Anderson provide concise histories of museum education in *Museum and Gallery Education* (1991) and *A Common Wealth: Museums and Learning in the United Kingdom* (1997), respectively. Each work briefly traces the fluctuating perceptions of museum education by museum staff from the 18th century to the late 20th century. Enigmatically, the bulk of literature on museum education focuses on families, primary and secondary schools, and adults. University

students are either grouped ambiguously in with older adults or ignored completely in museum education literature until very recently. Likewise, Aldona Jonaitis (2008) reveals that there are only fleeting references to the university museum in museum education literature before the new millennium. Only *Museums and Universities* (Solinger 1990) and *Managing University Museums*[3] (OECD 2001) had addressed specifically the educational potential and unique challenges facing university museums. The latter work focusing heavily on the challenges facing university museums around the globe in satisfying both their university and public roles. Nevertheless, Hooper-Greenhill (1991) argues that pedagogical and logistical similarities may be drawn between the methods of teaching with museum collections in primary and secondary schools and their use in higher education teaching.

In 1982, Jules Prown published a methodology for studying objects. He chose to narrow his focus to material culture and the influence cultural perspective has on a learner's interpretation. Prown provides two definitions for material culture:

> Material culture is the study through artifacts of the beliefs – values, ideas, attitudes, and assumptions – of a community or society at a given time. The term *material culture* is also frequently used to refer to artifacts themselves… (Prown 1982, p. 1).

Prown's main argument is that artifacts, as tangible primary sources, can and should be utilized as tools for active learning at any level. Several years later, Gail Durban (1990) wrote a short teacher's guide dedicated to teaching children with objects. In her work, *Learning From Objects* (1990), Durban explains how objects are educational motivators, which tap into the children's curiosity and creativity to provide the tangible evidence that children need to support the abstract ideas absorbed through traditional education methods. The educational benefits of teaching with objects described by Durbin and Prown have been exhaustively repeated over the years within museum education literature (Talboys 1996; Hooper-Greenhill 1991, 1994, 2007; Falk & Dierking 1992, 2000; Stone 1994, 2004; Paris 2002; Black 2005; Cook 2010; Jandl & Gold 2012; Boddington *et al* 2013; Chatterjee *et al* 2015). Durbin argues that the multisensory experience of object handling overcomes the barriers of different reading and writing levels within a classroom and aids in the development of a long list of transferable skills, such as observation, hypothesizing, critical thinking, deductive reasoning, and presenting, among others. For teachers who may not have experience teaching with objects, Prown (1982), Durbin (1990), and Talboys (1996) lay out proper questioning techniques that focus on the object's physical features first before moving onto topics such as the object's function and value.

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[3] *Managing University Museums* is the published conference proceedings from the Institutional Management in Higher Education (IMHE) conference in Paris in 2000. It was published by the Organization for Economic Co-operation and Development (OECD).

What is often overlooked is that these questioning techniques, even at the lowest cognitive levels, are still significant steps of the learning process for university students and can become the basis for further research. This concept is supported by Bruner, who argued for the revision of basic principles in order to bridge 'primary and secondary school knowledge' with 'university knowledge' (Bruner 1960, p. 26). Furthermore, as Piaget's (1972) concept of experiential learning and developmental growth claims, by the time individuals reach university, their cognitive capacities greatly exceed that of when they were children. Thus, drawing on both Bruner and Piaget, a recurring argument made by OBL enthusiasts is that university students would have greater possibilities for deeper analysis and higher levels of thinking if given the opportunity to work with museum collections (Jeffrey 2000; Paris 2002; Allmon *et al* 2012; Chatterjee *et al* 2015).

2.1.5   Object-Based Learning in Museums

Scott Paris' *Perspectives on Object-Centered Learning in Museums* (2002) introduces the phrase *object-based learning* for the first time in museum education literature to a growing list of similar phrases intent on describing the different active learning methods (Willcocks 2015). Divided into three parts, the collection of papers which make up this work bring together the educational theories of the past centuries and reasserts them in the museum context.

Part one of *Perspectives on Object-Centered Learning in Museums* sees an emphasis on social interactions. Building on Falk and Dierking's Contextual Model of Learning, Shawn Rowe (2002) highlights the idea of a socio-cultural setting for learning through a sharing of interpretations in his connection between museum collections and the process of meaning-making and its positive effects on teaching with collections. In a similar fashion, Paris and Hapgood (2002) look at the social benefits of informal learning environments and their ability to fostering meaning-making by applying Falk and Dierking's idea of 'free-choice learning' (Falk & Dierking 1992, 2000) to aspects of Hein's (1998) constructivist model.

Just as museums and formal education have different missions and perspectives on learning, so too do different types of museums. In part two, Robert Bain and Kirsten Ellenbogen (2002) explain the different ways in which objects are interpreted in history and science museums. Practitioners from different disciplines will have their own specialized techniques of inquiry and analysis when examining objects. Bain and Ellenbogen believe that a reexamination of these disciplinary differences in perspectives is the next step in object-based learning. Teaching the different disciplinary perspectives in examining objects to HE students is just one of the many ways to aid them in their investigations of objects. In one of the final chapters of part two, Paris and Kraayenoord (2002) address the 'readability' of objects (Paris & Kraayenoord 2002, p. 223). By readability, they allude to the similarities between how objects and texts should be treated and suggest asking problematic questions along with the objects on display.

Just as tests can be problematized, so can objects be positioned as problems or questions. Research has shown that students become more engaged with texts and objects when driving questions and big problems are posed about them (Paris & Kraayenoord 2002, p. 227).

Paris and Kraayenoord argue that by asking problematic questions, museum visitors can avoid the pitfalls of expected interpretations and are still able to construct meanings through connections with other people's interpretations, prior knowledge or past experiences. The concepts of inquiry-based learning (IBL) and problem-based learning (PBL) are not exclusive to museum education. Christopher Justice *et al* (2009), in an article on administrative perspectives of inquiry-based pedagogy, argue for the integration of *inquiry* into HE curricula. Citing Dewey's (1938) work on the importance of developing a student's critical thinking skills over memorization, Justice *et al* (2009) argue that by developing the skill of inquiry, HE students move farther along the path to becoming researchers and lifelong learners.

Part three of *Perspectives on Object-Centered Learning in Museums* focuses on the dialogue within the social context of learning with objects. The chapters which make up part three argue that the conversations generated and facilitated by the objects are the most influential aspect of the learning process. For Kristine Morrissey (2002) the communication between adults and children when observing objects is especially rewarding for both parties. The distinctively different perspectives of adults and children increase the chances for meaning-making through the interchange of prior knowledge and a wider range of experiences. Morrissey advocates for a balanced approach in the display of objects by presenting both content and stimulus for critical dialogue. However, Sally Duensing (2002) finds it odd that the authors of the preceding chapters do not discuss the context of objects within the museum, when it plays such a significant role in mediating the conversations that take place around the object.

One significant drawback to Paris' (2002) work is that it contains no practical information for academics who are looking to integrate museum collections into their own curriculum. Similar to the work of Falk and Dierking (2000), who are referenced throughout this work along with their Contextual Model, the theories provided are only applied to young children and their families. As a result, this work neglects a number of age groups, including HE students.

However, *Perspectives on Object-Centered Learning in Museums* is an insightful work and one of the first to focus solely on object-based learning. Through the amount of its topical overlap, this work is a reaffirmation of the theoretical benefits of teaching and learning with objects from the past century. Drawing on the educational theories of Dewey (1938), Hein (1998), and Vygotsky (1974), among others, and applying them to the more recent work and exhibitions in museums today, the authors agree that the visitor's social and prior experiences, as well as their direct experience with objects stimulates the learning process by building up layers of representational and functional meanings. They are all in agreement that museums need to turn their attention to cultivating this type of learning if they hope to reach their goals as educational institutions.

2.2   Practical Applications of Museum Collections

Part 2.2 of this study's literature review discusses the current uses of museum collections in higher education. With a consensus of underlining educational theories already established among OBL enthusiasts, the sections which make up Part 2.2 present case-by-case collaborations between museums and universities. These sections are organized by common themes and goals of the collaborative projects. This includes articles and works on pedagogy (both academic and museum), logistical limitations, the issue of assessment, transferable skills, and multisensory engagement.

2.2.1   *Object-Based Learning in Higher Education*

Overall, there is a general lack of understanding when it comes to the use of museum collections in higher education. The list of literature that focuses on the use of museum collections in HE is grossly outnumbered by the amount that focuses on the museum's educative role in primary and secondary schooling. The reasons for this disparity in focus are still speculative. However, in 2010 object-based learning and HE were finally brought together in two key publications. The positive response to these two works has spawned a short list of further publications and initiatives on the use of museum collections in higher education. The case studies presented in these publications on university-museum collaborations share common themes. These common themes include: the affect OBL has on academic and museum staff pedagogies, the logistical limitations of using museum collections in HE, the issue of assessing informal learning, and the perceived learning advantages of working with objects, such as transferable skills and multisensory engagement. Part 2.2 takes a deeper look at a selection of case studies to provide a glimpse of the current practical applications of museum collections in higher education. The following section introduces five main publications on this topic and one national initiative intent on connecting and facilitating collaborations between museums and universities.

The first publication of 2010 which brought OBL and HE together is the collection of papers presented at the University Museums and Collections (UMAC) Conference that took place in 2009. At this conference, academic staff from UCL, along with other academics from around the world, presented telling arguments of the positive impact object-based learning can have at the university level. Several papers presented at this conference are discussed further in sections 2.2.2, 2.2.4, and 2.2.6. For UCL's Helen Chatterjee, the 2009 UMAC conference was a precursor to her 2015 publication on OBL in higher education.

The second publication of 2010 is Beth Cook *et al*'s *Museums and Design Education* (Cook 2010). Published in the same year as the UMAC conference proceedings, this work is one of the first to focus solely on the use of museum collections at the university level and raises a number of pedagogical and logistical questions for further debate. The aim of this work is to promote the creation of more sustainable relationships between museums and

universities. Although this work only looks at the use of museum collections in design education, it provides intriguing insight into different types of relationships between museums and universities and is a major contributor to the attention the topic has received in recent years. The case studies presented in this work highlight both the educational theories and practical components in forging relationships between universities and museums. From a theoretical standpoint, there are recognizable constructivist and socio-cultural undertones throughout, as the researchers agree on the learning advantages most commonly associated with multisensory experiences and the acquisition of transferable skills for design students.

In 2012, a variety of essays from around the USA, UK, and Australia concerning the educational role and practices of university museums were compiled into *A Handbook for Academic Museums: Exhibitions and Education* (Jandl & Gold 2012). The essays selected for this work cover a wide range of topics: teaching, object-based learning, experiential learning, exhibitions, controversial projects, interdisciplinary collaboration, and stewardship, among others. This collection of essays offers the reader a variety of perspectives and strategies to using museum collections in higher education and strengthening university-university museum relations. Together the three essays on object-based learning in this work argue for the interdisciplinary nature and educational benefits of OBL and other active learning methods in higher education. As a whole, *A Handbook for Academic Museums* attempts to illustrate how university museums have the potential to play a fundamental role in the learning processes of HE students by providing the tools for alternative teaching methods and concrete knowledge students are unable to get from secondary sources.

One year later in 2013, *Museums and Higher Education Working Together: Challenges and Opportunities* was published to continue the promotion of university-university museum collaborations. This work explores the diverse factors which have continued to prevent sustainable relationships between museums and universities. In addition to pedagogical and logistical barriers, other topics include: 'international policy issues', 'institutional identities and challenges', and 'potential future changes in education at HE level' (Boddington *et al* 2013, p. 3). Staying in sync with its predecessor, *Museums and Design Education* (2010), this work connects the progressive educational theories from the past century to current case studies to validate the positive impact OBL has on the learner, university, and museum.

In their most recent publication, *Engaging the Senses: Object-based Learning in Higher Education* (2015), Helen Chatterjee, Leonie Hannan, and Linda Thomson present the latest case studies on object-based learning within higher education to illustrate educational benefits and pedagogical possibilities of using museum collections in higher education. Throughout the work, these case studies argue in favor of the value of multisensory engagement with museum collections. As Chatterjee *et al* (2015) assert, the experience of interacting with objects enables a deeper understanding of the object, its context, and one's self, through the sharing of attitudes and perspectives.

Lastly, and on the heels of Chatterjee *et al*'s (2015) publication, the Museum-University Partnership Initiative (MUPI) was launched in 2016. Funded by the Arts Council England (ACE) Resilience Fund and delivered by the National Co-ordinating Centre for Public Engagement (NCCPE) in partnership with the Share Academy and Paddy McNulty Associates, this initiative brought universities and museums of all types together through networking events in the hopes of fostering sustainable partnerships. MUPI ran for two years from 2016 – 18 following a pilot study in 2016 titled, *Realities and Impact of Museum-University Partnerships in England*, by Chiara Bonacchi and Judy Willcocks. Over the course of its two years, 77 MUPI projects were funded. A more detailed account of MUPI's achievements can be found on the NCCPE website[4]. Findings from MUPI and its pilot study are vast, incorporating both qualitative and quantitative data on the aims and challenges of reported partnerships between universities and museums. However, as the collaboration between universities and university museums is only one of many forms of partnerships encouraged by MUPI, this topic is overshadowed in its reports because of the initiative's broad scope.

2.2.2   Academic Pedagogy

There are various definitions of the term *pedagogy*. However, for this study pedagogy is understood as the methods, theories, and practice of teaching (Alexander 2008). Pedagogy is an individualistic condition that varies from academic to academic and university to university. Acceptance of a new pedagogy when an academic is comfortable teaching the way she/he sees fit, is often met with challenges (Peterman 1991). Francis Peterman explores this process of change using a longitudinal case study on a high school science teacher's beliefs and teaching methods, noting that because of the complexities of school environments, many researchers have shied away from the topic (Peterman 1991). This transition towards a new pedagogy has also been a challenge for academics when concerning the integration of museum collections into HE curricula. The following section presents current articles and case studies on the effects the use of museum collections, and more specifically, OBL, has on academic staff pedagogies and HE student learning.

Joe Cain (2010), a UCL lecturer in Biology, touches on the effect OBL has on individual academic pedagogies in his presentation at the UMAC conference in 2009. Written as a response to the UMAC essays presented by Chatterjee *et al* (2010), Cain proposes the question:

> What do museum workers need to do to make object-based learning (OBL) an attractive proposition to university tutors (Cain 2010, p. 197)?

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[4] For more information on MUPI or the NCCPE, visit https://www.publicengagement.ac.uk

Cain's first message for museum staff is to go beyond the reassurance that OBL works. Simply restating the educational theories that underline OBL is well rehearsed and simply not enough anymore. He explains how the demands on academics' curriculums are stringent and that the argument of best practice is not enough to persuade academics to change their curriculums when they are already rewarded for meeting certain standards. Museum staff need to communicate directly with academics to gain an understanding of their specific curriculum goals, needs, or any other concerns they may have (Cain 2010). Cain argues that every academic has his or her own preferences, annoyances, and goals when teaching. He is skeptical of academics' abilities to adapt to different teaching styles and provides a brief example to justify his cynicism.

> Most [tutors] won't have a clue what to do if the simple passive download model of lecturing was disallowed. Promotion of OBL asks for a radical change in teaching style. Anecdotally, I know a tutor who thinks students can't learn while they're talking. Another hates being interrupted for questions. Another sets as their goal the delivery of a certain amount of factual information (Cain 2010, p. 198).

Cain's evidence should be taken lightly, as it is based on his own generalized assumptions on the willingness of academics to modify their pedagogies in the wake of OBL. However, the invalidity of Cain's evidence highlights a bigger issue – the fact that there is a lack of qualitative data on how academic staff and students in the UK think and feel about working with museum collections in higher education. Up until this point, OBL enthusiasts, such as Chatterjee *et al* at UCL, have carried out their object-based learning projects in isolation or under idealistic circumstances, which are difficult, if not impossible, for other universities to replicate because of their individualist nature.

Rosalind Duhs (2010), a Senior Teaching Fellow at UCL, who presented at the UMAC conference in 2009, expands on the potential value of OBL in higher education. Duhs' article on the 'pedagogical power' of museum collections is straightforward (Duhs 2010, p. 183). Citing works on experiential learning, active learning, and OBL, she upholds the belief that hands-on activities create more memorable experiences and help HE students grasp complex information more effectively than passive listening. Studies on the relationship between memory and object handling have since been undertaken to confirm the argument that OBL increases the retention of information (Simpson & Hammond 2012). Duhs' argument is based on Kolb's (1984) model of active experiential learning and John Biggs' (2006) concept of a deep approach to learning, where meanings are not transmitted, but created through the student's activities. Both Biggs and Duhs lean heavily on the constructivist theories of Piaget (1970) and Hein (1998). However, similar to Hein's concerns of the pressure that planning constructivist activities puts on teachers, Duhs notes that proper preparation by both academic staff and students is essential for the successful execution of OBL. This may include providing supplementary texts for students to read

before working with the objects, as well as greater attention by academic staff towards facilitating discussion and reflection, additional readings and follow-up activities, and assessment.

Duhs' theoretical argument is backed by a project that was carried out by other delegates at the UMAC conference. For her project, delegates were broken up into groups and given time to inspect mammalian skulls. This project did show the potential impact museum collections could have on learning. However, although Duhs' project had a clear goal (distinguish the mammalian skulls from a reptilian skull), her argument for the integration of museum collections into HE curricula is hampered by a lack of information on learning outcomes and the fact that the project was executed in an isolated setting that bears little resemblance to a university classroom.

Following Duhs at the 2009 UMAC conference was Rachael Sparks (2010), another UCL lecturer and Keeper of Collections at UCL's Institute of Archaeology. Sparks draws on her own experiences teaching with collections in an attempt to share effective teaching methods with objects. Sparks' main critique of the current use of museum collections by HE academics is the decision of making object-handling sessions optional for the course. She explains how, like academic staff, students have time constraints as well. If an object-handling session is labeled optional, students may get the wrong impression as to how important the session is to the course and replace it with something they perceive as more fulfilling. She emphasizes the achievements of UCL's Institute of Archaeology in creating mandatory object-based components of archaeology degrees, as archaeology is a subject traditionally based on material culture.

As Stone (2004) anecdotally describes, there has always been a relationship between archaeology and education through handling objects. This physical relationship forces students, researchers, as well as academic and museum staff to think critically about the past. Therefore, as preservers of material culture, museums have a deeply embedded connection with archaeology. Thus, it is no surprise that there are particular Quality Assurance Agency (QAA) benchmarks for archaeology curriculums to use and engage with objects (The Quality Assurance Agency for Higher Education 2016; Sparks 2010).

Sparks offers a short list of teaching styles involving museum collections: object demonstrations, activity workstations, and individual or group research projects (Sparks 2010). She explains the design of each teaching style and their respective advantages and disadvantages, but claims that object demonstrations are the most common teaching style because of their resemblance to the traditional lecture. One advantage of object demonstrations for academic staff is their control over what information is presented. However, Sparks is wary of the students' participation levels during the object demonstrations and their reliance on the academic to provide them with the information instead of discovering it themselves (Sparks 2010). For a more progressive approach, Sparks points to activity workstations, where students discuss objects in a group format. She argues that the comfort students have discussing their thoughts with their classmates rather than with academic staff leads to greater student engagement. However, some disadvantages to activity workstations are the time constraints of the class and the attentiveness of the students when

left to themselves (Sparks 2010). Lastly, Sparks recommends individual or group research projects. She emphasizes the imposing amount of planning required to coordinate these projects, but argues that these projects provide the most beneficial learning experience for students because of the emphasis they put on the student's research skills (Sparks 2010).

The one drawback to Sparks' article is that it provides no direct qualitative evidence from the interviews she conducted with UCL staff to support the effectiveness of these teaching styles or how they affect their respective pedagogies (Sparks 2010). The omission of various pedagogical effects of OBL is lacking throughout contemporary literature on university-university museum collaborations. This in turn, complicates the understanding of the individualistic conditions which determine the use of museum collections within HE curricula.

In her insightful study on the lack of data on students' feelings towards working with museum collections, Carrie Winstanley (2013) reviews the attitudes of undergraduate education students towards museum and gallery visits. Winstanley argues that in her experience, a majority of HE students have a negative response to the idea of museum and gallery visits. This initial distaste, which may come from previous museum experiences, can impede the student's motivation to engage with the objects, thus theoretically hampering the learning process. This theory echoes the works of Dewey (1938) and T.W. Moore (1982) and the emphasis they put on the learner's participation in the learning process. As Moore argued, regardless of the academic's teaching style, without participation by the learner, no learning will take place (Moore 1982). When the topic of compulsory visits to museums and galleries was discussed in Winstanley's own module at Roehampton, University of London, she discovered a surprisingly negative preconception of working with museum collections.

> Despite all our classroom discussions about constructivist pedagogies, engagement and interaction, in most of the groups a desire to 'be taught formally' persisted (Winstanley 2013, p. 126).

From the students' comments, Winstanley found that they responded more positively to guided visits rather than independent visits. Referencing the three spheres of Falk and Dierking's (2000) Contextual Model of Learning, Winstanley argues that academics need to be flexible in their teaching styles to accommodate the different factors that influence learning (Winstanley 2013). She warns academic staff against forcing particular learning activities into their curriculum without first taking into account the learning styles of the students. Winstanley supports the use of museum collections in higher education, but indicates that breaking down the students' anxiety towards museum visits and the concept of contextualizing objects is one of the most important barriers to break down before exposing them to museum collections (Winstanley 2013). Of course, this process takes time, which can cause further logistical challenges for academic staff and their already constricted timetables.

Building on this gap in knowledge on the student's response to working with objects, Kirsten Hardie's (2015) breakdown of the OBL activity titled, *A Matter of Taste*[5], focuses on the use of objects as a way to provide students with an active learning experience. During the object handling session, students are divided into groups and presented with objects. After first recording and sharing their emotional responses to the object to understand the concept of personal preferences, they then respond to questions on topics such as material, form, function, and intended audience to relate the activity to design theory. Hardie maintains that the critical analysis of the object and the students' individual reflection processes (Kolb 1984) enables the process of experiential learning to run its course. The aim of the activity is for students to gain an understanding of how distinct and contrasting design theories are produced.

Hardie attests that the majority of student feedback was positive. Students found the activity to be an enjoyable and memorable experience, appreciated the aspect of touch, and recognized the connection between sharing and reflecting on their own perspectives. Although Hardie claims this activity was successful, as the activity was not assessed and there is no mention of follow up assignments, there is no evidence that the students retained the information and skills they are thought to have acquired. Similar to Spark's (2010) concern of sending the wrong message to students by making object-handling sessions optional or a one-off experience, the fact that Hardie's activity was not assessed may be one reason why some students lost interest or stopped paying attention during the lesson (Hardie 2015). The students' critiques were mixed. While some wanted fewer objects, others wanted more. While some wanted more time to research the objects, others felt the exercises dragged on for too long (Hardie 2015). In conclusion, Hardie recognizes the importance of object selection and the need to provide clearer instructions prior to the lesson. She takes all of this into account and acknowledges the difficulty for academic staff in satisfying everyone when planning object-based activities.

Dan Bartlett's (2012) essay on the collaboration between Beloit College, USA, and the Logan Museum of Anthropology is just one of the many examples of university-university museum collaborations from *A Handbook for Academic Museums*. He offers a variety of interdisciplinary OBL activities for academic staff who are unsure of the possibilities when teaching with museum collections. To defend Beloit College's dedication to object-based learning, Bartlett provides a brief overview of three perceived teaching and learning advantages of OBL.

> First, that encountering objects in the classroom is a potentially powerful, motivating experience. Second, that the social nature of objects encourages and facilitates interaction in the classroom. And third, that objects can be easily integrated into several teaching strategies that have proven to be effective in increasing student interest and achievement (Bartlett 2012, p. 192).

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[5] This programme is run for design students at the University of Bournemouth in collaboration with the university's Museum of Design in Plastics (MoDiP).

This statement is based heavily on the work of Dewey (1938) and his notion of the intrinsic and extrinsic meanings of objects, where extrinsic refers to an object's function and intrinsic refers to the object's physical properties or any other characteristics outside of its function (Bartlett 2012). Bartlett then touches on the socio-cultural potential of objects by emphasizing their capacity to promote conversation in the classroom. His third advantage of using museum collections in higher education is its compliance with multiple active learning methods. Teaching methods such as object-based, inquiry/enquiry-based, problem-based, task-based; all of these active learning methods feed into what Bartlett calls, 'visual and material culture pedagogy' (VMCP) (Bartlett 2012, p. 194). VMCP involves the concept of visual literacy, which Bartlett applies to the examination of museum collections. In this sense, by critically analyzing the objects, students are able to extrapolate both explicit and indiscernible information from them.

The three short case studies presented by Bartlett represent the interdisciplinary capabilities of object-based learning. These case studies span the subjects of Anthropology, Chemistry, and Music. For the first case study, Bartlett looked at Anthropology students taking a Food and Culture course. The students were required to relate the course themes to objects within the Logan Museum of Anthropology. Every object used for the research projects were selected by museum staff for their relation to food production and consumption (Bartlett 2012). Bartlett does not provide any information regarding the logistics, teaching methods, research processes, or communication models used to establish this partnership, however, he does have the humility to acknowledge the project's results did not live up to his expectations. He attributes the disappointing results to two reasons (1) the inexperience of students to extrapolate and communicate aspects of cultures from objects and (2) the students' assumption to write traditional object labels similar to the ones they found in the museum instead of connecting the object to the course themes. Bartlett hopes to amend these misunderstandings through closer guidance of student research, examples to show expectations, and clearer assignment descriptions.

The second case study, involving Beloit College's chemistry department, is an example of an innovative and interdisciplinary way to teach with museum collections. The aim of the exercise is for students to gain an understanding of the identification processes of different metals based on corrosion residues, as well as how and why different materials are used for different tasks. Students work with a variety of metal anthropological artifacts from around the world to show how the metals have been worked and transformed over time (Bartlett 2012). Similar to the Food and Culture case study, there is limited information on the exercise as a whole. However, the central message Bartlett wants to get across is that objects do not always have to be examined for their cultural significance.

There is limited information provided on Bartlett's third case study because the course was scheduled to take place in 2013. The professor's course proposal is added instead[6]. In short, collaborating with the Logan Museum of Anthropology and Wright Museum of Art,

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[6] See pp. 210-213 in "Coaxing Them Out of the Box: Removing Disciplinary Barriers to Collections Use" in *A Handbook for Academic Museums* for Music Professor Susan Rice's course proposal.

Chamber Singers from Beloit College were required to connect selected objects to pieces of choir music culminating into three live performances at the end of the semester alongside exhibitions of the objects. Bartlett includes this case study in his essay because of its creative use of museum collections, adding that the three case studies he presents in his essay are meant to inspire academic pedagogy more than direct it.

2.2.3 Museum Pedagogy

The term *pedagogy* is not exclusive to the methods and practice of formal education. Museums can also have their own pedagogies for the management, interpretation, and presentation of their collections. Commonly regarded to as informal learning, the learning that takes place in museums often conflicts with the formal learning of higher education. The differences between academic and museum pedagogy is a recurring condition in determining the use of museum collections in HE curricula. The following section presents current articles and case studies on the effects OBL has on museum staff pedagogies.

One common theme throughout *Museums and Design Education* (2010) is how museum and academic staff should approach the concept of informal learning when they each have their own specific educational goals in mind.

> Informal learning in this context focuses on the choices an individual makes in the museum, and assumes that a visitor is knowledgeable and confident enough to decide what, when and how they learn in the museum (Cook & Speight 2010, p. 32).

Formal education can be divided into two categories (1) the national curriculum of primary and secondary schools and (2) the formal, yet flexible module system of universities. The structure of formal education is drastically different from the free-choice learning that takes place in museums (Falk & Dierking 1992, 2000). Cook and Speight (2010) discuss the difficulties that museums have in gathering materials of relevance and organizing programmes for universities without a national curriculum for reference and with so much variation in university courses. The QAA benchmark statements are issued out to university departments as guidelines, but these are purposefully written so that academic staff have control over their course's content and framework (The Quality Assurance Agency for Higher Education 2016; Cain 2006; Sparks 2010; Cook & Speight 2010). Although self-directed research is becoming more emphasized by the QAA, the freedom of informal learning within museums can be overwhelming for students. Cook and Speight agree that the majority of university students do not know how to access all of a museum's available resources on their own. Furthermore, certain issues such as a lack of museum staff trained in supporting self-directed research, inadequate facilities, and a lack of knowledge by academics on how to teach with museum collections, have still not been collectively resolved (Cook & Speight 2010). Therefore, Cook and Speight advise that in order to promote self-directed research in museums, academic staff first need to teach their students how to approach informal learning

environments such as museums. Likewise, museum staff need to make a conscious effort in facilitating HE students within the museum. As to how academic and museum staff can accomplish these tasks is an area where more research is needed.

Arnold-Foster and Speight (2010) distinguish the Victoria and Albert Museum (V&A) and Manchester Museum as prime examples of active HE collaborators within the UK. The partnerships between these museums and their affiliated universities are examples that the pedagogical barriers in using museum collections in higher education are surmountable.

> These [barriers] include differing approaches to scholarship, limited and shared pedagogic knowledge of both the structures and the way in which different kinds and levels of students in HE learn from museum collections. This has all impeded integrated activity and the opportunity of shared agendas between the sectors (Arnold-Foster & Speight 2010, p. 6).

Arnold-Foster and Speight explain how it is not the responsibility of one institution over the other to create opportunities for OBL or to cater to the other's demands. Both academic and museum staff need to look to the V&A and Manchester Museum for evidence and inspiration on organizing and successfully executing university-museum collaborations.

According to Speight (2010), one area of pedagogical importance that needs more attention is the museums' knowledge of their audience. In this case, the audience refers to HE students. Hein (1998) has previously argued how formal and informal learning are not exclusive to formal and informal settings. Learning can take place in both types of environments. However, Speight reiterates how students today who visit these informal learning environments, such as museums, do not know how to take full advantage of the museum's resources outside of the collections on display. In order to understand how academic staff and students in design education engage with museum collections, qualitative evidence was gathered from a research programme titled *Learn to See*[7]. Speight connects the learning styles of design students to Kolb's (1984) definitions of accommodators and divergent thinkers, who rely on concrete information and learn through physical interaction, critical observation, and reflection. During the course-long research programme, design tutors challenged their students to question the authority and methods of the museum in the way they displayed objects through the concept of 'deconstructive inquiry' (Speight 2010, p. 21). The researchers came to the conclusion that understanding the museum experience of HE students is equally as difficult to understand as the experiences of everyday visitors because of their differing motivations and backgrounds.

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[7] This programme involved the V&A as well as the University of Brighton and Royal College of Art (RCA) and was led by the Centre for Excellence in Teaching and Learning through Design (CETLD).

The greatest take away from the *Learn to See* programme are the perspectives of the academic staff and researchers on the abilities of undergraduates and postgraduates to navigate the museum on their own. Design tutors from the University of Brighton and RCA felt that postgraduate students possessed the skills and subject knowledge to work with confidence in a museum environment. However, the design tutors were not as bullish on the abilities of undergraduates and felt they would need more assistance during their museum visits. The design tutors' perspectives are slightly different from those of the researchers'. Following the programme, the researchers concluded that design students, regardless of their skills and degree level, would need assistance in learning how to interpret and understand objects in their wider contexts. Speight explains how programmes like *Learn to See* are helpful for museum staff because they are able to highlight the needs of their audience and the areas in which the museums need to improve if they are to enhance the learning of HE students.

Jos Boys' (2010) study on 'conceptual learning spaces' continues the discussion on the different approaches to learning in museums and universities (Boys 2010, p. 45). Boys states that it is not her intention to argue in favor of a particular pedagogy. Instead, she only intends to raise awareness of the conceptual spaces which she believes act as linkages between museum and university pedagogies. She identifies these conceptual spaces as (1) learning *about* and learning *from* (2) learning creative thinking (3) knowledge, authority, and inclusion (4) learning as inspiration and/or achievement (Boys 2010). Instead of focusing on the differences between museum and university pedagogies, Boys urges staff to concentrate on the similarities and to build upon these linkages by sharing perspectives on teaching and learning. For instance, with the use of museum collections, HE students have the opportunity to not only learn *about* their subject, but also learn relative skills *from* their experience (Boys 2010). Additionally, Boys argues that museum collections offer design students a forum for creative thinking by challenging the museum staff's selection and ordering of objects. In terms of knowledge, authority and inclusion, Boys discusses how both institutions are rethinking their presentation of knowledge in the hopes of enabling more active learning in students and museum visitors (Boys 2010). And lastly, Boys notes a recent blending of assessment methods by academics and museum educators in the form of general learning outcomes (GLOs) (Boys 2010). The topic of assessment and the GLOs are discussed further at a later point in this chapter [see section 2.2.5], and the topic of assessment is discussed again in chapter 5 [see section 5.1.3.4].

As Torunn Kjølberg (2010) argues, a museum visitor's experience and interpretation of objects will always be influenced to some extent by the physical space of the museum, as well as the curator's judgment, selection, and display of objects. Kjølberg looks at the museum's authoritative selection and display of collections and the affect it has on the perspectives and research processes of HE students. She spent two years observing and interviewing design students as they engaged with the collections of the V&A. Citing Vygotsky's (1974) work on learning through interaction and cultural tools, she affirms the importance of material knowledge to design students. Not only does the interaction with

objects stimulate students' creative practice, but can also elicit a powerful sense of identity based on the physical space and presentation of the objects (Kjølberg 2010). She argues that this type of experience is either repressed or intensified depending on the museum's pedagogy (Kjølberg 2010). She concludes that traditionalist museums, such as the V&A, which are purposely structured and display objects deemed rare and luxurious by their curators, can still be used by HE students as creative spaces for research. She argues that the student's sense of identity and personal background influences their creative meaning making. She believes these personal influences have the power to reinterpret objects and contest the authoritative interpretations of the museums.

Rhianedd Smith's (2010) study of the student use of university museums examines a series of courses designed between the University of Reading and the Museum of English Rural Life (MERL)[8]. The courses were designed to engage students with museum collections through enquiry-based (EBL) and problem-based learning (PBL) techniques. Enquiry and problem-based learning were chosen as the pedagogical frameworks for the MERL project courses because of their emphasis on group work and the complexity of real-life scenarios. The courses required students to gain an understanding of the subject area and its content as well as enable them to develop a wide range of transferable skills.

However, the designing process for the collection-based courses was challenging for a number of reasons. The lack of referable models at the time of the project was a main concern. This led to the creation of the MERL Undergraduate Officer position, whose duty as a museum learning officer, was to specifically oversee the designing of the project's courses so that the style of teaching and learning stayed true to the values of museum educators and did not become a simple extension of the traditional lecture theatre (Smith 2010). Smith's account of the MERL project is a rare resource for academic and museum staff hoping to integrate museum collections into HE curricula as it traces the project team's design process, from confronting department heads and familiarizing themselves with the QAA benchmarks, to interviewing students for their thoughts on taking collections-based courses.

The method of assessing students' work was also challenging to overcome. Smith explains how both the students' decision-making processes throughout the course as well as the final result are both essential in the assessment of enquiry and problem-based learning. This led to the use of unorthodox assessment methods, such as reflective journals. However, students had difficulties with these unorthodox methods, as well as tutor expectations and working with primary sources in general. Another issue highlighted by this project is the uncertainty surrounding the role of academic staff in more student-centered frameworks like EBL and PBL. Smith finds that academic staff tend to struggle with the role of facilitator in student-centered frameworks and as a result often slip back into a more traditional top-down authority figure (Smith 2010).

Overall, the dedication of Smith and the MERL project team to merge EBL and PBL with museum education has provided valuable insight into the similarities and differences in

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[8] This project was funded by the Higher Education Funding Council for England (HEFCE) and University of Reading's Centre for Excellence in Applied Undergraduate Research Skills (CETL – AURS).

museum and academic pedagogy. Their attention to detail and the effort they put into addressing the challenges that arose prove that branches of constructivist pedagogies within higher education are possible with the right level of facilitation.

2.2.4   Logistical Limitations

Despite the importance of logistics when attempting to integrate museum collections into teaching, it is a topic seldom covered in the literature. However, when logistical conditions for university-university museum collaborations are examined, they are generally accepted as barriers needed to be overcome (Cain 2010). The following section presents a concise summary of the logistical limitations of integrating museum collections into HE curricula.

Of all the UCL presentations at the UMAC conference in 2009, the most sobering perspective on the use of museum collections in higher education came from Biology Professor, Joe Cain. In his paper, Cain (2010) defends the value of using objects in learning and its potential at the university level. He upholds the argument that OBL has the ability to aid in the development of transferable skills such as, critical thinking, and communication skills, but also acknowledges the logistical concerns which prevent academic staff from easily integrating collections into their curriculums. Cain (2010) provides a long list of the logistical concerns that can affect the use of museum collections within a traditional lecture theatre setting or outside the classroom. These include: issues of time, accessibility and inclusion, dealing with distractions and having a backup plan in the event something goes wrong. Cain also acknowledges the competition between museum collections and more accessible options. Although Cain states that he does incorporate OBL into his courses, it is not always with the university's collections. Cain points out that digital images, facsimiles, handouts, or even materials he can provide himself are considered objects too and are adequate enough to get his point across without all the extra time it takes to organize and coordinate with museum staff. Cain argues that these alternatives to using museum collections offer more flexibility and practicality for academics who are worried about time constraints. However, there are those like Hooper-Greenhill (1991), who would disagree with this notion, as she has defended the use of authentic materials by arguing the loss of texture, scale, weight, and color when using reproductions or facsimiles.

Time constraints seem to be a universal concern regardless of the setting. Other concerns include: travel distance, workspace, collections access, loan services, sufficient staffing and coordination, weather, even details such as proper seating, parking, and disability access. Although some of these concerns may seem trivial in the educational context, they all play a potential role in shaping the learner's experience and the overall success of the university-museum collaboration (Talboys 1996; Hein 1998; Cain 2006, 2010; Sparks 2010). These are just a few of the common logistical limitations of teaching with museum collections for both primary and secondary schools and higher education. This study aims to gain a

better understanding of the impact these logistical limitations have in determining the extent of the use of museum collections in HE curricula.

2.2.5   The Issue of Assessment

One of the difficulties facing museums today is governmental pressure challenging museums to provide evidence of their impact on society, and the subsequent issue of assessing informal learning. The lack of a proven method to assess informal learning has become a concern in the arguments of academic and museum staff who promote the use of museum collections in their teaching, as academics are required by their institutions to provide an evaluation of their students' achievements. Falk and Dierking (2000) point out that before the issue of assessment gained considerable attention, much of the learning in museums and schools had previously gone undocumented because the established methods used to evaluate learning only focused on the recognizable change in knowledge and not the reinforcement of what was previously learned (Falk & Dierking 2000). This issue of assessment, while drawing more attention, is still unresolved and continues to be another obstacle for academics interested in integrating museum collections into their teaching.

Hein (1998) claims that the introduction of the national curriculum in the UK in 1989 created this challenging obstacle for museums. Partnerships were created between schools and the museums lucky enough to possess collections that were deemed relevant to the new curriculum by school educators. As a result, many museums were left marginalized due to their collections not matching up with the compulsory themes of the new curriculum. Although the national curriculum does not affect higher education curricula, parallels can be drawn between the government set standards of the national curriculum and the QAA benchmark statements for university departments. However, no research has been done on how the QAA and/or university curriculum changes affect the use of museum collections by universities.

James Wertsch (2002) revisits the ever-present challenge of evaluating learning outcomes in museums. He believes museums should be treated as their own entities and attributes the problem of evaluation to the frequent comparisons between museums and formal education, citing Dewey's (1938) argument that museums are good models for schools as a key motivator in this misconception (Wertsch 2012). Wertsch concludes his argument by explaining how museums and other informal learning environments have different missions from formal education, and therefore, should have different methods of evaluation.

In an attempt to alleviate the governmental pressure and provide a model for museums to prove their impact on society, the University of Leicester, with the help of the Museums, Libraries and Archives Council, piloted a research project dubbed the Learning Impact Research Project (LIRP) in 2001 (Hooper-Greenhill 2007). Hooper-Greenhill provided an in-depth look at this project in her work, *Museums and Education: Purpose, Pedagogy, Performance* (2007). In short, this project attempted to measure the learning outcomes of school visits using three case studies. Hooper-Greenhill acknowledges the difficulties of the

project's methodology in trying to measure learning when it is conceptualized as an individualistic and life-long process. Regardless, this project developed five Generic Learning Outcomes (GLOs) that were accepted by the MLA as a practical approach to measuring learning (Fig. 4). The five GLOs are (1) Knowledge and Understanding (2) Skills (3) Attitudes and Values (4) Enjoyment, Inspiration, and Creativity (5) Activity, Behavior, and Progression (Hooper-Greenhill 2007). A diagram taken from Hooper-Greenhill's 2007 work featuring the GLOs is provided below:

Fig 4. The General Learning Outcomes (Hooper-Greenhill 2007, p. 52)

It is important to recognize that the GLOs were never meant to assess the extent of knowledge gained as a result of a museum visit. Hooper-Greenhill clearly states that the goal of the LIRP was advocacy of stakeholders and the government (Hooper-Greenhill 2007). Whereas university courses set specific learning outcomes to be achieved by the students upon the completion of the course, the GLOs are only set to describe the learning experience, through perceived categorical learning gains (Hooper-Greenhill 2007). In other words, the analysis of the five GLOs ultimately assesses the value teachers and pupils put on museum visits. In the end, with the data collected from the GLOs, the project was able to justify the museum's impact on society in the eyes of the government.

The GLOs as a method of measuring the impact of learning in museums was not intended for formal education. This is because the study's methodology makes it difficult to investigate the learning outcomes on an individual level.   However, despite Wertsch's (2002) warning, it was not long before OBL enthusiasts looked towards such methods to potentially solve the issue of assessing OBL within HE curricula. Cook and Speight (2010) briefly touch on the recurrent issue of assessing informal learning. They argue that whereas evaluation

methods of self-directed learning in museums are still widely debated, evaluation in higher education is deeply embedded in the curriculum. According to Cook and Speight, this does not mean that the assessment of coursework involving museum collections is impossible as long as the learning outcomes are explicit and students understand what they are being assessed on.

Graham Black (2005) raises a number of important issues with the GLOs and other current methods that hinder the processes of evaluating learning in his work *The Engaging Museum* (2005). Black's main argument is that methods of assessing informal learning, such as the GLOs, do not take into account the concept of museums as an inspirational starting point and that further research can be carried out in the future as a result (Black 2005).

> Another teacher pointed out that it was hard to identify progress over time following a museum visit. The impact at the time of the visit could be observed, but a permanent change would need to be sustained over time, and this was hard to map in individual children (Hooper-Greenhill 2007, p. 108).

Criticisms of the GLOs, such as Black's (2005), are perpetuated by the weight the LIRP team puts on the questionnaires given out to students at the end of their museum visits, as these do not take into account the long-term impact of the learning process (Dewey 1938; Kolb 1984; Falk and Dierking 2000; Black 2005).

> Stephen Brown's (2013) critique of the LIRP's GLOs reveals the paradoxical nature of measuring informal learning. He argues that defining learning outcomes in advance to the visitor's museum experience is impracticable because of the impossibility of knowing every individual's motivations, expectations, and interactions. As Brown reiterates, the GLOs do not measure *actual* learning. Instead, they only measure the teachers' and pupils' perceptions of their own learning and of each other (Brown 2013).

> So, while they do measure outcomes, these are more to do with uncovering whether the experience was enjoyable, inspiring, or interesting and how it affected visitor's disposition to museums and learning from museums (Brown 2013, p. 30).

Traditionally, UK academic staff base their curriculums on clearly stated learning outcomes. In order to establish a method for academics to measure informal learning, where comparisons can be drawn between what individuals learned and what academics intended, there has to be some form of learning outcome or baseline to analyze the end result. However, as Brown previously stated, defining learning outcomes in advance to informal learning activities is an impossibility (Brown 2013). Brown does not disagree with the idea of learning outcomes for informal learning activities, but instead offers an alternative framework

he believes is more appropriate for assessing the different learning experiences of the individual (Brown 2013).

2.2.6   Transferable Skills

The development of transferable skills alongside subject knowledge is one of the main advantages of object-based learning perceived by OBL enthusiasts (Marie 2010; Duhs 2010; Letschka & Seddon 2010; Alvord 2012; Friedlaender 2013; Chatterjee 2008, 2010, 2015; Sharp 2015; Altman 2015). Instead of passively listening to a lecturer, OBL enables students to acquire skills that can be applied to many fields or future professions (Oakley & Selwood 2010). Penelope Corfield (2008) does, however, argue against the idea of skills-only workshops and courses, claiming that focusing solely on skills development is a pedagogical mistake because of its lack of a knowledge framework. As a result, skills are easily forgotten because there is no contextualized knowledge to relate them back to. Therefore, Corfield argues that striking a balance between OBL and more formal teaching methods provides students with a more well-rounded learning experience. The following section presents current articles and case studies on the perceived value of transferable skills development through the use of museum collections in higher education.

At UCL, Sharp *et al* (2015) surveyed students who had taken courses involving OBL to examine the students' experiences. They found that students recognized the learning advantages of OBL and appreciated the potential for developing transferable skills.

Students claimed that the object-based learning experience helped them with ocular-centric skills such as 'observation', identification', 'comparison' and 'classification'. Analytical skills were developed through student-led inquiry and empowered learning experience. Object-based learning also helped with practical skills, such as 'handling' and tactile literacy. Communication skills were developed through 'presentation and speaking' and 'discussion and debate' (Sharp *et al* 2015, p. 110).

While there is no official list of all possible transferable skills one can develop, the ones most frequently cited by OBL enthusiasts include: observation, critical thinking, communication, and presentation skills.

In her article *Staying Essential* (Chatterjee 2008), which she presented at the 2007 UMAC conference, Chatterjee discusses the outcomes of a series of workshops that took place at UCL which aimed to illustrate the value of object handling in developing a student's observational, practical, and critical thinking skills. One of the workshops, which demonstrates the professional skills developed by medical students at UCL, involved objects being brought to patients at UCL Hospital for students to examine the effects, if any, that object handling has on the patients' wellbeing. Through the use of observed handling

sessions and interviews, Chatterjee states that the project was successful in raising the wellbeing of the patients and providing the students with a different way of connecting with their patients while enhancing the students' observation and communication skills. UCL's Guy Noble has also experimented with similar object-based projects in the hospital context (Chatterjee and Noble 2008; Noble 2010).

One case study of particular interest from *Museums and Design Education* is Patrick Letschka and Jill Seddon's (2010) project titled, *See What I'm Saying*[9]. Letschka and Seddon turn their attention towards the use of technology in museums and how it affects student engagement with museum collections. The aim of the project was twofold (1) to introduce students to visual research through the use of digital media and (2) for students to gain an understanding of the object's creation and museum display processes. To achieve these goals, students were required to produce short videos examining and questioning the V&A's collections. The project enabled students to develop and share a wide range of transferable skills, such as presentation, interpretation, critical thinking, reflective, and editing. Although a highly specialized case with no information regarding the role of academic staff or its relation to a curriculum, the project presents an innovative approach to integrating museum collections into higher education and the development of transferable skills through film and other technologies.

Ellen Alvord's (2012) case study in *A Handbook for Academic Museums* is practically instructional in its description of how the 'Enhancing Observational Skills' (EOS) programme was incorporated into the Mount Holyoke College (MHC) curricula in conjunction with the Mount Holyoke College Art Museum (MHCAM)[10]. The programme at MHC was based on the EOS programme at Yale University, in which medical students are brought to the Yale Center for British Art (YCBA) for lessons on observation and diagnosis techniques, which are two essential skills for future medical practitioners (Friedlaender 2013). As one of the project's creators, Linda Friedlaender, describes:

> In this way, the YCBA project gives practical expression to integrating art and science in education, using fine art as a medium and as a formal training tool for teaching clinical medicine (Friedlaender 2013, p. 148).

The first EOS programme at Mount Holyoke College involved post-baccalaureate pre-medical students and consisted of two three-hour lab sessions at the MHCAM. In the first session, students were instructed to observe and describe assigned objects and paintings in as

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[9] This project was funded by the CETLD at the University of Brighton and carried out in collaboration with the V&A museum.

[10] See p. 165 in "Visual Literacy and the Art of Scientific Inquiry: A Case Study for Institutional and Cross-Disciplinary Collaboration" in *A Handbook for Academic Museums* for further information on the lab sessions' framework

much detail as possible from different angles and distances. In the second session, students used the observation skills they had developed during the first to describe actual medical images. The positive feedback from both students and academic staff led to the introduction of two further EOS programmes in the biological sciences department. Alvord lists the educational benefits from the EOS programme. These are: the development of detailed observation and descriptive writing skills, clear and concise communication skills, and the practical application of hypothesizing and differentiating cases (Alvord 2012).

Alvord's focus is on OBL and the importance of transferable skills development. The details she provides on the EOS programmes at MHC are informative for both academic and museum staff looking to create stronger links between their own institutions. In addition to describing the programme's design, Alvord also lays out a short list of logistical challenges her team needed to overcome in order to translate the EOS programme from one university to another. These included questions such as: Which academic or museum staff to target for leading the EOS lab sessions? How to connect the sessions to the current and variety of curriculum objectives? And how to select the objects and paintings for the sessions? Many of these questions were answered during training sessions and meetings between university and museum staff (Alvord 2012).

2.2.7 *Multisensory Engagement*

Similar to the development of transferable skills in conjunction with subject knowledge, the use of museum collections in higher education is lauded by OBL enthusiasts for its overarching feature of multisensory engagement (Chatterjee *et al* 2015). Looking, touching, listening, and even tasting and smelling at times, are all able to provide information on an object that no other mode of investigation can. As a result, it is argued by OBL enthusiasts and museum educators that multisensory engagement turns the learning process into a holistic experience.

> Holistic learning is to know things in relation, to understand how parts relate to the whole (Hooper-Greenhill 1991, p. 102).

Harking back to Dewey's (1938), Lewin's (1952), and Piaget's (1970) foundational education theories on experiential learning, it is understood that humans make sense of the world around them using multiple senses. More recently, researchers such as David Howes, Constance Classen and Anthony Synnott in their work, *The Varieties of Sensory Experience* (1991), and Barry Stein and Alex Meredith in theirs, *Merging of the Senses* (1993), have influenced the study of how uni- and multi-modal experiences effect one's perception of the world.

A UCL workshop presented by Chatterjee in her article *Staying Essential* (Chatterjee 2008), illustrates the potential object handing has in stimulating an emotional response

through the multisensory engagement of objects. She recounts a case study involving a woman with Alzheimer's disease and a replica living room from 1940's Britain.

> We heard of one female patient with Alzheimer's disease who had not spoken a coherent sentence for five years. On engaging with objects in the room and on hearing the piano the patient gave a word-perfect rendition of a popular wartime song (Chatterjee 2008, p. 2).

Although an unconventional comparison to the use of museum collections in higher education, the case study on the 1940's Nostalgia Room at London's Newham University Hospital highlighted by Chatterjee proves her point that handling objects can elicit a powerful cognitive response by targeting the senses not typically utilized during the traditional HE lecture.

Nina Levent and Alvaro Pascual-Leone's *The Multisensory Museum* (2014) is one of the most recent works on the relationship between the senses and their effects on the museum experience. The work is broken up into five thematic parts, three of which, focus on the five senses. Each of the first three parts begin with a brief description of the connection between the senses and how the human brain processes information.

The chapters which make up part one of *The Multisensory Museum* confront one of today's most prevalent topics in the museum world – touch. Kish Sathian and Simon Lacy open this section with a chapter on the similarities between visual and haptic object recognition. Their research into the regions of the brain that are activated through visuo-haptic processing yields that the lateral occipital complex (LOC) responds to both vision and touch when processing an object's geometric shape (Sathian & Lacy 2014). They believe this cross-over in brain function furthers their argument for an increase in tactile museum exhibitions in order to accommodate those who identify as either 'visual imagers' or 'spatial imagers' (Sathian & Lacy 2014, p. 6). The chapters within this section discuss a variety of topics pertaining to touch, broadening the term *touch* from just the hands, to the whole body through 'proprioceptive' and 'interoceptive' experiences (Bacci & Pavani 2014, p. 19), to evaluating the educational and therapeutic benefits of touch in botanical gardens (Steinwald *et al* 2014). To highlight the progress being made in the field of multisensory museums, Nina Levent and Lynn McRainey's chapter reviews several touch-oriented exhibitions from museums today, which encourage visitors to become a part of the interpretative process (Levent & McRainey 2014).

Part two turns its attention towards sound galleries. To begin, Stephen Arnott and Claude Alain provide a brief description of the way the human brain processes sound before examining a list of 'auditory illusions' (Arnott & Alain 2014, p. 92). Their aim is to prompt discourse on auditory neuroscience and its application in museums and galleries. Similar to the duality of the LOC, the regions of the brain traditionally thought to be wholly auditory, are not so audio-exclusive. Thus, certain sounds have the ability to stimulate additional regions of the brain. These include: motor skills, emotions, memories, and social and

communicative (Arnott & Alain 2014). In their respective chapters, Seth Cluett (2014) and Salome Voegelin (2014) argue that sound has been a long-neglected artistic medium. No longer a thematic afterthought by curators, Cluett and Voegelin maintain that sound plays a pivotal role in all art forms as a multimodal feature.

Leading off part three, Richard Stevenson (2014) delves into the mechanics of olfactory perception, or in other words, the act of smelling. He argues that although historical representations of odors are merely conjectures of what the times and artifacts would have smelled like, the use of smell in museums still has its merits. The brain's orbitofrontal cortex, used primarily for smelling, plays a role in one's emotions and mood, which in turn adds to one's overall multimodal experience (Stevenson 2014). Andreas Keller (2014) follows with a chapter on the challenges of incorporating smell into museum exhibitions. As the main deterrents for curators, Keller points to the difficulty of enclosing odors in time and space, the mixture of odors in space, 'perceptible' versus 'subliminal' scents, and the difficulty humans have in accurately elucidating the emotional state brought about by odors (Keller 2014, pp. 167-174).

With the only chapter on *taste*, Irina Mihalache (2014) chooses to focus on the pedagogical role food can have in education. Mihalache notes that taste has been used in museums and galleries before, but is rarely developed further into an educational experience. She emphasizes the individuality of human perceptions when arguing taste as an ideal medium for the museum experience. She argues that the ingredients, traditions, languages of different cultures' foods are an opening for engaging visitors in critical thinking. For instance, foods deemed ethnic or exotic by some have the power to generate dialogue on topics such as stereotypes and social constructs (Mihalache 2014).

The Multisensory Museum (2014) is just one of many works bridging the gap between neuroscience and museum studies. It's an ambitious read for those not use to such scientific jargon, however, the work gets its point across that different senses trigger different parts of the brain and provide information on objects that the use of vision alone cannot. Although not directly related to the use of museum collections in higher education, there is an abundance of insightful information for educators throughout the work on the perceived learning advantages of working with objects.

Continuing the discussion on the importance of multisensory engagement, Judy Willcocks (2015) focuses her attention on the students' physical engagement with objects and examined the student response to OBL at Central Saint Martins' Museum of Study and Collection. Willcocks upholds the argument that physical engagement with material culture provides the most concrete and memorable experience (Dewey 1938; Bruner 1966; Prown 1982; Kolb 1984). For Willcocks, the most significant course evaluation comments came from design (fashion and textile) students. Whereas other students were excited to wear gloves for the aesthetic, design students felt as if the gloves deprived them of essential knowledge, such as authenticity and texture.

This leads Willcocks into two debates (1) increased access to museum collections and the risk of object degradation as a result of increased handling or (2) wearing gloves to handle collections and sacrificing a key mode of acquiring concrete evidence. Willcocks

acknowledges certain regulations surrounding collections preservation, but hopes raising awareness of the importance of tactile knowledge will motivate museums to consider modifying their regulations on collections access. Although Willcocks does not offer any revolutionary solutions to these debates, she does note specific ongoing advances, such as the switch from cotton gloves to latex (Willcocks 2015).

Finally, rounding out the conversation on the value of multisensory engagement is Anne Tiballi's (2015) study on active learning. Similar to Dewey's (1938) claim that not all experiences are educational, Tiballi argues that not all physical contact with objects is educational. The modality of touch is significant because it provides information about the object that the eyes cannot. However, she stresses 'active touching', which combines both touch and cognitive processes (Tiballi 2015, p. 58). To show how multisensory engagement with museum collections can be applied to higher education, she briefly explains the framework of a collaborative course between the University of Pennsylvania's Department of Computer and Information Science and Department of Anthropology. Throughout the course, students are required to draw, re-create, and virtually model artifacts from the Penn Museum.

Tiballi breaks down the perceived learning advantages of each task from the course. These tasks are: drawing, re-creating, and virtual modeling. She argues that the course's step-by-step process can aid students in acquiring an in-depth understanding of the object's structure, as well as the development of professional skills, such as drawing, replication, and digital media. As she explains, the complexities of weave patterns can be unraveled through the act of drawing, ancient tools too delicate to handle can be experimented with through the use of replicas, and objects once inaccessible to academics and students can be examined and shared via virtual modeling, where digital files can be freely manipulated or printed in 3D. Tiballi's overarching message is that the accuracy of the final object representations is not as important as the irreplaceable knowledge acquired through the interplay of multiple senses when engaging with the artifacts and the learning process the students go through to achieve their results.

2.3   University Museum Management

As Part 2.2 of this chapter identifies, documented use of museum collections in HE teaching is growing, but there is still limited information about the university-university museum management structures which enable them. In order for museum collections to be effectively integrated into HE curricula, there need to be systems of management in place between the university and university museum which support such cooperation. Part 2.3 examines the complexity of university museum management, which is also argued to play a role in the use of museum collections in HE curricula. There is extensive literature covering the topics of governance and management in a broader sense, however, regarding university museums, the literature is more limited. Therefore, for this study, it is important to narrow the focus of this section. This section focuses on the challenges universities and university museums face as a result of their chosen museum management structure.

2.3.1   University Museum Management Challenges

Peter McCaffery's *The Higher Education Manager's Handbook* (2010) is a helpful starting point if one is looking for an introduction to management and leadership skills within a university environment. McCaffery (2010) begins by reiterating the managerial challenges universities are currently facing in terms of government demands, funding, and an increase in student numbers. Concerning the dilemma all universities must face, McCaffery asserts:

> …how to do 'more' with 'less' while maintaining 'quality' in an ever-demanding competitive environment… this study aims to provide HE managers with a 'best practice' guide to effective management (McCaffery 2010, pp. 3-4).

Although McCaffery (2010) does not discuss the management of university museums directly, the theories and practices which he discusses, such as the impact of socio-cultural change, diversified funding as a cause of disagreement, and/or strategies for conducting effective meetings, can be applied to a variety of contexts, namely, the management of university museums.

There are many works which discuss how universities should be managed, but these do not explicitly discuss the management of university museums (Baldridge 1974; Cameron 1984; Birnbaum 1988; Sporn 1996; Shattock 1999; McCaffery 2010). One common theme among these works is the identification of qualities which differentiate a university from a traditional business. These works argue that although a university is a complex organization, it cannot be managed in the same way as a business. This argument has raised questions surrounding bureaucratic versus academic governance in universities to cope with today's challenges (Baldridge 1974). However, as Baldridge states, because of the complexity and individuality of every university, it is difficult to argue in favor of one model over another without taking their distinct contexts into account. Robert Birnbaum discusses the concepts of governance and management further in his work, *How Colleges Work* (1988). Of particular relevance to this study is the importance Birnbaum puts on the clarity and agreement of institutional missions (Birnbaum 1988). As he argues, the more diverse a university becomes, the more numerous and problematic their missions also become. Any confusion or disagreement over an institutions mission can have a negative effect on an institutions management (Birnbaum 1988). This is a topic which has not been thoroughly investigated in regards to university museums, but is of particular importance for this study, as how a university is managed will have a direct effect on the management of their university museum and the relationship between the two institutions.

As previously mentioned in this chapter [see section 2.1.4], the OECD's *Managing University Museums* (2001) raises a number of questions concerning how university museums can cope with their dual roles as academic and public resources. Similar to McCaffery's (2010) introduction, *Managing University Museums* also opens with a review of the general challenges and shift in identify facing university museums. There are several challenges these

opening chapters discuss regarding the relationship between, and management of, universities and its university museums. Three of these challenges are believed to play an intricate role in the use of museum collections in HE curricula. These are: a shift in audience, professionalization of museum staff, and staff communication.

While tracing the history of university museums, Patrick Boylan (1999) notes how many university museums have extended their educational remit to include the public. In the opening chapters of *Managing University Museums*, Melanie Kelly (2001), Lyndel King (2001), and Vanessa Mack (2001), respectively, all discuss this shift in audience for university museums to the public as a key challenge to the museum's traditional role of supporting university teaching. One of the key instigators for this shift is a change in funding sources (Willumson 2000; Kelly 2001; King 2001). As Glenn Willumson (2000) argues, if a university museum turns their attentions to the public, the need to satisfy these new demands can consequently take their attention away from supporting university teaching. Willumson continues by arguing that this shift in focus can increase the perception of the museum as independent from the university in terms of their missions, thus widening the gap between the two institutions. In order to avoid this separation, he claims that university museums need to reassert themselves into their university's curricula (Willumson 2000).

> The university museum must also reassert its role in the educational experience of the university student… Its programming must cross disciplines and embed the museum within contemporary academic conversations. Not by looking to outside audiences but only by reviving its commitment to its academic audiences can the university museum thrive in the twenty-first century (Willumson 2000, p. 18).

However, Willumson's solution is not accepted by everyone. How a university museum prioritizes their audiences is still debated today. There are still those, like Mack (2001), who believe that the university museum's growing responsibility to the public should take precedence if a museum wants to survive the current economical climate. Although both Willumson and King focus on university museums in the US, this shift can also be seen in the UK as well (Boylan 1999; Kelly 2001; Were 2010). Graeme Were (2010) takes a closer look at this shift in his review of how UCL has confronted this challenge of diverse audiences. As Were argues, although UCL's openness to diverse audiences is commendable, this shift has caused some academics to question who has authority over the collections. This dynamic, coupled with changes to university curricula, which saw collections use fall in and out of fashion with academics, as well as changes in staffing, have inhibited the use of museum collections in HE teaching (Were 2010).

How a university and university museum are managed can also impact the type of staff employed by the institution (Mack 2001; Were 2010). As Mack argues, there are managerial implications which stem from the decision to make museum collections more accessible to the public. One of these implications is the professionalization of museum staff, which contrasts the traditional management of university museums by academic staff (Mack 2001).

Describing what the ideal museum director should look like moving forward to deal with these changes, Mack stresses:

> The museum director needs to be well-educated, but not primarily a scholar: an organizer, promotor, marketer and communicator, with good PR skills and high energy level. No longer should the museum be seen as a fiefdom of the academic (Mack 2001, p. 31).

Furthermore, Kelly (2001) adds that new university museum managers not only need to be trained in museum management, but also have the necessary communication skills to navigate the complex management lines of universities and be able to communicate with academics as equals. Using UCL as an example, Were (2010) discusses how the establishment of UCL Museums and Collections, a separate department with a separate staffing structure, has impacted UCL's university-university museum relationships. While there are positives to this style of management, as museum staff became more professionalized to deal with a growing focus on the public, communication with academic staff decreased (Were 2010). He argues that this decline in communication is due to the dispersal of subject specific knowledge which was generally held by academic staff who managed the collections themselves. As a result, this lack of subject specific knowledge can lead to less academic displays and/or research within the university museum (Were 2010).

The last challenge to institutional cooperation pertaining to the management of university museums covered in this section is the impact of managerial lines and communication between museum staff and the university. As Kelly (2001) and Mack (2001) argue, university museum staff can become isolated from their academic colleagues and communication can get lost through various managerial lines and never reach those in higher positions within the university. Jane Weeks (2000) argues that university museum staff isolation, specifically of curators, is a particularly challenging issue to overcome. Depending on the museum management structure put in place by the university, curators may or may not have communication with decision-makers. However, university museum curators are also at risk of isolation from academics, as their goals can differ depending on the direction of the museum (Weeks 2000). Even university museum directors can struggle to have their voice heard depending on who they report to within the university and the number of assets that individuals oversees (Genoways 1999). As Genoways (1999) claims, it is human nature for academic programs with higher visibility and profiles, such as the sciences, to garner more attention and time from university administrators than university museums because of the incentive of more funding opportunities. He continues by discussing how administrative turnover rate can also effect communication between the university and university museum. Referencing his own experiences with this challenge as the director of the University of Nebraska State Museum, Genoways explains:

> …I had three different vice-chancellors for research and three interim vice-chancellors for research. This becomes a challenge for the campus museum director because it represents a total change of the board approximately every 32 months. There is little or no continuity and no institutional memory. The campus museum director must start from the beginning by educating the new supervisor about the museum, its programs, and its needs (Genoways 1999, p. 220).

This lack of communication between the university and university museum can not only alter the perception of the museum by academic staff as separate from the university, but can also cause a decrease in collections awareness by academic staff (Hamilton 1995; Weeks 2000). This topic, as well as a shift in audience and professionalization of museum staff, have garnered relatively little attention considering the impact they can have on university-university museum relationships and the use of museum collection in HE curricula.

2.4   Literature Review Conclusion

The works covered in this literature review focus on the theoretical and practical uses of museum collections in higher education, as well as the logistical and managerial challenges of university-university museum relationships. As educators from both sectors (museums and universities) continue to argue throughout the literature, the logic behind using museum collections in university level teaching and object-based learning is deeply grounded in experiential and active learning. OBL is argued to provide learners a more memorable experience than the traditional lecture; contextualizing information through the sharing of interpretations whilst enhancing a long list of transferable skills, such as critical thinking, analytical, communication, and presentation. However, as Dewey (1938) stresses at the beginning of his instrumental work, progressive teaching methods, such as OBL, should not be viewed as direct challenges to traditional didactic pedagogies, but instead act as supplementary experiences for learners. As Hooper-Greenhill (1991) restates, the study of objects can provide the concrete information necessary to support or refute abstract theories. Contemporary literature from around the world reveals that there are examples of sustainable university-university museum relationships, as seen in the US and Australia (Ladkin *et al* 2010; Caban & Scott 2010; Warren *et al* 2012). Within the UK, there is optimism regarding the recent governmental initiatives to promote partnerships between museums and universities, such as the Higher Education Funding Council of England (HEFCE) and the inception of a number of Centres for Excellence in Teaching and Learning (CETLs). These organizations set out to research and promote the highest quality of innovative teaching and learning within their partnered universities (Arnold-Foster & Speight 2010). Furthermore, projects such as MUPI, promote the sharing of ideas and strategies through UK-wide networking workshops. Nevertheless, the literature also confirms that these UK collaborations are still only generated by motivated individuals on a piecemeal or ad hoc basis and that there is more work to be done on both fronts if museum collections are to become an integral part of HE curricula in the future (Oakley & Selwood 2010).

A review of the literature on museum education and university-museum collaborations has exposed a gap in the knowledge and understanding of the use of museum collections within higher education. There is a growing number of works and papers promoting university-museum collaborations and the perceived learning advantages commonly associated with them. However, the lack of qualitative based case studies focusing on the relationships between universities and university museums and the conditions which determine the use of museum collections at the university level has presented an opportunity to explore and unpack this topic further (Oakley & Selwood 2010; Cook *et al* 2010; Boddington *et al* 2013; Chatterjee 2015).

3 Methodology

This chapter describes the basis for the chosen methodological approach used to answer this study's research question:

What determines the use of museum collections in university level teaching?

Furthermore, this chapter highlights how data was acquired for this study and how it was analyzed. This chapter is broken up into three parts: Methodological Approach, Research Design, and Data Analysis.

This study's overarching research question has been broken down into a list of subsequent research aims and objectives in order to effectively guide the investigation of this study's topic, as shown in Table 2 below:

Table 2: Research Aims and Objectives

Aims	Objectives
Aim 1: Identify learning advantages and disadvantages perceived by academic and museum staff and students when teaching with museum collections	Identify and analyze the reasons academic staff use, or do not use, certain teaching methods Analyze academic and museum staff experiences with OBL and feelings regarding the use of museum collections as teaching tools
	Gain an understanding of how logistical limitations have affected the use of museum collections by academic and museum staff in the past Identify any ongoing, unique, or future logistical limitations and the affect they have on teaching with museum collections
	Identify positive and/or negative ways in which academics feel OBL affects their pedagogy
Aim 2: Analyze how the relationship between museums and universities affect how academic staff	Identify the different models of communication and how they support the use of museum collections in teaching Identify the individuals responsible for communicating between the university and museum

and students use museum collections	Examine the extent which different museum management structures affect the relationships between universities and museums in terms of supporting teaching
	Determine how often curriculum changes occur and how museums are notified of such changes
	Determine the extent that use of museum collections is taken into account during the process of curriculum changes
Aim 3: Investigate the degree to which the use of objects in HE teaching affects student interest, motivation, and learning	Identify any patterns to what students prefer or expect when working with objects
	Gain an understanding of the factors which influence student response to OBL
	Analyze if and/or how levels of interest, motivation, and learning in students are affected as a result of the use of museum collections in teaching

3.1   Methodological Approach

Sections 3.1.1 – 3.1.4 provide the rationale behind an interpretivist approach rather than a positivist approach as the most appropriate way to answer this study's research question. In addition, these sections describe the use of multiple case studies, semi-structured interviews and an online survey, and the analysis of official university and museum documents, as well as the weaknesses and pragmatic reasoning for the chosen research methods.

3.1.1   Academic Basis

For this study, an interpretivist (non-positivist) approach to examining qualitative data was used to address the question of conditions which determine the use of museum collections in university level teaching. The decision to use an interpretivist epistemology, as opposed to a positivist one, was made in accordance with the aims and objectives of this study. A common delineation between the two paradigms are their views on reality. Whereas positivists believe reality exists outside the human mind as an observable part of the world, interpretivists believe that reality is constructed by humans, and therefore, differs from one individual to the next in various degrees (Bassey 1999). Whereas positivism predominantly focuses on the quantitative, interpretivism seeks to understand the individual, their relationships, feelings, and how they perceive the world (Thomas 2013). This level of understanding is achieved by immersing oneself in the context being researched (Gillham 2000; Demarrais & Lapan 2004; Yin 2009; Thomas 2013). The type of data acquired through

qualitative methods cannot be expressed through empirical data. To clarify, Bill Gillham (2000) discusses how positivist experimental approaches which rely on statistical data are inadequate at representing naturalistic phenomena and human behavior because they simply cannot grasp the complexities that are exclusive to the individual, specific groups, or institutions. If the goal of a qualitative study is to initiate a change, then understanding these underlying reasons that motivate people is an essential step in the process of that change (Gillham 2000).

It is common practice for positivists to pursue generalizations as an end-goal to their research (Thomas 2013). However, as Gary Thomas (2013) argues, interpretivists make no such claims of broad generalizations. Instead, interpretivists attempt to gain a greater understanding of each case's complexities within the context of the study's analytical frame. As long as the context is explicitly and clearly stated, multiple cases, which fall within the same context, can be compared and contrasted. In other words, for an interpretivist, the situational differences of each case and an understanding of individual actions and beliefs are the main focus (Thomas 2013).

Thomas (2011) defines the two necessary parts of a case study as a subject (case) and analytical frame (object). An example of this model derived from this study is Newcastle University and the GNM: Hancock as the subject (case), whereas the analytical framework (object) is the conditions which determine the use of museum collections in HE curricula. The use of museum collections by universities is not universal, nor is the relationship between universities and museums. Instead, each relationship between university and museum is unique as a result of the individual actions and the pedagogies of their respective staff and should be treated as such. To gather the necessary qualitative data to address the defined research question, semi-structured interviews were carried out across four separate case studies with academic and museum staff. In addition to the use of semi-structured interviews, an online survey comprised of both closed and open-ended questions was sent to HE students from these four cases to gather data on the student response and incorporate it into this study.

3.1.2   Multiple Case Studies

A case study method was used for this research because of a case study's detailed investigation into a particular phenomenon (Yin 2009). Robert Yin (2009) has attested for the use of case studies as one of the most advantageous research methods for the social sciences. As Yin argues,

> The case study method allows investigators to retain the holistic and meaningful characteristics of real-life events – such as individual life cycles, small group behavior, organizational relations, and the maturation of industries (Yin 2009, p. 4).

Furthermore, Yin argues that the use of multiple case studies offers the researcher particular advantages over single case studies. He contends that multiple case studies are generally accepted as being more compelling as a result of drawing conclusions from a wider range of cases (Yin 2009). Additionally, the use of multiple cases enables the researcher to compare and contrast cases, which ultimately leads to interpreting the *object* (analytical frame) instead of the *case* (Thomas 2011).

Like any research method, there are criticisms that challenge the validity and reliability of the case study method. Yin (2009) cautions against several of the common concerns with the case study method. These include: the unclear perspective and bias of the researcher during data analysis, the challenge of/or inability to generalize, overwhelmingly large data collections, and the seemingly long timetable for the completion of a thorough case study. Of particular importance to this study are the matters of internal and external validity, as these generally determine the value of the research undertaken. Yin explains how internal validity refers to the inference on behalf of the researcher, while external refers to the level of generalizability of the case study (Yin 2009; Hartas 2010).

Generalization in qualitative research is regularly debated in methodology literature today. Often, the interpretivist's position on generalization can be summed up with a review of Yin's (2009) model. Citing Yin, Peter Swanborn (2010) agrees that,

> To start with, we have already seen that hardly ever enough cases can be studied to use inductive statistics for generalization to the intended domain in the way it is usually done in extensive research (Swanborn 2010 p. 66).

In other words, generalizations concerning entire populations cannot be made from one or a few cases. However, this is not the goal of qualitative researchers doing case studies. Instead, as Patricia Hays (2004) argues, generalization is both achievable and justified with the use of multiple cases under the umbrella of the same contextual phenomenon. Swanborn (2010) echoes this sentiment, arguing that analytic generalization, in place of statistical generalization, can be made between similar cases within the same theoretical framework. Yin has championed this concept of analytic generalization in the face of external validity critics, arguing that qualitative case studies are generalizable to theoretical propositions (Yin 2009; Hartas 2010).

Previous studies on university-museum collaborations and OBL have used the case study approach. However, these were done on a piecemeal or isolated basis under ideal circumstances and/or through the efforts of highly motivated individuals or those with personal connections to museum staff and resources. These previous studies mainly focus on the learning advantages and satisfaction rate of OBL or what took place during the object handling session (Cook *et al* 2010; Jandl & Gold 2012; Boddington *et al* 2013; Chatterjee 2015). Therefore, this study seeks to go beyond previous single case studies by analyzing

four separate case studies in an effort to identify conditions that either support or limit the extent of the use of museum collections in HE curricula.

Logistical limitations played a minor role in the justification of this study's chosen research methods. However, they are worth mentioning for their added support. The decision to focus on four cases in England was dependent on the researcher's and interviewees' time constraints, travel expenses, and distance. Likewise, the time constraints of this study were the main reason behind the use of an online survey for HE students instead of conducting interviews with them.

3.1.3 *Semi-Structured Interviews*

Researchers hoping to gain an in-depth understanding of an individual's experiences generally use interviews as their primary research method (Yin 1994, 2009; Demarrais & Lapan 2004; Thomas 2011, 2013). This is because interviews provide the opportunity to discuss qualitative knowledge such as personal feelings and perceptions that are otherwise impossible to record through traditional observations and command a higher response rate than surveys (Hartas 2010). Additional advantages to the use of interviews are the opportunity for the interviewer or interviewee to clarify any terms, questions, or responses the other finds confusing and the interviewer's ability to ask follow-up questions to interviewees if their responses trigger any thoughts not considered at the onset of the interview (Hartas 2010).

For this study, semi-structured interviews with open-ended questions throughout were conducted with academic and museum staff from each individual case based on the aims and objectives of the study. The defining strength of semi-structured interviews is their capacity to cover both the desired topics and allow interviewees a platform to discuss other matters freely that they believe to be relevant and significant to the study (Yin 2009; Hartas 2010). Semi-structured interviews were used in the place of structured and open (unstructured) interviews because of the restrictiveness of structured interviews, which inhibits the understanding of each case's individuality and the unstructured interview's lack of focus that potentially compromises fulfilling the aims and objective of the study. The term *open-ended questions* refers to questions using key words such as *why* or *how*, which call for more detailed answers, as opposed to an interview comprised of solely *yes* or *no* questions. The use of open-ended questions is essential to this project because it is attempting to understand, in their own words, the reasons behind individuals' actions and beliefs (Hartas 2010).

There are however, weaknesses and criticisms to the use of interviews that must be addressed in order to avoid arguments of this study's validity. Bias on behalf of the interviewer and interviewee are the main concerns in regards to the validity and reliability of the data collected through interviews. Yin (2009) also notes inaccurate recall and articulation

on behalf of the interviewee as common challenges the interviewer must overcome. As Hartas argues,

> Critics, however, have argued that since the interviewer is a 'co-producer' of knowledge, interviews are an 'unreliable' method of data generation. That is, we cannot rely on findings that result from interview studies because the data would inevitably have been different had they been generated or 'produced' by a different interviewer (Hartas 2010, p. 228).

This argument is common among positivists who believe in more scientific approaches to research, where researcher and respondent are detached from one another to increase objectivity and the chances of generalization. Other criticisms of interview data cited by Hartas (2010) include the possibility of interviewees tailoring their responses to put themselves in a better light, the influence of power relations (class, ethnicity, gender, or age) on interviewees' responses, and finally, that interviewees may interpret the same terms or questions differently.

As this study is focused on qualitative data, the positivist concern over co-production of knowledge is acknowledged by the researcher, but is not considered to be a primary concern. Hartas (2010) argues that as interpretivists, qualitative researchers acknowledge that the influence of the interviewer and interviewee on the data is inevitable, and instead of shying away from the issue, should focus on how this cause and effect influences the data and their findings. This belief parallels Gillham's (2000) argument, which claims an interpretivist researcher is not, and cannot, be detached from their research. Instead, an interpretivist researcher not only acknowledges their influence, but also looks out for it. Gillham continues by asserting,

> A research investigation is not neutral; it has its own dynamic and there will be effects (on individuals, on institutions) precisely because there is someone there asking questions, clarifying procedures, collecting data. Recognizing this is part of doing good research. Ignoring it is bad 'science' (Gillham 2000, p. 7).

There is no proven method to erasing outside influences from the data collected from interviews because these are often unconscious byproducts of the interviewer and interviewee's background (Denzin & Lincoln 2003). However, this concern can be overcome. One solution is a sense of reflexivity on the part of the researcher. Reflexivity in qualitative research refers to the process of examining one's own background and preconceptions and how these affect research decisions. This positionality allows the researcher to examine how knowledge is being co-produced within the interview context and onwards (Thomas 2013). This in turn, will lead to a better understanding of their own findings and a more coherent conclusion for the study's audience. A second solution to

overcoming the concern of co-production of knowledge is the use of triangulation. Triangulation can have various definitions. However, at the heart of every definition is the method of using multiple viewpoints to investigate a question (Thomas 2013). Two distinctive data sources were used during the interview process of this study. These sources are academic and museum staff, which theoretically play a role in the conditions which determine the use of museum collections in HE curricula.

3.1.4   Online Survey

For this study, HE students were used as a third data source. However, to gather this data, an online survey was conducted instead of interviews. Although not as personal as an interview, surveys are a convenient and structured method for gathering data from large populations. Normally associated with closed questions and/or statistical data, the use of open-ended questions in the survey enables the participant to share their more in-depth and personal perspectives on a topic (Thomas 2011, 2013).

There are various web-based services available to guide researchers in the creation and distribution of online surveys. However, as Thomas (2013) cautions, there are several considerations the researcher must recognize when using surveys. First, is to keep the questions and survey length short. Respondents are less likely to fill out a long survey. Second, is to be precise and clear in what the survey is asking. A single question which asks for multiple pieces of information can confuse the respondent and as the researcher is not there for clarification, clear wording of questions is essential. The third consideration for the researcher is to make sure the survey questions cover all the desired areas of the study. One of the most challenging research limitations to overcome is collecting all the survey responses only to realize there is a significant gap in the data collected. The fourth consideration is the criticism of 'prestige bias' (Thomas 2013, p. 208). Prestige bias is when the respondent purposefully answers a question to appear educated and/or moral, and can affect the interpretation of their responses. And lastly, is the challenge of motivation. Without any stimulus, there is little motivation, especially for HE students, to take time out of their schedules to fill out a survey (Thomas 2013). All of these considerations were taken into account by the researcher for this study and managed accordingly.

3.1.5   University and Museum Document Analysis

In addition to the use of semi-structured interviews and an online survey, official university and museum documents from each case were analyzed for the information they contain regarding the aims and objectives of the chosen institutions and the context in which those being interviewed operate (Bowen 2009). Yin (2009) argues that document analysis is especially advantageous in qualitative research because of how it enables the researcher to verify their findings. These documents were particularly insightful in providing background information on each case, the framing of interview questions surrounding museum management structures, and the contextualization of data. The majority of these documents

are publically available online, however, in some instances, access to confidential and/or restricted and unpublished documentation was granted for this study. The types of documents used for this study included strategic plans, annual performance reviews, corporate plans, business plans, and impact reports.

3.2   Research Design

Sections 3.2.1 – 3.2.5 of this chapter discuss the research design used for this study. Adopting aspects of Yin's (2009) multiple case study design, this section explains why the chosen design involving cases representing a Third-Party System, Academic Service, Professional Service, and Direct Governance was chosen and how these titles were used in framing the study. The use of terms *Academic Service* and *Professional Service* are commonplace in the sector, however, the terms *Third-Party System* and *Direct Governance* have been chosen by the researcher for the purpose of this study, as there is no official label for these types of museum management structures. These sections then continue with a description of the case study and interviewee selection processes, and end with the development of the interview and survey questions used for this study.

3.2.1   Case Study Design

Robert Yin's *Case Study Research: Design and Methods* (2009) was referenced in the early stages of this study. Yin provides five separate rationales for single case studies. These include: 'Critical case', 'Extreme case', 'Representative case', 'Revelatory case, and Longitudinal case'. According to Yin, the use of such titles to categorize cases is one way to justify the undertaking of the research in the first place, as well as an indication of the researcher's prior knowledge and expectations of the case in question. A briefing on Yin's descriptions of each case type are provided below in Table 3 (Yin 2009, pp. 47-8):

Table 3: Yin's Case Study Typologies

Critical case	A single case, which meeting all of the conditions for testing the theory, can confirm, challenge, or extend the theory.
Extreme case	Where a [subject] may be so rare that any single case is worth documenting and analyzing.
Representative case	Here, the objective is to capture the circumstances and conditions of an everyday or commonplace situation.
Revelatory case	This situation exists when an investigator has an opportunity to observe and analyze a phenomenon previously inaccessible to social science inquiry.
Longitudinal case	The study of a case at two or more points in time to investigate conditions of change over time.

The case study design used for this study is analogous to Yin's case study design. Yin's specific case typologies (shown above in Table 3) proved to be unfit for this study because of the difficulties in justifying one case over another per typology. Whereas some cases fit seamlessly into Yin's design, other cases could qualify for more than one case type. In this instance, to choose one case type over another without evidence that it is the better choice would compromise the validity of the study. This limitation of Yin's design led to a reexamination of university-university museum relationships to find a way of organizing the cases for the case-study selection process. Thus, instead of using Yin's specific case typologies, as shown above, the cases for this study were categorized under new titles which represent their museum management structures. The decision to focus on museum management structures for the case selection process was made because of its presence in all cases and that it could theoretically play a significant role in the museums' communication and relationship with the university.

Following a thorough investigation into the different types of museum management structures within the UK, the four case type titles chosen for this study were: Third-Party System, Academic Services, Professional Services, and Direct Governance. The parameters of these four categories, however, are not without a few caveats. First, one must keep in mind that it is impossible to have a perfect or uniform management structure. Even those which sit within the same category will have differences in their management structure at some level. This is due to the individuality that differentiates one university museum from the next. Additionally, universities may define these titles differently or have their own views on what they are and do. Although the majority of university museums within the UK sit within either academic or professional services, there are the occasional outliers which called for additional categories to accommodate their structural distinctions. Table 4 provides a brief description of what these four new case types signify in regards to differing museum management structures:

Table 4: Museum Management Structure Case Study Typologies

Third-Party System	An organization outside the university and museum that oversees managerial responsibilities on behalf of the university.
Academic Services	Museum and its staff sit within an academic department and/or report to a faculty board. Their main priority is the education of students on behalf of the university.
Professional Services	Museums are considered an administrative support service to the university. Their primary focus is the administration and procedural duties of the institution.
Direct Governance	Line of governance communication travels directly from the museum to the university's senate without any intermediary.

Following a review of applicable case study designs, this was decided by the researcher as the most appropriate case study design for this study for three main reasons. First, the use of a multiple-case design enhances the reliability of the research findings and robustness of the study as a whole (Yin 2009). Second, it provides a clear structural layout of the case selection process and case types, illustrating prior knowledge of how they both relate and differ from one another within the study. And third, the four carefully selected cases will provide detailed information from a wide variety of circumstances (Yin 2009).

3.2.2 Case Study Selection

The four university-university museum partnerships selected to represent the four aforementioned museum management structures were: Newcastle University (NU) and the GNM: Hancock as the Third-Party System, Oxford University (OX) and the Ashmolean Museum as the Academic Service, University College London (UCL) and the UCL Collections as the Professional Service, and University of Manchester (UoM) and the Manchester Museum as the Direct Governance. These four cases were the logical choices because they predictably offered the most relevant and detailed information for the completion of this study. The following section provides a brief overview of the selection process as well as the rationale for each case selection.

The case study selection process began with an online search of the Arts Council England's 2017 list of accredited museums within the UK. Following a thorough review of the ACE's Excel spreadsheet[11], a list of 79 accredited university museums across 37 universities was compiled. These universities and museums were then contacted to inquire about their museum management structures. Of these 37 universities, 23 responded with brief descriptions of their museum's position in relation to the university's structure. Once knowledge of their museum management structure was gained, the museum and their affiliated university were grouped into case types based on that structure. During this phase of the selection process, Rachel Barclay, a curator at Durham University's Oriental Museum, was contacted regarding her recent survey of university museum governances across the UK. Although Barclay cautioned that the data she provided in its current form was merely informal feedback, her survey proved to be a complementary resource during the classification of cases. Although less critical to the overall selections, logistical limitations of the institutions themselves, such as the accessibility of academic and museum staff for interviews and the researcher's personal finances, distance, and time, were also considered during the selection process.

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[11] A full Excel spreadsheet of accredited UK museums can be found at:

http://www.artscouncil.org.uk/document/list-accredited-museums-uk-channel-islands-and-isle-man

The two tables below illustrate the case study selection process. A comprehensive list of the universities and museums contacted for this study can be viewed below in Table 5. Those who responded, as well as their management structure groupings, can be viewed below in Table 6:

Table 5: Contacted Universities and Museums

University	University Museums
Aberdeen University	- King's Museum - Zoology Museum - Herbarium - Geology Collection - Anatomy Museum - Scientific Instruments - Pathology Collection
Cambridge University	- Museum of Archaeology and Anthropology - Fitzwilliam Museum - Whipple Museum of The History of Science - Sedgwick Museum of Earth Sciences - University Museum of Zoology - Kettles Yard - Museum of Classical Archaeology - The Polar Museum
St Andrews University	- Bell Pettigrew Museum - Museum of the University of St Andrews - The Gateway Galleries
Glasgow University	- The Hunterian Museum
Manchester Metropolitan University	- Manchester Metropolitan University Special Collections
University of Manchester	- Manchester Museum - Whitworth Art Gallery
Oxford University	- Ashmolean Museum - Pitt Rivers Museum - Bate Collection of Musical Instruments - Museum of Natural History - Museum of The History of Science - Herbaria
University of East Anglia	- Sainsbury Centre for Visual Arts
Newcastle University	- Great North Museum: Hancock - Hatton Art Gallery

University College London	- Grant Museum of Zoology - Petrie Museum of Egyptian Archaeology - UCL Art Museum - Pathology Collection - Geology Collection - Bloomsbury Theatre and Studio
Edinburgh University	- Talbot Rice Gallery - Reid Concert Hall Museum of Instruments - Cockburn Museum of Geology - Centre for Research Collections and Art Collection - Anatomical Museum
University of Reading	- Museum of English Rural Life - Ure Museum of Greek Archaeology - The Cole Museum of Zoology
Durham University	- Oriental Museum - Museum of Archaeology - Durham Castle
University of Birmingham	- Barber Institute of Fine Arts - Lapworth Museum of Geology - Research and Cultural Collections - Winterbourne House and Gardens
Lancaster University	- Ruskin Library - Peter Scott Gallery
University of Liverpool	- The Victoria Gallery and Museum - Garstang Museum of Archaeology
University of Leeds	- The Stanley and Audrey Burton Gallery - ULITA: An Archive of International Textiles
University of Warwick	- University of Warwick Art Collection
University of Hull	- University of Hull Art Collection
University of Bristol	- Theatre Collection
Heriot-Watt University	- Heriot-Watt University Museum and Archives
University of Stirling	- University of Stirling Art Collection
University of Exeter	- The Bill Douglas Cinema Museum
University of Dundee	- University of Dundee Museum Services
Swansea University	- Egypt Centre
Aberystwyth University	- School of Art Museum and Galleries
University of Essex	- Essex Collection of Art from Latin America
Bournemouth University	- Museum of Design in Plastics
Kingston University	- Dorich House Museum
Robert Gordon University	- Art & Heritage Collections

University of Nottingham	- University of Nottingham Museum
University of Salford	- University of Salford Art Collection
University of Chichester	- Otter Gallery
Middlesex University	- Museum of Domestic Design and Architecture

Table 6: Museum Management Structure Groupings and Selections

Museum Management Structure	Case Study Selections
Third-Party System	
Newcastle University - Great North Museum: Hancock	Newcastle University - Great North Museum: Hancock
Academic Services	

<u>Glasgow University</u> - Hunterian Museum <u>Oxford University</u> - Ashmolean Museum - Pitt Rivers Museum - Bate Collection of Musical Instruments - Museum Natural History - Museum of the History of Science - Herbaria <u>Cambridge University</u> - Fitzwilliam Museum - Museum of Archaeology and Anthropology - Whipple Museum of The History of Science - Sedgwick Museum of Earth Sciences - University Museum of Zoology - Museum of Classical Archaeology - The Polar Museum - Kettles Yard <u>University of Reading</u> - Museum of English Rural Life - Ure Museum of Greek Archaeology - The Cole Museum of Zoology <u>Aberystwyth University</u> - School of Art Museum and Galleries	<u>Oxford University</u> - Ashmolean Museum
Professional Services	

Manchester Metropolitan University - Manchester Metropolitan University Special Collections **University of Salford** - University of Salford Art Collection **University of Exeter** - The Bill Douglas Cinema Museum **Bournemouth University** - Museum of Design in Plastics **University of Dundee** - University of Dundee Museum Services **Middlesex University** - Museum of Domestic Design and Architecture **University College London** - Grant Museum of Zoology - Petrie Museum of Egyptian Archaeology - UCL Art Museum - Pathology Collection - Geology Collection - Bloomsbury Theatre and Studio **Heriot-Watt University** - Heriot-Watt University Museum and Archives **St Andrews University** - Bell Pettigrew Museum - Museum of the University of St Andrews - The Gateway Galleries **Aberdeen University** - King's Museum - Zoology Museum - Herbarium - Geology Collection - Anatomy Museum	**University College London** - Grant Museum of Zoology and Comparative Anatomy - Petrie Museum of Egyptian Archaeology - UCL Art Museum - Pathology Collection - Geology Collection - Bloomsbury Theatre and Studio

- Scientific Instruments - Pathology Collection Lancaster University - Ruskin Library Swansea University - Egypt Centre University of Bristol - Theatre Collection Durham University - Oriental Museum - Museum of Archaeology - Durham Castle Edinburgh University - Talbot Rice Gallery - Reid Concert Hall Museum of Instruments - Cockburn Museum of Geology - Centre for Research Collections and Art Collection - Anatomical Museum	
Direct Governance System	
University of Manchester - Manchester Museum - Whitworth Gallery University of Birmingham - Barber Institute of Fine Arts	University of Manchester - Manchester Museum

For case study research, the conceptual and pragmatic rationales behind the chosen cases are two contributing factors to the case selection process which must be presented for the validity of the study. As Swanborn (2010) warns, pragmatic reasoning for case selection often is, and should be, combined with theory driven reasoning to increase the validity of the research being undertaken. He argues the most important principle to remember when selecting cases is to look for 'informative' cases, that is, cases that can provide the most relevant and useful information, regardless of the criteria used (Swanborn 2010, p. 52). Few would argue with this basic concept, however, for Swanborn, it is assumed that this process involves a level of familiarity with the cases under consideration prior to the compilation of possible cases. In other words, Swanborn's view is that the case study selection process for

qualitative research must include some form of prior knowledge of the cases if one is going to choose the cases most likely to answer the study's research questions.

Yin's (2009) whole case study design relies on the idea of prior knowledge of cases in order to categorize them under his typologies. As Thomas (2011) contends, a researcher's case selection does not have to be randomized, nor based on the researcher's personal experience with the case. A researcher's selection may simply depend on how much available information there is on the case. Whereas one researcher may value a case with an abundance of available information, another may justify their choice of a case on account of its distinctiveness, anonymity, or its ability to reveal noteworthy data. The concept of 'criterion-based selection' alluded to by Kathleen Demarris (2004, p. 59) in her work on qualitative interviewee selection is also applicable to the process of case study selection. Demarris defines criterion-based selection as the researcher's search for participants who have the particular knowledge of the topic being researched. By definition, criterion-based selection can also be used in the process of case selection, where the researcher's ultimate goal is to choose the case(s) with the most suitable types of sources for the study's focus (Demarris 2004). For this study, the concept of prior knowledge of cases was taken into consideration and used throughout the selection process to aid in the narrowing down of possible cases in addition to logistical limitations.

In the section below are brief descriptions of the chosen cases for this study's case study research and the rationale behind their matching case type. This study's case introduction chapter (Chapter 4) provides a more in-depth look at each of these four cases:

Third-Party System – Newcastle University

Newcastle University and its relationship with the Great North Museum: Hancock was chosen to represent a third-party system management structure because of the case's unique complexity. The GNM: Hancock is managed through Tyne & Wear Archives & Museums (TWAM) on behalf of Newcastle University. TWAM is a regional museum, gallery, and archives service supported by ACE and four local authorities. An unusual, if not, distinguishing aspect of TWAM's relationship with Newcastle University are the Service Level Agreements (SLA), which lists a number of services paid for by the university. Of these services, an unexpected omission is any mention of collaboration in regards to the use of collections in university level teaching (Service Level Agreement 2014-2017). There is active communication between the museum and university primarily through NU's Dean of Culture and Creative Arts[12] and a GNM committee chaired by NU's Deputy Vice Chancellor. The researcher's access to ample staff and individuals within Newcastle's academic community who have worked between the two institutions both in the past and present had the ability to provide a rich account of this unique case. This access to academic staff extends not just to

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[12] At the time of this study's data collection, the Dean of Culture and Creative Arts position was titled Dean of Cultural Affairs.

those who use collections in their teaching, but non-users as well, which is a significant feature of this study that, when added to the perspectives of museum staff and students, allows for a more comprehensive investigation of the theories.

Academic Service – Oxford University

Oxford University and the Ashmolean Museum are a particularly intriguing case because of their latest managerial transformation in 2016. The museums and libraries of Oxford University have recently merged to form 'Gardens, Libraries, and Museums' (GLAM). GLAM has recently replaced 'Academic Services and University Collections' (ASUC) as a management structure. GLAM's exclusive Strategic Plan demonstrates that their goals extend well beyond that of a professional service and center on supporting university teaching and research (GLAM Strategic Plan 2015-2020). Although GLAM is not officially affiliated with an academic division, there are still strong links between academic departments and Ashmolean Museum curators. This relationship, although not widely discussed in the relevant literature, has the potential to shed light on a number of university-university museum collaboration features, highlighted by the distinctive position of Ashmolean curatorial colleagues, whose joint responsibilities extend beyond the museum to university teaching. One additional contributing factor to the selection of this case over others is the researcher's prior knowledge of the relationship between Oxford University and the Ashmolean Museum and the use of museum collections in the university's curriculum.

Professional Service – University College London (UCL)

Of the many cases which are managed through a Professional Services structure, UCL was a distinctive choice for this study. UCL manages their museums through UCL Culture, an independent department within Professional Services. No other case has gone to such lengths as UCL to endorse the advantages of using museum collections in university teaching. UCL's research not only influenced institutional policies (Chatterjee 2008, 2015), ensuring the use of museum collections in HE teaching, but also publicizes this usage to a greater extent than other universities around the UK (Chatterjee 2008, 2010, 2015; Cain 2006, 2010; Sparks 2010; Noble 2010; Marie 2010; Duhs 2010). This enthusiasm and devotion on the part of UCL towards promoting their use of museum collections in HE curricula sets them apart from the other cases and is recognized by their repeated presence at UMAC conferences, publication contributions, and personal publications on their collections use.

Direct Governance – University of Manchester

The relationship between the University of Manchester and the Manchester Museum is another unfamiliar and interesting case. Within the university's management structure, the museum is neither defined as an academic service nor a professional service. Instead, the line of management goes directly from the museum director to the university's deputy president, who is on the Board of Governors. The Board of Governors are responsible for approving and signing off on relevant policies. Manchester's partnership is an established, yet growing,

effort and desire to work collections into HE curricula, in addition to the museum staff's already active participation in subject-specific university teaching (The Manchester Museum Annual Performance Review 2015-16; The Manchester Museum Academic Policy and Strategy). Although not at the publicity level of UCL, the University of Manchester's communication and collaboration with the Manchester Museum is prominent within the field, acting as a suitable standard for other university-university museum relationships that fall into a similar context (Arnold-Foster & Speight 2010).

3.2.3   Interviewee Selection

This section entails the selection process of interviewees. Once a shortlist of possible cases was created, academic and museum staff from each case were contacted to confirm their participation in the study. A total of 41 interviews were used for this study.

In terms of interviewee selections strategies, Demarris (2004) argues that the 'network-selection method' for finding participants is the most common among qualitative researchers (Demarris 2004, p. 60). This method has been used extensively throughout this study's case study design process. The network-selection method is simply the targeting of one participant from a case, who then refers the researcher to other possible willing participants based on the desired information being sought by the researcher.

Through the use of staff directories and networking, a list of interviewees was created for each case. Every case includes at least one interview with a museum education specialist and curator. Other museum staff willing to share their expertise and knowledge of their collaborations with their university include: Head of Collections, Deputy Head of Collections, Head of Education, Learning Officers, Learning Managers and Teaching Fellows, Museum Managers, Director of University Engagement, and Head of Research and Teaching.

Selecting academic staff for interviews started with contacting the heads of school departments with a request to send the contact details of fellow academics who they knew taught with, or without, museum collections. These newly recommended academics were then contacted to confirm their willingness to participate in the study[13]. The university departments generally targeted first were History, Classics, Art, Archaeology, Geology and Biology. These departments were targeted to maximize the chance of university-university museum collaborations because of their traditional connection with material culture. Other departments and positions from which this study's interviewees derived include: Culture and Heritage Studies, Music, Psychology, Cardiovascular Science, Language Studies, English Literature, Education, Geography, and Business. Departments and positions could not be standardized across all cases because of logistical limitations, such as scheduling and time constraints of academic and museum staff, and the uniqueness of several collaborations.

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[13] See Appendix 4 for a copy of the interviewee consent form.

3.2.4 Interview Questions Development Process

The interview questions used for data collection were developed through close reference to this study's aims and objectives. There are two separate sets of interview questions. One set was created for academic staff and one for museum staff. Separate sets of interview questions were created to emphasize the different roles and perceptions academic and museum staff have on the use of museum collections in HE curricula. This project's internal validity was enhanced by the reexamination and modification of interview questions following each interview. Questions that either confused the interviewer or did not lead to the desired information were altered or cut to improve the focus of future interviews. Each interview with academic and museum staff member lasted between 20-60 minutes and was recorded for its ensuing transcription.

Although semi-structured interviews often call for open-ended questions, there needed to be a set of guiding questions to steer the interview back on track in the event of extended tangents. As a result, closed questions were created to precede the open-ended questions. Table 7 below shows two samples of this progression of closed to open-ended questions alongside the aims and objectives they wish to satisfy[14]. The sample questions shown below were taken from the interview questions transcripts used throughout this study's interview process.

Table 7: Semi-Structured Interview Questions Sample

Aims & Objectives	Corresponding Interview Questions
Aim 1: Identify learning advantages and disadvantages perceived by academic and museum staff and students when teaching with museum collections **Objective:** Identify and analyze the reasons academic staff use, or do not use, certain teaching methods	**Academic Staff** 1. Are museum collections integrated into your curriculum? Why or why not? a. Have you had any previous experiences (negative or positive) working with museum collections? b. If so, how did you use them? c. If no, have you tried to integrate museum collections into your curriculum in the past? d. What do you perceive as learning advantages or disadvantages to the use of museum collections in your courses? e. To what extent does the use of museum collections affect your methods of teaching?

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[14] See Appendices 1 and 2 for the full transcripts of interview questions for both academic and museum staff.

Aim 2: Analyze how the relationship between university museums and universities affect how academic staff and students use museum collections
 	
Objective: Identify the different models of communication and how they support the use of museum collections in teaching
	Museum Staff
	
	1. What is the main form of communication between the museum and the university?
	    a. Does this model of communication support object-based learning?
	    b. In what ways could communication between the museum and university be enhanced?

Yin (2009) stresses the fluidity of questions as a necessity for the successful case study interview. Demarris (2004) goes at length into the development of interview questions and the interview process. She highlights the importance of guiding questions, which not only aid the researcher in retaining their study's focus, but also help with the conversational flow of the interview. She adds that keeping these guiding questions short and clear eliminates the risk of confusing the interviewee with lengthy questions filled with challenging academic vocabulary. Lastly, she argues that for a qualitative interview, following up closed questions with open-ended questions is more effective than reciting an exhaustingly long list of survey-like yes-or-no questions because the open-ended questions lead to more detailed responses while still focusing on the topic of the study (Demarris 2004). In turn, these detailed responses open up opportunities for the interviewer to probe even deeper if a comment by the interviewee is of particular interest.

3.2.5   Survey Questions Development Process

SurveyMonkey at www.surveymonkey.com was used to create and distribute this study's online survey. Following written consent from the academic staff, a link to this survey was sent to all academic staff interviewees inviting them to send it to their students. A total of 45 online student survey responses were used for this study.

Similar to the development of this study's interview questions, the online survey questions used for data collection were developed through close reference to this study's aims and objectives. There are seven total questions on the survey which take approximately 3-5 minutes to complete. To keep the questions concise, but also satisfy the qualitative focus of this study, the survey consists of both open and closed questions. When answering questions, respondents can choose between *yes*, *no*, and *cannot answer because museum collections are not used.* Extra boxes for the respondent to explain their perspective further were provided after several questions, but this was made optional so as not to discourage unwilling respondents. Table 8 below shows a sample question taken from the online survey which

incorporates all the above aspects, as well as its connection to the aims and objectives of this study[15].

Table 8: Online Survey Questions Sample

Aims & Objectives	Corresponding Survey Question

Aim 3: Investigate the degree which the use of objects in HE teaching affect student interest, motivation, and learning
 	
Objective: Identify any patterns to what students prefer or expect when working with objects
	University Students
	
	1. Do you feel more motivated and attentive when museum collections are being used during the lesson?
	    a. Yes?
	    b. No?
	    c. Cannot answer because museum collections are not used
	
	If yes or no, can you explain why or why not you feel more motivated and attentive?

3.3   Data Analysis

Part 3.3 of this chapter discusses the justification behind the chosen methods of data analysis. In order to achieve the aims and objectives of this study, a thematic approach was taken to analyzing the data collected from the multiple case studies. These sections additionally cover the preceding steps leading up to thematic analysis. This includes brief segments on interview transcription and the use of NVivo software while detailing their relevance to the data analysis process.

3.3.1   Transcription

All interviews conducted for this study were recorded following the interviewees' permission for future transcription. As Silverman (2004) argues, one advantage of interview transcriptions is that they are physical accounts of the data, available for review. In turn, this physical evidence ready for review adds a level of validity to the study's findings.

Interview transcriptions were recorded verbatim to aid in the content analysis. Gillham (2000) argues that transcribing interviews verbatim is advantageous because it can emphasize the interviewee's repetitiveness or minute details of the interview. However, word repetition does not always indicate an important point, and therefore, should not be the researcher's sole focus when searching for patterns during data analysis (Hays 2004). In qualitative data analysis, word repetition is merely a starting point, not an end, as in

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[15] See Appendix 3 for a full transcript of online survey questions.

quantitative research. Ultimately, the transcription process is meant to assist the researcher in identifying 'substantive statements', which Gillham simply distinguishes as statements which make a point (Gillham 2000, p. 71). Hartas identifies the strategy used to determine substantive statements as 'indexical transcription' (Hartas 2004, p. 304). This type of transcription sees the researcher generate a series of marked points and annotations throughout the interview transcript where the interviewee said something of interest or relevance. In this respect, the non-neutral nature of indexical transcription makes it an initial step in the analysis process.

3.3.2   NVivo

Interview recordings were uploaded to the qualitative data analysis software (QDA), NVivo 11, for storage, transcription, and further analysis. NVivo was created to aid qualitative researchers in their analysis of text-based and multimedia data. This does not mean that the software makes sense of the data for the researcher (Weitzman 2004; Yin 2009; Hartas 2010). As Weitzman clarifies,

> QDA software provides tools for searching, marking up, linking, and reorganizing the data, and representing and storing your own reflections, ideas, and theorizing (Weitzman 2004, p. 316).

NVivo was used for its ability to quickly consolidate and reorganize large sets of data. In addition, NVivo enables the researcher to pull out and group sections of text for thematic analysis based on the frequency of key words and phrases (Hartas 2010). Yin (2009) advocates the use of QDAs as tools for finding relationships between textual data, but stresses that QDA results cannot be used in the same way they are used for statistical analysis and that the actual analysis of the data must come down to the empirical and creative thought processes of the researcher. Furthermore, it is the responsibility of the researcher, not the software, to explain the rationale behind the codes used for sorting information and how these codes return back to the original research questions (Hartas 2010).

NVivo assisted in thematic analysis through its coding and data retrieval capabilities. Two important aspects of thematic analysis are 'groupings' and 'relations' (Hartas 2010, pp. 303-5). Groupings are collections of codes with similar elements, whereas relations refer to the specific relationship between codes. For this study, data was first grouped by the university or museum in which the interviewee was employed. Select excerpts from the interviews were then grouped into four codes: Pedagogy, Logistical Limitations, Museum Management Structure, and Student Response. These four codes came from a combination of data and literature analysis. A sample of the coding used for thematic analysis from this study is shown below in Fig. 5.
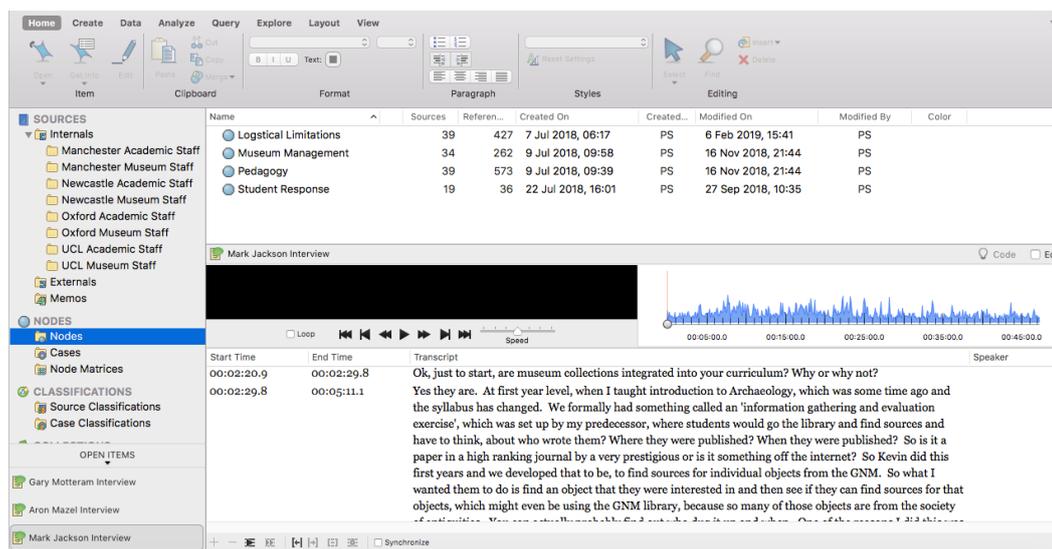
Fig. 5. NVivo 11 screen shot of groupings and nodes used for coding

3.3.3   Methods of Analysis

The main method of data analysis used for this study was thematic analysis. Thomas (2011) has called this method of eliciting themes the ideal interpretivist's method for case study analysis. The goal of thematic analysis is to categorize recurring sections from the data according to themes, which are alleged to capture the essence of the phenomenon being studied. From this point, it is the burden of the researcher to diagnose these themes and illuminate the meaning(s) being made by the interviewee and the researcher. Yin (2009) proposes three analytic strategies and five techniques for analyzing case study data. According to Yin, the strategy refers to what is being analyzed and why, whereas the technique is how it will be analyzed. These analytic strategies include: 'Relying on theoretical propositions', 'thinking about rival explanations', and 'developing a case description' (Yin 2009, pp. 111-4). The analytic techniques include: 'Pattern matching', 'explanation building', 'time-series analysis', 'logic models', and 'cross-case synthesis' (Yin 2009, pp. 116-33). Of these, only Yin's strategy of following the study's original theoretical propositions and the technique of cross-case synthesis were used during the analysis of this study's data.

Yin insists that the ideal strategy for case study analysis is to revert back to the original theoretical propositions that guided the study towards the case study method in the first place.   This is accomplished by reviewing the study's original aims and objectives in order to prioritize which data is the most relevant or significant to the study's overarching research question (Yin 2009). In terms of this study, for each university-university museum relationship, the purpose of the case study was to examine conditions relating to pedagogy, logistics, museum management structure and student responses, which may or may not determine the extent of the use of museum collections in HE curricula.

Once a strategy is chosen, Yin argues that an analytical technique is an advantageous next step in the case study analysis process. He recommends cross-case synthesis to any researcher using more than one case study. In essence, a researcher using the cross-case synthesis technique handles each case study as a separate study, while gathering and categorizing data from across the separate cases under a single framework. Once the data is gathered and displayed for each case, patterns can start to be identified and examined further (Yin 2009).

3.4 Methodology Conclusion

To summarize this study's methodology, an interpretive approach was taken towards qualitative data. Yin's work on case study research played a major role in the methodological development of this study. Yin's approach, although modified for this study, was favored for its focus on applied research and his emphasis on the use of a theoretical framework to structure the study from start to finish.

Building on Yin's (2009) multiple case study design, four separate cases were selected to represent four separate case types. Each of these case types represent a different museum management structure. Museum management structures were used as a means to organize and differentiate between cases during the case study selection process because of their theoretical role in all cases in regards to the conditions which determine the use of museum collections in HE curricula. The four case types used for this study are third-party system, academic service, professional service, and direct governance. The four cases selected to fill these roles are NU and GNM: Hancock, OX and the Ashmolean Museum, UCL and the UCL Collections, and UoM and the Manchester Museum, respectively.

For this study, data was collected using three methods. Semi-structured interviews were conducted with relevant academic and museum staff, while an online survey was conducted with university students from all four cases. Official university and museum documents were also analyzed for supplementary and contextual purposes. These interviews were then transcribed and uploaded to NVivo for cross-case synthesis. Open-ended question responses from the survey were analyzed in conjunction with interview data for a holistic understanding of the four themes (pedagogy, logistical limitations, museum management structure, and student response) which determine the use of museum collections in HE curricula.

As expected from the development of a research project, there arose a multitude of methodological issues. Issues concerning interpretivism vs. positivism, generalizability, and selection processes have been confronted and the researcher's stance made clear in this chapter. The qualitative nature of the study justifies an interpretivist approach and defines the

boundaries of possible generalization. Lastly, by using a case study design analogous to Yin's (2009) and established research methods, such as criterion-based selection and network-selection, as well as taking into account the logistical limitations of the study, the selection process for the chosen cases and interviewees are justified as well.

4   Case Introductions

This chapter provides a more in depth look at the four cases used in this study. It is by no means a comprehensive history of the four chosen universities and their museum affiliates, and will focus primarily on publicly available information pertaining to the use of collections in HE curricula. This extended introduction for each case covering their unique backgrounds, governances, and current state of affairs with regards to university-university museum collaboration is necessary to strengthen the understanding of the cases and their relevance to this study. The four cases studies: Newcastle University and the Great North Museum: Hancock; Oxford University and the Ashmolean Museum; University College London and the UCL Collections; and University of Manchester and the Manchester Museum; were chosen for this study for their ability to predictably offer both valuable and contextually diverse insight on the conditions which determine the use of museum collections in HE curricula.

This chapter is broken up into four parts. Each part will provide general information about a case, including a succinct historical background of the case's university museum, their strategic aims and objectives and/or mission, museum management structure and governance, and relevant staffing.

4.1   Newcastle University and the Great North Museum: Hancock

Built in 1884 to house the growing collections of the Natural History Society of Northumbria (NHSN), the Great North Museum: Hancock is now also responsible for looking after the collections of the Society of Antiquaries of Newcastle upon Tyne (SANT) and the Newcastle University's Shefton Collection of Greek and Roman Artefacts. Together, the GNM: Hancock boasts the largest collections of Roman, Greek, and Egyptian Archaeology, Ethnography, and Natural History in the North East. In 1992, Tyne and Wear Archives and Museums (TWAM) was appointed to manage the then Hancock Museum[16] on behalf of Newcastle University, making it the only university museum in the UK to be managed by a local authority. As a result, the GNM: Hancock has five main partners and stakeholders: NU, NHSN, SANT, TWAM, and Newcastle City Council. Each of these bodies is represented on the Great North Museum Board (Committee of Senate). In 2009, the GNM: Hancock was reopened following a three year, 26 million pound redevelopment (http://www.nhsn.ncl.ac.uk/about/our-history/).

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[16] When TWAM first started managing the GNM: Hancock, it was called the Hancock Museum. Its name was changed to the Great North Museum at a later date.

4.1.1   *GNM: Hancock and TWAM Strategic and Corporate Plans*

At the time of the data collection for this study, the GNM: Hancock did not have its own strategic plan. However, one had been in the process of being drafted and was just recently made available to the public on their website. Fortunately, prior to its publication, access to selected sections of the strategic plan was granted for this study.   The first part of the strategic plan presented is the GNM: Hancock's mission and vision statements. Their mission statement reads:

- Inspire curiosity, learning and debate through a stimulating, innovative and provocative science and culture engagement programme with cutting edge university research at its heart (Great North Museum: Hancock Strategic Plan, 2019, p. 4).

The next section which was provided is the museum's strategic aims and objectives. There are five strategic aims. Although Aim 2, labelled 'To Facilitate Powerful Learning' may sound relevant to the focus of this study, its corresponding objectives only provide a vague indication of their target audience. Instead, Aim 1, labelled 'To Be A World Leading University Museum Welcoming To All' focuses more on supporting university teaching, university engagement, and enhancing the student experience. A more specific breakdown of actions and deliverables to achieve these aims and objectives was also provided. Of the five objectives listed for Aim 1, the first is the most relevant to this study. The first objective of Aim 1, as well as three selected relevant subsequent actions and deliverables are presented below:

- **Objective:** Support and deliver excellence in teaching, learning and research
    - **Action:** Support Newcastle University and other external HEIs with module courses, student placements, collections for teaching and research consultancy
        - **Deliverables:** Museum staff will teach on taught course modules as invited, offer at least 12 student placements per year and provide collections for teaching and offer research consultancy on request
    - **Action:** Create a museum-university liaison role to develop structural links and ensure research is embedded in museum activity
        - **Deliverables:** Create the role Project Manager: Learning, Engagement and Research
    - **Action:** Maintain the highest standards of collections management to ensure the integrity of the collections for future generations and to promote easier access to public programming
        - **Deliverables:** Staff will ensure good standards of documentation and improve records through exhibition and project activity. Stores and galleries will be organized, maintained and cleaned. Pest management will be maintained
    (Great North Museum: Hancock Strategic Plan, 2019, pp. 10-11).

Prior to this new strategic plan, the GNM: Hancock has fallen under TWAM's Corporate Plans and most recently, their 2018-22 Business Plan. Following a brief introduction of who TWAM is and what they do, TWAM's 2018-22 Business Plan begins with a briefing of their own Mission, Vision, and Commitment. Efforts towards this mission are funded by the Newcastle City Council, ACE, and Newcastle University. As stated, their mission statement reads:

- To help people determine their place in the world and define their identities, so enhancing their self-respect and their respect for others (TWAM – Business Plan 2018-22, January 2018, p. 5).

A review of TWAM's Business Plan 2018-22 reveals where TWAM's priorities lie, as the majority of the document relates to funding and the generating of income from a diverse range of audiences. Although the GNM: Hancock is a university museum, it is surprising how ambiguous towards higher education TWAM's plan is. What is also interesting, is the fact that TWAM's 2016/17 and 2017/18 Corporate Plans both shared a direct statement on creating stronger links to higher education institutions, albeit solely in their Appendix 2. Under Appendix 2: Museum Development Objectives, Goal 1, number 2 reads:

- Developing stronger links with Higher Education Institutions (TWAM – Corporate Plan 2017/18, January 2018, p. 21).

The decision by TWAM to not prioritize university teaching collaborations between the GNM: Hancock and one of its primary funders, Newcastle University, is striking and, per discussions with NU academic staff, one foundation for criticism and friction between the university's academic staff and the management of the GNM: Hancock [see section 5.1.1]. However, TWAM's omission of HE collaborations from its business plan could be the result of the GNM: Hancock having its own strategic plan which focuses on such aims, leaving the business plan to focus on their ACE non-profit organization (NPO) goals. This topic will be examined further in this study's findings and discussion chapters (Chapters 7 and 8).

4.1.2   NU and GNM: Hancock's Museum Management Structure

The third-party system between Newcastle University, TWAM, and the GNM: Hancock is one of the more unique university museum management structures in the UK. Including the GNM: Hancock, TWAM manages nine museums and galleries across Tyneside as well as the Tyne and Wear Archives. Funded by ACE to be a Bridge Organization, it is stated that TWAM's responsibility to connect children and young people with art and culture (https://www.twmuseums.org.uk/about/about-us).

TWAM is governed by a strategic board made up of approximately eleven members. One of these members represents NU. This strategic board meets at least four times a year to develop and ensure TWAM are meeting their mission. A more specific list of topics covered in these meetings can be found on the TWAM webpage. Of these, only one mentions the university directly, but is vague in what it involves. This topic is shared below.

- Ensuring TWAM is delivering against Constituent Council and University priorities (https://www.twmuseums.org.uk/governance/committees)

Additionally, a Service Level Agreement (SLA) has been agreed upon between Newcastle City Council and NU. The SLA is a set of services to be provided to the university by the GNM: Hancock as pertaining to the contract agreed upon by Newcastle University and Newcastle City Council. However, within this document there is no mention of services involving the use of collections in university teaching (Service Level Agreement 2014 – 2017). In the past, TWAM has appointed a Head of Museums – Collections and Research for Gateshead and Great North Museum to oversee the delivery of the services laid out in the Service Level Agreement. It was also understood that administrative reports would go through the NU's Pro-Vice Chancellor (PVC) of Engagement and Internationalization, who sat on GNM board. However, both the PVC of Engagement and Internationalization and Head of Museums positions no longer exist. Instead, the GNM board is chaired by the university's Deputy Vice-Chancellor (www.ncl.ac.uk/executive/governance/committees/).

4.1.3 NU, TWAM, and GNM: Hancock Staff

One result of the 1992 agreement between NU, Newcastle City Council, and TWAM was a complete restructuring of GNM: Hancock staff. With TWAM's senior management team in place to oversee the strategic planning, policy, finance, and programmes across all designated museums, the on-site GNM: Hancock team consists of one Museum Manager, one Learning Officer, three Assistant Learning Officers, one Project Manager, and several subject-specific Keepers to manage its collections and run its learning programmes (https://twmuseums.org.uk /governance/senior-management-team). The position of project manager is the newest addition to the GNM: Hancock staff and is allegedly responsible for maintaining communication networks between museum and university staff [see section 7.1.1].

Meanwhile, NU has entrusted the responsibility of fostering links between the university and the GNM: Hancock, among all other areas of cultural activity, to several individuals: the aforementioned PVC of Engagement and Internationalization (which no longer exists), the Deputy Vice-Chancellor, who is the chair of GNM board, and the Dean of

Culture and Creative Arts[17], who sits within the faculty of Humanities and Social Sciences and is the university member of the GNM board. It is their responsibility, along with TWAM and GNM: Hancock staff, to oversee and facilitate existing relationships between museum and academic staff who are interested in using museum collections in their teaching and research.

4.2   Oxford University and the Ashmolean Museum

The oldest university-university museum partnership of the four cases used for this study is Oxford University and the Ashmolean Museum. Founded in 1683, the Ashmolean Museum is the world's first public and university museum. Originally built to house a collection donated to the university by Elias Ashmole (1617-1692), the Ashmolean underwent significant changes throughout the 19th and 20th centuries, including the move from Broad St to Beaumont St and merging with the University Art Galleries, and a number of noteworthy acquisitions which played catalyst to the establishment of separate departments within the arts and antiquities fields. Since then, the Ashmolean has continued to grow into a world-renowned museum for art and archaeology, and was refurbished in 2009 (http://www.ashmolean.org/history-ashmolean).

4.2.1   Ashmolean Museum and GLAM Strategic Plans

The Ashmolean Museum's Strategic Plan 2014-19 is broken up into four key aims. These aims coincide with the University Strategic Plan, as noted by specific paragraph references provided. Under the section heading Higher Education, the Ashmolean Museum's Key Aim B states:

- To be recognized and respected as a world class centre for research and teaching (Ashmolean Strategic Plan 2014-19, p. 5)

This aim is then broken down into four subsequent objectives. Each objective then leads to several corresponding outcomes. One of these objectives deals with the increased and effective use of the museum's collections in university teaching at OX. These objectives and outcomes read:

- To encourage and enable both the Museum and University's academic staff to use the collection to deliver world class teaching

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[17] Newcastle University's Dean of Cultural Affairs is responsible for fostering links between the university and all cultural activity in the region, particularly the GNM: Hancock (https://www.ncl.ac.uk).

> o To maintain the current level of teaching from the collection during the transition of the University Engagement Programme to core staff assuming current staffing levels
>
> o To increase teaching from the collection by Faculties

(Ashmolean Strategic Plan 2014-19, p. 5).

Additionally, OX's Gardens, Libraries and Museums (GLAM), through which all their university museums and cultural organizations are managed, has its own Strategic Plan 2015/16 – 2019/20 separate from the Ashmolean's. GLAM's mission is as stated:

- The cost-effective provision of world-class resources in support of (a) teaching and learning (b) research, and (c) access and outreach for the University of Oxford and, where appropriate, national and international users audiences. To secure staff and non-staff resources, equipment and an estate optimally fitted to achieve those objectives (https://www.glam.ox.ac.uk/about).

The details of GLAM's desire to support and enhance university teaching collaborations are stated in the 'Priorities' and 'Core Strategies' sections of their plan. One of GLAM's four overarching priorities for the upcoming years is titled, 'Partnership and collaboration in the development of the GLAM community' (Strategic Plan for Gardens, Libraries and Museums 2015/16 – 2019/20, p. 4). To accomplish this priority, GLAM intends to work across its individual units to continue supporting and expanding teaching within both long-standing and new departments and colleges throughout Oxford University (Strategic Plan for Gardens, Libraries and Museums 2015/16 – 2019/20).

GLAM's Strategic Plan continues with four Core Strategies, which are expressed through eleven objectives. Objective four, which is the first objective to fall under the 'Education' section of GLAM's Core Strategies, also focuses on the enhancement of university teaching and the student experience through the use of the museum's collections. Objective four reads:

- To contribute to the distinctiveness and excellence of Oxford's undergraduate and postgraduate teaching (Strategic Plan for Gardens, Libraries and Museums 2015/16 – 2019/20, p. 6)

These objectives are then followed by a list of commitments, two of which, are listed below for their relation to the use of museum collections in HE curricula:

- The resources available within GLAM offer unique opportunities for teaching and learning. We will build on the success of the *Teaching with Objects* programme by

engaging with lecturers across the division, and in other HEIs, to explore new approaches.

- We will be alert to requirements within the proposed Teaching Excellence Framework and will contribute to the Universities' approach to excellence. (Strategic Plan for Gardens, Libraries and Museums 2015/16 – 2019/20, p. 6).

Although not specific to the Ashmolean Museum, GLAM's Strategic Plan shares the overarching goal of furthering Oxford University's profile as a leading institution for teaching and research. When read together, the consistency and interconnection between the strategic plans of OX, GLAM, and the Ashmolean Museum creates a sense of direction and comprehensiveness to the goals of the Ashmolean Museum and the relationship between them and the university.

4.2.2   Oxford University and the Ashmolean Museum's Management Structure

Oxford University and its affiliated museums, archives, gardens and libraries have recently transitioned from Academic Services and University Collections (ASUC) into Gardens, Libraries and Museums (GLAM) in an attempt to bring all these cultural institutions together in support of the university's outreach and access missions.

Oxford University's management structure blurs the lines between an academic service and professional service[18]. However, the Ashmolean Museum was chosen to represent an academic service for this study because of its resilient links to academic departments without being a part of one of the university's four academic divisions, specifically in the form of their curatorial colleagues, who hold joint positions between the museum and the university (Ashmolean Annual Review 2015-16). The Ashmolean Museum is overseen by a Board of Visitors, as well as the Director and Senior Management team (https://www.ashmolean.org/about).

Furthermore, GLAM is operated under an executive board headed by the PVC of Academic Resources and Information Systems and includes the Directors and Heads of the six GLAM departments – the four university museums, Bodleian Libraries, and the Botanic Garden and Harcourt Arboretum. There is an appointed GLAM Secretariat under the PVC for additional coordination and support to these six departments (https://www.glam.ox.ac.uk/about).

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[18] Please refer to this study's methodology, chapter 3, section 3.2.1, for descriptions of how academic and professional services are understood for this study.

4.2.3   Ashmolean Museum Staff

Although managed through GLAM, the Ashmolean Museum has its own extensive staff for the daily running of the museum. This includes teams for Operations, Commercial, Collections, Public Engagement, and Development. All of which report to the Museum Directorate. Many of the museum's curatorial staff actively engage in teaching and research with academic staff across all four academic divisions of the university (Ashmolean Annual Review 2015-16).

Embedded within the Collections branch of the Ashmolean Staff is the University Engagement Team. It is the University Engagement Team's duty to act as liaisons between the Curators and Keepers of the museum and the university's academic departments. The University Engagement Team's efforts for wider use of the Ashmolean's collections were aided by the University Engagement Programme (UEP), which aims to develop cross-disciplinary teaching throughout Oxford University. UEP specifically targets academic departments who would be less likely to use art or archaeological collections in their teaching (Ashmolean Annual Review 2015-16).

4.3   University College London and the UCL Collections

The UCL Collections is one of the more diverse collections of the four cases, spanning four separate public museums as well as a number of specialist collections within close proximity to UCL's campus. Most notably, these include the Grant Museum of Zoology, Petrie Museum of Egyptian Archaeology, UCL Art Museum, UCL Pathology Collections, and Bloomsbury Theatre and Studio. Both the Petrie and Grant museums were first established as teaching collections in the 19th century and have only recently opened to the public. These collections, museums, and venues are managed through the UCL Culture department. The UCL Culture team is responsible for collections and venue management as well as facilitating engagement between UCL's collections, the university, and beyond (https://www.ucl.ac.uk/culture/uclculture/about-us).

4.3.1   UCL Museums and Collections Strategic Operating Plan

As UCL's Museums and Collections (M&C) fall under the management of UCL Culture, there is no need for each museum to prepare its own strategic plan. Instead, each museum shapes their work around the main UCL Museums and Collections 2016-2019 Strategic Operating Plan. Per discussions with UCL museum staff, it was revealed that there is a strategic plan for UCL Culture, however it is not available to the public or outside parties without special authorization for confidentiality of information deemed too sensitive, such as financial figures (Head of UCL Museums, personal email communication, May 14, 2018). However, for this study access was granted to examine and share select sections of the plan.

Although access to the full M&C strategic plan was restricted, the researcher was provided with UCL M&C's purpose statement, strategic vision, objectives and actions, and action plan. In all four of these sections, one can find a connection or pledge to enhancing university teaching with museum collections. UCL M&C's purpose statement is the first section of the plan. Relevance can be given to the fact that *student* and *staff* engagement is put ahead of the public with regards to their prioritized audience. This purpose statement is stated below:

- We connect students, staff and communities and enable them to explore ideas and change the world through:
  - o Active engagement
  - o Enthusiastic collaboration
  - o Innovative use of collections

(UCL Museums & Collections 2016-2019 Strategic Operating Plan, December 23, 2015).

Following the purpose statement is UCL M&C's strategic vision. This statement provides a broad overview of their medium and long-term aims. An excerpt of this statement pertaining to their role in university teaching is provided below:

- …M&C also aims to play a role in ensuring UCL students become workforce-ready, global citizens by using its collections to design problem-based learning opportunities… In the medium term, M&C will look to re-calibrate how it delivers basic services (i.e. providing physical access to collections for teaching and research) in order to capitalize on the skills and expertise of staff to design and deliver creative student learning experiences… (UCL Museums & Collections 2016-2019 Strategic Operating Plan, December 23, 2015).

Next comes M&C's Objectives and Actions. There are six objectives and actions which M&C will pursue to achieve their strategic vision. Of these six, number four focuses on the use of museum collections in university teaching. Objective four reads:

- **Use collections to create innovative, research-based education provision.** M&C staff will work with teaching staff to design engaging courses using collections and museum spaces in order promote interdisciplinary and applied learning experiences. It will also use its resources to create digital resources that will expand and enrich learning opportunities (UCL Museums & Collections 2016-2019 Strategic Operating Plan, December 23, 2015).

The last section provided is M&C's Action Plan. This section takes each objective and breaks them down over a four-year span while providing specific actions for each year. The action plan for objective four is provided below for its focus on the university's promotion of OBL:

2015 – 16

- Support the dissemination and implementation of OBL best practice articulated in H. Chatterjee's OBL book
- Evaluate and re-calibrate service provision for courses, focusing attention of assisting the design of courses and creating self-service methods of collections access
- Continue to deliver OBL and Heritage Technology course for BASC degree
- Create an accessible Adlib database to enable collections staff to deliver and improve research collections enquires

2016 – 17

- Develop a series of guides for different disciplines that provides information about how collections can be used to advance teaching and understanding of different subject areas
- Develop proposal for 'Centre' for culturally-engaged learning that develops practice in using collections, performance and cultural spaces for innovative learning experiences
- Create and lead network of university-based museums that exchange best-practice in using collections in teaching
- Work with Information Service Division to develop an image store and imaging database for collections, objects and PACE activities

2017 – 18

- Seek academic partners and funding for Centre for cultural learning
- Design and develop spaces in East London that support collections access and use of collections in teaching
- Implement new plan for furthering digitization of collections and archives

2018 – 19

- Deliver world-leading OBL facility at East London campus and integrate services with Bloomsbury

(UCL Museums & Collections 2016-2019 Strategic Operating Plan, December 23, 2015).

In addition to the UCL M&C 2016-2019 Strategic Operating plan, UCL Culture has published a short manifesto to help disseminate the promotion of their new identity. This manifesto is simply a broad set of aims and themes to which UCL Culture aspires and provides little information on their exact responsibilities and activities. However, included in the manifesto to supplement these broad aims and themes are brief explanations to assist the reader in understanding what UCL Culture envisions with the use of these short idioms. UCL Culture's manifesto can be found on the UCL Culture webpage[19].

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[19] For further information on UCL Culture, visit https://www.ucl.ac.uk/culture/ucl-culture/our-manifesto

4.3.2   UCL Collections' Museum Management Structure

UCL Culture falls under the Professional Service category. Within UCL Professional Services, UCL Culture's division is comprised of other services such as Human Resources, Estates, Communication, and Finance, to name a few. As a part of UCL Professional Services, the line of management for UCL Culture's day to day operations run through the museum Directors to UCL's Vice Provost of Operations, who heads the division (https://www.ucl.ac.uk/professional-services/).

4.3.3   UCL Culture and Museum Staff

The UCL Culture staff is divided into departments. Each museum and venue has its own on-site managers, curators, and other various positions such as Learning Officers, Public Programmers, and Visitor Service Officers, to name a few. Additionally, UCL Culture has its own senior staff, consisting of a Director of UCL Culture, Head of Administration and Finance, Head of Museums, Senior and Associate Researchers, and the Director's Personal Assistant (https://www.ucl.ac.uk/culture/staff?toc=159).

The focus for this study is on the roles and perspectives of various curators and managers from UCL museums, however, an integral addition is the UCL Culture's Teaching and Object-Based Learning team, which features their own Head of Research, Senior Research Associate and Project Manager, Assistant Researcher, Teaching Fellow in Public and Cultural Engagement, and Learning Officer. Every member of this team has a background in experiential and object-based learning. It is the duty of this team to continue to encourage engagement with the UCL Collections throughout the university's academic departments (https://www.ucl.ac.uk/culture/staff?toc=2511).

4.4   University of Manchester and the Manchester Museum

Located just opposite University of Manchester's main building on Oxford Rd sits the Manchester Museum. Originally known as the Manchester Natural History Society, their collections were transferred to Owens College in 1868. Following this transfer, the museum building seen today was built and first opened its doors in 1890. Owens College would later become University of Manchester and the museum would gain the new moniker, Manchester Museum. Over the years, the collections have grown to over six million items and in 2003, the museum reopened following an extensive construction and refurbishment funded by the Heritage Lottery Fund (HLF), UoM, and several other sponsors. The museum's collections range from archaeology and anthropology to the natural sciences. Manchester Museum is the UK's largest university museum and garners approximately 430,000 visitors annually (http://www.museum.manchester.ac.uk).

4.4.1 Manchester Museum Strategic Plan

At this moment in time, there is no 2019 and onward strategic plan for Manchester Museum which is available to the public. Therefore, as stated in the Manchester Museum's Strategic Plan 2015/18, their mission reads:

- As a university museum, the Manchester Museum uses its international collection of human and natural history for enjoyment and inspiration, working with people from all backgrounds to provoke debate and reflection about the past, present and future of the earth and its inhabitants (The Manchester Museum Strategic Plan 2015 – 18, p. 6).

To achieve this mission, the Manchester Museum has laid out six objectives. Of these six, number four relates directly to the museums contributions to the university:

- Ensure that the Museum plays a distinctive role in the teaching, learning and research programmes of the university
    - Ensure that the Museum contributes to a distinctive Manchester student experience
    - Develop the use of the Museum as a vehicle for the research impact agenda by providing space for public engagement with research
    - Facilitate greater use of the Museum's resources by researchers by targeted programme of engagement
    - Continue to develop the use of the Museum's resources for teaching and learning across the University

(The Manchester Museum Strategic Plan 2015 – 18, pp. 8-9).

Of particular interest here is how the Manchester Museum identifies themselves first and foremost as a university museum. This statement is reiterated throughout the document to enforce their contention as a significant asset to the university's mission.

The Manchester Museum's efforts in the HE sector are heavily influenced by its two key stakeholders – University of Manchester and the Higher Education Funding Council for England (HEFCE) (The Manchester Museum Strategic Plan 2015 – 18). However, in the case of HEFCE's funding agenda, their focus in HE teaching lies beyond the University of Manchester.

4.4.2 Manchester Museum's Management Structure

The governance of the Manchester Museum is one of the most straightforward lines of university museum management in the UK. Per discussions with Manchester Museum staff,

under the Manchester's Museum's management structure, the Museum Director reports directly to the university's Deputy Vice-Chancellor and Deputy President (same person), who sits on the Board of Governors. The Board of Governors review and sign off on proposed policies (Head of Collections, personal email communication, April 21, 2017).

4.4.3   Manchester Museum Staff

It is unclear who the main point of contact is for engagement between the museum and university, or if connections are on a more personal level with academic departments and/or staff. In addition to a number of subject specific curators, the Manchester Museum does have a Learning and Engagement team, however, the position titles within this team suggest a more public and schoolchildren-oriented focus (www.museum.manchester.ac.uk/about/staff/). Nevertheless, Manchester's widespread use of collections in university teaching is well-documented as well as their curators' active engagement in university teaching (Annual Performance Review 2015/16, April 2016).

4.5   Case Introduction Conclusion

This chapter has provided additional insight into the four cases used for this study. All four cases offer a wealth a knowledge on university-university museum relationships. Their similarities, as well as stark contrast, are central to the breadth of this study. Yet, as expected each case has their own unique complexities and grey areas that are difficult to discern using only the information available to the public. Within each case there are a number of motives and agendas at work which influence the daily operations of the university museums. Resources such as Strategic Plans, Annual Reports and Performance Reviews, staff profiles and official websites do not tell the whole the story of the relationships between the universities and their university museums. However, these extended introductions do provide a solid platform for further investigation following data collection and analysis.

5 Findings: Learning

This study's findings chapters present the data which was collected through semi-structured interviews with academic and museum staff members as well as the data collected through an anonymized online student survey. From this study's inception, its aim was to identify conditions which determine the use of museum collections in HE curricula. To achieve this aim, a thematic approach has been used to present and explore this study's findings to identify patterns across its four datasets. Yin (2009) argues that following the study's original theoretical propositions, which directed the study throughout its many stages, consequently shapes and highlights relevant data.

Data collected through interviews was transcribed and coded through NVivo 11 software. The findings presented in these chapters have been categorized into four themes according to this study's initial theoretical propositions with the aid of NVivo's thematic nodes function. These themes are: Pedagogy, Logistical Limitations, Museum Management Structure, and the Student Response. These themes are broken down into subthemes, which further specifies and organizes the data. Nevertheless, these categories are not definitive, as many of these determining conditions influence, or are influenced by, other conditions under a different theme. Recognizing these connections is a pivotal first step in discussing the significance and implications of this study's findings.

Rather than having the fourth theme, Student Response, as a stand-alone chapter, it has been merged with findings regarding pedagogy to support the claims made by academic and museum staff. The Student Response is primarily comprised of survey data, which was collected online through SurveyMonkey.com. For this study, interviews were not held with university students. Instead, an anonymous online survey featuring both closed and open-ended questions was sent to course leaders from all four cases used for this study, who then forwarded it to the students on their courses. This data was analyzed alongside the transcribed NVivo data from interviews with academic and museum staff. A selection of student responses from the survey's open-ended questions are presented in this chapter as qualitative evidence of the student response to the use of museum collections in HE curricula.

5.1 Pedagogy and the Student Response

The topic of pedagogy is the most theoretical and ubiquitous theme of this study. An individual and/or institutional pedagogy can have major influence on the kind of teaching that takes place at a university. This concept of individual and/or institutional pedagogies playing a role in determining the use of museum collections in HE curricula was a focal point in all interviews of this study. When discussing pedagogy during their interviews, there were four topics which academic and museum staff indicated as determining conditions in the use of museum collections in their teaching. These four topics were: Audience, Learning Advantages, Learning Disadvantages, and Object-based Learning. These four topics are

subsequently broken down further, providing case-specific examples of the affects pedagogy has in determining the use of museum collections in HE curricula.

One of the most critical, yet often overlooked, conditions which determines the use of museum collections in HE curricula is the students' response to such teaching methods. For students to learn, they need to engage with the material. If students are not engaging physically and/or mentally with the collections when prompted, then it becomes a waste of time and effort for the academic and museum staff involved. The students' response to the use of museum collections was discussed during interviews with academic and museum staff, with both parties sharing how the experience to work with objects is consistently highlighted in student evaluations as a positive of their courses. However, to support these claims and determine whether or not the student response is a limiting condition, students had to be questioned directly. This study's online survey questioned students on the use of museum collections in their courses, focusing on their levels of engagement, motivation, as well as their perceived learning advantages or disadvantages, when working with collections.

5.1.1   Audience

A museum's target audience will not only dictate the academic level of the museum's projects and displays, but also the learning environment created by the museum. As all university museums used for this study are open to the public and run educational programmes for primary and secondary school children, the concept of collections accessibility for learners of all levels was a frequent topic of debate during interviews. Many academics cited that the level to which their museum's content is geared towards directly affects the extent of the use of the museum collections in their teaching. Meanwhile, museum staff had mixed opinions on their museums' respective target audiences, but agreed in acknowledging the pedagogical challenge of servicing such a wide range of education levels. This debate over the university museum's target audience is explored in greater depth in the subtheme below, as it plays a large role in determining the use of museum collections in HE curricula.

5.1.1.1   School Children and the Public vs. Higher Education

The debate over whether a university museum should target school children and the public or its own HE students has become increasingly prevalent. Throughout this study's interview process, there were conflicting statements by both academic and museum staff across all four cases regarding how the museum should present its content and for what purpose. As confirmed by the comments below, this debate over target audience and the pedagogical impact of the museum's choice has a significant impact on the use of museum collections in HE curricula.

One of the most thought-provoking statements on the topic of audience and pedagogy was made by a UCL Biology Professor. When asked how their academic pedagogy differs

from the museum's pedagogy, the UCL professor questioned whether any museum has one stated pedagogy or if it is determined by the pedagogies of individuals working within the museum, adding that by nature, the purpose of a university museum is to be used as a teaching resource.

I do not know if they or any other museum have a pedagogy. It all comes down to the individuals. I would say the intrinsic properties of university museums are pedagogically informed spaces and the whole point of the university museum was that they were set up as teaching resources (Biology Professor, UCL, May 3, 2018).

Just because a university museum's target audience may be different from the university's target audience, does not mean academics are unable to use the collections in their teaching. Academics across three cases acknowledged that the museums' target audiences can change the way collections are interpreted and presented, but argued that this does not affect the methods they use to engage with objects.

Two UoM lecturers did not see a sizable gap between their own pedagogies and the museum's pedagogy. Although the lecturers' view school children as the Manchester Museum's target audience, they do not struggle to collaborate with the museum because they believe the enthusiasm, experiential learning, and inquiry-based learning which is prompted by objects are universal methods of engagement for all levels.

I have not had conversations with museum staff about their pedagogy. We are targeting different groups. They are more targeting school classes, but I think the engagement methods are the same. It is that enthusiasm about an artefact and prompting the students or pupils with questions, so I do not see them as too different (Lecturer in Archaeology, UoM, March 28, 2018).

I think the way [the Learning Manager] taught the class was very similar to the way I would do it. I work in education, perhaps if I was in politics, I would present information differently, but we do a lot of group work already, we do a lot of engagement, or task-based learning, or experiential learning, so I use activity theory, where you are looking at learning in the moment. I do not see it as massively different, but I am sure other academics might see it quite different (Senior Lecturer in Education, UoM, March 1, 2018

This sentiment was echoed by Manchester Museum staff. As detailed below, museum staff may not know the pedagogy of every university discipline, but understand that there are many disciplines in which engaging with objects is fundamental and that the methods of engagement are comparable. Additionally, Manchester Museum's Learning Manager

acknowledged how outside the more object-dependent disciplines, the ways in which objects can be used is less defined, but argues there is no discipline adverse to the use of objects if the approach is creative enough.

> *I have no idea how half the academic pedagogy in different disciplines work, but I think for some of them it is very similar. With my experience with Geology, I know that the same way we would use objects for engaging students would be the same as they do over the road. It is a kind of disciplinary convention of using objects, so the subjects where objects are fundamental to them, there is a standard way of doing things that we would be in line with. However, once you move away from those, it is all open and up for grabs… Next week I am doing a workshop with some Master's students who are doing a creative learning module and we will do a lot of the same things I do with primary kids because it works and it is fun and it gets people thinking about using objects creatively and opening their minds to the power of objects* (Learning Manager, Manchester Museum, January 19, 2018).

Two lecturers from NU and UCL also recognized how the pedagogies of their respective museums do not match up perfectly with their own, but noted that they have still been able to make use of the collections. To overcome this dissimilarity, both lecturers emphasize good communication with museum staff and understanding of what each other are trying to accomplish as their solution to achieving sustainable collaborations with the museums.

> *There are museums that I have interacted with in the world where the emphasis is very art-historical, so it is about the development of particular types through time. That is not what I teach. The public galleries in the GNM are, given the limitations of what is available here, quite contextual and thematic, which is a good thing. They understand why I am using this collection and how I am using it, particularly [the Keeper of Archaeology], so we have a good relationship and [the Keeper] is often involved in helping me with these sorts of things, so I do not think there is a gap in pedagogy* (Lecturer in Ancient History and Archaeology, NU, January 17, 2018).

> *I have good discussions with our curators and the manager, and a lot of it is about how they are aware of the fact that we have a teaching collection that is different to being a national museum. The purpose of these objects is to teach with. That does not mean everything should be handled because some things are fragile, but for most of them that is their purpose* (Senior Lecturer in Archaeology, UCL, January 24, 2018).

While there were academics who claimed to work around their museum's widespread remit with little trouble, several academics argued that the museum's choice to pedagogically tailor their galleries towards school children and the public has had a negative effect on the extent of their use of museum collections in their teaching.

One NU lecturer summarizes this conflict of interests below. As the lecturer suggests, the way the GNM: Hancock's collections are presented do not support the teaching taking place at the university.

The way the museum is set up, it is just not using the collections in a way that reflects the teaching that is going on in the university. That is a problem. We are teaching stuff and trying to do stuff, but the actual way the collections are set up, do not reflect what we are doing as academics (Lecturer in Roman Archaeology, NU, April 6, 2018).

Of the academics who expressed discontent with the museum's pedagogical focus on school children and the public, four academic comments from this study's interview process stand out for their perspectives on the implications of when university museums aim to be more inclusive and accessible rather than focusing on university teaching.

Two NU lecturers shared the opinion that the GNM: Hancock's focus on younger children does not lend itself to the more in-depth research carried out by university students.

We both have a desire to educate people about the value of the physical remains of the past. We are fighting the same battles from slightly different perspectives and positions… I have great respect for the museum, but my general sense is that they are heavily geared towards key stage 2-3 of the national curriculum. A lot of the ways things are set up in the museum are aimed at small children and their pedagogy is aimed at small children. They are good at teaching a group of 6 year olds about Greek pottery, not so good at handling more complex needs of students undertaking research (Senior Lecturer in Roman Archaeology, NU, November 27, 2017).

I'm told they are geared towards an 8-year-old child in terms of what they write. I think they give almost nothing. That is my feeling… In terms of pedagogy, I can understand why some people don't like the top down instruction, but the things are there because they have been considered significant and why they are significant does not always come across… For example, the stone that records that Hadrian was the one that built Hadrian's Wall. It is just a stone on the wall with an inscription. You wander around the museum and think, 'there is another old stone on the wall', but you do not know that is the stone that changed history… You see the Rothbury Cross, but there is no discussion to why the Rothbury Cross is significant. There is no explanation of the fact that there is the angel holding the victory wreath. The significance of the victory and the angel and Roman art that becomes medieval art is lost. I feel that we are not conveying those potential narratives. We have to give

people something so they know what they are looking at (Senior Lecturer in Archaeology, NU, February 21, 2018).

The third comment comes from an UoM lecturer, who not only recognizes Manchester Museum's motivation behind the promotion of the more famous pieces of their collection, but also raises an interesting point about the museum's thematic approach as a result of their target audience and how this approach differs from the more theoretical and contextual focus of their HE teaching.

> *I think because the museum pedagogically is reaching out to a much broader age range than we are, clearly some of those learning objectives are very different. For them, most of the kids in that museum will have no understanding or grasp of the time depth they are looking at, so they are focusing more on thematic issues. There is a very strong natural history collection, but for many kids, the replica T-Rex or the live vivarium are the reason they go there. The museum is very astute at making connections between the icons of its collections and trying to get people to visit other exhibits in the museum. So, it does tend to be more thematic…. I suppose pedagogically, we have aims around learning about particular periods or particular skill sets. They are going to be different from the major remits of the wider education philosophy of the museum itself* (Senior Lecturer in Archaeology, UoM, April 9, 2018).

A similar concept was discussed at OX, where one academic stated how although the delivery of a lecture by museum staff was comparable to how they would deliver it, the museum wanted to focus more on the object's characteristics rather than the contextual.

> *The way the lecture was delivered, it was very familiar in form. Perhaps a little more focus on the specific whereas our lecture teaching might be more about theoretical and contextual. We would not be getting into too much detail in lectures whereas the museum focuses on the specific in terms of the objects, so it is slightly different in a way* (Lecturer in Geography, OX, March 22, 2018).

To grab the attention of the wider public and excite younger school children, museums will generally highlight their most famous and/or beautiful objects. However, as academics from NU, UCL, and OX assert below, this prioritization of high-calibre objects does not always support the learning outcomes of university teaching because of the restricted narrative the museum is conveying.

> *The disadvantage of [using collections] is that they can be fragmented or superficial and it comes with the issue of context. If you have collections that are just bits and*

pieces or that have been organized in certain types of ways, then you end up with students just engaging with the superficiality of it, 'this is pretty', rather than something more intellectually engaging, something like an archaeologist would be doing (Senior Lecturer in Roman Archaeology, NU, November 27, 2017).

It is quite different in that I'm interested in getting students to think about the production processes behind the objects which is rarely prioritized in museums. We study things like recycling, which is obviously quite difficult to display or discuss in a museum context… I suppose museums, when it comes to ancient glass particularly, they tend to favour object types that are relatively complete like tableware, which tend to survive quite well. So, often they tell a restricted story (Lecturer in Archaeological Material Science, NU, January 31, 2018).

I have a little beach pebble, but part of it is brick and half of it is cement. It probably came from a house and it has got this mix of materials and it becomes a useful object to discuss. Is it a bit of pottery or an artificial bit of stone? Is it stone? Do we treat it any differently? Is this an archaeological object? It is two different materials. How do we understand those and how do we look at them and record them as two different materials? But, it is not a museum object (Senior Lecturer in Archaeology, UCL, January 24, 2018).

…I think often when people are studying Classical archaeology, there is a tendency to focus on the masterpieces and I think it is important for students to understand that the material culture of the ancient world is not laid out in masterpieces. Even a part of something that looks a bit rubbish compared to the masterpieces is important and I think it is important for students to get their heads around that and what is in the bulk of museum collections (Classics Associate Professor, OX, March 22, 2018).

A further element to this discussion on audience is the information provided with the displayed objects. Whereas academics have accused their museums of providing an insufficient amount of information, there were two academics from UCL and NU who felt their museums provide too much information at times. Both academics support research-based learning, but feel as though the museums defeat the purpose of this method by essentially giving the answers to students instead of encouraging students to find it themselves.

There is something about provenance that is different in the museum. A lot of these [objects] I just bought and I do not know that much about where it comes from. Whereas in a museum, provenance and where an object sits in relations to other objects and its history and its collecting history are quite important, I think. This is quite divorced from that… I bought a WRVS badge on eBay, said to be 1940s, but

then a student did so much research, she could establish that my date was wrong. I just put the eBay date down, but it was actually a 1960s badge. That is a perfect representation of research-based learning, but that would not happen in the museum because they would already know the date (History of Education Associate Professor, UCL, October 12, 2017).

I think the museum's pedagogy is more telling the final answer. It is displayed and says that this is a coffee cup. We want students to think and then come to a conclusion that this can be a coffee cup. I think in that sense, the museum gives the answer and we want to teach them to search for the answer (Lecturer in Geology, NU, May 9, 2018).

Two academics from UoM and UCL expanded on this disparity between the museum's pedagogy and an academic's pedagogy by defining how their pedagogies as historians, differ from that of the museum or the academics' from more object-dependent disciplines. Both academics detail how they are not focused on the specific when using material culture, but instead use objects to answer the bigger questions.

As a department, we are much more interested in thinking about the relationships between literary text and material text and I think that is a difference as well… because we are primarily concerned, not with material culture, but with literary culture and because the literary culture in the museum is limited, the whole perspective is limited. I teach Ancient History and the overlap with what I teach and the museum is limited (Senior Lecturer in Classics, UoM, April 27, 2018).

I am conscious that the museums have their own agendas. That does not fit with my own agenda. I am trying to work out whether it is true to say that museum curators are more interested in objects as objects and how they fit in with other objects in their collections, whereas I, like any other non-museum-based historian, am only interested in objects solely for what it can tell me about a historical question. This course I am describing to you, what the students have to do is answer a historical problem. They would get a lower mark if all they do is tell us about the thing. They would get a better mark if they tell us why the thing mattered. That always requires additional research. You cannot answer that question solely from the object itself. The object is the beginning of the intellectual journey, but it is never the whole of it or the endpoint and I think that is a different intellectual sensibility from museums (History Professor, UCL, October 9, 2017).

Two UCL academics from the sciences shared their perspectives on the topic of museum pedagogy and the affects it has on collaborations between a museum and an academic with a science background. As suggested below, a scientist who regularly works with scientific

evidence, statistics or psychology, has considerably different aims and pedagogy from the traditionally trained museum staff who, for example has a background in teaching art-history, as the latter comment suggests.

> *Generally, I would say [the pedagogies] are vastly different. We tend to be concerned with evidence, so we do a lot of work with very large statistical trials* (Cardiovascular Sciences Associate Professor, UCL, April 6, 2017).

> *With the Art Museum, they had not interacted with psychology courses before. They were incredibly happy to do so, but I think in my interactions with [name omitted], he was classical art trained, so it was more to do with what you could see in the picture and what you interpreted. Whereas I was trying to get the psychological aspects out of these things* (Lecturer in Psychology, UCL, April 6, 2017).

Moving away from the academic perspective, it was equally interesting to hear from museum staff on the topic of target audiences and how they felt it affected the relationship with the university. Museum staff from UCL, NU, and OX discussed this topic at length throughout this study's interview process with varying perspectives. However, although Manchester Museum is also open to the public, Manchester Museum staff did not touch on this topic during their interviews. Reasons for this are still only speculative.

UCL museum staff were particularly steadfast in their statement that as university museums, the university is their primary target audience. This does not mean HE is their only focus. As UCL museum staff explained, the UCL collections are in principle teaching collections and until recently, strictly HE focused, but with the addition of school children and the public, they have had to extend what it means to be a teaching collection.

> *If you are a university museum, higher education is going to be your core audience because you are a part of the institution, but having said that, our museums have primary and secondary school visitors, so it is not just HE, but in terms of us, our core audience are university students and colleagues among the staff* (Teaching Fellow, UCL, April 6, 2017).

> *…because we were founded as a teaching collection in the 1820s, the philosophy of the museum was to be a teaching collection and it only opened up to the public in 2005, so that is recent. Because of that, we do not have a teaching collection and proper collection. Everything is available for use. What the kids are handling down there is part of our permanent accession material. It fits nicely with how we conceive the museum between public and HE* (Museum Manager, Grant Museum, February 15, 2018).

GNM: Hancock staff had a slightly different perspective on their target audience. To better illustrate the GNM: Hancock's approach on target audience, one staff member compared the GNM: Hancock to UCL's Petrie and Grant museums. As stated below, the GNM: Hancock's target audience is the public. Museum staff recognize there is discontent amongst NU academics with the education levels of the museum's displays, but as the museum is a public facing organization, it is argued that the museum design their displays with this purpose.

> *We know that some of the academics feel that our displays are, and I am going to use their words, 'dumbed down', and that it does not respond to their student needs. Now my response to that would be, it is not designed for their students. It is designed for the public. We get half a million visitors a year and we are very much a public facing organization that serves its local audience. That is different from a place like UCL, whose stated mission is to serve its students and staff. If you visit the Petrie or the Grant, the public are welcome, but it is a very different proposition. We are very clear that we are there to serve the public* (Museum Manager, GNM: Hancock, July 27, 2018).

NU's former Dean of Cultural Affairs, who worked closely with the GNM: Hancock throughout and following their 2009 redevelopment, details the museum's approach to servicing such a widespread audience. They indicate the importance the topic of target audience had during the redevelopment and supports the museum's decision to limit the amount of information presented as to not overwhelm the public.

> *I think we had some very interesting philosophical discussions when we were in the middle of the project about, who the audience was? How you are presenting the material? What level of information do you provide? The answers to that was, your audience is from under 5s to the classics professor, which of course is a challenge. What we tried to do was make the collections accessible to as wide an audience as you can. We agreed not to have a huge amount of information on the labels, which I think in retrospect was right. The idea was if you really want to get into lots of detail about the collections, you can use digital resources and if I am honest, we have not had the time nor the funding to develop those levels of digital access that I had hoped we would when we started the project… Obviously the key GNM audience is a family audience and I think it is important that the collections are accessible to that audience* (Dean of Cultural Affairs, NU, February 2, 2017).

The Dean of Cultural Affairs was present at the meetings where this decision was made and offered useful insight into the voices heard during these meetings. Per discussions, there were two polarizing opinions; one for a more academic approach pushed by former curators of the Museum of Antiquities and the Shefton Collection [see section 4.1] and academic staff from

NU's International Centre for Cultural and Heritage Studies (ICCHS), and one for a more family-friendly approach pushed by representatives from TWAM. The GNM Board eventually chose to support TWAM's more family-friendly proposal. When asked about the lack of wider academic department representation at the meetings, the Dean described the difficulty in getting academics to attend because of scheduling conflicts (Dean of Cultural Affairs, NU, personal email communication, October 2019).

Ashmolean Museum staff had mixed opinions when asked how the museum's pedagogy differs from the academic pedagogy and the role the museum's target audience plays in this difference. The first staff member referenced below, focuses on a level of openness and acceptance of multiple teaching approaches by the Ashmolean, such as didactic and constructivist, which are not dictated by the museum, but by the teacher's or learner's learning outcomes.

> *We use a range of different learning approaches across different audiences, but there is a tone and voice and personality to the museum. It is not a pedagogy, there is not a stated teaching approach… It depends on the audience, it depends on how you understand learning and how people learn and I think people disagree with how people learn, so there is not one Ashmolean approach because it depends on who are teaching and how and the format… There is a communication of knowledge through a didactic voice, but I think there is also a strong constructivist idea, the idea that you can construct your own meaning from your experience at the galleries. That is trickier when you need to do a course where you have to learn certain things to pass. So, like I said, it depends on what you are doing and in what context and what your learning outcomes are (Head of Education, Ashmolean Museum, March 7, 2017).*

The second Ashmolean staff member does differentiate between the museum's pedagogy and academic pedagogy. First, accessibility for the public is stated as a primary importance for the museum. As a result, the galleries are designed around typologies, which differs from the perceived theoretical style of teaching by OX academics. Even though the academic and museum staff are teaching the same concept, museum staff feel as though they are looked down upon by the university because their pedagogy is not the same.

> *The university is not object-based at all. It is all theoretical. There is a difference in what we think is academically important and the way we might approach students to the academic approach, which is about big questions, not necessarily focused on the old fashion approach we often have when it comes to dating and thinking about something… Materiality is the big buzz word for the moment. Of course, we have all been doing materiality, but suddenly academics are interested in materiality. Suddenly, you can talk about how things are made and what they are made from. It is all the same information and research, but the way we talk about it is not seen as being properly academic, I think. That is a problem for the students. You can see from*

the students that come here, that they have that pressure to also think that… They are
sort of brainwashed to think in more theoretical styles… Not to think the old fashion
ways of styles and dates, like the Rococo or Baroque, are old fashion, but we work
with those all the time and that is how most museums work. But, in the academic
world you are taught to not really think that way, which means when they finish, they
do not know how to work in a museum. The main reason is we have to deal with the
public, we need to make it accessible, that is of primary importance (Curator,
Ashmolean Museum, April 12, 2017).

Findings suggest that a museum's target audience can have a significant impact in
determining the use of museum collections in HE curricula. Whereas several academics
claimed the museum's target audience did not hinder their use of museum collections, there
were academics across all four cases who described how the museum's commitment to school
children and the public has negatively impacted their use of museum collections in their
teaching. Academics have argued that their museums provide too little information, provide
too much information, present a restricted narrative, and do not reflect university teaching
overall. These issues have caused tension between academics and their respective museums
and inhibited the use of museum collections in HE curricula. However, from the museums
point of view, they have had to adapt to the modern museum sector. If a university museum
decides to be public facing and/or receives money from funding agencies such as Heritage
Lottery Fund or Arts Council England, then they will need to account for more than just HE
students. The prioritization of school children and the public or HE students varies from case
to case, but neither can be ignored.

5.1.2 *Learning Advantages*

The learning advantages of teaching with museum collections are myriad and well-
documented (Prown 1982; Durbin 1990; Talboys 1996; Hooper-Greenhill 1991, 1994, 2007;
Falk & Dierking 1992, 2000; Stone 1994, 2004; Paris 2002; Black 2005; Cook *et al* 2010;
Jandl & Gold 2012; Boddington *et al* 2013; Chatterjee 2015). These advantages were
recognized by both academic and museum staff during the interview process. Even
academics who do not use museum collections in their teaching were able to expound on the
benefits of such practices when prompted. However, the purpose of this section is not to list
every possible learning advantage of teaching with museum collections. Instead, this section
aims to identify only the specific learning advantages which academic and museum staff
acknowledged as determining conditions in the use of museum collections in their teaching.
The five most common learning advantages cited by academic and museum staff were:
objects as tools of engagement, an improvement in knowledge retention, the development of
transferable skills, the development of subject-specific practical skills, and the opportunity to
work with primary source material.

It was also imperative that this study investigate the students' perspective in whether
or not they see the learning advantages of working with museum collections in their courses.
If academics do not believe their students are enhancing their learning through the use of

museum collections, then there is no pedagogical reason to use them. Drawing from the students' survey responses, one recognizes that the students do have a general understanding of the established learning advantages associated with the use of objects in teaching and an appreciation for the opportunity to experience a different teaching method. Topics frequently touched on in their comments included: objects as primary source material, tactile experience, knowledge retention, employability, and engagement.

5.1.2.1 Engagement

The first learning advantage examined in this section is the use of museum collections as tools to increase student engagement. Teachers are always looking for ways to engage their students, as engagement is often considered the first step towards increasing levels of attentiveness, participation, and optimistically, a better understanding of the material being covered. As academic and museum staff argue below, the use of museum collections in teaching is one way of increasing student engagement as they can grab students' attention in a variety of ways and help them engage with material on a deeper level.

Without engagement, students passively endure their courses with limited cognitive activity. As indicated by the students' survey responses, the active engagement that working with objects promotes is recognized and valued by students, especially those whose subjects have strong links to material culture or those who prefer a more active learning style.

As two NU lecturers recounted during their interviews, in their experience, students have responded positively to the opportunity to work with objects because it breaks away from the normality of lectures and PowerPoints. They admit to not knowing how to explain this reaction in scientific terms, but it just works, so they continue to do it.

> *The advantage to using collection material is that students respond to it far better than just pictures being projected on a screen or being talked about through diagrams, they feel more engaged* (Senior Lecturer in Biology, NU, December 9, 2016).

> *I am not sure how the process works, but it can capture and fire their imaginations and get them to have a tangible sense of the past in a way that if you are teaching in a lecture theatre with a PowerPoint presentation can be hard* (Lecturer in Ancient History and Archaeology, NU, January 17, 2018).

Supporting these claims are student survey responses. At the heart of student engagement is attentiveness. Student comments indicate varying levels of attentiveness when working with museum collections in their courses. As a result, this study's findings indicate that the use of objects in HE teaching can encourage higher levels of attentiveness in HE students.

As one Archaeology and Anthropology student perceptively noted, the engagement with the objects promotes independent research, focusing more of their attention towards, and allowing them to think more critically about, what is in front of them.

> *I feel more engaged because I am able to make my own observations and use my own critical analysis* (Student Respondent 14, OX, May 30, 2018).

Expanding on this perspective, another student described how when working with museum collections, they felt less hurried and anxious about taking precise notes during a lecture or PowerPoint and were able to engage fully with the objects.

> *I wasn't just on my laptop furiously trying to write down everything the professor was saying, without engaging with it. I was fully engaged the whole time and learnt more than some of my theory lectures in other modules* (Student Respondent 16, UCL, May 30, 2018).

For some academics, such as the two from OX and NU referenced below, the decision to teach with objects may be determined by the sense of excitement it generates amongst their students.

> *It excites them to have a sense of the very object that has been touched by hundreds of people over hundreds of years and they get excited about silly things. There is a Nobel Prize sitting amongst the silver and so for the first time in their life they can handle a gold Nobel Prize. They take pictures of themselves holding it. It is nothing more than a gold disc, but it is interesting to touch* (Reader in History of Business, OX, March 22, 2018).

> *I think the privilege of holding something that is two and half thousand years old, it takes a very hardened student to not be enthusiastic or engaged with that* (Lecturer in Classical Archaeology, NU, November 30, 2017).

Enjoyment is a powerful tool for academics who want their lessons to be more engaging and appealing to their students. Throughout this study's interview process, academic and museum staff made fleeting references to the enjoyment their students get from working with museum collections. Again, student survey responses support these claims.

Two students praised the use of museum collections in their archaeology and anthropology and ancient history courses, defining it as a feel-good experience which grabbed their attention more than a normal lesson.

Overall, it makes me feel happier and makes the course more interesting (Student Respondent 38, OX, June 10, 2018).

It is more interesting and fun to use the actual objects rather than a photo and increases my passion and motivation (Student Respondent 30, NU, June 6, 2018).

However, enjoyment is a subjective concept. What is enjoyable for some students, may not be enjoyable for others. The subjectivity of enjoyment as an emotional response and the impact it can have on the students' learning processes makes it a limiting condition which can determine the use of museum collections in HE curricula.

Aside from adding a sense of freshness and/or excitement to lessons, many academics decide to teach with objects because they recognize and appreciate that there are different types of learners. As two UCL academic and museum staff assert below, teaching with objects gives students who may not be adept at learning through traditional means, the opportunity to engage with the material in a way that they are comfortable.

Pedagogically, it is for different types of learners. There is the type of learner that likes to get up, move around, hold stuff, the physicality of it, and perhaps does not engage well with text-based sources all the time (History of Education Associate Professor, UCL, October 12, 2017).

If you have a module that is based on 20 lectures, 1 hour each, 1 person leading, with a PowerPoint or whiteboard, then that teaching does not lend itself to using collections, but it also does not lend itself to learning for most of the students who are in the class. If you want to make it more interesting, more interactive and student centred, then using collections is one way of doing that… There is more of an openness that very verbal and visually focused education disadvantages a lot of students. There is a broad spectrum of learners, going back to Gardner's multiple intelligences. If you only talk and have visuals like slides, then you are going to exclude 20-30% of your class automatically. Therefore, if you give them all the opportunities to engage, like physically, haptically, tactile engagements with objects, you are making it better for everybody, but in particular those learners who struggle with reading and writing and expressing themselves verbally (Teaching Fellow, UCL, April 6, 2017).

On an even deeper pedagogical level, academics may decide to teach with objects because of their ability to reach and engage diverse student populations, as suggested by one UCL professor and Ashmolean Museum's Director of University Engagement.

A lot of the students are British Asian and some black, and in our largely white curriculum, they have often found that the history that is taught in schools is not very engaging. They have come to history with a bit of a negative view. So, I try hard with the work I do to address that to make them both interesting and engaging and fun, and also address aspects of the curriculum that are ignored (History of Education Associate Professor, UCL, October 12, 2017).

...collections in it of themselves are diverse. They represent material gathered from all areas of the world, all cultures roughly speaking, and from many periods. To the extent that you have a diverse student body and diverse faculty body and to the extent that you wish to engage those bodies with the histories of their own regions, peoples' histories, you have a much richer resource than say, a library, which might not be multilingual or multi-period (Director of University Engagement, Ashmolean Museum, April 10, 2017).

As this section on perceived learning advantages illustrates going forward, museum collections have the ability to engage students in a variety of ways. Engagement is the first step in the learning process from which all other learning advantages stem. In terms of how the use of objects affected their learning, student comments emphasized the concept of engagement more than any other positive. However, as the academic and museum staff highlight above, engagement does not have to be a means to an end, for instance, knowledge retention or skills development. Museum collections can be used simply for engaging different types of learners, different peoples, or purely for enjoyment. As a result, it can be argued that engagement in of itself is a determining condition of the use of museum collections in HE curricula.

5.1.2.2 Knowledge Retention

The second learning advantage examined in this section is knowledge retention. Both academic and museum staff agreed that the use of objects in teaching creates a more memorable experience for the learner. The high number of responses involving knowledge retention and/or the opportunity of providing memorable experiences for the students illustrates the importance this learning advantage has in the academic's decision to integrate museum collections into their teaching.

The students' comments on greater knowledge retention as a result of working with museum collections once more indicate the positive effects these teaching methods have on the student's education experience. These positive evaluations of knowledge retention when using museum collections in HE teaching should encourage academics to pursue such opportunities.

Two academics from NU and UCL discussed how the use of objects in teaching is pedagogically important to them because of their conviction that it increases students' retention of information, especially concepts which are difficult to convey through a traditional lecture and/or PowerPoint.

I think that the tactile engagement of working with those objects can be quite useful in terms of embedding things in students, learning and memories and their recollections can be quite useful for the students who may not be academically able in other ways (Senior Lecturer in Roman Archaeology, NU, November 27, 2017).

Whatever it is you are trying to teach, whether it is complicated concepts, new ideas or information, what I know is that the students really engage with it better, they remember it more and for longer, partly because there is an enjoyment element and partly because of the multi-sensory. It pedagogically taps into multiple levels of coding, the way the brain absorbs and retains information. All around pedagogical advantage is the retaining of knowledge, understanding knowledge at a deeper level, and engaging with that knowledge and hard to reach concepts (Biology Professor, UCL, May 3, 2018).

Museum staff from the Manchester Museum and the Ashmolean Museum further supported this argument. In their comments below, both museum staff members touch on the power of human experience and how individuals attach memories to experiences which are emotionally impactful.

...we can read any number of books on Pompeii, but if we see a plastic cast of one of the victims of Pompeii in our gallery or a dog that has died and the ash has solidified around the dog in its death agony, somehow it brings it home to people. That is incredibly evocative and to me that makes learning have more impact and I think students are much more likely to remember that (Deputy Head of Collections and Curator, Manchester Museum, January 19, 2018).

It is an experience. People remember it. It is a memorable time when they are allowed to come to the museum, sometimes backstage to the store rooms and then be taught by specialist in their field with the objects in front of them (Curator, Ashmolean Museum, April 12, 2017).

In the comments below, two history students detail how the use of museum collections in their courses made them more memorable experiences. The students describe how the objects' tangible nature and handling each object directly not only creates a unique and intimate experience every time, but also provides a sense of practicality and value to the

course overall. For the students, it is the meaningfulness of this experience and the multi-sensorial engagement that makes it more memorable.

The physicality of the objects meant that they were much more memorable and seeing them felt like an essential part of taking a module about objects (Student Respondent 24, UoM, June 6, 2018).

It is more memorable seeing the objects used in a real-life setting (Student Respondent 35, UoM, June 7, 2018).

The importance of knowledge retention cannot be understated. If academics did not believe the use of museum collections in their teaching could increase knowledge retention, then they would not use them. However, findings confirm that both academic and museum staff agree that the emotionally stimulating experience of working with objects is particularly memorable for students. Therefore, academics who follow this pedagogy, will continue to seek out museum collections to use in their teaching because of their belief in this learning advantage.

Without the account of the learner, one cannot truly confirm knowledge retention as a learning advantage of working with objects. Of course, no two students will attach the same memories to an experience. It is also impossible to confirm that every student increases knowledge retention without responses from every student. However, this study's findings do indicate that there are students who can increase their knowledge retention from the use of objects in teaching.

5.1.2.3   *Transferable Skills*

The third learning advantage academics attributed to the decision of using museum collections in their teaching is the development of transferable skills. The skills developed through working with objects are valuable for HE students as they work across disciplines and eventually transition into the professional world. Academic and museum staff identified three main transferable skills which can be developed as a result of working with objects. These skills are: critical thinking, observation, and communication. Both academic and museum staff argued that the ability to develop such skills and prepare their students for future endeavors as a key reason for integrating museum collections into their HE teaching.

The first transferable skill which academics identified as a determining condition in the use of museum collections in their teaching is the ability to develop students' critical thinking skills. All four academic comments presented below focus on the importance of teaching students how to evaluate evidence, reconstruct arguments, and to think laterally instead of simply reiterating what previous scholars have written.

We want them having the boldness to critically engage with materials and substances, to think about how things are crafted and made, but also their symbolism and to make connections between archaeology and anthropology, so that they are using the living cultures alongside archaeological materials to make that ethnographic link (Senior Lecturer in Archaeology, UoM, April 9, 2018).

It is not important to me whether those students in the space of a single course master the intricacies of Greek history by looking at some vase. It is much more important to me that they understand the process of historical study and establishing how using an object or multiple objects or a building or a space, they can reason from those objects and find associated research materials to help them interpret it. It is about the process more than it is about the outcome, but that is not true for any of my other courses (History Professor, UCL, October 9, 2017).

It is to break them out of the bookish way of thinking about things and to get them to a practical perception and thinking about the world (Senior Lecturer in Archaeology, UCL, January 24, 2018).

If art-history is traditionally, through its photographic history, a science of comparisons, it is harder to make comparisons when you only have one object and not all of those in its same class or contrasting objects. On the other hand, it forces you out of that paradigm of art-history, which is that it is not left or right, Baroque or Renaissance, Early or Late, Greek or Roman. That is the way art-history, through its photographic history, has been structured, where you have to focus on the object. But, I think that is an advantage also because that makes you think about the object in other contexts. So, I'd say mainly advantages, but the disadvantage may be paradoxically advantages because it reminds you about different qualities of the object that you would not otherwise know (History of Art Professor, OX, March 20, 2018).

The second transferable skill which academics identified as a determining condition in the use of museum collections in their teaching is the ability to develop students' observation skills. The three academic comments presented below impress the importance these academics put on developing students' abilities to pick out and describe the fine details of an object.

With undergraduates, they probably will not have the faintest idea of what they have in front of them. The key pedagogical objectives are about not being fazed by that, by learning that you can observe closely, feel, handle, and by holding something in your hand you can engage with something in a very human manner, which teaches you the skills of logical and natural thinking about the material past (Senior Lecturer in Archaeology, UoM, April 9, 2018).

It teaches students to look. Many students have trouble looking. I don't mean they have vision problems. I think for a lot of people they think anyone can look at an object because they have two eyes and I think the moment you start to really engage directly with objects and get students to draw them and tell you what they see, you quickly distinguish students who have excellent observational and descriptive skills versus those who cannot pick out that fine detail and connect it to a larger picture (Classics Associate Professor, OX, March 22, 2018).

I think it is encouraging the students' observational skills. It is making them aware that we are still a discipline that can change by looking at things and an awful lot of what we do is interpreting small amounts of information and our discipline can be changed by people looking at things in more detail and seeing new things (Senior Lecturer in Archaeology, UCL, January 24, 2018).

Lastly, the third transferable skill which academics identified as a determining condition in the use of museum collections in their teaching is the ability to develop students' communication skills. Academics argued that the use of objects encourages students to communicate and share their ideas more openly than in a traditional lecture-based lesson.

There is something about the way students interact with the material that I think is a different form of learning and I think it allows them to communicate more as a group. They tend to be more vocal when we do that kind of activity (Lecturer in Archaeological Material Sciences, NU, January 31, 2018).

In terms of the language course, getting the students to communicate about something and trying to shift the focus from the process of learning a language to the actual communication on objects that were relating to the culture they were studying as well, I think one of the positive aspects is the focus on real communication and reminding the students that learning a language is not just about learning a skill, but it is learning something that gives access to something else (Lecturer in Scandinavian Studies, UCL, October 12, 2017).

Both academic and museum staff understand that students come to university with varying levels of transferable skills. The development of these skills may not be important to every academic, but findings confirm that there are those who feel they are valuable. Museum collections are a proven resource for these academics hoping to develop students' transferable skills. As a result, it can be argued that the desire to develop students' transferable skills can determine the use of museum collections in HE curricula depending on the academic's individual pedagogy and desired learning outcomes.

5.1.2.4 Practical Skills

There is a distinct difference between practical skills and transferable skills. Essentially, transferable skills are applicable across disciplines. Practical skills, although sometimes transferable, can also have subject specific or field specific importance. As such, there are academic and museum staff who believe it is their duty as teachers to teach the practical skills associated with these certain fields to their students in order to prepare them for when they move on from university.

As indicated by their survey responses, students recognize that the professional skills which can be developed through working with objects enhances their employability after university. This is an insightful finding for academics in that it confirms how museum collections can be used to motivate student learning at the university level. Students become motivated to learn when they can see the significance of what they are doing. For those whose career aspirations have strong links to material culture, they look at the use of museum collections in their courses as an opportunity to show future employers that they understand the practical side of their field. For students studying subjects where there is no obvious connection to material culture, there is still the development of transferable skills through the use of museum collections that they believe will give them an edge over those who have not had the same opportunity.

Academics from NU, OX, and UCL discussed how the use of objects in their teaching gives them the opportunity to teach their students the practical skills they will need in the future which they would not be able to teach through traditional lecture-based lessons.

Real life experience. When you take a hand specimen to the classroom, it is not only to teach what that hand specimen is, but mostly to teach how to approach it and how describe it. That is what we do in our field work (Lecturer in Geology, NU, May 9, 2018).

I think getting them to understand the limitations of the evidence and the skills required as an archaeologist to engage with that evidence can only be developed through handling and firsthand experience (Classics Associate Professor, OX, March 22, 2018).

I do Psychology and psychology is an applied subject. You have these lectures and you can try to make them engaging and interesting, but I always try to remind the students that this is about real living people… The brain is an amazingly intricate organ and when you teach about it, it is in an abstract manner. All the diagrams are neat and concise, but when you actually see it, it adds a huge element to the learning.

> *The students are able to use the stuff they have learned during the course and apply it to real life specimen* (Lecturer in Psychology, UCL, April 6, 2017).

In the comment below, one archaeology and anthropology student supports these arguments by discussing how the use of museum collections in their course was motivational because of the prospect of enhancing their employability. The student clarifies how the knowledge of how to work with material culture is essential to their education if they hope to further their career in the subjects they are studying.

> *It is directly relevant, as material culture forms the basis of both my subject areas. Using the collections is central for my studies and for later progression into my subject either educationally or in employment in my discipline* (Student Respondent 14, OX, May 30, 2018).

One NU academic went as far as to specify how beneficial it is to have professionals work hands on with students in addition to working with objects, as this provides students with a more comprehensive understanding of their future responsibilities in the field.

> *A definite advantage is from a vocational perspective. If we are trying to equip our students with two things, one with an understanding of what their responsibilities might be in the sector, and along with that, what people working in the sector do, what taking them behind the scenes involves is being able to expose them firsthand to people doing their job. I could develop a lecture around it, but it is so much more powerful if the people who are doing it on a day to day basis are able to tell them about what they do, their challenges, their frustrations and so on* (Reader in Heritage Studies, NU, November 9, 2016).

Many academics rely on the use of objects to teach students the necessary practical skills to progress in their fields. Not every discipline will require practical lessons with objects. However, for those that do, museum collections may be a viable resource for academics looking to develop their students' practical skills. Similar to the conclusion on transferable skills, it can be reasoned that the development of practical skills is also a determining condition of the use of museum collections in HE curricula as the decision to use them is often dictated by the professional practices in the field.

The students' motivation for learning is a common concern for academics. Regardless of the teaching methods, when students are not motivated to engage with the material in front of them, learning will not take place. Student comments indicate that objects can be used to liven up traditional didactic teaching methods and inspire students to engage with material through the prospect of acquiring practical skills to boost their employability.

5.1.2.5   Primary Source Materials

At their core, objects are primary source material. Academic and museum staff believe that the experience of working with primary sources is essential for the intellectual growth of HE students. As a result, objects as primary source material was identified as a determining condition in the use of museum collections in HE curricula.

The ability to use museum collections as primary source material was also a key learning advantage acknowledged by students in their survey comments. This is encouraging evidence for academics who might fear that the rationale behind using museum collections in their teaching is lost among HE students. As many students described, the authenticity of museum collections allows them the opportunity to further their education by providing concrete information while enhancing skills such as critical thinking.

Two students specifically discussed how the information derived from the object's physicality is one advantage of non-textual primary source material.

> *It is easier to understand an artifact when you see it in real life. For example, prior to seeing actual models of Venus figurines, they seemed to me to be much bigger than they actually were, and therefore, I perceived them to be much less personal then when I had actually handled one* (Student Respondent 4, UoM, May 16, 2018).

> *It provides that link you get when working with items – solid, physical evidence of the period you're studying… something you just do not get working off journals and papers* (Student Respondent 28, UCL, June 6, 2018).

In addition to tactile and scaling advantages of primary source material, one Ancient History student noted how the use of museum collections as primary source material can help support or dispute the arguments made in secondary literature.

> *They helped to analyze the connections to the bigger argument that secondary literature authors are making…* (Student Respondent 11, NU, May 29, 2018).

Furthermore, not only do museum collections as primary source material aid in the understanding of secondary arguments, but with training, can also be used in formulating one's own arguments. One student described how the use of museum collections has helped them reach this level of education, where one is able to put forth their own questions and theories, thus adding to the field's pool of knowledge.

It allows you to develop your own opinions and theories regarding the object rather than just listening to a lecture talk about it (Student Respondent 12, NU, May 29, 2018).

The use of museum collections as primary source material is one of the most principal learning advantages, as their multi-faceted use can provide scale and texture, aid secondary source investigation, and incite new lines of inquiry. Findings suggest that the students from this study's four cases both appreciate and benefit from the use of museum collections as primary source material in their courses. As a result, academics can trust that their efforts to integrate museum collections into their curriculums are not limited or wasted by student's understanding of the value of such teaching practices.

UoM and NU academics provided detailed insight into the value they put on working with primary source material. The most significant learning advantage these academics perceive for their students when working with objects is the scale and weight. Even if the students are not allowed to handle the objects themselves, to see them firsthand and up close instead of distorted proportionally in pictures plays a significant role in the students' understanding of the object as well as connecting those characteristics to wider topics of discussion.

In terms of advantages, it is mainly the diversity of engagements with the student. You cannot mirror a physical object in the classroom. You can show as many photos as you want, but it does not give them the appreciation for the size and weight and the skill that may be involved, or not, in how the pots have been made (Lecturer in Archaeology, UoM, March 28, 2018).

I think scale is something which slides distort. In Greek archaeology, we never put scale into things because it spoils our beautiful object, so we never have an indication of size. That sense of proportion, how big or how small something is, I think those are the real advantages to learning from objects (Lecturer in Classical Archaeology, NU, November 30, 2017).

For example, Early Medieval coins are tiny objects, so when you see them in books, they are blown up to get the detail. You get a false sense of how much you can see and what the details look like. When you see them in your hand and not only how small they are, but how thin and fragile they are, you get a different experience of what these things were like (Lecturer in Roman Archaeology, NU, April 6, 2018).

The use of primary sources is embedded in the study of many disciplines. As it has already been established that museum collections are an available source of primary source material,

it can be argued that the responsibility of certain academic and museum staff to integrate primary source material into their teaching can determine the extent of the use of museum collections in HE curricula. Likewise, if an academic does not necessarily need authenticity in their objects or does not see a need for using primary source material all together, there is no requirement for them to do so.

5.1.3 Learning Disadvantage

As advantageous as the use of objects in teaching can be, it is not without its own learning disadvantages. Both academic and museum staff explained how the use of objects in teaching can be both inclusive and exclusive depending on the learning styles of their students. Additionally, the use of objects in teaching becomes even more disadvantageous when the students do not possess the skills required to work with particular objects or the teachers themselves are not confident in their own ability to teach with objects. The last disadvantage presented in this section concerns the assessment of students' engagement with objects. Responses on the topic of assessment on a whole were mixed throughout this study's interview process. However, several academics indicated the difficulty of converting a student's level of engagement with an object into a standardized mark. Just as in section 5.1.2 above, there are instances throughout this section where student survey comments support academic and museum staff claims regarding the learning disadvantages of using objects in HE teaching.

5.1.3.1 Didactic Learners

The first learning disadvantage presented in this section is the reality of didactic learners. Just as there are people who prefer active learning, others may prefer more didactic lessons and therefore, do not benefit from the more hands on or discussion-based teaching styles that are associated with the use of objects.

As two lecturers from UoM and NU indicated during their interviews, the use of objects in teaching can equally exclude students as much as include them. Whereas some students do not possess the skills to work with objects, other students may be too shy to discuss their ideas aloud and instead, feel more comfortable listening and taking notes in a lecture theatre environment.

Disadvantages are that shy students can be very reluctant to be put on the spot… (Senior Lecturer in Archaeology, UoM, April 9, 2018).

…some students, either because they are quicker on the uptake or they have some prior knowledge which helps them, are able to go from there and become self-propelling, they do not need more guidance. Equally, there are students who will not

respond or feel that initial introduction is inadequate and still want more guidance. That is partly a lack of experience, personality issues, and you have to continue the instruction process to help them build their confidence in what they are doing until they feel comfortable practicing on their own (Senior Lecturer in Biology, NU, December 9, 2016).

As expected, when using objects in HE teaching, an increase in student engagement and/or interest is not a universal outcome. Several students commented that the use of museum collections in teaching either has no effect on their attentiveness or can actually decrease their attentiveness. As is the case when surveying individuals, the levels of engagement amongst the students when working with museum collections will vary depending on the student's learning preferences and the teaching methods employed by the lesson's leader. In the comment below, the student makes their preference very clear.

I prefer listening to a lecture rather than touching a pot (Student Respondent 19, NU, May 31, 2018).

One student describes below how when using objects in their course, students tend to miss out on information or instructions because they use the opportunity to talk amongst themselves instead of paying attention to the lecturer.

When museum collections are used in teaching, it tends to break into group discussions and less attention is paid to the lecturer (Student Respondent 10, NU, May 29, 2018).

Another student stated that it is the topic that grasps their attention, regardless of working with museum collections or other teaching methods employed by the academic.

I find lectures interesting and my attention and motivation is derived from what we are studying at the time, not on engagement (Student Respondent 13, NU, May 30, 2018).

And lastly, although the majority of student responses were positive, not everyone found as much enjoyment in working with museum collections as others. As one student shares below, the change in environment actually added to the student's anxiety. As a result, the student was unable to focus during the lesson, consequently hindering their learning process.

I suffer from anxiety, so the courage it took for me to go to a museum outing was intense and took away from the incredible opportunity at hand (Student Respondent 34, UCL, June 8, 2018).

Students have different learning styles. Whereas one student may prefer working with objects over traditional lectures, another student may prefer the reverse or a completely different teaching method all together. Likewise, just introducing objects into teaching does not mean every student will engage. The methods employed to work with the objects are equally as important. Findings suggest that depending on the learning styles of one's students, the use of museum collections in teaching could prove to be counterproductive if the students do not respond to it as well as they do with more didactic teaching methods. This does not mean that academics should abandon the use of museum collections in their teaching because it is not universally advantageous. Instead, it only indicates a limitation which academics need to appreciate and continually reevaluate before organizing such lessons. Equally, although both academics referenced above do use objects in their teaching to a degree, student comments do support the argument that an academic could decide to forgo the use of museum collections in their teaching if they discover an overwhelming number of their students are didactic learners.

5.1.3.2   Teacher Confidence

Just as students may not be confident in working with objects, the confidence of the teacher in their ability to teach with objects is another condition which can determine the use of museum collections in HE teaching. If a teacher is not confident in their ability to teach with objects, this will negatively influence the planning and running of the lesson, the communication of information, and ultimately, inhibit the learning process.

The condition of teacher confidence was summed up perfectly by one NU lecturer during their interview. As the lecturer contends, teachers, whether it be university academics or museum staff, have different teaching styles. Thus, just because one academic is confident teaching with objects, does not mean everybody will be.

> *I think it depends on the individual, the staff member. Just as people have different learning styles, we have different teaching styles and it would be possibly counterproductive to squeeze somebody into a teaching style they are not comfortable with* (Lecturer in Archaeological Material Sciences, NU, January 31, 2018).

A teacher's confidence in their ability to teach with objects can be connected to their discipline. It is natural for academics who have been working with objects throughout their educational careers to feel more comfortable and confident teaching with them. Likewise, as the three comments below suggest, it is understandable for those who teach subjects which are not regularly associated with objects to feel uncomfortable when teaching with them.

> *As archaeologists, we are more comfortable with objects. Touching, feeling, handling them is just more natural for us then it might be for colleagues dealing with more*

textual material. That is something we need to think about (Lecturer in Archaeology, UoM, March 28, 2018).

I think it depends on the academic and the discipline. I know there are colleagues in the faculty, who are not archaeologists, who would like to incorporate objects into their courses, so historians, and language and literature, and I know they have been upfront in saying, 'I would love to do this, but I am not trained to work with objects and I am not comfortable teaching students with objects' (Classics Associate Professor, OX, March 22, 2018).

...I suspect for the people who are not art-historians, just a primer on how to teach with objects would be necessary (History of Art Professor, OX, March 20, 2018).

UCL has recognized this issue and have attempted to address it in the form of professional training for UCL academics in object handling and educational practices involving objects. As a UCL academic details below, one of the responsibilities of UCL Culture's Teaching Fellow in Public and Cultural Engagement is to support and train academics who have not experienced working with objects before.

[Academics] have not experienced it themselves and that was part of the idea behind [the Teaching Fellow's] post, having someone who could train up academics, because a lot of it is not just the students, but the academics who have not got the confidence (Biology Professor, UCL, May 3, 2018).

One statement of particular interest was made by Manchester Museum's Learning Manager concerning the relationship between teacher confidence and the Teaching Excellence Framework (TEF)[20]. On the one hand, they argued that the TEF could push academics to expand their teaching horizons in search of higher accreditation. However, they also argued that the TEF could have the opposite effect and instead scare academics who are not fully confident in teaching with objects into returning to their traditional teaching methods out of the fear of receiving a poor assessment.

Beyond the ones that we already have direct links with, there are so many more people that could make use of these things and perhaps with the Teaching Excellence Framework, that may become more important and it may open doors in terms of people looking beyond the standard way that they teach. That may be an opportunity,

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[20] The Teaching Excellence Framework (TEF) was introduced in 2017 as a way for government to assess the quality of teaching and learning in UK universities. For more information on the TEF, visit: https://www.gov.uk/government/collections/teaching-excellence-framework

but it may be a threat. It may have the opposite effect. It may lead to more focused classroom learning rather than being more creative in how you engage students… I can imagine for some people, the potential threat of being assessed on the excellence of your teaching could equally limit as much as it could expand people fields of view for how they work (Learning Manager, Manchester Museum, January 19, 2018).

There are academics who have worked with objects for the majority of their academic and professional careers. Equally, there are academics who have never worked with objects because they were not seen as essential to the study of their field. For those who do not have experience working with objects, it is not easy to suddenly change one's pedagogy. Even if an academic is willing to undertake professional training in object-based teaching methods, this will take time. It will also be interesting to see the impact that the TEF has on academic pedagogy. However, it is understandable that academics may not want to risk receiving a poor assessment by teaching outside their comfort zones and hold off on integrating museum collections into their curricula.

5.1.3.3 *Difficulty Level*

The third learning disadvantage presented in this section is the difficulty level of working with objects. Both academic and museum staff acknowledged that certain methods, which are associated with the use of objects in teaching, can be too difficult for the level of their students, and thus, choose not to use museum collections on particular courses.

For many HE students, especially first year undergraduates, working with objects pushes them out of their comfort zone.

Most of the time students are worried because there is no model answer… When we get a rock, we smash a bit off and lick the rock because then you can see the grid context better. That looks weird if you see it the first time, so most students do not do that straight away (Lecturer in Geology, NU, May 9, 2018).

Although the benefits of working with objects are widely accepted, there are academics who choose to not use objects because of how little their students would be able to do with them. At UoM and NU, two academics confessed how, unfortunately, because of the students' educational limitations when they first arrive at university, such as translation and/or language barriers, and the nature of available collections, such as original script or annotation, the students would only be able to engage with the superficiality of the objects.

The strength of Manchester's collections is in the John Lions Library. It has an amazing 19th century collection of papyri, Egyptian papyri of ancient literature and

finance. To a degree, we are limited in what use we can make of that because it is there, but it is not translated and most of our students come to us without any Greek, so we have to train them in Greek first and the number of them who want to carry on to do Greek to the point where they can deal with these papyri is quite limited (Senior Lecturer in Classics, UoM, April 27, 2018).

Obviously how much you can do, that depends on the nature of the student you are teaching and their background in that particular area. For example, in my own area, if you gave students a 13th century piece of music in their first year of university, they would not know where to start and if it was in its original notation, they would not even be able to read it. There are all sorts of things you have to facilitate… (Dean of Cultural Affairs, NU, February 2, 2017).

Even engaging with the superficiality of collections can be too challenging for students, as described by one UCL professor who recognized that many students are not used to using their observation skills in connection with coursework.

I think it can be a challenge. Just last week some students felt like they did not know what they were doing and that it was tricky. They are not used to using the power of observation so much (History of Education Associate Professor, UCL, October 12, 2017).

Or as one OX lecturer suggested, students may struggle with the critical thinking necessary to connect the object to wider topics of discussion.

I can imagine a disadvantage is that students might focus too much on the particular and perhaps might struggle to relate that to the general… I am just not sure whether our students have enough skill in thinking about objects to take that kind of direct learning themselves that far (Lecturer in Geography, OX, March 22, 2018).

One UCL lecturer acknowledged the challenge objects pose students, highlighting the more advanced questions they generate. However, the UCL lecturer argued that they actually see this difficulty as a positive because they want their students to confront those challenging questions.

Disadvantages? I don't think there are any. It does present trickier questions for the students and lecturer quite often, but that is good (Lecturer in Psychology, UCL, April 6, 2017).

At the Manchester Museum, one staff member echoed these remarks by stressing the importance of introducing students to working with objects, especially those from courses such as archaeology or history, regardless of how challenging or uncomfortable it may be for students with no experience doing it.

> *...understanding objects, reading objects, and handling them, I think some students find that very challenging and disconcerting. It is something that they have not had an opportunity to do and yet to me, teaching a course on archaeology or history and not using artefacts would be nonsensical* (Deputy Head of Collections and Curator, Manchester Museum, January 19, 2018).

Academic and museum staff agree that the students' inexperience of working with objects prior to university directly effects the use of museum collections in their teaching. Without the necessary skills, such as handling, observation, critical thinking, and/or subject knowledge, many students are unable to move past the more basic levels of object-based lessons. Academics rarely have the time to cover the required course material and provide ample opportunities for students to develop these skills. That is not to say it is impossible. Some academics will use objects regardless because they like to challenge their students, but findings do confirm that there are academics who hold off on integrating museum collections into their curriculum until they are confident their students would benefit from working with them.

5.1.3.4 Assessment

One of the main challenges of using museum collections in HE curricula is the assessment of this type of work. Several academics recognized the complexity of assessing an individual's engagement with an object and the levels of learning which take place during such work. This raises questions pertaining to standardized criteria of handling and observing objects. This complexity leads into a second challenge, which is integrating objects into the traditional exam-based marking structure.

As academics from OX and UCL maintain below, it is difficult to convert an individual's multisensory experience with an object into a form of assessment. Every individual's experience with an object is unique and a lot of the learning that can take place when engaging with an object cannot be accurately exhibited through traditional research papers and/or exams.

> *This is all a process of touching things and feeling it, but it is very hard to translate that back into examinations and other sorts of assessment* (Reader in History of Business, OX, March 22, 2018).

> *I think in terms of OBL* skills*, people might think of those as transferable or soft skills, and I think it is hard to assess those* (Biology Professor, UCL, May 3, 2018).

One solution to the issue of assessment, which was proposed by multiple academic staff was to not assess the work students do with objects all together. Although having unmarked coursework may diminish the importance of these lessons in the minds of students who are more focused on getting high marks, two academics from UoM and UCL agreed that it was more important to have their students fully engaged with the material instead of worrying about being assessed.

> *I am quite averse to using those activities as tests because I think that can be very stressful. I do not use my assessments in that way. My assessments are about encouraging hard work, real research, and crafting something original* (Senior Lecturer in Archaeology, UoM, April 9, 2018).

> *I do very little assessment based on practical stuff to be honest. There are other courses that do involve practical assessment where students are given bones or seeds to identify and comment on, but I do not do that. I do not want them to feel anxious about it. I want them to feel engaged with it without feeling the anxiety that they are going to be examined on it* (Senior Lecturer in Archaeology, UCL, January 24, 2018).

However, as one student's survey comment reveals below, there are students who do not look at the development of skills or multisensory experience as an end-goal while at university and are not particularly motivated by the opportunity of working with museum collections. Instead, their only aim are the marks they receive at the end of the year. As long as they receive high marks on their exams, they do not care about the teaching methods employed by the academic.

> *Prepare me for the exam in the most convenient way possible. We're here for the 2:1 or first, otherwise we've wasted a huge amount of money* (Student Respondent 9, NU, May 29, 2018).

The student survey comment above adds another layer to this discussion on assessment. For some students, exam scores are the only thing they care about. Therefore, if the course leaders assign object-based coursework which is neither marked nor pertinent to an upcoming exam, the students will not be as motivated to engage with the material. This is a consequence that academics will need to consider when lesson planning if they choose to use objects in their teaching, but not assess it.

Findings highlight the challenge of assessment with regards to experiential learning. When it comes to assessment, many academics are handcuffed by university marking structures. Research papers, exams, and group presentations are easy to assess, but do not truly convey the levels of engagement and the extent of learning that can take place when students work with objects. Several academics acknowledged this challenge during this study's interview process and choose to not assess the experiences students have with objects to avoid this controversy and allow their students to engage with the material without the fear of being evaluated. Similar to the unresolved issue of assessing informal learning in museums [see section 2.2.5], there is still no proven method to assess the full extent of learning which takes place with objects in a formal education environment. Although no interviewee specifically stated that the issue of assessment keeps them from using museum collections in their teaching completely, their comments do suggest that it can influence the extent of their use.

5.1.4 Object-Based Learning

Object-based Learning (OBL) [see sections 2.1.5 and 2.2.1] is an educational practice which has gained significant popularity within the academic community over the past few years. However, during this study's interview process, the discrepancy in interpretations of this practice was exposed. Whereas some academic and museum staff differentiate between the acts of teaching with objects and OBL, others did not. For those who did differentiate the two teaching styles, there were two specific pedagogical concepts that they exclusively associated with OBL. These are the theory of multisensory learning and the concept of a level playing field between teacher and student. If a museum does not support this pedagogy in its entirety, and academics are not able to do what they want with the museum collections, then this can cause tension between the museum and academics who are interested in using museum collections for OBL.

5.1.4.1 Multisensory Learning

The key concept which several academic and museum staff associated with OBL is the theory of a multisensory learning process. Supporters of this educational theory contend that people learn more through the use of multiple senses. Multisensory learning is embedded in numerous disciplines, such as archaeology, anthropology, geology, and biology, and in order to teach these subjects, academic and museum staff need to agree that multisensory engagement with objects is crucial.

The tactile experience which comes with object handling was specifically acknowledged by students in their survey responses. For subjects in which understanding the physical features of an object is fundamental, handling objects and using the body's sense of touch is imperative. Academics want their students to experience object handling, but before putting in the time and effort, they need to know that the students recognize the benefits of tactile learning.

When asked how the use of museum collections affects the student experience, several students focused on the engaging nature of physical objects. The three selected student comments below state how having the object in front of them automatically engages more of their senses than simply looking at a photo of the object or passively listening to a lecture.

It is a significantly more enriching experience having an object in front of you rather than a picture on a PowerPoint (Student Respondent 12, NU, May 29, 2018).

It is easier to connect with both the objects and the cultures when we are able to view and handle the objects ourselves, instead of just passively looking at photos (Student Respondent 20, UoM, June 6, 2018).

You have something tangible in front of you, it is much more engaging than a book or a slideshow (Student Respondent 30, UCL, June 6, 2018).

One UCL professor, who has done extensive research on OBL, gives an insightful recount of their interactions with other academics concerning OBL and their conversations on the practice and importance of multisensory learning in OBL.

People will say to me, 'we are doing OBL and did not realize it', then I will talk to them and what they are actually doing is talking about collections. I think it is distinctly different because of the multi-sensory element… We found that people say they are or want to do OBL, but it turns out it is just collections-based teaching. They will have an object at the front of the lecture or photos, but when you explain to them that the next step of engagement is to get the students working with the objects, they can be shocked at that… Of course, with some objects, you cannot have students moving around, but that does not mean they cannot do OBL. We have some fragile artwork I would say are still part of OBL because it is not just about physical engagement, it is about close looking, looking in detail at the structure of the objects, the intrinsic properties, and engaging with that object on a deep level, which happens by close proximity, not in a lecture theatre (Biology Professor, UCL, May 3, 2018).

When a museum does not endorse multisensory learning with its collections, then academics and museum staff can clash over what students can and cannot do with the objects. Two academics from NU and OX, who rely on multisensory learning, shared their perspectives on the importance of museums supporting multisensory learning.

If you do not handle specimens, it is not useful in teaching. You cannot teach them from a distance, you really need to look at their properties and look closely with a

hand lens and sometimes scratch it to get some features (Lecturer in Geology, NU, May 9, 2018).

The problem is that you physically have to touch it, so today for me in some ways is kind of annoying because when we are talking about the fineness of a fabric and we are not allowed to touch it in a museum. They should be able to touch it. I understand with fabric that there is inherently a problem, but if we are describing how something is ring spinning or able to pass through a ring, I'd like to show them it pass through a ring and feel just how fine the fabric is (Reader in History of Business, OX, March 22, 2018).

One student expands on this perspective by discussing the difference between handling the objects and having objects present, but being unable to handle them. This student stresses the more intimate and engaging experience they had when they were able touch the objects, contrasting it with a separate, more passive, lesson involving objects they could not touch. The comment below supports the arguments of those above, on the impact the tactile experience has on students versus not being able to touch the object.

The first-year module that they were used in was very engaging, as we got to see and handle real pieces of material culture. It was much less engaging when done in a very 'sterile' environment (Student Respondent 10, NU, May 29, 2018).

At the Ashmolean Museum, one curator described how they have always endorsed and use multisensory practices when teaching because of their perceived pedagogical advantages.

I am a decorative arts historian, so I deal with objects that are 3D and that are meant to be picked up and are tactile and I think that connection with an object is amazing. For decorative arts, as soon as you put something behind glass, it dies. Often decorative art galleries and shows are amongst the least popular in a museum because people do not know how to interact with them. If you can get them out and let people handle them, it makes all the difference to people understanding an object… It is a new focus. You start with the object, people are looking at it, they pick it up and extrapolating from that. It is about people experiencing the objects in a different way. I always encourage them to pick things up (Curator, Ashmolean Museum, April 12, 2017).

However, this same Ashmolean curator also acknowledged how there are times when the pedagogy of individual museum staff can clash with the policies of the museum.

I generally try to use collections that are in store rather than ones that are on display, unless a student has specifically requested something. I generally try to choose things that are not of the highest calibre just in case something gets dropped. I have had things of a higher calibre and still let people handle them, but I know different museums have different policies. Some places are more strict and will not let people handle things (Curator, Ashmolean Museum, April 12, 2017).

One practical solution which was suggested to the debate over multisensory learning in museums is for academics to buy and curate a personal teaching collection of objects. As one UCL professor argues below, with a personal collection, the students have the freedom to fully engage with the objects and if an object is damaged, which is expected, then they can simply buy a new one. Clearly, this is a specialized case where the objects relevant to the course are available and cost efficient. There are academics from a number of disciplines who will not be able to do this because of laws surrounding the selling and purchasing of particular items, but it is still a solution in its own right.

Students can basically do what they want with these objects, which I do not think you can do in a museum. I think the museum adds that level of formality when you go around and cannot touch anything. Maybe if you were in a museum facilitated learning class then you can touch stuff, but it would be carefully controlled. I take the view that some of this stuff is going to get damaged because people are touching it. I know there is a division in the museum between stuff that can be touched, whether you curate it and keep it forever or if you use it and touch it. I am of the opinion that this is material culture that we should be able to hold and touch it and if it gets broken, it gets broken, I'll just buy something else (History of Education Associate Professor, UCL, October 12, 2017).

The more in-depth and multisensory engagement that comes with OBL is a distinct pedagogical advantage acknowledged by both academic and museum staff throughout this study's interview process. However, for certain academics, close proximity or physical engagement with the objects is essential to their teaching. If a museum does not support this pedagogy, this disagreement can cause tension between the parties involved. Consequently, academics who are unhappy with the museum's restrictions may look for opportunities elsewhere or decide that it is not worth the trouble and drop the lessons all together.

There are degrees of object interaction which dictate the levels of student engagement. When students engage with the material using multiple senses, they become active learners, allowing them to have a more meaningful learning experience. If academics are looking for opportunities to further engage their students, the use of museum collections is an accepted resource. Similar to the argument on primary source material, this study's findings also indicate that when proper methods of working with museum collections are used in HE teaching, the efforts of academics to integrate museum collections into their curricula are not limited or wasted by students' understanding and appreciation of tactile experiences.

5.1.4.2 Level Playing Field

The second pedagogical advantage associated with OBL is the concept of a level playing field between the student and the teacher. Academic and museum staff alike noticed how certain students respond more to OBL because of this level playing field. This balance in the authority of who holds the knowledge empowers the students and gives them the confidence to ask questions and share their own ideas.

Throughout this study's interview process, academic and museum staff discussed how part of the allure of OBL for students is the power it gives them. This concept is directly related to the teaching methods of the academic and/or museum staff leading the lesson. At UCL, two academics discussed how they approach OBL in their courses. It takes a specific type of pedagogy to create a level playing field, one that other academic and museum staff might struggle with and consequently take away from the student's learning experience.

> *It allows for a fluidity of discussion. It removes or changes the authority of the person who is guiding the process and it encourages the student to think more creatively, I hope… it slightly levels the playing field. When I am lecturing from the podium, I am in control and I choose the content. When you have a seminar, the student can ask, 'how is this done?' Or I ask a question, 'how is this made?' I might be brought short and have think again. It levels the playing field in that they can question things you are saying and that makes them more interested* (Senior Lecturer in Archaeology, UCL, January 24, 2018).

> *I like the word facilitator because it is less didactic than the person who knows everything about the object, because they inevitably will not. We are all teaching with objects and topics that we do not know everything about. I often say that to my students. I work with primates and if I happen to be teaching with a particular reptile, I do not know tons about different reptile groups. Students may ask questions about the anatomy of a particular reptilian skull and I will not know the answer. I think that is empowering about OBL, it creates a more even student centered playing field* (Biology Professor, UCL, May 3, 2018).

Museum staff can support this pedagogical aspect of OBL too. As one Ashmolean Museum curator described his approach to when they teach, being honest with the students and admitting when the museum does not have all the information grabs the students' attention and encourages them to think more critically.

> *I always ask a lot of questions and what I often do with the students is talk about problems with the collections and talk about ethics… One of the collections I use is a*

collection of goldsmiths' work, but there are a lot of ethical questions to this collection. We think it contains fakes, but how do we know what is fake? I am honest with them and I pose these questions to them and say we honestly do not know in many cases. They really respond to that kind of approach and it really gets them thinking about authenticity and testing (Curator, Ashmolean Museum, April 12, 2017).

Student comments support these claims. When asked about their preferred teaching methods, the concept of a level playing field was highlighted by several students. The three comments below indicate how the idea of a level playing field varies from student to student. The students seem to agree that the playing field is never truly equal, but also that they prefer the lesson leader to be a source of information to some degree.

Students are active participants and the academic staff is just a more knowledgeable student (Student Respondent 21, UoM, June 6, 2018).

Give us information and open it up for debate rather than just talking at us for an hour (Student Respondent 31, UoM, June 6, 2018).

I like when the teacher wants to hear my opinion of what an object may be and then reveal its actual use. It holds my attention for longer and is far more engaging (Student Respondent 38, OX, June 10, 2018).

OBL takes the focus off the teacher as the conveyer of knowledge, and redirects it on the object. This pedagogy creates a level playing field between the students and leader which emphasizes inquiry-based learning and communication amongst peers to study an object/s. Findings confirm that there are both academic and museum staff who support this pedagogy. Student comments also indicate a positive response and draw towards this concept. However, if a museum or lesson leader primarily use a didactic voice to communicate information and struggle in the facilitator role, this may prevent certain teaching methods from taking place, such as a level playing field.

5.2   Conclusion: Pedagogy and the Student Response

The impact of pedagogy on the use of museum collections in HE curricula is significant and far-reaching. Academic and Museum staff agreed that the learning advantages associated with the use of museum collections in teaching, and more specifically OBL, are the motivation behind their use. However, it was revealed that learning disadvantages also factor heavily into the decision to integrate museum collections into their teaching for the detrimental effect they can have on the student experience. Furthermore, the debate over the university museum's target audience was indicated as a potentially cumbersome determining

condition for the impact it can have not only on the interpretation and presentation of the museum collections, but also the supporting of university level teaching.

The collection of data on the students' response to the use of museum collections in university level teaching was an important aspect to this study. If the students do not enjoy or benefit or do not feel motivated to engage with the material when museum collections are introduced, then there is little reason for many academics to integrate them into their teaching. This of course, excludes academics whose disciplines are traditional linked to the use of objects. Nonetheless, survey comments indicate a general appreciation amongst the HE students from the four cases of working with objects, which is encouraging for academics who were unsure if their students could cope with the teaching techniques associated with such practices. However, survey comments also indicate disadvantages to working with objects, which reminds those interested in using museum collections in their teaching to plan thoroughly and have clearly defined goals for the lesson.

6   Findings: Logistics

6.1   Logistical Limitations

One of the most referenced topics during this study's interview process was the issue of logistical limitations when teaching with museum collections. The data presented in this chapter explores the impact these have in determining the use of museum collections in HE curricula. Both academic and museum staff took time during their interviews to discuss or allude to instances when logistics influenced their experience of teaching with, or without, museum collections. The term *logistical limitation* is broad in scope and can cover a wide range of conditions which affect the use of museum collections in teaching. However, there are five distinctive logistical limitations drawn from this study's data and presented in this chapter. These are: space, time and timetabling, awareness, human resource, and limitations of the collections themselves. These five are subsequently broken down further, providing case-specific examples of the challenges academic and museum staff have faced.

6.1.1   Space

The first of the five logistical limitations presented in this chapter is the limitation of space. Across all four cases, the space provided for teaching with museum collections and OBL was cited as a condition which determines the use of museum collections in HE curricula. This concept of space not only includes the adequate amount of space for larger university class sizes, but also being appropriately outfitted with the right equipment, and providing the right atmosphere for conducting such object-based lessons.

6.1.1.1   Room Size

Among academic staff interviewed for this study, the challenge of having to fit large class numbers into small sized rooms was a prevalent spatial logistic limitation to the use of museum collections in their teaching. This limitation was expressed by academic staff from NU, UCL, and OX.

Of the UoM academics interviewed for this study, only one commented on the size of the museum-based teaching room available to them, emphasizing that it did not inhibit their use of museum collections.

> *The space is designed both for group work, so we can have our admissions workshop there on our visit days or you can also take a module group. It is a space that can hold up to 30-40 students if you need it to and that is brilliant for us* (Senior Lecturer in Archaeology, UoM, April 9, 2018).

This UoM comment is in stark contrast to comments from the other three cases. NU academic staff were particularly outspoken on the topic of room size during the interview process. NU academic staff discussed the implications of the insufficient amount of space provided to them for teaching within the GNM: Hancock's teaching room and gallery space. Below are three selected comments from NU lecturers expressing their discontent with the fact that the teaching room and galleries are too small for their class sizes.

> *...with the current class sizes that I'm dealing with, 180 is the biggest one, it is just the sheer volume of people going in to do something. If your space isn't big enough to house all of them at one time, you make it an incredibly complex issue regarding timetabling to split them into groups* (Senior Lecturer in Biology, NU, December 9, 2016).

> *...it is also a very thin gallery so it is hard to get a group of students in there. I used to do a class in there for my first years, but then it just proved the groups were too big* (Lecturer in Classical Archaeology, NU, November 30, 2017).

> *There is never enough space and there are always too many students. It can be summed up in that. For History, and it is not the same for all degree programs, but for History, there are too many students and not enough space and not enough flexibility... They have that handling room, well its absolutely useless because it only seats 10. The smallest group I teach is 20* (Lecturer in Roman Archaeology, NU, April 6, 2018).

OX and UCL academics echoed these concerns regarding the insufficient amount of teaching space provided by museums with examples from their own respective university museums.

> *The logistical limitations are partly about space and the number of people you can have in a room and do that type of work with. There is a cohort of 240 students doing English at Oxford in any year and it would be good if these opportunities would be available to all of the students, but you can only get 10-12 in a room so it is only a little subset. You can't have a handling experience with 50 people because of the room size, so that is a logistical issue* (English Literature Professor, OX, March 21, 2018).

> *...it is quite a small room and I'd say that is another thing, we could split out groups in half and run it twice. It would be more comfortable to run it in a bigger room, but it is nice to be in the art museum* (Cardiovascular Sciences Associate Professor, UCL, April 6, 2017).

Two issues arise from these comments on space. The first issue is the capacity of rooms provided by the museum for teaching purposes. Out of the four cases used for this study, three stated how the amount of space provided by their museums to work in was insufficient. As a result, academics have either struggled with the discomfort of forcing a large number of students into a small space or have decided to forgo using the space and teaching style all together.

This issue of room size is not lost among museum staff. As the comment below indicates, museum staff at the GNM: Hancock acknowledge this limitation and understand the pressure it puts on academics who have larger class sizes and want to use the museum's teaching room.

> *There is a limit to the number of people that can get into the stores at one time. There is a practical thing about space and fitting in the size of undergraduate practical groups or even masters level* (Learning Officer, GNM: Hancock, May 2, 2018).

The second issue stemming from the comments on space is the issue of large university class sizes. With undergraduate class sizes reaching into the hundreds at times, it is naïve to expect any university museum to provide a space where that many students can work with museum collections comfortably. When class sizes rise beyond a certain point, it becomes not only a logistical limitation, but also a pedagogical limitation when discussing how museum objects can be used in a class of that size. As one professor from UCL discusses below, if there are too many students and not enough objects, then the students will not see the benefits of working with those objects because they will be unable to develop an intimate engagement with them.

> *…I think that the only disadvantage is around logistics, particularly with some classes around 200 students. It is really hard for big groups of students, unless you have masses of space and masses of stuff and resources, to be able to engage the same way a group of 20 can around a group of objects just because of those space limitations…* (Biology Professor, UCL, May 3, 2018).

This study's findings highlight that the limitation of room size is not a standalone problem, but a combination of both room size and university class size. These two concerns will always be intertwined. However, an argument can be made that this alone does not rationalize the insufficient capacity of the teaching rooms provided by the museums in the three cases of this study. Providing spaces that can only hold up to 20 students comfortably when it is known that the parent university's average class size is higher, is evidence of a miscommunication between the university and the museum.

6.1.1.2 Equipment

The second spatial limitation is the presence of proper equipment within the spaces provided. Having an adequate amount of space to work with museum collections is wasted without the proper equipment to compliment the type of work being done. There are standard pieces of furniture and tools needed to carry out object-based lessons, such as sturdy tables and chairs, foam paddings, paper weights, and gloves. However, without more subject specific equipment, certain subjects are unable to effectively use these spaces as well.

Two NU lecturers share below how the perceived poor facilities and lack of proper equipment within the GNM: Hancock inhibit their use of the museum's teaching room.

> *I think some of the equipment in the museum could be a bit better. Their tables are a bit wonky. They aren't the most sturdy tables so when you put pottery out, you kind of think, it would be better if this was a more weighty piece of furniture* (Lecturer in Ancient History and Archaeology, NU, January 17, 2018).

> *We have a teaching lab with microscopes so such collections would have to come here… I think one of the disadvantages, is that you need a more specific set up, a microscope, or what we call a dry lab. We do have wet labs for chemistry, but dry labs or dry teaching rooms, they still don't exist in this university. If something like that would exist in the museum, we would love to go over there and use that* (Lecturer in Geology, NU, May 9, 2018).

Together with properly equipped teaching rooms, the upkeep of displays and equipment throughout the galleries are just as crucial to the effectiveness of the teaching space. This is identified by one NU lecturer, whose account details how the lack of general maintenance of the museum galleries has affected their teaching and why they no longer teach in the GNM: Hancock.

> *…if you go there, things are broken, things don't work anymore, things are tired, the displays haven't changed. Even the displays that were known at the time to be makeshift are still in place, just stuff in glass with cards on them. That is not what modern museums are like* (Lecturer in Roman Archaeology, NU, April 6, 2018).

Without the proper equipment or upkeep of facilities, limited use of museum-based teaching rooms and galleries by academics is understandable. For academics, it becomes a question of whether the use of these spaces is worth the effort when their lack of proper equipment or care becomes detrimental to the course's learning outcomes. One OX academic shares their

reasoning for choosing to use the teaching rooms in the museum despite the rooms not being outfitted to their expectations.

> *As a teacher, [a classroom] is just easier, a classroom is there when I need it, it's cleared and ready, it's got PowerPoint, comfortable chairs. Why am I leaving it? One argument is this is just a lot of extra work for no purpose, except that I am dedicated to the pedagogical purpose here* (Reader in History of Business, OX, March 22, 2018).

The provision of appropriate equipment to work with museum collections is a necessary measure that must be taken by the university and museum to both ensure the safety of the students and the museum collections. The lack or absence of proper equipment can be a major deterrent for academics when considering the use of museum collections in their curricula because of the impact equipment has in the smooth running or learning outcomes of the lesson.

6.1.1.3 Atmosphere

The atmosphere of a teaching space or museum gallery is one spatial limitation that can often be overlooked when compared to the more glaring limitations of room size and equipment. However, the atmosphere of the space is still a factor in the quality of the space, as well as the quality of work being conducted in the space. Issues of noise, location, security, or even other issues not mentioned by interviewees, such as lighting, room temperature, and cleanliness, can distract those working with museum collections and inhibit the overall learning experience.

Two UoM academics spoke highly of the atmosphere of the space provided to them for working with museum collections at the Manchester Museum. Both accounts note how the space's separation from the traffic and noise of the museum's main galleries creates an enabling atmosphere for learning.

> *…having a safe and secure space in which to conduct those studies and we are lucky again that the museum in the last 2-3 years has created a space called The Study, where it's a secure space where you can either go independently to study materials or you can take a group there… Also at all times you have a museum curator there and sometimes if the collections are fragile, the conservator will also be present, so they can be sure you are handling the stuff securely and safely, but you've got the space and silence to do this* (Senior Lecturer in Archaeology, UoM, April 9, 2018).

> *They have a room set aside so it is quiet and they lay out all the padding and sometimes have a handling instruction by a conservator or curator* (Lecturer in Archaeology, UoM, March 28, 2018).

For academics wanting to teach in the museum's galleries, peace and quiet may be harder to come by. As two comments from NU lecturers confirm below, an undesirable atmosphere of a museum gallery is a definitive factor in whether collaborations between the university and the museum are possible.

> *I very rarely teach in the gallery, it is very difficult to teach in the gallery over there. I don't know if you've been in, but there are a lot of school visits and there are also these little buttons which start off telling you about Greek myths and people tend to come and push all three at once and then not sit and listen* (Lecturer in Classical Archaeology, NU, January 17, 2018).

> *Essentially, we've stopped using the GNM for teaching. I have tried to use it for teaching, to use the Early Medieval room and Roman material and the basic problems are noise and large school parties. You can't really talk* (Lecturer in Roman Archaeology, NU, April 6, 2018).

Although the atmosphere of the provided work spaces was not discussed at length in the majority of this study's interviews, it is understandably a logistical limitation and a significant condition which determines the use of museum collections in HE curricula.

6.1.2   *Time and Timetabling*

For academic and museum staff, the logistical limitations of time and timetabling can be so problematic, that even the most enthusiastic collaborations may never come to fruition. In addition to the already busy daily schedules of academic and museum staff, pressures such as the added amount of time it takes to plan a lesson involving museum collections, the time it takes to effectively conduct a lesson involving museum collections, and the balancing act of timetabling these lessons into the university timetable structure, all factor heavily in the decision to integrate museum collections in HE curricula.

6.1.2.1   *Planning Time*

Both academic and museum staff acknowledge that the amount of time it takes to plan and organize lessons involving museum collections is considerably more than it takes to plan the traditional lecture. With so many demands on academics' time already, the planning time of lessons involving museum collections becomes a major logistical limitation.

One UoM senior lecturer voiced how the pressures on their time has drastically affected the extent of their use of museum collections. As a result, they argue that rather than spending the time to plan object-based lessons, it is easier to just plan a standard lecture-based course instead.

> *The university is really slashing down on us now and we can't engage with our wonderful material culture in our museum unless we are better supported by the university. If your university is not supporting you, you can't engage with material culture because material culture takes time and thought. If I'm teaching Thucydides, I can summon all his text up on my screen in 20 seconds, but if I'm trying to work with our wonderful collections in our museum, then I need to talk to [the Curator] and make arrangements for my students to visit that and I can only do that if I have time and adequate support, and at the moment, the university is not making adequate arrangements for those things* (Senior Lecturer in Classics, UoM, April 27, 2018).

At UCL, one lecturer acknowledged how the limited amount of pressure on their time has enabled them to focus more energy on working with museum collections as opposed to other academics at UCL with more responsibilities.

> *I put a lot of time and effort into preparing for these lectures and being as I am kind of young and not jaded, I was happy and motivated to do that. I can see how people with more responsibilities wouldn't be as motivated or have the time to do it… There has to be a lot of preparation and coordination with you and whoever the museum collection supervisor is. I can't express the amount of time that went into that* (Lecturer in Psychology, UCL, April 6, 2017).

There are a number of steps one must take in planning a lesson or module involving the use of museum collections. These may include, but are not limited to: contacting museum staff and briefing them on your lesson plan and learning outcomes, finding the object/s you would like to use, museum staff agreeing to the use of the selected objects, and arranging and booking a time slot for students to go to the museum. Two academics from NU and OX detail below the steps they had to take throughout the planning process of their lessons involving museum collections and how the necessity of additional planning time are logistical limitations.

> *It can take a long time to get the materials you require, often because the museum is unable to devote time or energy to find the things you want. I've just managed to put together a teaching collection of Roman pottery. Doing that has taken a long time because you have to find the bits of pottery that the museum are willing to allow you to use for that kind of purpose, and then you have to get them from the museum, and*

sometimes it is just the physical bit of who is going to go to the museum to pick up the box. I know it sounds ridiculous, but that is actually a problem (Senior Lecturer in Roman Archaeology, NU, November 27, 2017).

I came in knowing how hard it would be to set this up. I allowed over a year to set up the first lecture series based in the museums, in fact it was closer to two, because I had worked in museums and could see all the challenges in setting this up... Finally arranging to see it all in different trenches and selecting objects, updating the database, getting them approved for handling through conservation, booking the teaching room which is incredibly logistically hard here, and so because we allowed so much time to develop it, it worked, but I only knew that because I came from a museum background. If I had just rocked up and gone, 'I want to teach with your stuff next week', it would have never happened (Classics Associate Professor, OX, March 22, 2018).

One NU academic discussed the logistical limitation of planning time with a wider lens, directing attention not just to the time it takes to plan object-based lessons, but to the conflict this additional planning time creates with the other incentive driven pressures on an academic's time, such as their own research.

I think in terms of logistics, probably the biggest constraint is the time constraint on the academics and the fact that for most academics there is more pressure at the moment, and it is going to be interesting as we are about to embark on the era of the Teaching Excellence Framework, which is equivalent to the Research Excellence Framework, and because of the fact that every 5 years or so every academic who is producing research is evaluated through this exercise, there is probably historically more pressure on academics to focus on their research and produce high quality research in addition to their teaching... They just don't have the time to think and develop a completely new module taught in a different way... At the moment a percentage of the university income is directly based on the quality evaluations of their research, so if you go down in the REF in terms of your quality since the last one, your income will drop. That is why there is such pressure on academics and on the reputation of the university itself. When academics take a sabbatical, 9/10 times that is to do research rather than to do teaching and to really change your approach to teaching, to use the collections for example, you probably need part of a sabbatical to really get your head around that and do the necessary preparations for the new module (Dean of Cultural Affairs, NU, February 2, 2017).

Interviewees were exceedingly candid in their explanations of how significant the logistical limitation of planning time is in their decision to use museum collections in HE curricula. In addition to the normal pressures on academic time and the number of logistical steps that must be taken to arrange a lesson involving museum collections, there are also outside

pressures on academics which require a bulk of their time, such as their own income-dependent research. With the TEF now in effect and the Research Excellence Framework (REF)[21] already in place, universities need to recognize the pressure their academics are under to produce both high quality teaching and research within a limited amount of time. Until this logistical limitation is resolved, pressured academics will continue to choose the more time efficient lecture-based teaching and only those who are particularly motivated and not pressed for time will likely pursue the use of museum collections in their curriculum.

6.1.2.2 Class Time

In addition to the time it takes to plan a lesson involving museum collections, the amount of time per class session and per term to engage with museum collections were also referenced by academic and museum staff as major constraints when trying to fit museum collections into their curriculum.

Class times are a fixed entity in university timetable structures. With your standard lecture lasting approximately 1 hour, there are constraints as to how much can be accomplished within that time frame when working with museum collections. As indicated below by one NU senior lecturer, the use of museum collections in teaching, especially when students are handling objects, requires more class time than if students were passively taking notes during a lecture.

> *I tend to weigh up a whole host of factors, obviously there is the planned learning objectives for whatever it is you're trying to achieve, but then there is the constraints on time. Can you get that many students to do that within the time available in the timetable slot* (Senior Lecturer in Biology, NU, December 9, 2016)?

Alongside the students' actual engagement with the object/s, one Ashmolean Museum curator reveals the supplementary tasks one must undertake at the beginning and end of the lesson as additional logistical limitations. These tasks take time and cut into an already tight class schedule.

> *It is not just showing up at the lecture or plugging a USB stick in, it is going to the store room, taking out the objects, asking the museum assistants to help you set up. Afterwards, you have to do the same thing* (Curator, Ashmolean Museum, April 12, 2017).

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[21] The Research Excellence Framework (REF) is the predecessor to the TEF. Under this policy, the quality of research undertaken by academic staff is assessed every few years for investment and funding purposes. For more information on the REF, visit: https://www.ref.ac.uk/

The second aspect of class time as a logistical limitation is the amount of classes per term. Universities do not always operate on the same academic calendar. Term times vary from university to university and whereas most universities run on semesters, some universities, such as OX, run on trimesters. Both academic and museum staff at OX and the Ashmolean Museum share the concern that because the terms at OX are so short, academics do not have the freedom to adopt the process which comes with using museum collections and risk not covering their desired content.

> *...the Oxford term is so pressured. We only have 8 week terms and there is no room. If you have the wonderful idea to teach with those objects next week, if it can't happen, you have to move on to the next thing* (Classics Associate Professor, OX, March 22, 2018).

> *...I think they see it as the terms here are so short and so focused that to have distractions away from that is a waste of time* (Curator, Ashmolean Museum, April 12, 2017).

At the crux of this issue of class time are the universities' workload allocations, which set specific amounts of time for each type of class. One NU lecturer discussed how their workload allocation recognizes the time it takes to prep for seminars in the timetable, but does not account for the time it takes prep for classes involving objects. This NU lecturer's comment indicates a disconnect, not between academic and museum staff, but between academics and the university administrators in charge of organizing workload allocation.

> *...for preparing a seminar you have a set amount of time, 1 hour I think. If I have to walk across to the museum and get objects and walk back, I have already used most of my preparation time. It is not recognized in the workload allocation at all. Teaching with collections is more time consuming* (Lecturer in Classical Archaeology, NU, November 30, 2017).

The amount of time per class and the number of classes per term are logistical limitations when determining the use of museum collections in HE curricula because the teaching methods generally associated with objects are understood to take more time than the standard lecture-based module. If an academic is not able to cover the necessary material in the time provided while using objects, it can cause further disruptions to the content covered in future classes. With a limited number of classes per term, rather than risk falling behind schedule, many academics decide to omit the use of museum collections from their courses and follow a more straightforward structure of lecture-based classes to cover everything the course sets out to cover.

6.1.2.3   Timetabling

Academic staff regularly cited the complexities of timetabling when discussing the logistical limitations of using museum collections in their teaching. Many detailed how the university timetabling structure does not have the necessary flexibility to cope with both the public and higher education use of the museum. More specifically, issues surrounding the booking of museum-based teaching rooms and the opening and closing times of museums were also indicated as potential barriers academics must overcome in order to use museum collections in their teaching.

The demand on museum-based teaching rooms, not just by the university, but also by the primary and secondary schools and the public means there are less timeslots available for academic staff to book in. If there are no rooms available in the museum to bring the objects, then in most cases the object-based lessons cannot take place. Two academics from NU and UCL explain how this logistical limitation causes tension between universities and museums.

> *The mechanics of timetabling, that is challenging because if it is booked out all day every day during school term, there is not a lot of flexibility for university use, so there are little tensions like that in the physical use of the building* (Dean of Cultural Affairs, NU, February 2, 2017).

> *The first thing of course is that courses are timetabled and it will depend on whether or not the museum is available on that particular slot. What is a pity, is that will affect whether or not you end up using those materials because if you don't have availability of a room where items can be brought to, then you can't use them or it is difficult to use them* (Lecturer in Scandinavian Studies, UCL, October 12, 2017).

At OX, one professor detailed how the limitation of timetabling museum-based teaching spaces is particularly difficult at the master's level because the students on the programme might not have the same schedules. As a result, not only do academics need to find a time when the museum-space is free, but also match that with a time when all the students on the programme are free.

> *Well the timetable is particularly acute in teaching a master's course because the students, if they are coming from different elements of the master's course, the amount of free time they have all got and the space where none of them have anything on, it will be like one afternoon a week, and to reconcile that with the demand on the teaching rooms in the Ashmolean is hard* (English Literature Professor, OX, March 21, 2018).

Out of all museum staff interviewed for this study, only one member of UCL museum staff discussed the challenge of timetabling when using museum collections in HE curricula. They identified an interesting topic of authoritative control over the museum space when explaining how the museum sits outside the normal university booking system. As a result, one would need to book the museum space separately. The tension derives from when academics call for a simplified process and museum staff contend that they need to have control over the museum space. This added layer of complexity when trying to match up booking systems is a process that both academic and museum staff believe could be improved.

> *When academic departments have their teaching administrators controlling timetables, then we've always got a middle person. If we were just communicating directly, it would be a lot easier than going through the third person… You see we're outside the room booking system because we have to be in control of the space. Most universities will say, I need a 100-seat lecture theatre for this slot, so the teaching administrators will negotiate that, but we fall outside that system, it is just another cog* (Museum Manager, Grant Museum, February 15, 2018).

Lastly, and directly linked to the logistical limitation of timetabling is the issue of museum opening time. When the opening and closing times of the museums are not coordinated with the university course schedule, this further restricts the time slots academics can book for certain classes, especially those which usually meet when the museums are not open. This topic was discussed by academic staff from UoM, NU, and OX with frustration for the pressure it puts on their class schedule.

> *…there are limitations in terms of timing of the class. If I have a seminar that runs 9-10am, the museum is not open, so I will have to reschedule the seminar. Same for seminars after 5pm… The other way would be for the museum to have longer hours and match the teaching hours we have or alternatively for the university to restrict our teaching hours to 10-5pm instead of 9-6pm, but neither of those are going to happen* (Lecturer in Archaeology, UoM, March 28, 2018).

> *If you've got seminars at 9am, which we often do, the GNM is not open until 10am. I've had times when they said they would open for me and students were just standing out in the rain. They just forgot* (Lecturer in Roman Archaeology, NU, April 6, 2018).

> *My executive course runs in a very tight time frame, it runs this week from Monday to Thursday, so it would have been logical for me to talk about global trade in the 1500s in either the first or second session of the course. That would've been Monday morning or Monday afternoon. The Ashmolean is closed on Mondays. The*

Ashmolean is closed the day I need it open for the course. I can't move my course because it is scheduled according to these executives who are flying in from all over the world. So, what do I have to do? I have to teach the course backwards. All the museums in Oxford are closed on Mondays, which means I can't take them to any museums on Monday... I need to work around their schedule. And the museums don't open until 10am. Well fine, but my class starts at 9am, so I gather them someplace else and I give a lead off, we then walk over to the museum, but of course that throws off the timing, so I was late getting to the museum, which in turn has a spillover effect for pulling the class together again later. Museums have their own schedule that doesn't necessarily fit with the timing of my course. I need to tell the people scheduling the course don't put me on a Monday nor in the morning. That is really a pain in the ass for the people… So, the museums themselves because of their own hours, they in effect block people from using it and that is just the nature of doing it (Reader in History of Business, OX, March 22, 2018).

Issues surrounding the availability of museum-based teaching rooms, museum opening times, and administrative timetabling procedures, were all cited as logistical limitations in the use of museum collections in HE curricula. The complexity of factoring in all these issues into the university timetable structure is enough to turn academics away from teaching with museum collections. Rather than take the time to plan and timetable object-based lessons, academics are, rightly or wrongly, more comfortable continuing with the more traditional lecture-based system, which is easier to reconcile with the university timetable structure.

6.1.3   *Awareness*

Among the four cases used for this study, findings indicate a lack of awareness among academic and museum staff as to the daily operations and intricacies of each other's roles. Academic staff across all four cases confessed that they do not know the full extent of their respective museum collections outside of the already public displays. While museum staff stated how they are equally unaware as to when changes are made to the university curriculum. And thirdly, both academic and museum staff revealed that there is no formal communication network between the two. As a result, the majority of relationships between academic and museum staff are on an individual basis. This lack of awareness on multiple levels between university and museum leaves both parties disoriented in the early stages of collaborations and prevents them from moving forward.

6.1.3.1   *Museum Stores*

All four cases used for this study have extensive collections at their disposal. However, only a fraction of these collections are displayed in public galleries while the rest remain in storage. There are many objects in storage that lend themselves to teaching, but this potential for inspiring collaborations with these hidden collections is wasted when academic staff do not know what the entire collections entail or how to access them.

For those who regularly work with collections, finding what they need may not be as challenging. However, for academics who are new to their universities or teach within a discipline that does not normally use museum collections for teaching, the lack of awareness of collections within the museum's stores is a key logistical limitation in whether or not museum collections are used in their teaching. Two academics from OX and UCL aired their concerns regarding the difficulty of finding what their museums have and what they do not have.

> *One of the issues about using the collections is that sometimes if it is not on display, it is hard to know what is there. Unless you have knowledge of it, even a database isn't necessarily good enough because you need to decide what you are going to try to find. So, you can have very rich collections that can be hard to use as effectively as you'd like because they are not out there physically in the museum. It is hard to know that they exist and if they would be available for teaching* (History of Art Professor, OX, March 20, 2018).

> *...apparently, they have a vast number of objects that are stashed away in draws. Most of it is not on display, so it is not possible for the clinicians walking in there to say, 'oh there is something I can use'. It does require quite a bit of searching and knowledge to find certain things* (Cardiovascular Sciences Associate Professor, UCL, April 6, 2017).

Accordingly, museum staff from both the Manchester Museum and Ashmolean Museum also acknowledged how the awareness of collections within their museum stores is a significant pitfall in their use. Both comments attribute this limitation to a lack of communication between their respective universities and museums.

> *I would say logistically it would be about the information and the awareness and the availability of these things… I think that probably the biggest limitation currently is the awareness of the potential to use the collections and our support for helping people to work out how to use them* (Learning Manager, Manchester Museum, January 19, 2018).

> *There needs to be more communication between the teachers and the curators because how would the teachers know what we have* (Curator, Ashmolean Museum, April 12, 2017)?

While interviewing NU academics, the topic of accountability rose out of discussions on collections awareness. NU academics, specifically those who are unfamiliar with the GNM:

Hancock's collections, believe it is the obligation of the museum staff to reach out to academics with information regarding the collections. As the two comments below indicate, these particular academics believe it is in the best interest of the museum for museum staff to present subject-specific collections to them instead of searching through the collections themselves.

> *I'm a good example of someone who arrives here as a new person and you don't know much about the university, so it would be nice for teaching staff if there was kind of an introduction like, 'this is what is available, that is a list of the collection that is maybe interesting for the course you are developing'* (Lecturer in Biology, NU, May 2, 2018).

> *They also have collections behind the scenes, not just the collection that are showing. I think these collections are good material for teaching, but someone has to introduce us… As I said, I am not sure how much background collection they have. We need to go and chase people, but if we don't have any specific question or request, it is sometimes a waste of time to go somewhere and say, 'let me see what you have', because they might have too much stuff to look at and understand. They need to say, 'these are the collections that we can offer you', and we can check to see if we can use it in our teaching. So, it is a lack of communication, not a miscommunication* (Lecturer in Geology, NU, May 9, 2018).

One topic discussed across all four cases, and evidently a driving force behind the academic staff's lack of awareness in terms of the contents within their museum stores, was the challenges and inefficiency of the museums' online databases. Academics across all four cases expressed frustration with the databases at their respective institutions, stating that they are out of date, lacking in detail, not user-friendly or have limited accessibility.

> *The online database is not the easiest to either find or navigate* (Senior Lecturer in Archaeology, UoM, April 9, 2018).

> *…I think the only problem I've had is getting access to the card data. What you want to do is sit in your office with a computer and look stuff up… I don't know how to find it and I've been told it is very difficult to use. I can't really understand why we can't make it available online?... So logistically I would like to see those old card catalogues and databases updated and made fully available* (Senior Lecturer in Archaeology, NU, February 21, 2018).

> *There is an issue with the museum database which was designed a long time ago and is not the easiest to use. It does require specific knowledge to navigate so that puts*

more pressure on the collections managers… (Classics Associate Professor, OX, March 22, 2018).

…it is very labor intensive and very often the problem is where to start? If you're not familiar with what we have in the collections, it is not very easy, although the catalogues are online, unless you know how to use them and know what you are looking for, it is very difficult (Teaching Fellow, UCL, April 6, 2017).

One OX academic argued that the database's poor operation is not its only drawback. Even the physical access of computers which can use the database is a point of frustration and limits the accessibility of the collections.

…in the case of Oxford, the catalog for objects is only accessible within the museum itself. So, if I want to add objects to call up, I can't physically sit in my three offices across this university. Not one of my offices connects to the university museum's collections. I have to go physically into the museum to sit at a little PC to access their collections database. That is ridiculous (Reader in History of Business, OX, March 22, 2018).

There are many objects which are preserved behind the scenes and academic staff do not have easy access to them. One obvious solution to academic staff's lack of awareness of what their university museum's stores hold is a greater investment in updating these complex, and sometimes outdated, online databases. However, to update these databases would be an extensive and expensive project that would further drain the museums' already thinly stretched resources. Until academics can efficiently find what they are looking for or search through the museum stores without being overwhelmed, the logistical limitation of museum store awareness will pose a major barrier to academics who are interested in integrating museum collections into their curriculum, but lack the time and knowledge to do so.

6.1.3.2   University Curriculum

Findings indicate that there is a lack of awareness of university curricula by museum staff. University curriculums change periodically and subjects can fall in and out of fashion. When museum staff are not informed of these changes in a timely manner, making connections between their collections and the curriculum becomes exceedingly more difficult.

When discussing the museum's awareness of UoM's curricula, one staff member of the Manchester Museum revealed how there is no formal contact between museum staff and academic staff. As a result, museum staff are left to navigate their own more informal lines of communication they have with academic staff to find where connections can be made. As the

Manchester Museum curator mentions below, this mode of communication often leads to missed opportunities.

> *We don't always know what people are doing, what their intentions are or what they propose to do. So sometimes we will find out about a course after the fact...* (Deputy Head of Collections and Curator, Manchester Museum, January 19, 2018).

Similar to the Manchester Museum's lack of awareness of UoM's curricula, one staff member of the GNM: Hancock detailed how the museum only knows the parts of NU curricula that traditionally have strong links to the material culture. This further pushes the notion that communication is largely based on individual relationships with no formal meetings between academic and museum staff to discuss and share ideas and information.

> *We are not aware of the curriculum in the university. We are only aware of where it touches us. We were aware when they reintroduced the Earth Sciences degree program. Our geology curator had talked to people about that and the museum manager had, but it tends to involve people coming to us. We are not really proactive with courses within the university* (Learning Officer, GNM: Hancock, May 2, 2018).

At UCL, the issue of university curriculum awareness is becoming less problematic. UCL's recent initiative Connected Curriculum[22] is one example of how universities and museums can tackle this problem of curriculum awareness. By influencing the teaching methods of university academics towards a more research-based teaching style, academics will seek out different opportunities to engage their students. As two UCL academic and museum staff state below, the museum collections offer an in-house and effective resource for this style of teaching.

> *...at the minute, students tend to learn in this style of module where we learn this and then get assessed at the end with an exam. They retain the information, but they do not understand how that information connects with other information they might learn in another module. The whole point behind Connected Curriculum is that we need to be more joined up in terms of the knowledge, but also the skills, and skills is an important part of the curriculum* (Biology Professor, UCL, May 3, 2018).

> *In the past the idea was that research starts after your Bachelor's, so the idea of the Connected Curriculum is that it forces academics to think about how and to what*

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[22] For further information on UCL's Connected Curriculum initiative, visit: https://www.ucl.ac.uk/teaching-learning/connected-curriculum-framework-research-based-education

degree do our modules involve this? And object-based learning, I would argue, is a very good way of doing that (Teaching Fellow, UCL, April 6, 2017).

Awareness of university curricula comes with greater communication between the university and the museum. How greater communication between the two institutions is achieved is at the discretion of those in power within the university and the museum. If museum staff are more informed about the university's curriculum, that allows museum staff to then be more proactive and reach out to individuals and departments where there are no individual relationships or obvious material culture connections. Likewise, an improved understanding of university curriculum can help cut down on lesson planning time, as museum staff will already have an idea of what academics are looking for.

6.1.3.3   Personnel

The last aspect of awareness as a logistical limitation, is the awareness of university and museum personnel. Not knowing who to contact to discuss potential university-university museum collaborations is one of the quickest ways to postpone or end the planning of a collaboration between academic and museum staff.

One Ashmolean Museum curator unabashedly affirmed their own lack of awareness of university personnel and alludes to such a gap in the communication network between the two staff groups, that museum staff do not even know when academics leave post.

We don't really know about these things. We hardly know if one of them goes on sabbatical (Curator, Ashmolean Museum, April 12, 2017).

As one Manchester Museum curator expands on the implications of this notion, if universities are not more transparent with their personnel, the museum staff cannot effectively reach out to academic staff because they do not know where to begin.

I think you'll probably find the same applies elsewhere, it is not the museum that goes out proactively trying to get students and course leaders because how would you choose who to approach and why (Head of Collections and Curator, Manchester Museum, February 8, 2017)?

Universities are massive and complex institutions. From the outside looking in, they are impenetrable. As one GNM: Hancock staff member explains, the complicated structure of NU's academic schools and departments has created a networking barrier for museum staff who are unfamiliar with university structures. However, this same staff member goes on to

recognize the anonymity of the GNM: Hancock's staff directory as well, and how it plays an equal part in the lack of awareness of each other's personnel.

> *We find some parts of the university incredibly opaque. If you have a contact within a department, then you have a way into that school, but actually a lot of what we do has traditionally been based on individual relationships… I find the system at Newcastle incredibly opaque because the structure of the school means that trying to find a particular research strand within them, because it's got these massive schools which bring together all kinds of academic disciplines, if you're trying to find a biologist, you can find a biologist in almost every different faculty in loads of different schools, so tracking them down is really hard, even if you know what you're doing with universities. If you have not encountered university structures before, it is really difficult… Also, looking at museums from the opposite perspective, because the museum doesn't structure the way that you contact people in the way the university does, you can't go on our website and easily find a person to talk to about something. We work more on a local government style structure, where you go in through the portal and one person will get in touch with the administrator and they will hand you on to somebody. We don't have personal pages that a university website would have. Looking at it from the opposite perspective, it is not that easy to track us down either* (Learning Officer, GNM: Hancock, May 2, 2018).

Nevertheless, there are those who, because of their current or previous positions, do not struggle to find contacts. One GNM: Hancock staff member clarified that they do not struggle finding contacts because of their prior position at NU before moving over to the museum. Maintaining those connections they had after the move was manageable because they were already familiar with each other, the collections, and course learning outcomes. Although this is not a customary situation, the staff member's comments do show a different or even unique dimension to the logistical limitation of personnel awareness.

> *I think one of the key things here is that I used to work for the university and my job was transferred across to TWAM. I have a lot of existing relationships with people that came across with me, so I already had that way of working with the university and those personal relationships have continued and I've built up relationships with new members of staff* (Keeper, GNM: Hancock, October 4, 2017).

One way to ensure closer links between academic and museum staff is to have more formal connections built into the university structure. At OX, many museum staff are integrated into the university's departments and colleges. One Ashmolean Museum staff member believes these formal links bring academic and museum staff in contact with each other more regularly because of their involvement in department and college committee meetings. This regular contact has a dual effect in improving not just the awareness of each other's personnel, but the museum staff's awareness of the university curriculum as well.

All our curators are engaged with the university, but there are different departments.
Our Keeper of Western Arts is in charge of the western arts department and she has
very strong links with the History of Art. She will go to their departmental meetings.
Very much in the same way our Keeper of Antiquities is much more actively involved
with the archaeology department and classics department. People link into
departments where there is the strongest link and often are involved in committees and
things that are particular to those departments or divisions. Also, all the academic
curators are linked to a college as well, so they are networked into that academic
decision making about the development of courses and all that stuff (Head of
Education, Ashmolean Museum, March 7, 2017).

As a logistical limitation, the lack of awareness of each other's personnel indicates a major
rift in the relationship between the university and the museum. Both universities and
museums need to be more transparent with each other. Often it is the case where academic or
museum staff do not know where to begin their search for potential candidates for
collaborations, and rather than taking the time to hunt through the extensive networks and
directories, decide to turn their attention towards more pressing matters.

6.1.4   Human Resources

A lack of staff within a museum or university can influence a number of daily
operations. Both academic and museum staff interviewed for this study cited a lack of human
resources as a major obstacle when attempting to use museum collections in HE curricula.
When an institution is understaffed, individuals will often have to compensate for this by
taking on more responsibilities. With pressures on time already weighing on academic and
museum staff, collaborations with universities cannot be given the attention or support they
need when an institution is understaffed.

6.1.4.1   Staff Numbers

According to this study's findings, the number of staff employed by a university or
museum has a direct effect on the use of museum collections in HE curricula. An institution
that is understaffed cannot devote the time and attention that object-based lessons demand
compared to those who are sufficiently staffed. Challenges resulting from both low academic
staff numbers as well as low museum staff numbers were indicated during this study's
interview process.

The first challenge deals with the lack museum staff and the negative affect these low
staff numbers have on the overall workload the museum staff can handle. There are many
academics who want their students to engage with museum professionals when working with

museum collections. However, museum staff are unable to support academics in their teaching when they are too busy overseeing multiple areas of the museum.

This is a challenge one NU senior lecturer experiences first-hand when their students are required to research objects at the GNM: Hancock. As they explain below, their students struggle to find time to meet with the particular museum professional because of this individual's busy schedule.

> *The negative experiences are when students have to do independent research on objects from those collections. It can be quite difficult for them to get the curatorial support they need, I think that is largely a consequence of the lack of resources given to the curatorial side in the museum. The Keeper of Archaeology is one individual and there are many demands on his time* (Senior Lecturer in Roman Archaeology, NU, November 27, 2017).

When asked about the lack of human resources at the GNM: Hancock, museum staff agreed that the museum's staff capacity causes limitations with how much support they can give to university teaching.

> *One of the things about this place is that there aren't very many of us considering how many people we engage with and what we do… We have vast quantities of stuff that we just don't have the staff to use. We've got four people on the natural sciences teams, two people on the archaeology team, and pots and pots of stuff* (Learning Officer, GNM: Hancock, May 2, 2018).

In addition to the lack of time museum staff have when a museum is understaffed, there is also the risk that an understaffed museum will lack subject specific expertise. One OX professor identified this lack of subject specific expertise as a potential setback when collaborating with the Ashmolean Museum's teaching curators. As a result of this lack of human resources, curators have had to start covering subject areas outside their original discipline.

> *There are obviously limitations on subject knowledge, so we don't have a teaching curator in pure archaeology anymore. We had one, but that person left and [name omitted] has extended and is doing art and archaeology…* (Classics Associate Professor, OX, March 22, 2018).

At UCL, where the academic agenda is currently pushing research-based learning more than the other three universities, academic staff indicated they understand the pressure that comes

with added demand on understaffed museums. Two UCL academics discussed the risk of pushing agendas like the use of museum collections in HE teaching when museums do not have sufficient staff numbers to satisfy the demand.

> *Each time I contact them, they say how happy they are that somebody is finally using it. If there were more people using it on and off, I can imagine that response would drop. It is kind of a double-edged sword. Because they are not being used enough at the moment, everyone is incredibly accommodating, but if every lecturer suddenly decided they wanted to use resources from the museums, they would be completely overrun* (Lecturer in Psychology, UCL, April 6, 2017).

> *The session I've done in the Art Museum last year was great, but I don't think they can do it this year because they are short staffed… I realize if every faculty member wants to start using objects, it is not going to work because there is not the number of staff in the museums to help that. That is the thing with pushing OBL here at UCL, it gets to a point where it is too much* (History of Education Associate Professor, UCL, October 12, 2017).

The second challenge stemming from low staff numbers deals with the lack of academic staff and how this affects the extent to which museum collections are used in HE curricula. When universities have low academic staff numbers, academic staff are forced to take on more classes. However, this increase in workload forces academics to spend more time planning classes and leaves them less time to engage with museum collections.

At UoM, one senior lecturer reveals how there is the desire to integrate museum collections into HE teaching among academic staff because the value of learning with objects is recognized, but the lack of academic staff prevents this from happening.

> *If you had staff who were not overburdened with teaching and marking, then they have more time to engage with the wonderful collections we have… What we need is more support. We need more staff. We need contracts where our colleagues are not constantly exploited. We are really in a desperate situation* (Senior Lecturer in Classics, UoM, April 27, 2018).

An institution's human resources are directly related to the institution's financial situation. Although academic and museum staff are affected the most by staff numbers, this is out of their control. Therefore, it needs to be recognized and impressed upon those in positions of power within the university and museums the impact that the lack of human resources is having in university-university museum collaborations. Museum staff are overwhelmed having to split their time between their own jobs and the workloads of others, while

academics are stymied by the pressures of teaching too many classes. These pressures would only increase with an increase in demand for the use of museum collections in HE curricula.

6.1.5 Limitations of the Collections Themselves

The last logistical limitation presented in this chapter which determines the use of museum collections in HE curricula is the limitations of the collections themselves. The limitations of collections themselves is broken down into two topics. First, is the nature of the collections and second, is the condition of the collections. The nature of collections focuses on the type of collections within the museum and whether or not these collections are relevant to existing HE courses. If a museum's collections are not relatable to university courses, it becomes more difficult to rationalize their use by academics. In terms of the condition of the collections, those consisting of objects which are too fragile or valuable to handle, too big to move, or too susceptible to the change in environment, will dictate how much can and cannot be done with them.

6.1.5.1 Nature of the Collections

The nature of the collections can be one of the most restricting logistical limitations when attempting to integrate museum collections into HE curricula. Oftentimes, an academic will require specific objects to convey certain points. If the museum does not have objects relevant to the teaching points an academic is trying to make, then there is little reason for the academic to collaborate with the museum.

There is only so much academics can do with museum collections when they are teaching a subject area which has little to no representation within the museum. At UoM and NU, for at least two academics, this means tailoring the content of their courses to match what the museum can offer. This willingness to adapt their courses to the museum shows the desire and the importance they put on using objects in their teaching. However, depending on what the museum has, certain topics or themes of the course will be better represented than others.

> *There is an extent to which the lack of relevant collections in Manchester affects my teaching. I will orientate my introduction courses to what is there in terms of red figure vases, inscriptions, statue bases, so certainly there will be a degree of influence by what is there because I want to make use of that…* (Senior Lecturer in Classics, UoM, April 27, 2018).

> *The only reason that I'm not using museum collections is that the GNM, which would be the obvious choice, doesn't have a huge amount of glass to look at… I suppose in terms of disadvantages, you are constrained by what material is available. You're*

going to have to structure your teaching around the material rather than selecting perhaps the material that would be the best exemplar of what you are trying to show (Lecturer in Archaeological Material Sciences, NU, January 31, 2018).

At both UoM and NU, two lecturers who teach specific areas of Greek history have found it difficult to find representative objects within their respective museums. While both academics understand that it is rare, and sometimes illegal, to acquire these types of objects today, this is still a barrier every time they would like to provide their students with a visual or tactile example.

*From my perspective, it would be lovely to have more objects in my relevant collection, but again that is not something that just happens, especially in this modern world. You can't just extend a collection from the Minoan and Greek worlds. Where are you going to get the bloody stuff from (*Lecturer in Archaeology, UoM, March 28, 2018)?

The fact that I am someone with a specialty that is not served particularly by the GNM, there is no way that they could serve it. They would have to acquire a bunch of prehistoric Greek material, which would be illegal (Lecturer in Ancient History and Archaeology, NU, January 17, 2018).

As one UCL professor states, the university museums at UCL do not have any collections relevant to the period of history they teach. Therefore, they have decided to forgo using the university collections and instead, find appropriate objects elsewhere and create their own personal collection.

The reason I didn't go the UCL museums, although I had conversations with them, is the courses I teach are about modern 20th century history, generally about daily life, stuff that isn't necessarily in a museum collection (History of Education Associate Professor, UCL, October 12, 2017).

Outside the schools of arts and cultures, there are other logistical limitations pertaining to the nature of the collections. For Instance, in the schools of medicine or life sciences, the majority of their work deals with living specimens. As one NU lecturer specifies below, they can only use the GNM: Hancock's collections when dealing with anatomy and fossils because the museum does not have molecular or living specimen collections, which is required for many of their courses.

> *When it comes to evolution and fossils, it is a good resource to have. I don't really see how I could use it in the other modules I teach because that is more like molecular and biotechnology. This is where the museum is limited… It has to do with content. We use DNA analysis. We need living cells, which you don't have in the museum* (Lecturer in Biology, NU, May 2, 2018).

Additionally, this same NU lecturer discussed a particularly important element surrounding the nature of the collections and its limitations. In the comment below, they state that even if the museum has relevant collections to one's course, sometimes it is the quantity of objects within that collection which restricts its use. In other words, if there are not enough objects for everyone to handle at the same time, the academic could run into challenges such as time constraints and lower levels of student engagement.

> *…the practicals we run are with up to 200 students. You can imagine we would need multiple versions of the same thing, so it is better to just buy it yourself* (Lecturer in Biology, NU, May 2, 2018).

There is no simple solution to the logistical limitation of insufficient representation of subject areas within a museum and only so much academics can do with limited relevant material. There are financial and ethical parameters now in place to regulate the acquisition of certain collections. This is an immediate wall that many academics hit when trying to integrate museum collections into their teaching, and while in some cases a pedagogical solution is found, sometimes collaborations are dropped with the realization that there is no solid connection to be made between the course goals and the material available.

6.1.5.2   Conditions of the Collections

Within a museum, it is the job of those who oversee the care and preservation of the collections to prioritize the objects' safety and wellbeing above all else. As important as this duty to protect fragile and valuable material is, it consequently limits the collections available to academics for lessons where object handling is beneficial to the course's learning outcomes.

As expected, museum staff across all four cases were steadfast in prioritizing the object's safety over its use if deemed too risky to handle. As two museum staff from the GNM: Hancock and the Ashmolean Museum explained, this conflict of risk assessment when using museum collections in HE curricula is a natural part of the job when working in university museums and something they cannot ignore on principle.

There are going to be artefacts or specimen that are too precious or delicate to let classes handle or expose to different elements. Museum staff might be hesitant with certain objects (Keeper, GNM: Hancock, October 4, 2017).

There is always a risk if you're handling objects… As curators, the first role is make sure the objects are safe (Curator, Ashmolean Museum, April 12, 2017).

To err on the side of caution with certain objects does not mean these museums are averse to using valuable or fragile materials in teaching. If a request to use an object in a certain way comes in which cannot be done, museum staff clarified how they do not turn the academic staff away. Instead, they try to find a middle ground as to how the particular object or alternative objects can be used. As two staff members from the Petrie Museum and Manchester Museum articulated, museums understand the important role objects can play in learning and will do as much as possible to see their collections used.

I would say if someone gets in touch to say they want to use an object for a handling session that is especially fragile, we would assess whether that object can't leave its case or drawer, in which case we would suggest alternatives perhaps or we might say that if an object is fragile, but it is OK to sit on the table and not be physically handled, then we will go there. We try to find a point in the middle where we agree (Curator, Petrie Museum, January 1, 2018).

We have fragile human remains from a local wetland bog and these are normally kept in an organic store. When we take them out, literally just unwrapping this and exposing it to a different atmosphere and environment, that potentially could do damage to the object. We might need to have a conversation about how the access is organized for conservation reasons or if they've got very high financial values (Deputy Head of Collections and Curator, Manchester Museum, January 19, 2018).

Academics interviewed for this study voiced their concern over how the condition of the collections influences whether or not they use museum collections in their teaching. Issues surrounding the frailty of collection material were discussed at length as a barrier created by not being able to use specific objects for handling lessons. Although academic staff have been disappointed to learn they would be unable to do the exact lessons they had planned to do because of object security, they understand that these measures taken by museum staff are paramount to their occupation and that the condition of collections is sometimes an irrefutable limitation they just need to work around. As one UCL senior lecturer reasons below, these concerns around the collections' condition, although restricting, are also valuable to the student's overall education.

...we need to have some controls depending on what it is, of people wearing gloves and foam under objects, stuff like that. There are care concerns, but those are good things for the students to learn. They are constraints, but they are also in their own right part of the education and they are raising awareness of those issues (Senior Lecturer in Archaeology, UCL, January 24, 2018).

The issues surrounding the collections' condition raises an intriguing and important debate surrounding the conservation efforts of museum staff versus the academic's pursuit of more engaging educational practices. For courses where the tactile experience with objects plays a meaningful role, the limited access to material deemed too fragile or valuable to handle is restricting when trying to organize such lessons. However, it can be argued that at the core of every museum are the principles of conservation and security of its collections.

6.2   Conclusion: Logistical Limitations

The list of logistical limitations which can inhibit the use of museum collections in HE curricula is long and diverse. The impact of these logistical limitations has not been thoroughly discussed in contemporary literature on university-museum collaborations, which makes the findings of this study even more significant. Many of these logistical limitations are the result of poor communication between the university and museum, but are not insurmountable and if given proper attention, can be overcome.

7 Findings: Management

7.1 Museum Management Structure

Each of the four cases used for this study have distinct museum management structures which influence the use of museum collections in their respective HE curricula. Although museum staff were generally able to provide deeper insight into their particular management structures during the interview process, there were instances where academic staff felt confident sharing their perspectives on the subject. The data presented in this chapter concerning museum management has been categorized under the following four headings: staffing, finance, governance, and agendas. These four topics are subsequently broken down further, providing case-specific examples of the challenges academic and museum staff have faced when attempting to integrate museum collections into their teaching while operating under specific museum management structures.

7.1.1 Staffing

The first facet of museum management presented in this chapter is the staffing of the university and the museum. Although similar to the logistical limitation of human resources, this section on staffing pertains to issues concerning the type of staff employed by the institution, as well as the turnover rate of positions [see section 2.3.1], which were frequently referenced by academic and museum staff during this study's interview process as conditions which can determine the use of museum collections in HE curricula.

7.1.1.1 Type of Staff

Across all four cases, both academic and museum staff discussed how the type of staff employed by the university and museum affects the use of museum collections in HE curricula. When discussing this topic, academic and museum staff focused not only on the type of positions within the institutions and their responsibilities, but also the personality and pedagogical views of the individuals filling those positions.

Two academics from UoM and NU summarize below how the type of staff employed by a university or museum can determine the use of museum collections in HE curricula. While both academics claim that museum staff today lack the subject-specific expertise to aid HE teaching, the NU academic extends their argument to include how universities also lack academics who understand how to use museum collections in teaching.

> *I think there has been, certainly during my time at Manchester and I think more nationally, we have seen a move in museums away from actual professional curatorial expertise, and so the risk is that you end up with people in those roles who, may be*

very willing and eager to help, but they just don't have the in-depth knowledge to make a difference. That has caused weaknesses in communication (Senior Lecturer in Archaeology, UoM, April 9, 2018).

The universities don't have sufficient people in the university that understand the museum collections and what they can do with them, and museum folk tend not to understand how their collections could be used in a more effective way for teaching (Reader in Heritage Studies, NU, November 9, 2016).

This concern has lead institutions to explore different approaches of bridging the gap between universities and museums. One of these approaches frequently discussed during interviews with both academic and museum staff was the employment of staff positions which effectively work between the university and museum, whose roles could include anything from curatorial and teaching responsibilities, to facilitating communication between staff, or the organization of collections for their use in HE teaching.

One GNM: Hancock staff member recounted meetings between NU staff and the museum, where discussions of having people whose roles involved both university teaching and curatorial duties took place. As the staff member contemplates in the comment below, this type of staff position could have played a key role in facilitating further collaborations between the university and the museum because the individual's familiarity with both the university's and museum's daily operations.

I remember meetings where people were advocating for what they really needed, and Manchester Museum does this, is having posts that bridged the two institutions, so having someone who did some university teaching, but also had a curatorial role. I wonder whether that is a missed opportunity where if we did have people who bridged the two, they would maybe understand how the two institutions operated and might be able to smooth over some of the bumps (Keeper, GNM: Hancock, October 4, 2017).

Two lecturers from NU and UCL expressed their desire for their institutions to employ someone whose specific role is to organize requested objects. As explained by the lecturers, having this staff position would in turn cut down on the logistical responsibilities of academics and allow museum staff to focus their attention on more pressing museum matters.

…I think it would be brilliant if there was somebody that was a bridge between the university and the museum whose specific role was dealing with facilitating objects because the Keeper of Archaeology has to do it. It is only a small part of the job, but it is quite time consuming, so sometimes I feel guilty adding to the workload (Lecturer in Classical Archaeology, NU, November 30, 2017).

I suppose if it was an ideal world, then there would be some staff that would be part of the organization or did the organization. For example, I said there are 15 brains that I'd really like to see, then the person on the other end would say, 'we can work it out this way.' So, to reduce the logistics on the side of the lecturer (Lecturer in Psychology, UCL, April 6, 2017).

At the Ashmolean Museum, one curator advocated for a position whose sole responsibility would be forming networks between academic and museum staff based on subject matters and what relevant museum collections are available.

I think we need coordinators who sort of keep track of everyone in the museum… someone who already has the contacts with the departments at the university and then can sort of be a matchmaker… Most of us are linked to colleges, so there you can meet academics, but again that is individual (Curator, Ashmolean Museum, April 12, 2017).

UCL Culture's Teaching Fellow in Public and Cultural Engagement post is a trailblazing model for institutions looking to bridge the gap between the university and museum. This position was created because UCL Culture identified and justified the need for somebody who could navigate university departments and initiate contact between academic and museum staff. The success of this position results from the Teaching Fellow's knowledge of how to work within a museum context, as well as how to facilitate object-based lessons.

I think it is partly about the kinds of people that you have within the infrastructure. The whole idea of [the Teaching Fellow's] position was because I wanted to run an OBL module, but I couldn't do it on my own. I'd need somebody who can help facilitate access to collections intellectually and pedagogically, so you need a kind of collections teaching person. You need people like that and also people whose job it is to get objects out. That is the thing that is really time consuming… I think there are ways of doing it, but I think investment in those sorts of people is absolutely crucial (Biology Professor, UCL, May 3, 2018).

I'm the person who is responsible for making that link, therefore I try and make it that I am the first point of contact for academics looking to interact with the museum. Sometimes people know what they want already and they know where to go. That is fine, they don't need me and they can cut out the middle man and just go, but very often they come to me first… I think it would be difficult if somebody like me wasn't there. I don't know what other people have said about this, but having a link person,

> *somebody who is directly in the museum, but whose job it is to facilitate those interactions is very useful* (Teaching Fellow, UCL, April 6, 2017).

NU has attempted to bridge the gap between the university and the GNM: Hancock by introducing several different types of staff positions. In addition to the NU's already established Dean of Creative and Cultural Arts position, the GNM: Hancock has recently created a similar post to UCL Culture's Teaching Fellow in Public and Cultural Engagement, whose main duty is reaching out to NU faculties in the hopes of fostering more sustainable relationships with the museum.

> *We have a role at the GNM that I just created, it has only been around for 4 months, which is a Project Manager who looks at learning, engagement, and research. We put that post into the structure because there was a desire from the university and from us to have a liaison post. The role is to create links across the university in a much more strategic and supported way so that these relationships are picked up and not dropped* (Museum Manager, GNM: Hancock, July 27, 2018).

Having a type of liaison position between the university and the museum does have its merits, but not everyone believes it is necessary for facilitating wider use of museum collections in HE curricula. As one GNM: Hancock staff member argues below, adding another layer of secondary contact to an already complex infrastructure could further inhibit the communication between the two institutions.

> *My inclination is that if you put someone else in who was coordinating contact between the university and the museum, that is another level of bureaucracy, another way in which things can go wrong and I actually value that direct contact* (Keeper, GNM: Hancock, October 4, 2017).

There are further positional approaches to bridging universities and museums other than the aforementioned liaison positions advocated by UCL and NU. At OX and the Ashmolean Museum, they have implemented a unique programme known as the University Engagement Programme (UEP)[23]. In summation, the UEP appoints annual faculty members to the museum to both conduct collections-based research and lead object-based lessons on a number of university courses. Two OX academics shared their admiration for the type of staff employed by the UEP, recognizing how helpful these individuals have been because of their inside knowledge of both the collections and the museum's daily operations.

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[23] Established in 2012 with funding from the Mellon Foundation, this programme is responsible for introducing museum collections into university teaching, and targeting courses which do not traditionally engage with the museum. For further information on the Ashmolean Museum's University Engagement Programme, visit: https://www.ashmolean.org/university-engagement-programme-opportunities

I feel just unbelievably grateful to the UEP scheme and the resource that has given, that there is basically another colleague that I can work with, who I don't pay, and knows what they are doing. But, that obviously is not sustainable beyond the lifetime of that project (English Literature Professor, OX, March 21, 2018).

...the teaching curators in the Ashmolean have been amazing because they have been a resource for those people to say, 'I would like to do this, but I don't know how to teach with objects, can you do that for me?' I think on a whole, that has worked well (Classics Associate Professor, OX, March 22, 2018).

Moving away from the discussion on the specific types of staff positions and their effects on managing collaborations between universities and museums, there were several academic and museum staff from three separate cases who instead revealed how the type of person hired by a university museum can determine the use of museum collections in HE curricula. Interviewees agreed that university museum staff should have distinct personal specifications. These include interpersonal and pedagogical traits that enable them to communicate and think not just on a museum level, but on a university teaching level as well.

At Manchester Museum, two staff members spoke admirably of their director at the time, specifically calling attention to his attitude towards learning and his ability to communicate with those both within the museum and within the wider university community. The latter comment attributes this ability to the director's academic background and history of working in higher education before joining the Manchester Museum. As highlighted below, during his time as director, his efforts and support culminated into an extensive network between the museum and university.

Our director is moving post, so he will be leaving the museum in the spring to take up another post and my feeling is, and I'm saying this because I know he is an archaeologist, but if he wasn't an archaeologist, I know full well that he would be very supportive of students, lecturers, and tutors coming in and using the collections (Deputy Head of Collections and Curator, Manchester Museum, January 19, 2018).

…I think it will always be about the personality and reputation of the director of the museum and how they connect with various academics or higher ups in the university. I imagine the person who comes in after [name omitted] will be handed a massive network and will exist within a ready-made set of relationships that probably weren't there when [name omitted] started… he worked at UCL and he was involved in archaeology down there, so he was an academic, but also closely related to the museum… he's got that balance of academia, but practical skills of being able to

manage an organization like this (Learning Manager, Manchester Museum, January 19, 2018).

However, at both OX and UCL, two professors discussed their desired personal specifications for those hired for university museum positions. Both professors agree that university museum staff need to be able to communicate effectively with HE students if any consideration of collaboration is to be given.

> *I think that in hiring decisions, I think being able to communicate not only in a museum education way, but in a university education way, which is slightly different, is important. I don't know if it is always important to have some sort of dedicated university education specialist, I think it should be part of the curator's brief, if they are hired by a university museum, to have some understanding of both themselves as teachers, but also to teach how to work with objects, particularly outside of art history, and what is available* (History of Art Professor, OX, March 20, 2018).

> *It has to be said, that sometimes museum people are not actually good at talking to students. Some of them are, but some of them aren't. It is a bit of a risk if you've got a course and it is going well and you've got a rapport with the students and then you bring in someone who is just dreadful and boring. Then it doesn't matter how interesting the object is or the content of what they are saying is. Ideally, I would like to audition them and see them in action with students before I book them, but obviously you can't really do that. That wouldn't be tactful to ask* (History Professor, UCL, October 9, 2017).

Two important strands emerged when interviewees discussed how the type of staff employed by the university or museum determines the use of museum collections in HE curricula. First, is that there are certain types of positions which are strategically fitted within the infrastructure between the two institutions and have been proven to make an impact, whether it be positive or negative, on the overall communication between the university and the museum. The second pertains to the pedagogy and interpersonal skills of those involved in sustaining this relationship. Drawing on this study's findings, it can be argued that in order to foster stronger links between academics and museum staff, it is advantageous for both staff to share and support each other's agendas and pedagogies.

7.1.1.2 *Staff Turnover Rate*

The second aspect of staffing which determines the use of museum collections in HE curricula is the turnover rate of staff. The turnover rate of staff, particularly in museum staff, and its effects on the communication between the universities and museums was a recurrent topic of discussion for academics when asked about their main points of contact within the

museum. Academics from UoM, NU, and UCL discussed how their time and efforts to build up relationships with museum staff were wasted because of a sudden change in post. Unsure of who they would be working with or not wanting to start the process over, many academics have instead decided to forgo the use of museum collections in their teaching as a result of this challenge.

At UoM, one lecturer indicates below how the challenge of working with new museum staff is twofold. Not only does this new staff member not know the academic, their teaching style, or teaching objectives, but they also may not have had the time required to feel confident teaching with the collections. These barriers consequently slow down the collaboration process.

> *The problems have usually arisen as a result of rapid changes in museum staff, where the connections you once had with a curatorial assistant are gone and you are working with somebody new who doesn't know you or the collections* (Senior Lecturer in Archaeology, UoM, April 9, 2018).

One NU lecturer discussed the difficulty of reconnecting with the museum once their department's point of contact left. As the NU lecturer details below, there was no contact from the GNM: Hancock following the department's initial push to reconnect. This shortcoming has left the lecturer feeling as though the museum does not prioritize university teaching highly enough to warrant the time and effort it would take for the lecturer to reach out again.

> *I think another disadvantage of working with museums is point of contact, at least for me. Just like here, the GNM or any museum or any workplace, there is a turnover of people and one contact can disappear… At least in our case, the lack of communication between us and the GNM, is really the pitfall. Before I started working here, [name omitted] had approached them and he had a bit of contact with them, but after the contact moved on, we had to push hard to get in touch again and there was no approach from them either. Maybe they don't want to share their collection with us or maybe it is not in their agenda. Both sides were passive, and because of that, we are not really in contact with them* (Lecturer in Geology, NU, May 9, 2018).

Academics from UCL also acknowledged the tensions caused by a high turnover rate in museum staff. Whereas the first comment below touches on the task of reconnecting with new museum staff once a point of contact moves on, the second offers a more poignant response from the academic in real time following the uncertainty surrounding their course collaboration.

I don't know if UCL is unusual in this, but it seems to be quite a high turnover in the education staff in the UCL museums, so you build up a relationship with one person and then the next year they are not there, so you have to start again with somebody else (History Professor, UCL, October 9, 2017).

This is the problem, you are relying on others within the museum and UCL Culture, and they lost the member of staff that did it with me last year, so I am not sure if I will be able to do it… (History of Education Associate Professor, UCL, October 12, 2017).

It is curious as to why no museum staff from any case discussed the challenges resulting from the turnover rate of academic staff at the university. The reasoning for this may be related to the logistical limitation of museum staff awareness regarding university personnel. However, there was one NU academic, who works closely with the GNM: Hancock, who scrutinized the issue of staff turnover rates from the museum's perspective. From this academic's point of view, it is the academic staff who have a high staff turnover rate (regarding short-term contracts) and as a result, have caused the inconsistent use of the museum's collections in HE teaching because of the incoming academic's lack of knowledge of the museum.

…the challenge, particularly with the GNM collections has been that some of the staff who historically used the collections the most in their teaching and research have retired. Then you get new staff coming in from different backgrounds and haven't been brought up in the region and don't know anything about the museum or collections and in a university this size, there is quite a turnover in staff over the years and so part of the challenge, and part of my role is thinking through how to involve new academics (Dean of Cultural Affairs, NU, February 2, 2017).

This study's findings confirm the negative impact high turnover rates have on the communication between academic and museum staff. Academic staff expressed their frustration with the recurrent theme of putting in the time and effort to build a rapport with museum staff only to have to start over again once that individual moves post. Why no museum staff commented on this topic during the interview process is only speculative. As one NU academic indicated, this is not a one-sided issue. As such, it can be argued that the staff turnover rates of both the university and/or the museum can play a significant role in determining the use of museum collections in HE curricula.

7.1.2   Finance

One of the most integral parts of a museum's management structure is its financing. The financial situation of a university and/or university museum will naturally impact the majority of the work undertaken by the institution. However, during this study's interview

process, the two noticeable concerns regarding finance among academic and museum staff were the complexities and confusion surrounding the payment for the teaching time of museum staff and a general lack of departmental and museum funding as a result of university funding distribution.

7.1.2.1   Teaching Costs

Across three cases used for this study, the teaching costs of museum staff was identified as a condition which can determine the use of museum collections in HE curricula. The cost of museum staff teaching time was a concern for both academic and museum staff who were uncertain if collaborations would continue if payment schemes were not resolved. UoM and Manchester Museum were the only case in which there was no discussion concerning teaching costs.

At the GNM: Hancock, museum staff recognize the teaching cost as a reason for their decreased teaching workload. As the comment below indicates, there are academics who choose to pass on the opportunity to collaborate with the museum because of the added cost.

> *I don't do as much university teaching as I used to for various reasons, one of which is that now the museum charges the university for my time, so a lot of people in the university don't ask me to do the odd session* (Keeper, GNM: Hancock, October 4, 2017).

One UCL associate professor went as far as to question whether the teaching cost of museum staff was a manoeuvre by the museums to secure additional capital by taking advantage of the university's turn in teaching practice towards a more research-based curriculum. The UCL professor agrees that museum staff should be paid for their time, but asserts the difficulty of procuring funds from academic departments.

> *There are some issues about funding. If you book sessions in museums, the department has to pay for it, so I don't know if the museums and UCL Culture are realizing that there is a shift to use their objects and they want to get some money out of it, which fair enough, but it is a little bit of a barrier because then you have to approach the department and ask for money* (History of Education Associate Professor, UCL, October 12, 2017).

Although the above UCL academic confirmed their knowledge of the teaching cost for museum staff, this does not prove that knowledge of the teaching cost is widespread across UCL faculty. As one curator from UCL's Petrie Museum explained, they believe the issue derives from the academic staff's lack of awareness of the teaching cost and that academic

staff are sometimes informed of this additional expense after they have already completed their module budgeting. This in turn causes tension between the museum and the academic's department when museum staff come to them to figure out the student load payment.

> *The only issues I've seen are that we do have to report our hours and student load for the teaching load so we can claim for that, but because that message is not so well communicated across the university, sometimes the academic staff don't realize that is the case and that affects their budget for their module. There have been occasions when we have had to go back and forth to figure that out. If their department are unable to agree to the student load payment, then we try to find a balance. We don't turn people away necessarily, but we need to work within a certain procedure, so that has been an issue* (Curator, Petrie Museum, January 1, 2018).

In addition to the cases of NU and UCL, the issue of museum staff teaching costs is also a prevalent managerial barrier for OX academics. Two OX academics in particular made strong statements on the issue. The first OX academic referenced below details how their department does not have the funds to pay for museum teaching costs and if asked to pay, they would regrettably have to forgo the use of museum collections in their teaching. The academic drives home their argument by explaining how the museum inadvertently hurts its own collaborative initiatives with the teaching cost because the more they urge and advocate for wider use of museum collections in HE teaching, the more expensive for academic departments it becomes.

> *The people who are in the museum today, who are facilitating that visit, they are costly. At various times the museum has asked, for example, my department to pay for the cost of those people. My course is already expensive and there is no extra money. If they were to ask me to do that, I would have to say we can't afford that and I'll just find another way to do it. Unfortunately, as the museum encourages more people to do it, it takes on more cost and that is a structural problem that I don't really see much of a solution to* (Reader in History of Business, OX, March 22, 2018).

The second OX academic is less sympathetic in their critique of the museum staff teaching cost, stating the museum should think less about payment for their teaching and more about ways to validate their university museum title.

> *There are bits that could be done better and from a management point of view right now. There is discussion about how we pay or whether we pay museum staff to do certain kinds of teaching. That has to do with a very complicated collegiate structure… The museums need to be less fussy about getting the payment for their curators' teaching because, at least in most university museums, in fact all of them, are not making money. They are generating enough revenue to pay for their own*

costs and so they need to think about integrating themselves into the teaching of the university to justify their existence as a university museum… (History of Art Professor, OX, March 20, 2018).

In addition to the aforementioned financial barriers causing tension at OX, there is also the unique financial situation surrounding their UEP scheme. Originally funded by the Mellon Foundation to bring in teaching curators and embed the use of the Ashmolean Museum's collections into the university's core teaching, the UEP has since relied on the university's academic departments to cover the teaching costs. As referenced below by two OX academics who have both benefitted from the UEP, taking on this expense has created restrictions on account of available department funding.

Originally the curators were funded by the Mellon funding, they then moved to a situation where they were not quite funding themselves, but trying to set up ways. The idea of the Mellon funding as I understand it, was that this engagement might be embedded in what departments do and that these departments would then take on paying for it… We do now pay for curators' time, but it has created some restrictions. Previously we've had more engagement than we do now (Lecturer in Geography, OX, March 22, 2018).

I think [name omitted] contract is until 2020 or something, but it is a finite thing. They are not going to pay forever, and it is core teaching, but it will be very difficult to get either the college or the faculty to pay for that extra teaching (English Literature Professor, OX, March 21, 2018).

The disgruntled tone disseminating from staff comments regarding the museum staff teaching costs is telling of the tension surrounding the subject. Findings confirm that these teaching costs do have a negative effect on the use of museum collections in HE curricula, as academics have been forced to forgo collaborations because of insufficient funding.

7.1.2.2   *University Funding Distribution*

In addition to the teaching costs of museum staff, there were several academic and museum staff who felt the tension between their universities and university museums originates from the university's lopsided distribution of its funding. This tension has consequently affected the use of museum collections in HE curricula.

One aspect of this funding distribution issue that can have major implications on the direction of the museum, and therefore, the use of museum collections in university level teaching, is the amount of money given to the museum by the university. One NU lecturer

and one Ashmolean Museum curator revealed how much funding their museums receive from their universities each year. Whereas the GNM: Hancock receives a reported 1 million pounds each year from NU, which equates to approximately 90% of the museum's running costs [see section 7.1.4.1], the Ashmolean Museum only receives 20% of its funding from OX. This is a striking comparison and the significance of these values will be discussed further in this study's discussion chapter (Chapter 8).

Even though the university is putting 1 million pounds into the museum every year, we can't get an impact case study out of it because they won't accept that we might have some input on the collections (Lecturer in Roman Archaeology, NU, April 6, 2018).

We only get 20% of our funding from the university. I don't know any other university museum that receives so little (Curator, Ashmolean Museum, April 12, 2017).

When asked what changes could be made by the museum and/or the university to better facilitate the use of museum collections in HE curricula, one UoM lecturer expressed their displeasure with how the university exploits their department and does not provide sufficient funding for collaborative opportunities. Asked to expand on this claim, the lecturer cited greater investment by the university as the solution for the logistical limitations of low staff numbers and the amount of time and money required to effectively integrate museum collections into HE teaching.

The university has to start respecting humanities and start funding humanities properly. At the moment, this university views humanities as a way of supporting other interests. There is little university interest in supporting humanities for their own sake. I don't think you would find many humanities academics who are very convinced by the support of this university for humanities… The university is a business. It is focused on making money. It is focused on making money for the sciences. The arts are a cash cow. We will recruit and make money for the sciences. That is the impression I have… Humanities is so small and we are in a big university. I wish we were bigger. I wish we had more leverage, but we don't. We have very little leverage. We are fighting over a very small amount of money (Senior Lecturer in Classics, UoM, April 27, 2018).

The uneven distribution of university funding was also discussed at length with UCL museum staff, where one museum manager argued that museum staff do not receive payment for a volume of work they believe deserves compensation. As detailed below, UCL museum staff can claim for teaching costs, but do not receive compensation if they are only pulling objects for classes. As the pulling of objects is a large part of the work the museum does and can be considerably time consuming, UCL museum staff believe they are being treated unfairly

compared to other university services such as the Library or IT, which they argue receive considerably more money for performing their daily responsibilities.

> *We do have a problem with financing. Essentially, it is when a student pays their fees, how does the university work out which department gets that money? If you are on a History of Art course, you'd imagine all that money goes to History of Art, but what if other people are doing the lecturing for History of Art? UCL has to work out how to proportion that. If we are lecturing, at the end of the term, we will say to History of Art we've taught on this percentage of your course and they'll give us that percentage. That is fine, that works. What we don't get any money for is pulling objects. So, if it is just on the table, non-facilitated object-based session, we don't get a slice of the teaching… One might argue that the museums are funded by UCL in order to do that, but for example, the Library will get a top slice of student fees, or Information Services division IT will get a top slice of student fees to do their jobs. We don't get that* (Museum Manager, Grant Museum, February 15, 2018).

Lastly, one Ashmolean Museum curator discussed how tensions rose between OX and the museum when the university decided to help fund the museum's redevelopment, but found itself at a loss following significant economic problems. It can be argued that the tensions created by this deficit are compounded by museum staff members' push for teaching costs. However, it also can be argued that museum staff have had to push for teaching costs as a result of the lack of funding by the university.

> *Part of the problem I think is the funding situation, when we developed the museum, there was a shortfall for it, which the university agreed to underwrite. Then there was the big crash, so there was a deficit and I think that soured things slightly, but things are getting back on track. But certainly, there has been a problematic relationship with the university, it hasn't been an easy one* (Curator, Ashmolean Museum, April 12, 2017).

Although the distribution of university funding was not discussed at length across all four cases of this study, the issues revealed by interviewees illuminate how this fiscal condition can also determine the use of museum collections in HE curricula. Both academic and museum staff revealed how a lack in university funding can complicate university-university museum relationships. However, resolving this issue is more complex than the university simply handing out additional funding. Because of the scope in data collection and time constraints of this study, unpacking the complexities of this issue further is difficult. While an in-depth knowledge of the four universities' funding distribution is a limitation of this study, it is still important to identify this issue as a condition which determines the use of museum collections in HE curricula and could be the basis for further studies.

7.1.3   Governance

The university museum's positioning within the larger university management structure affects its daily running and administration [see section 2.3.1]. This positioning also plays a significant role in determining the use of museum collections in HE curricula. All four cases used for this study boast their own distinctive forms of museum management, each with their own pros and cons pertaining to the use of museum collections in their curricula. However, out of all possible managerial issues which could influence the use of museum collections in HE curricula, the only topic indicated by both academic and museum staff was the lines of management.

7.1.3.1   Lines of Management

Within every university museum management structure there is a line of management made up of individuals and/or departments from both the university and museum who are responsible for the smooth running of museum operations. For this study, four cases with four different management structures were highlighted. All four of these different management structures come with differing lines of management. As academic and museum staff detailed throughout this study's interview process, this bureaucracy can become problematic when those involved and those in positions of power do not see eye to eye.

The third-party system between NU, the GNM: Hancock, and TWAM is one of the more complex management structures of this study. As one NU academic with keen insight into the management structure details below, there are both pros and cons to having TWAM manage the museum. However, it can be argued that the cons of this management structure directly affect the relationship between the museum and the university in terms of HE teaching collaborations. When TWAM staff disregard the GNM: Hancock's status as a university museum and manage it like a local authority museum, this in turn can have a negative effect on the use of museum collections in the university's teaching.

> *The big plus of having TWAM manage the museum is that you've got an organization that is used to working with the public and understands a public need for accessing the collections. The downside is that their default is to the standard public museum approach of managing it. We are their only university museum and constantly I am saying the GNM is different from the Discovery and the Laing, and some colleagues in TWAM understand that because they've worked with us closely, but again if you get a new person in Communications or Development in TWAM, then they don't necessarily understand what the difference is between a university museum and public authority museum* (Dean of Cultural Affairs, NU, February 2, 2017).

At the Ashmolean Museum, one staff member identified how the value of their senior management meetings is challenged by an absence of key voices. This lack of departmental

representation is caused by the museum's management lines. While the burden of representing large groups of people at senior management meetings has unfairly fallen on a select few, other areas of the museum are widely represented. It is argued that those with more representation at the senior management meetings sway the direction of discussions, for instance curatorial practice, while other topics, such as university-museum collaborations, can get overlooked.

> *The bigger the museum, communication will always be an issue. These are big clumps, Collections and UEP sits under that, Public Engagement sits over here, we sit along with Design and Registrar, Development is here, which is all about getting money. Commercial, HR, Operations is a joint museums team, so those are the big clumps of people. There is a head of each of these bigger clumps, which make like a senior management group. They slightly restructured it, but it is a bit collections heavy. There is one person, who is my line manager, who goes to the executive management group and she has to represent all departments and that is massive, that is Exhibitions, Registrar, Learning Team, Marketing, Press, Publicity, it is huge. On the other hand, in Collections, the Keeper of Antiquities goes, the Keeper of Western Art goes, the Keeper of Eastern Art goes, the Keeper of the Coin Room goes, the Head of Conservation goes, and [name omitted] from UEP goes and others, so the structure is odd in the sense that there is one person representing these massive areas, but it is very collections heavy in the senior management group, which I think they are missing key voices* (Head of Education, Ashmolean Museum, March 7, 2017).

An intriguing comparison can be made between the managerial complications at UCL and those of the previous two cases (NU and OX). At UCL, the museums sit within professional services along with Finance, Human Resources, and Computing. One UCL academic, who has worked closely with the UCL collections, argued that this positioning has been detrimental to the use of museum collection in their university teaching. Essentially, those working within the UCL museums and those along the museums' managerial line do not agree on how the museum should operate. Thus, the museums are being classified in a way which prevents them from receiving the acknowledgement and support needed to develop their brand as core HE teaching resources.

> *What is the best way to manage and deploy assets like university museums? I see them as primarily teaching, research and engagement resources that should be actively integrated into the curriculum, research, and all of that should feed into public engagement. But the issue is that not everybody is signed up to this concept, particularly on the professional services side where they say it costs a lot of money, it takes up a lot of space… when I ran the Grant Museum, it and I were housed in the biology department… Then for various reasons there was a shift, which I see as very negative, into what is called professional services. Museums are part of the big unit with things such as Finance, HR, and Computing, which I and many of us in the*

academic community think has been really negative because they are basically a very small cog in a massive wheel that is about delivering services. They have been pushed into a service model or delivery model, rather than being pedagogically and research engaged (Biology Professor, UCL, May 3, 2018).

It is important to note that the topic of management lines and the effects they have on determining the use of museum collections in HE curricula was not explicitly discussed by UoM academic or museum staff. Manchester Museum's management structure is far less complex and more transparent than those at NU, OX, and UCL. Throughout the interview process, the only mention of the Manchester Museum's position within the university structure was that it is a non-academic unit of the university. It was previously known that the museum's line of management consists of the museum's Director reporting to the university's Deputy President, who sits on the university's Board of Governors where policies are approved and signed off on [see section 4.4.2]. However, as there is no further evidence on this topic, one cannot speculate as to what degree this management line determines the use of museum collections in HE curricula.

This study's findings indicate that the lines of management within a university museum's management structure can significantly influence the use of museum collections in HE curricula. However, the issue of management lines is a complex condition to pick apart. There is no single right or wrong way to manage a university museum, but one may argue that there are ways which work best in certain circumstances. An analysis of the cases above suggests their complications stem from two aspects of governance. These are the individuals within the management line and their perceptions of the museum's pedagogical role, as well as the museum's position within the structure.

7.1.4   Agendas

Universities and museums operate towards the targets laid out in their strategic plans. These targets are often referred to as an agenda. Depending on those involved, these agendas can vary in magnitude and number. In principle, a university museum's agenda will inherently play a role in the university's agenda. However, all four university museums used for this study have their own strategic plans, which are separate from the university's. Both academic and museum staff indicated how this duality in agenda can cause tension between the university and the museum, particularly when one agenda is seemingly overlooked while another receives additional support [see section 2.3.1]. When discussing the topic of agendas and how they can determine the use of museum collections in HE curricula, interviewees specifically focused on the agendas of funding agencies and the difference between the agenda of a cultural organization and that of a higher education institution (HEI).

7.1.4.1   Funding Agendas

In order for university museums to pay for their maintenance, projects and exhibitions, funding is essential. In addition to the sliding scale of funding museums receive from their parent universities from year to year, many museums have had to turn towards outside funding agencies for extra capital. However, with outside funding comes the added pressure of meeting the required outcomes of the supplier's agenda. Interviewees from two cases in particular delved into the agendas of their funders when examining the affects museum management has on determining the use of museum collections in HE curricula.

One NU academic who works closely with the GNM: Hancock illuminated the pressures on the museum as a result of additional funding from agencies such as the HLF and HEFCE. Whereas one funding body wanted to see a dramatic increase in visitor numbers following their 2009 redevelopment, the other wanted to see a greater focus on bringing in academics from outside Newcastle upon Tyne. One could argue that the museum's resources were stretched so thin by these outside agendas, that efforts to collaborate with NU academics fell by the wayside.

> *I think one of the biggest challenges for us, is when the GNM opened after the refurb the big push was visitor numbers because Heritage Lottery Fund put nearly 10 million into that project. Their key thing was get the public in. For the first few years, that was the big push… The other thing is thinking not just about Newcastle academics. We have a strand of funding from the Higher Education Funding Council… and their criteria for that funding is how much is a museum contributing to higher education around the country, not specifically of Newcastle University, but of the broader academic community. So, we are also having to think how do we encourage academics from elsewhere to use the collections and that is more of a challenge for us up here in Newcastle than it is for a museum in London or the Ashmolean in Oxford…*
> (Dean of Cultural Affairs, NU, February 2, 2017).

Further evidence of the GNM: Hancock's prioritization of outside funding agendas over the university agenda was given by one of the museum's keepers. The keeper admits that the financial situation of the museum has pressured them into taking advantage of outside funding opportunities at the expense of the university's agenda, and as a result there is tension between the two. The keeper specifies the GNM: Hancock's unique status within TWAM as their only university museum, yet indicates TWAM still focuses their efforts elsewhere.

> *…there is within TWAM, a pressure to come up with income-generating work because of the budgeting situation. We have been hit by massive government cuts and our services have been shrunk and within the organization, there is a real focus on income-generation, which there is tension there. I do feel that because in the GNM we are very aware that we are different from the rest of TWAM, we are TWAM*

employees, but nearly all the money for running this museum comes from the university. They put in 90% of our running cost I think, so we are mindful of the university's agenda, but I think there is a bit of tension there (Keeper, GNM: Hancock, October 4, 2017).

The second case in which funding agencies were discussed, albeit briefly, was during an interview with the Ashmolean Museum's Head of Education. For a second time, HEFCE was cited, and again their interests lied outside the university. In this case, HEFCE wanted to see more focus on the museum's impact on non-Oxford University students. The museum staff member defended this agenda by arguing that as a university museum of OX, it would seem illogical not to already be working with OX students. Therefore, like the GNM: Hancock's push for visitor numbers in 2009, the Ashmolean Museum also secured additional funding in 2009 when they reopened followed their own redevelopment, while under similar pressure to show an increase in visitor numbers of a specific audience other than their own students.

We've always been a public museum, so members of the public could come in, but they were not our audience. If they didn't understand it, it wasn't our problem. The galleries were set up as teaching collections… 20 years ago there started to be a change. Big development team expansion, commercial expansion, learning teams are expanding, because the museum was a public museum, but slightly noncommittal. It was not hostile, but unapologetically. It was like, you can come in, but it is for these people. As funding changes, and pressures change, that is not ok. The university would have no funding, so if you look at the funding strands, it is all about public access, public engagement and research… The big shift has been how the museum has evolved into a public museum. This is a public museum with public funding. The university is not a private university, it is funded by taxpayers' money and fees. There was certainly a culture shift, so a bit of carrot and stick as well with central government funding… We have good numbers for higher education, but the figures you get in the annual report will not just be from Oxford University because for HEFCE , they are interested in non-Oxford University people, because we should be working with our own students (Head of Education, Ashmolean Museum, March 7, 2017).

This study's findings highlight the impact outside funding agendas can have on determining the use of museum collections in HE curricula. The attention these outside agendas receive from museum staff takes away from the attention they could be giving to university-university museum collaborations. The repercussions of the museum's focus on outside funding agendas, with regards to how it affects the mindset of academics when considering the use of museum collections in their teaching and the direction of the museum in terms of collections accessibility, will be unpacked further in this study's discussion chapter (Chapter 8).

7.1.4.2   Cultural Organization vs. Higher Education

The second aspect of agendas which determines the use of museum collections in HE curricula is the debate between cultural organization agendas and higher education agendas, and which agenda takes precedence for university museums. University museums are cultural organizations. However, as university museums, they sit within a university structure. As a result, university museums inherent a dichotomy of agendas to appease both the needs of the public and of the university. Throughout this study's interview process, both academic and museum staff across all four cases acknowledged how the balancing of agendas can cause tensions between the university and the museum, especially when one side feels as though they are receiving less attention.

At the Manchester Museum, one staff member described how the museum's history as a civic institution has had a lasting influence on its agenda. As described in the comment below, the fact that the city council took on the museum's funding created an enduring perception that the museum's duties were to the Manchester community and not exclusively UoM students.

> *I think this is part of the challenge of the background of our museum in that it was originally a mixture of civic and university funded institution. A long time ago the council took on funding for it and therefore, we've always had this municipal role as a civic institution that it is Manchester's museum in many ways, it just happens it is part of the university. This is why my role and the engagement role is more community and public focused than any other places you will visit. Our focus has not always simply been university students…* (Learning Manager, Manchester Museum, January 19, 2018).

Expanding on this position, another Manchester Museum staff member aimed to rationalize the museum's approach to satisfying both agendas. As the museum's Head of Collections describes below, Manchester Museum's approach is divided, being dictated by both the size of the museum, as well as its position in the university structure as a non-academic unit of the university. First, because of the museum's size, it is in the museum's best interest to gear itself towards the public or risk running at a financial loss. They use the smaller museums of UCL as a comparison for this argument. And second, the staff member indicates how the influence of the museum's agenda as a cultural organization also dictates when the museum proactively develops university-university museum collaborations.

> *A museum which is part of a department is completely different to a museum which is part of a cultural service of a university. If a museum is part of a school or faculty, then supporting the students or faculty of that school is much higher up the agenda. If you were to take UCL, which has a group of museums, they are not big enough to be huge visitor attractions, so their focus is more on the students of UCL than our focus is here, our audience is 460,000 a year… The [collaborations] that we would*

proactively develop would be the ones that support the museum's agenda. The museum has an agenda as well, which is about promoting understanding between cultures and working towards a sustainable world, so we aim to make the collections available to anybody… (Head of Collections and Curator, Manchester Museum, February 8, 2017).

In addition to the views of Manchester Museum staff, one UoM lecturer also shared their view on the museum's agendas. The UoM lecturer discussed how they are sympathetic towards the museum's public remit, but also recognizes how the museum's outward focus has resulted in missed opportunities for collaborations with the university.

I think the museum very much sees itself, although it is a university museum, it sees its major audience as the general public and it is told its role is to act as an interface between the public and university. We are not their major priority and I understand that and I appreciate it, but I think there could be greater strategic use of resources and also encouragement for curators to be engaged with university staff in exciting ways (Senior Lecturer in Archaeology, UoM, April 9, 2018).

The debate between the museum's cultural organization agenda and HE agenda was briefly touched on by Ashmolean Museum staff. One Ashmolean Museum curator clarified their position on the matter, stating that their duty is to the public and therefore, they have to make their collections accessible to all levels, not just higher education. This is a striking statement as it clearly confirms that there are Ashmolean Museum staff who do not view the university students as their primary audience and that their agenda as a cultural organization does take precedence over their HE agenda.

We have a duty, and I think that is a big difference with academics. We have a duty to the public, while they have a duty to the students, but they do it on their own terms. We can't do it on our own terms. We need to be very accessible and inclusive… (Curator, Ashmolean Museum, April 12, 2017).

At the GNM: Hancock, the Museum Manager also made a clear statement on how the museum prioritizes the agendas of the university and of the museum itself. As indicated below, the museum has strategic aims for both the university's agenda and their own. However, they assert that it is not up to the university to dictate how the museum manages those agendas.

…we have a series of strategic aims that respond to the university's agenda, but also our own agenda as a cultural organization, so we want to be a world-class university museum welcoming to all. If you went back to the redevelopment in 2009, in the business plan for that, there will be somewhere in there a statement about the purpose of the museum and there is, from memory, a paragraph about supporting teaching and

research, but not one that says our primary audience is this. So, I don't think there was ever an expectation that the needs of the university would dictate how those permanent galleries were displayed (Museum Manager, GNM: Hancock, July 27, 2018).

One NU lecturer was particularly outspoken about what they felt was a lack of consideration towards the university's agenda by the GNM: Hancock in the wake of TWAM's agenda.

It is the 5 year olds that have always taken precedence in the GNM even though it is the university collections and the university museum and the university is putting a lot of money into it. The GNM has always privileged school parties over undergraduates… I used to sit on the GNM Academic Research Committee, but it died 5-6 years ago because no one was going. Most academics weren't going mainly because the agenda was always about what we are going to do for 12 year olds, which is great, but it is not relevant to what we are doing… Since it became the GNM, it has been about school children. I love taking my children there, but it is not fit for purpose to use as an undergraduate collection… So TWAM, despite doing some very good things, frankly doesn't understand, or if I can speak bluntly, doesn't care about the problems of the university because these have been pointed out to them for 10 years or more and they have done nothing to address it, nothing. For them, we are not their prime audience unless there is something that will benefit them (Lecturer in Roman Archaeology, NU, April 6, 2018).

In stark contrast to the other three cases, UCL's Teaching Fellow in Public and Cultural Engagement, who works closely with both the UCL collections and UCL academics, clarified how although the UCL museums are open to the public, higher education is still understood as the core audience among UCL academic and museum staff. Conversely, it can be argued that this is because they only recently opened to the public and/or that the UCL museums are considerably smaller than those of the other three cases, as previously discussed in this chapter [see section 7.1.4.2].

…our department is a university service. Therefore, university museums have a very distinct, at least at UCL, but also probably more across the board, mission of facilitating teaching and learning and education, whereas if you are a public authority museum or one of the big national museums, education is always important, but not to the same extant, I think… if you are a university museum, higher education is going to be your core audience because you are a part of the institution, but having said that, our museums have primary and secondary school visitors, so it is not just higher education, but in terms of us, our core audience are university students and colleagues among the staff (Teaching Fellow, UCL, April 6, 2017).

The discourse surrounding cultural organization agendas versus HE agendas in university museums is an intriguing topic of debate and raises a number of questions regarding priority, authority, and funding. This study's findings confirm that the tension caused by the inherent cultural organization and HE agendas of university museums is a condition which can determine the use of museum collections in HE curricula. As a part of the university, there are academics who believe the museum's primary audience should be university students. It can be argued that the prioritization of their cultural organization agenda raises the perception among academic staff that the museum is disinterested in collaborating with them. However, museum staff insisted this is not the case. As supported by comments from museum staff at the Ashmolean Museum, Manchester Museum, and GNM: Hancock, there are those who perceive their role as cultural organizations as their primary purpose for a number of reasons, such as the museum's profile and/or funding strands, but this does not mean they are deliberately neglecting their HE agenda.

7.2   Conclusion: Museum Management Structure

The museum management structure is another topic which receives less attention in contemporary literature on university-university museum collaborations, yet the argument can be made that the management structure of a university museum has the greatest impact of the four themes in determining the use of museum collections in the university's teaching. How a museum is managed will dictate the direction of the museum's policies and strategic planning. The effects of these executive decisions can trickle down into the staffing, finance, governance and agendas of the museum, which in turn, can play a major role in the relationship between the university and the museum.

8   Discussion

This study set out to answer the following research question:

What determines the use of museum collections in university level teaching?

A number of determining conditions were drawn from the four themes (pedagogy, logistical limitations, museum management structure, and student response) presented in chapters 5 – 7. In this chapter, two of these topics which deserve further attention are identified and examined for their significant impact in determining the use of museum collections in HE curricula. In doing so, this chapter will clarify where this study fits in with, and extends, the current knowledge of the field.

The first of these discussion topics, entitled 'Facilitating Learning: Debating the Pedagogical Roles of University Museums', examines the debate over the pedagogical role of university museums in terms of how the museum satisfies, or fails to satisfy, their dual roles as an academic asset of the university as well as a cultural organization. For many academics, a university museum's pedagogical shift towards the public creates barriers which inhibit the use of museum collections in their teaching. Despite this perceived disconnect, university museums are still shifting their focus towards the public. This section draws on the data presented in chapters 5 – 7, information presented in chapter 4, as well as educational and interpretation theories previously covered in chapter 2, to elucidate the arguments of academic and museum staff. Both sides of the debate are presented to ensure that every effort was taken by the researcher to be as impartial as possible.

The second discussion topic, entitled, 'Rethinking the Relationship: Universities and University Museums', calls for the reevaluation of two key components which facilitate university-university museum relationships. This section further unpacks the previously presented logistical and managerial themes of Awareness [see sections 6.1.3] and Staffing [see section 7.1.1] for their roles in determining the use of museum collections in HE curricula. This section argues that in order for the use of museum collections in HE curricula to become more prominent and sustainable, universities and university museums need to focus less on *why* they are collaborating with each other, and focus more on *how* they can create a positive and facilitating relationship. Only then will the UK see an increase in the presence of museum collections in HE curricula.

Finally, this chapter highlights the research challenges of this study and how these challenges act as the impetus for future research. This section focuses on the challenges associated with the study's design, logistical constraints such as time, finance, and thesis

volume, and the extent of this study's impact. Additionally, this section identifies several promising avenues for future research, which were beyond the scope of this study.

8.1   Facilitating Learning: Debating the Pedagogical Roles of University Museums

Melanie Kelly's introduction to OECD's 2001 publication, *Managing University Museums* [see sections 2.1.4 and 2.3.1] provides a synopsis of the unique position university museums occupy. Kelly (2001) discusses the dual roles many university museums play in terms of their responsibilities to both the university and the public, but notes how many university museums have shifted their focus away from the more traditional presentation of their collections and towards a more inclusive and accessible presentation for the public. Kelly offers two reasons for this shift. These are: the museum's pursuit of university support (possibly from a social responsibility angle) in response to a decrease in the use of the museum's collections in the university's teaching, or as a necessary maneuver to satisfy outside funding agendas. Unfortunately, what Kelly and the majority of literature on the field do not address when discussing these dual roles, is the pedagogical rift this turn towards the public creates between the museum and academic staff who are looking to integrate museum collections into their teaching. As this study highlights, fulfilling these dual roles continues to be a challenge for university museums and the pedagogical implications of this balancing act can play a significant role in determining the use of museum collections in HE curricula.

The debate over the pedagogical role of university museums is a topic which warrants greater attention from universities and university museums if collaborations between the two are to become more sustainable. For many university museums, it can be argued that it is in their best interest to tailor their presentation of collections and interpretations towards a wider audience. This argument is mainly the result of outside funding agendas and/or stakeholder perceptions likening the museum to that of the local authority approach, which encourages audience diversity and accessibility for all learning levels. This dilemma has been felt to various degrees at the GNM: Hancock, Manchester Museum, and Ashmolean Museum [see sections 5.1.1.1, 6.1.4.1 and 7.1.4.2]. Even UCL's Petrie and Grant museums, who have only recently opened their doors to the public, have had to reconsider the accessibility of their collections, albeit to a lesser extent because of the Petrie and Grant's sizes and annual visitor numbers compared to the three cases mentioned above [see section 7.1.4.1].

However, university museums must be careful. Focusing too much on the public may have the implication of distancing themselves from the university, which could prove disadvantageous for a university museum when the time comes for the university to reassess their funding priorities [see section 2.3.1]. Universities have complex financial structures and if a university believes one of its assets, such as a university museum, is not providing the expected returns regarding the university's aims and objectives, then financial and other resource cuts could be made. In a recent article, the Vice-Chancellor of NU suggested just this, by stating one of the first areas to be reduced if cuts to tuition fees were made, would be

the funding of its local museums and art galleries (The Telegraph, 2018). For this reason, it is crucial for university museums today to prove their worth to their parent university in order to justify the money being invested in them (Anderson 1997; Kelly 2001).

8.1.1 The Academic Staff Perspective

For academic staff, a university museum's pedagogical shift towards the public can determine the use of museum collections in HE curricula in three distinct ways:

1. A change in presentation and interpretations in response to more diverse audiences, leading to insufficient or unserviceable displays and interpretations for HE students.

2. A neglect towards the research and cataloguing of collections in museum stores, leading to fewer museum store resources for academic staff to utilize when attempting to integrate collections into their teaching.

3. A decline in curatorial subject-specific expertise for museum staff whose roles become more focused on public education and engagement.

Two of Tilden's (1957) six principles of interpretation highlighted in this study's literature review [see section 2.1.3] help to explain the grievances academic staff have when university museums alter their display interpretations for a more inclusive audience instead of focusing on HE students.

Tilden's (1957) second principle differentiates between the provision of information and the provision of interpretation. Tilden argues that just because a cultural organization provides what they believe is key information about their collections, does not mean they are providing interpretation of the collections, which is particularly important to HE academics. Of all four cases used for this study, NU academic staff were particularly outspoken on this matter when discussing the GNM: Hancock's decision to provide less information with their displays following its 2009 redevelopment. This absence of key information in turn prevents the museum from conveying important narratives. NU academic staff argued that the lack of information weakens the value and depth of the interpretation provided for HE students who are undertaking more complex levels of study than the average visitor or schoolchildren. However, it needs to be noted that from the GNM: Hancock's perspective, the decision to provide less information throughout its galleries was agreed upon in accordance with the university before the museum reopened. The key players from the meetings where this decision was made were previously discussed in chapter 5 [see section 5.1.1.1].

Tilden's (1957) sixth principle, which claims interpretation for children and adults cannot be derived from the same pedagogical approach, again supports the arguments of many academic staff that a university museum cannot pedagogically focus on schoolchildren

and the public and also expect their collections to be widely used in HE teaching. This principle is buoyed by the educational theories of Dewey (1938), Bruner (1960), and Piaget (1970), who wrote extensively on the stages of knowledge comprehension. As Tilden *et al* argue, it is natural for children to be unable to grasp the information intended for adults, as the cognitive capacities of adults are far greater than those of children [see sections 2.1.1 and 2.1.4]. Furthermore, and in accordance with Dewey (1938) and Tilden (1957), information intended for children will be of little value to HE students and adults as it may not interest or challenge them intellectually. Thus, while a museum may view itself as more inclusive as a result of its pedagogical shift, in the minds of academic staff, the museum's interpretation, or lack thereof in some cases, actually neglects the interests of key audiences.

A university museum's shift towards the public can negatively affect the presentation of its collections as well. Just as interpretations intended for children can disinterest adults, so too can an unsophisticated presentation of collections. Not only can this type of presentation have a negative effect on the motivation and engagement of HE students, but it can also negatively affect the atmosphere of the museum as a workspace. One NU academic had concerns regarding the GNM: Hancock's use of loud story-telling audio triggered by buttons in the galleries [see section 6.1.1.3]. The distraction of these buttons being pushed, in some instances at the same time, made the galleries of the museum an ineffective workspace. This is just one example, but it is these types of presentation techniques deployed by the museum to be more family-friendly that from an academic perspective, inhibit the learning experience more than stimulate it.

For academic staff, the impact of a university museum's pedagogical shift towards the public goes beyond their use of museum collections on display. Over time, this shift can also have a negative effect on the academic use of collections in the museum stores. Traces of this trend were identified in all four cases used for this study, as academic staff frequently emphasized the importance of up-to-date and accessible museum store databases [see section 6.1.3.1]. As a museum increases its focus on the public, museum staff who were originally consigned to research museum store collections and update catalogues, may have to take on further or new responsibilities concerning the public. This in turn leaves museum staff with less time to research and work in the museum stores and leaves academic staff with fewer resources when attempting to integrate museum collections from the stores into their teaching.

In addition to the negative impact on interpretation, presentation, and a decrease in museum store resources available to academics, the loss of museum staff with subject-specific expertise is another possible consequence of a university museum's pedagogical shift towards the public [see section 2.3.1]. Across the sector as university museums have shifted towards the public, museums have made the conscious decision to employ museum staff with more public-facing roles instead of the more traditional subject-specific curator. The challenge which declining museum staff expertise poses academics was identified in discussions with UoM, NU, and OX academic and museum staff. As one Manchester Museum staff member

confirmed, there are museum staff at Manchester who are motivated and willing to help, but are unable to without the subject-specific knowledge needed [see sections 6.1.4.1 and 7.1.1.1]. Academic staff comments indicated this decline in expertise is a significant loss for academic staff looking for individuals with specialist knowledge to lead object-based lessons or simply seeking further information on the collections and/or a specific object.

Academic staff want greater involvement from museum staff in university teaching for the educational benefits it provides HE students [see section 6.1.4.1]. However at OX, academic staff called for a deeper embedding of the museum in university teaching as a means of justifying their existence and financially supporting themselves instead of asking for more money in the form of museum staff teaching costs [see section 7.1.2.1]. On the surface this sounds like a simple solution to the debate, but a complete shift of this magnitude does not happen overnight without risks of financial insecurity for the museum. In reality, this process would be laid out over the course of years according to a new strategic plan, which itself would take an extended period of time to develop and implement.

Meanwhile at UCL, UCL Culture have taken significant steps towards embedding museum collections in university teaching on the coattails of the university's new Connected Curriculum initiative. UCL's aspiration for a more research-based and interdisciplinary undergraduate education is a timely opportunity for UCL Culture. Although the Connected Curriculum does not specifically promote the use of museum collections, UCL Culture are relying on their profile and promotional efforts, as well as academic staff knowledge of the learning advantages of teaching with objects in research-based education to increase the presence of museum collections in university teaching [see section 6.1.3.2]. It will be interesting to observe the growth in UCL's university-university museum collaborations as a result of this strategy, but as Connected Curriculum is a part of UCL's newest Education Strategy 2016-2021, the extent of its impact is currently unknown. Nevertheless, for other cases, it is a model worth examining, especially with the TEF now in effect. Museum and academic staff were curious about the effects the upcoming TEF evaluations would have on academic staff teaching methods and whether or not academics would seek out museum collections as alternative teaching resources [see sections 6.1.3.2 and 7.1.2.1]. Like UCL Culture's use of the Connected Curriculum to expand their presence in HE teaching, the TEF may be an opportunity for university museums to further embed themselves in their university's teaching.

For university museums looking to enhance their pedagogical role within university teaching, it would be advantageous to identify and strategically plan for the different types of pedagogies and learning outcomes that prospective academics have on an individual and/or departmental level when teaching with museum collections. Whereas the majority of public facing museums are more thematic in the presentation of their collections and tend to focus on their more famous pieces, many HE academics today aim to contextualize these objects, introduce their students to a range of objects in different states, and utilize educational techniques such as inquiry, object, and/or research-based learning. Moreover, there is the issue of accommodating disciplines which lie outside of the more traditional object-based

subjects, such as mathematics, divisions within the sciences, language, and engineering. If these academic needs are not met by the museum, then the museum will continue to lose out on opportunities to widen the use of their collections and validate their worth to the university.

8.1.2   The Museum Staff Perspective

University museums have their reasons for pedagogically shifting towards the public despite the challenges it can pose academic staff attempting to integrate museum collections into their teaching. As previously suggested in this chapter [see section 8.1], outside funding agendas and internal perceptions (both university and museum) of the university museum appear to be the two main driving forces behind whether a museum shifts pedagogically towards the public or not.

In terms of defending the decision to cater to diverse audiences rather than prioritizing higher education, one common argument for university museums which view the public as their primary target audience, is that the more accessible interpretations can be used by all levels of learners, as the methods of engagement, such as inquiry-based learning or research-based learning, are essentially the same. For those who take this constructivist stance, how the collections are used and at what level, is determined by the individual or the one in charge of the lesson, not prescribed by the museum. One case which has shown an ability to satisfy these dual roles is UoM and the Manchester Museum. It is generally understood by UoM academic staff and Manchester Museum staff that the museum's primary target audience is the public. That being said, several UoM academics indicated that the museum's focus on the public does not inhibit their use of museum collections because their teaching methods are comparable [see section 5.1.1.1]. This has proven advantageous for both parties as museum staff with specialist knowledge have traditionally played a role in university teaching (Arnold-Foster & Speight 2010; McGhie 2012).

Recent government threats of funding reductions for universities have put increasing pressure on university museums to produce income-generating projects. This is compounded by existing public funding reductions, which TWAM cites as already having caused a 48% dip since 2010, respectively (TWAM – Corporate Plan 2018). As a result, a popular source of income for university museums to pursue are funding agencies such as, the Heritage Lottery Fund, HEFCE, and Arts Council England. Academic staff need to understand that university museums can be handcuffed by the agendas of these outside funding agencies. In most cases, the museum has decided to pursue outside funding because of a lack of university funding. However, in exchange for their support, the funding agencies request the museum fulfill specific demands and/or reach specific benchmarks. As indicated in this study's findings, although they are supporting university museums, the aims of these funding agencies can lie outside of higher education [see section 7.1.4.1]. In the cases of NU and OX, the HLF and HEFCE wanted to see an increase in public visitor numbers for their support. To fulfill this

requirement and secure the necessary funding, both the GNM: Hancock and Ashmolean Museum have had to pedagogically shift towards the public [see section 7.1.4.1]. From the perspective of the museums, they are just doing what they have to do to secure the necessary funding for their own operations. If the university is dissatisfied with this shift in the museum's primary target audience, then it could be argued that it is the responsibility of the university to remedy, not the museum's, as it is the university's lack of funding that caused the museum to seek additional funding in the first place.

Just as influential as outside funding agendas, if not more so in defining a university museum's pedagogical role, is the internal perception of the museum. This internal perception is formed through a combination of influences. These mainly include: the perception of the museum by its main stakeholders and museum staff, as well as the museum's institutional memory. In theory, for those who equate their university museum to a local authority museum, the decisions to pedagogically shift display interpretations and the roles of museum staff towards the public are the appropriate actions to take. This is regardless of academic staff arguments concerning the value of interpretation and presentation, availability of museum store resources for HE teaching, and subject-specific expertise. For museum staff, this argument is based on the emphasis local authority museums traditionally put on public accessibility to learning.

As one Ashmolean staff member revealed, OX provides approximately 20% of the Ashmolean Museum's running costs [see section 7.1.2.2]. The remaining funding for the museum's running costs are acquired through the museum's benefactors and other grants. This imbalance in funding has altered the perceptions of Ashmolean Museum staff, who agreed that their primary audience is the public as the museum is primarily funded through taxpayers' money. This same Ashmolean staff member argued that because the museum is a public-facing asset of the university, museum staff see their duty as to the public, whereas academic staff have a duty to HE students [see section 7.1.4.2]. For comparison, NU and the GNM: Hancock is a useful case in illustrating how influential the internal perception of the museum can be. Although the GNM: Hancock is given approximately 1 million pounds per year by the university, which accounts for roughly 90% of its running cost [see section 7.1.4.1], there are still those within the museum who view the public as their primary target audience.

Even despite appeals from NU's former Dean of Cultural Affairs and academic staff that the GNM: Hancock should not be managed in the same manner as TWAM's other museums (as it is the only university museum under TWAM's management), it is still managed along the lines of a local authority museum. As a result, there are NU academic staff who share the opinion that because TWAM have customarily dealt with and managed local authority museums, that they are unfamiliar and/or indifferent towards what differentiates a university museum. Thus, they feel as though TWAM have chosen to manage the museum in the way they are most accustomed to managing because they are more focused on their pedagogical role to the public [see sections 7.1.3.1].

However, for museum staff this decision to prioritize the public was based on a number of variables such as, politics and agendas, and is attributed to the perceptions and

influence of those in positions of power within TWAM. From TWAM's perspective, this is their decision to make, as nowhere in their Service Level Agreements with NU or the 2009 redevelopment business plan does it say that the museum needs to cater to university teaching needs or that the university can control how the museum's galleries are presented [see section 7.1.4.2]. It is also important to remember that this might be changing in the near future, as the new GNM strategic plan does emphasis greater involvement in university teaching [see section 4.1.1].

When examining the influence institutional memory has on the museum's pedagogical role, the case studies used for this study reveal a variety of contexts. In the case of Manchester Museum, their institutional memory has steered their pedagogical role more towards the public. As Manchester Museum's Learning Manager explained, the reason their position, as well as the museum's other engagement positions, are more focused on the public than on UoM students (although they will be asked to lead the odd UoM lesson from time to time), is because of its historical mixture of civic and university funding [see section 7.1.4.2]. With civic funding, came a greater responsibility to the public. This municipal role, as well as the public-oriented values and operations generated over time have made a lasting impression on the museum's profile to the extent that museum staff see themselves as a public-oriented museum first, and HE-oriented second. For comparison, one can look at the cases of UCL and OX. Although UCL museums are now open to the public, because of their extensive history of focusing on being teaching and research resources for academics, museum staff still view HE students as their primary target audience [see section 7.1.4.2]. This is still different from OX, where the Ashmolean Museum has always been open to the public, but it was not until the last 20 years that the museum shifted pedagogically towards the public. Prior to this, the Ashmolean Museum was more consumed with its academic roots and focused primarily on the academic use of its collections.

The perspective of museum staff in the debate over the museum's pedagogical role is dependent on a number of variables, but their arguments are legitimate and need to be appreciated by academic staff. If the universities are not going to provide sufficient funding to their university museum (the topic of *sufficient* funds varies from case to case), it is only reasonable for the museum to cover the costs of their projects through other funding opportunities. Unless there are specific university aims and objectives that the museum is required to fulfill, but are unable to because of the attention they are giving to the agendas of outside funding agencies, then academic staff have little justification for criticisms of the museum for prioritizing their own projects over the desires of academic staff. There is also the impact of the internal perception to consider. The internal perceptions of the museum can dictate the majority of the museum's activities. These perceptions are rooted in the profiles of the university museums and thus, are more challenging to overcome if viewed as detrimental to the overall relationship. If a university wanted to change the internal perception of their museum, it would have to be mandated and emphasized heavily through the university's strategic plan. However, in today's economy, if a university museum does decide to prioritize the public, they also need to appreciate the risk of future funding cuts from the university.

8.1.3   Conclusion: The Challenge of Settling the Debate Over Pedagogical Roles

This study has shown that defining the pedagogical role of a university museum is subject to the uniqueness of each case, as every case has its own agendas, financial situation, and relationship between university and university museum. However, it has also been revealed that a university museum's pedagogical role can have a considerable impact on the use of museum collections in university teaching, and consequently, the museum's university funding. It is because of this impact that the pedagogical role of university museums should be at the center of discussions on how a university museum can expand the use of their collections in HE curricula.

It is important to remember that it was never the intent of this study to declare a side in this debate. Simply bringing this issue to light accomplishes the main goal of this study and provides an important platform for further discourse on the topic. How this issue is fixed or dealt with hangs on the willingness and motivation of the individuals and resources put in place by both institutions for collaborations to run smoothly. Unfortunately, there is a great deal of information which is not available to the public or could not be shared during the interview process for confidentiality reasons. This absence of key information makes it difficult to untangle the debate over the museum's pedagogical role on a case-by-case basis. In the end, the inconclusiveness of this debate is a call for greater communication between those in positions of power within the museums and the universities, as greater communication between academic and museum staff will help each party know what the other wants and needs.

8.2   Rethinking the Relationship: Universities and University Museums

The contents of Helen Chatterjee *et al*'s *Engaging the Senses* (2015) [see section 2.2.1] is a representation of what the majority of literature on university-university museum collaborations focus on when promoting the use of museum collections in HE teaching. The work is a compilation of international approaches to OBL in higher education, with each author providing the pedagogical theory behind the use of objects in their teaching, as well as the different engagement methods they have used with their students. These examples are both encouraging and inspirational for those interested in integrating museum collections into their teaching, yet what is not discussed in this work, and rarely touched on by the literature elsewhere, is the development of these university-university museum relationships which make the collaborations possible.

As Cain (2010) argues, it takes more than the reassurance that teaching with objects works to make university-university museum collaborations happen [see section 2.2.2]. This study ultimately supports Cain's remarks, providing ample evidence that academic staff across disciplines today have at least a general understanding of the educational theories and learning advantages associated with the use of objects in teaching. Instead, what academic and museum staff tend to struggle with when attempting to integrate museum collections into

their teaching, is a combination of pedagogical conflicts, the influence of the student response, logistical limitations, and implications of museum management structures, which together hamper the collaboration process. For future university-university museum collaborations to become more prominent and sustainable, both the universities and museums are going to have to rethink how they can better address these issues.

There is no universal model for the perfect university-university museum relationship. This is simply due to the individuality of each university and university museum.   However, as this study has shown, there is always room for improvement. Most, if not all, university-university museum relationships share key components which facilitate these relationships. Two of these constant components, awareness and staffing, were chosen for further discussion because of their impact on other identified determining conditions. This section argues that a greater attention towards these two components will enhance any university-university museum relationship in supporting the use of museum collections in HE teaching.

8.2.1   *Considering the Importance of Awareness in University-University Museum Relationships*

This study has identified *awareness* as a key logistical limitation across all four cases, with academic staff awareness of collections in the museum's stores, museum staff awareness of university curricula, and awareness of university and museum personnel, as three specific conditions which can determine the use of museum collections in university level teaching [see section 6.1.3]. When examined individually, each of these three determining conditions are impactful on their own. However, examined in a broader context, better awareness by both academic and museum staff can resolve several other challenges facing university-university museum relationships.

First, better awareness of the collections within the museum's stores can have a positive effect on a teacher's confidence when working with museum collections. Teacher confidence was identified as a learning disadvantage of teaching with objects for the impact it can have on learning outcomes [see section 5.1.3.2]. However, this barrier can be alleviated if a teacher is more knowledgeable and comfortable with the object/s they are working with. As frequently stated by academic staff, one way to achieve this is by keeping up-to-date and accessible databases and/or promoting more of what the museum collections contain. With more information at their disposal on the collections, academic staff will not feel as overwhelmed to search and integrate collections into their teaching. These actions by museum staff are major points of emphasis because it also shows academic staff that the museum is making an effort to support them.

In addition to increasing teacher confidence, the logistical limitation of planning time [see section 6.1.2.1] is another significant determining condition which can be overcome through better awareness of museum stores, university curriculum, and university and

museum personnel. If an academic is able to find the object/s they want in the stores efficiently, this will cut down on one aspect of the planning time of lessons involving museum collections. Museum staff need to recognize that academics who are not familiar with the museum collections can often feel overwhelmed with the amount of material in front of them and do not have the knowledge and/or time to search through stores without assistance. If museum staff are more aware of the university's curriculum, this will also cut down on planning time because this awareness enables museum staff to be more proactive in finding connections between the collections and university courses. Furthermore, better museum staff awareness of university curricula would cut down on planning time because academics would not have to spend as much time describing what the goals of the courses are. This is particularly challenging when new museum staff are employed and have not had the opportunity to connect with academic staff. The third way in which better awareness can decrease planning time is through directory transparency. Both the university and museum indicated they are unaware of turnovers in staff and have difficulty finding specific individuals throughout the various networks of the university-university museum relationship. The time it takes to navigate out-of-date and confusing directories of universities and museums can be significantly cut down if these directories are simplified and more sustainable networks are created for more frequent communication between academic and museum staff than the more ad hoc and personal connections which were indicated across the four cases of this study.

One of the more constructive topics frequently discussed throughout this study's interview process was the topic of increasing awareness through the type of staff employed by the university or museum. Both academic and museum staff contended that having a type of liaison working between the university and the museum would help communicate information and concerns more effectively from one to another. Key words such as *facilitating*, *organization*, *coordinators*, *matchmaker*, were thrown around to describe the desired responsibilities of such positions. The first and most obvious area in which a liaison can help is the promotion of what the collections entail, thus aiding in the academic staff's awareness of collections within the museum stores. A second area of difficulty for academic staff who have limited knowledge of the museum stores, is the process of retrieving objects for lessons. Having someone who could organize and facilitate this process for them would take pressure off the academic as well as reduce the workload of other museum staff who are regularly consigned to perform this task. A third area in which a liaison position could help increase awareness is the networking between academic and museum staff. Again, having someone who can compile contacts and create networks across departments instead of leaving it to academic and museum staff is a sizable weight off their shoulders and gives them a common first point of contact in the collaboration process.

As findings show, these bridges between institutions can come in a variety of forms. UCL Culture's Teaching Fellow has been lauded for their proactive engagement with academic staff and knowledge of the collections. At OX, the UEP has also received positive reviews for their contributions to university teaching. It will also be interesting to follow up on how the GNM: Hancock's recent liaison appointment fairs. Although limited information

was provided on this new position, their role was stated to create more strategic and sustainable links between the museum and the university [see section 7.1.1.1].

All university-university museum relationships, especially those of a larger size, can fall victim to a lack of awareness, but it is the responsibility of both the university and the museum to negotiate how lines of communication are going to be managed to maintain it. This section has shown how greater awareness of museum stores, university curricula, and personnel can have a positive effect on multiple aspects of university-university museum relationships. As a result of greater awareness in these areas, further barriers to the use of museum collections in HE curricula, such as teacher confidence and planning time, can also be overcome. Unfortunately, there is no universally accepted step-by-step process to increasing awareness amongst the different parties which make up university-university museum relationships. Liaisons working to bridge the two institutions is just one possible solution. It should be recognized that just because a liaison position is in place, does not mean awareness will always be improved. The effectiveness of the liaison position, or any strategy for that matter, still comes down to the personalities and motivations of the individuals hired for these positions. Nevertheless, now that the topic of awareness has been identified and its significance as a key component in university-university museum relationships has been unpacked, greater attention can be given to addressing it.

8.2.2 *How Institutional Staffing Impacts University-University Museum Relationships*

The second component of university-university museum relationships which plays a major role in determining the use of museum collections in HE curricula is the *staffing* of universities and university museums [see section 2.3.1]. As this study has revealed, both the type of staff, as well as the individual motivations and pedagogies of staff within a university museum and those along the museum's line of management, influence the museum's daily operations and relationship with the university [see sections 5.1.2 and 7.1.1]. The topic of liaison-type positions bridging universities and university museums has been previously touched on in this chapter with regards to its impact on mutual awareness in university-university museum relationships, and therefore, will not be revisited in this section [see section 8.2.1].

At UCL, one academic who works within UCL Culture and closely with the collections at the Grant Museum, discussed their displeasure with how the Grant Museum was taken out of the biology department and placed within professional services. As the UCL academic details, their displeasure is the product of conflicting opinions on how the university's museums should be deployed [see section 7.1.3.1]. Whereas the academic sees the UCL Collections as primarily teaching and research resources, which should be integrated into university teaching, those within professional services are more worried about the financial costs and issues of space which come with managing the museums. Consequently,

the UCL Collections have been forced into a service model which can complicate aspirations of systematic integration into HE curricula.

This clash of interests at UCL speaks to a wider issue, which is the establishing of a shared vision amongst university and university museum staff. This is where staffing, and specifically the type of staff employed by both the university and the museum, is crucial to developing a university-university museum relationship which supports the use of museum collections in HE curricula. It is idealistic to believe that every individual who is a part of the university-university museum relationship would agree on the direction and position of the museum. However, if people are pulling in different directions, either one side is going to be marginalized or nothing will get done. Therefore, this idea of a clear and unified vision, across both staff, of the university museum's role could be the key to enhancing university-university museum relationships. Using the case of UCL to illustrate this approach, one cannot hope to foster a sustainable university-university museum relationship if there are staff who view their collections as integral teaching and research resources and those who view them as a professional service to the university. Or as in the case of NU and the GNM: Hancock, if there are staff who view the museum as a HE-focused university museum and others who view it as a local authority museum.

Having staff who recognize not just the learning advantages of teaching with objects, but also the logistical limitations challenging academic staff as well, is a key element of any university-university museum relationship. What may be an important issue for staff who view the museum's primary audience as HE students, may not be as important to those who view it as the public. One example of this is the higher priority academics put on spatial limitations, such as museum-based teaching room equipment [see section 6.1.1.2]. For academic staff, sturdy tables and specific tools are essential pieces of equipment if students are going to be working with objects. Of course, the safety of objects is important to museum staff as well, but this specific equipment may not be as high a priority for someone who is primarily focused on the public galleries and public engagement or worried about the cost efficiency of outfitting the museum with new equipment.

The impact museum opening hours and teaching room availability have on the collaboration process are two further examples of the type of logistical limitations which can be lessened if recognized by university and university museum staff. Both these issues tie into the challenge of timetabling lessons involving museum collections [see section 6.1.2.3]. Academic staff are unable to use museum collections outside of museum hours. This can unfortunately exclude both early morning and late afternoon classes from object-based experiences, as well as classes which are held on days the museum is closed. In addition, because there are a fixed number of museum teaching rooms which are available not only to the university, but local schools and public programming, scheduling a time slot to use these teaching rooms is increasingly difficult for academic staff. One possible solution to this issue, which was not brought up in any interview, but is still worth noting, is the concept of specific time blocks set aside for university groups when school children and/or the public are not usually present at the museum. If these issues are identified and appreciated by those within

the museum management structure, steps can be taken to amend them. It would be interesting to know if those in charge of managing the museums in which these issues were cited are unaware of their impact or aware of the impact, but choose to do nothing about it. These logistical limitations may seem like minor obstacles, but each one has its own significant implications in determining the use of museum collections in HE curricula.

UCL and OX academic staff discussed the importance they put on employing university museum staff who can facilitate learning at the university level [see section 7.1.1.1]. Academic staff want to know that if they are going to collaborate with the museum and have museum staff leading lessons, that their course goals are being met and their students are getting a worthwhile experience. For universities and university museums looking to increase their collaborations with each other, having museum staff who can communicate information and engage with students is an important starting point. Even if it is not the museum staff leading the lesson, having museum staff present in a supportive role is crucial to university-university museum collaborations because it reassures academic staff that they have someone to turn to if they have any questions.

Again, the one case that stands out in this discussion on institutional staffing is UoM and the Manchester Museum. There are two key elements to this case which drive the argument that their relationship is a seemingly favorable situation for both the university and the museum. First, is a museum director who appreciates the dual roles of the university museum, both as a valuable teaching resource for the university and as an important cultural organization for the local and national communities. Manchester Museum staff spoke highly of their former director because of his background as an academic and how his experience and personality enabled him to build a rapport and networks between key members of the university and museum staff [see section 7.1.1.1]. It should be noted that a turnover in museum director took place within the past year, and therefore, has not yielded any noticeable change in university-university museum collaborations. Second, is the Manchester Museum's seemingly simple management structure, which allows for the director of the museum to report directly to the university's Deputy President. With this direct link, the director is able to communicate issues and the museum's direction more efficiently and effectively to the university's Board of Governors as opposed to going through, and being grouped in with, other departments. As a result, UoM and Manchester Museum appear to be an outlier among the four cases used for this study. Although the museum unapologetically considers the public their primary audience, there is considerably less evidence of tension, especially along the museum's line of management and academic staff regarding the pedagogical role of the museum and their relationship with the university (Learning Manager, Manchester Museum, personal email communication, November 2019).

8.2.3   Conclusion: University-University Museum Relationships Moving Forward

University-university museum relationships are multifaceted, unique, and in constant flux. This does not mean one case cannot learn from another in the hopes of improving their own relationship. Awareness and staffing are two components which are found in all university-university museum relationships and are foundational in determining the use of museum collections in HE curricula. As such, if one is looking to increase university-university museum collaborations, reevaluating and concentrating efforts on these two components is the logical first step. Increasing awareness in the key areas of museum stores, university curricula, and personnel are not only important in their own right, but can also have a direct effect on other determining conditions, such as teacher confidence and planning time. The most popular solution to increasing awareness in these areas was through the appointment of liaison posts. However, this option is not available to every case and does not guarantee success. Despite this, the staffing of university museums, as well as the staff along the museum's management line, are essential for building sustainable relationships. If one wants to create sustainable university-university museum relationships, the advantages of having staff who understand and appreciate both the university and museum sides of a university-university museum relationship cannot be underestimated. With this type of staff, both pedagogical and logistical determining conditions in the use of museum collections in HE teaching can be given greater attention.

8.3   Research Challenges and Future Research

This section presents the research challenges of this study and identifies areas for future research. There were two main challenges to this study. These were: research design limitations and data limitations.

8.3.1   Research Design Limitations

Following Yin's (2009) critique of the case study method, there are four challenges in particular to this study's design which effect its impact on the field.

The first challenge is the general concern over the rigor in which the case study method has been carried out. Yin (2009) laments how many researchers disregard case studies because of the lack of structure and systematic procedures associated with the method. In response to these concerns, this study chose to follow and adapt Yin's case study design for its structure and procedural approach to carrying out case study research.

The second challenge is the concern of researcher and interviewee bias. Thomas (2013) provides a sound explanation for how this study overcomes this challenge. He states the key to an interpretive approach is a naturalistic response by the researcher to the study's

findings. As such, it should be acknowledged that although the researcher's position will almost certainly have affected interpretation, careful consideration was made for equal representation of all parties examined in this study. As for the concern of interviewee bias, this is solved by triangulation (Yin 2009). Information gathered through the interview process was verified using official university and museum documents [see section 3.1.5], as well as the information gathered across a large and diverse group of participants.

The third challenge is that sweeping generalizations regarding the use of university museum collections in HE curricula cannot be made as a result of this study. This is true, however, it was understood prior to selecting the case study method that generalization was never the goal of this study. Cases were chosen for their ability to fulfill the specific aims and objectives of this study. As a result, parallels can be drawn between the four cases used for this study, as well as cases which were not used, if theoretical and/or situational similarities are identified.

The fourth concern of the case study method is the time it takes to complete case study research. As Yin (2009) argues, this concern is often mistaken for data collection techniques such as ethnographic studies or participant observation, which require extended periods of field work. Through careful planning, organization, and justifiable limitations in data collection, all four case studies were completed for this study. However, time constraints did play a role in this study in terms of the number of cases, the number of interviews, and the time-frame in which interviews and the online student survey could be conducted. Interviews had to be arranged according to the schedules of the interviewees. In some instances, Skype interviews were used in place of face to face meetings. This was due to both financial and scheduling reasons. An online survey for student responses to the use of objects in their courses was implemented as a result of time constraints as well. However, this method was not without its own time constraints. To maximize the number of results, this online survey had to be sent within the narrow window towards the end of the school year when students had completed their courses, but had yet to leave on summer holiday.

8.3.2   Data Limitations

The pool of potential cases from which to draw data from, data diversity, and access to confidential or unavailable information were the three main data limitations of this study. All three were managed and justified by the researcher in chapters 3 – 4.

Time-permitting, as illuminated by the case selection process of this study [see section 3.2.2] there were a number of potential case study candidates which could have been selected and could have yielded contradictory and/or more supportive findings. These excluded cases are the impetus for future research.

Likewise, a greater diversity in academic and museum staff participants could have provided a more holistic understanding of disciplinary use of museum collections in HE curricula as well as perspectives on specific university-university museum relationships.

Although qualitative data was gathered on the student response through open-ended survey questions, the volume of responses was limited because of the nature of the research method employed and timing of its use. Many students provided short answers to the open-ended questions or chose not to answer them at all. Greater depth and diversity was desired, but not obtained. This in turn, limited this study's analysis of the student response.

Lastly, there were instances throughout the research process when certain information, such as financial figures from institutional strategic plans, was deemed confidential or unavailable. In these instances, so as not to speculate or break ethical code, data was only presented when available or when granted permission.

8.3.3   *Future Research*

The topic of university-university museum relationships and the use of museum collections in HE curricula is relatively new. As such, there are issues and themes which were unable to be discussed at length in this thesis. These are promising avenues for future research. The four cases examined in this study do not tell the whole story of collections use in HE curricula in the UK. As clarified above and in chapter 3 [see sections 8.3.2 and 3.2.2], there are a number of university-university museum relationships which qualify as candidates for case study research and have the potential to enhance the knowledge of the field with contradictory and/or supportive findings. One example of this is the relationship between the University of Reading and its university museums, specifically the Ure Museum of Greek Archaeology, Cole Museum of Zoology, and Museum of English Rural Life. This is an intriguing case because they identify more closely to the description used for this study to distinguish an academic service management structure and could offer a new perspective on the implications of this museum management structure. The University of Reading was on a shortlist of possible cases for this study, however, due to communication issues, OX was instead selected for the completion of this study.

As funding pressures and teaching and research incentives change, such as the TEF and REF, so too do the dynamics of university-university museums relationships. To monitor these changes, it will be crucial for future case studies to focus on university museum funding strands and their impact on the direction of the museum. For example, the future of OX and the Ashmolean Museum's teaching cost and UEP funding arrangement. With UEP's Mellon Foundation funding ended and academic staff arguing against paying out of their department's pocket for museum staff teaching, there are questions concerning the contracts of UEP teaching curators upon their expiry as well as the impact this issue will have on the growth of the museum's involvement in university teaching [see section 7.1.2.1].

Another potential and exciting research opportunity is into how museums intend to handle an increase in workload if efforts to widen collections use in university teaching are successful. With universities, such as UCL, moving away from didactic methods of teaching, museum collections become a prime resource for academic staff across disciplines [see section 5.2.3.2]. However, with financial and staff restrictions, museums are going to have to set rational limits as too just how much they can handle. It will be interesting to see how university museums cope with such demands and how it affects their pedagogical role.

A third and final area of interest is the topic of the student response to object-based lessons. The sample of student survey responses analyzed for this study is only a fraction of the UK student population. As student survey comments indicated, there is a general appreciation for object-based lessons across the four cases. However, further surveys and/or interviews with students will provide the field with more in-depth and greater understanding of the student response to object-based teaching techniques and their impact in determining the use of museum collections in HE curricula.

9   Conclusion

This study began with a critical review of the foundational and contemporary literature on educational theory, museum education, and university-museum collaborations (Chapter 2). This was followed by a chapter on the study's methodological approach (Chapter 3), which provided both the rationale behind an interpretivist approach to multiple case study research and justified the use of both semi-structured interviews and an online survey to answer this study's overarching research question. Next came a chapter of introductions to the study's four cases (Chapter 4). These introductions provided a brief history of each case's museums and their collections, a review of relevant strategic plans, and an overview of each case's museum management structure and relevant staffing. The next three chapters presented this study's findings amassed from interviews with academic and museum staff and an HE student online survey (Chapters 5-7). Utilizing a thematic approach to data analysis, these three findings chapters revealed the diversity of determining conditions across four main themes (Pedagogy, Logistical Limitations, Museum Management Structure, and Student Response). The second to last chapter of this study (Chapter 8) further discussed two key topics, that of the pedagogical roles of university museums and the reevaluation of university-university museum relationships, which are argued to play significant roles in determining the use of museum collections in HE curricula, and showed the interconnected nature of the identified determining conditions.

This conclusion chapter brings together the arguments and ideas of the previous chapters for evaluation and reflection in relation to this study's aims and objectives. This study's aims and how they were met are reiterated below:

Aim 1: Identify learning advantages and disadvantages perceived by academic and museum staff and students when teaching with museum collections.

Identifying how pedagogy influenced and/or determined the use of museum collections in university level teaching was central to this study's aims and objectives. This study found that academic and museum staff from the four cases generally share the same perceived learning advantages (engagement, knowledge retention, skills development, and exposure to primary source material) as well as disadvantages (didactic learners, teacher confidence, difficulty level, and the issue of assessing the extent of learning) of teaching with objects. Student survey comments reinforce these claims. However, perceived learning advantages and disadvantages are just two aspects of pedagogy. Where academic and museum staff can differ, and where barriers to collaborations in HE teaching can arise, is when there is a difference in individual teaching methods, such as OBL and everything which comes with this method [see section 5.1.4], or a difference in the university's and university museum's target audiences. These differences can complicate or deny what academic staff seek to accomplish while using the collections, and if the needs of an academic cannot be met,

many academics have little reason to collaborate with the museum except for those who are personally motivated or teach subjects in which material culture is traditionally embedded.

The impact of logistical limitations on the use of museum collections in HE curricula was severely underestimated at the early stages of this study. The sheer amount and diversity of logistical limitations detailed in this study is a significant addition to the contemporary literature on university-university museum relationships [see section 2.2.4]. Academic and museum staff identified issues involving the space required to work with museum collections, time and timetabling, awareness, human resources, and limitations of the collections themselves as the most frequent and challenging logistical limitations to overcome. Many of these topics have not been discussed by the literature before in regards to their effects on the use of museum collections in HE curricula. These issues may seem trivial in the grand scheme of the partnerships between universities and university museums, but this study has shown how their impact on the use of museum collections by academic staff in their teaching is undeniable and deserves greater attention if a university and museum are looking to foster a more sustainable and positive relationship.

Aim 2: Analyze how the relationship between museums and universities affect how academic staff and students use museum collections.

There is no universally accepted management structure for university museums. This is due to the individuality of each case. However, the way in which a university museum is managed has a significant influence on the relationship between the university and the museum, and ultimately, the facilitation of museum collections in university teaching. For example, this study found that university-university museum relationships can be strained when there is a lack of subject specific expertise within the museum, an absence of positions which bridge the university and museum, and high institutional turnover rates. These shortcomings leave academic staff with limited support when looking to integrate museum collections into their teaching. Finance undoubtedly plays an important role in the use of museum collections in HE curricula. Conditions such as museum staff teaching costs and university funding distribution, weigh heavily in an academic's decision to use museum collections. When one mixes in the complexities of managerial lines and the affect these can have on perspectives surrounding the position of the university museum [see section 7.1.3], and the impact funding agendas and institutional agendas have on the direction of the museum [see section 7.1.4], it is easy to understand how the first area to focus on when looking to foster sustainable links between a university and a university museum in regards to teaching with museum collections, is the relationship between the two institutions.

Aim 3: Investigate the degree to which the use of objects in teaching affects student interest, motivation, and learning.

With limited qualitative data to draw from, this study could not give the desired amount of attention to the student response. However, HE student survey comments did provide valuable insight on this study's aims and objectives concerning the student response to the use of objects in HE teaching. This study established that the use of objects in HE teaching can increase levels of interest, motivation, and learning in students. Additionally, this study indicates a general appreciation and understanding, amongst the HE students, of the perceived learning advantages of working with objects. This of course, cannot be considered universal as only a limited number of HE students participated in the study. Regardless, as previously contended [see section 5.1.2.1], for academic and museum staff, the significance of the student response lies in the argument that without the student's active engagement with the material, efforts to provide the opportunity for experiential learning are wasted.

This study successfully compliments the contemporary literature on university-museum collaborations. By focusing on the relationships between four separate universities and their affiliated university museums, and expanding the scope of the study beyond pedagogy, to include logistical limitations, museum management structure, and the student response to the use of objects in HE teaching, this study presents a novel look at the inner workings and perspectives which can enable, or inhibit, university-university museum collaborations at the HE level. The four cases used for this study (NU and the GNM: Hancock, UCL and the UCL Collections, UoM and the Manchester Museum, and OX and the Ashmolean Museum) provided a wealth of information. From this data, a number of conditions which determine the use of museum collections in university level teaching were identified.

Times have changed. University museums today need to justify their value to their university, or risk financial cutbacks. With new financial challenges on the horizon, strengthening the relationships between universities and their university museums is more crucial than ever. However, as the UK landscape of higher education changes and becomes less didactic and less lecture-based, this shift is one opportunity university museums can take advantage of to expand the use of their collections beyond traditional material culture-based disciplines and raise the profile of the museum through collaborative scholarship. This study is a starting point for these discussions on how to better facilitate the use of museum collections in HE curricula.

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Appendix 1:
Academic Staff Interview Questions

What learning advantages and disadvantages are perceived by academic staff when teaching with museum collections?

2. Are museum collections integrated into your curriculum? Why or why not?
    a. Have you had any previous experiences (negative or positive) working with museum collections?
    b. If so, how are they used?
    c. If no, have you tried to integrate museum collections into your curriculum in the past?
    d. What are your perceived learning advantages or disadvantages to the use of museum collections in your courses?
    e. To what extent does the use of museum collections affect your methods of teaching?

3. What is, or would be, your assessment method for projects including museum collections?

4. What are the logistical limitations of teaching with museum collections?
    a. How do these limitations affect the use of the museum collections?
        i. How might these logistical limitations be resolved?

5. How would you define the term – Object-based learning?
    a. What pedagogical advantages or disadvantages do you find in object-based learning?
    b. What role do you believe academic staff should play in regards to OBL?

6. To what extent do you believe your pedagogy is different from the museum's pedagogy?
    a. In what ways are they similar?
    b. What pedagogical changes, made by either the museum or the university would have to be made to better facilitate the use of museum collections in higher education?

7. What do you think the museum can do to better accommodate or support academic staff use of museum collections?

Appendix 2:

Museum Staff Interview Questions

How does the relationship between museums and universities affect how academic staff and students use collections?

2. Do academic staff and students use the museum collections? Do you believe they should? Why?
   a. If so, how often are they used and what takes place during these sessions?
      i. To what extent are these lessons relevant to course curriculums or do they have their own individual goals?

3. What is the main form of communication between the museum and the university?
   a. Does this model of communication support object-based learning?
   b. In what ways could communication between the two sectors be enhanced?

4. Has there been resistance by academic or museum staff, either in the past or currently, to the use of museum collections in university curricula?
   a. If so, what were the reasons for resistance?
      i. If so, have these concerns been addressed? How?

5. How does the museum respond to the individualistic (personalized) and changing curricula of the university?

6. To what extent do you believe the pedagogy of the museum is different from academic pedagogy?
   a. In what ways are they similar?
   b. What pedagogical changes, made by either the museum or the university would have to be made to better facilitate the use of museum collections in higher education?

7. Does the museum's management structure have an effect on the relationship between the museum and the university in terms of supporting the use of museum collections by academics and students?
   a. If so, why and how?

Appendix 3:
University Student Online Survey Questions

To what degree does the use of objects in university level teaching affect student interest, motivation, and learning?

1. What is the title of your course?

2. Have you experienced working with museum collections in your course?
   a. Yes
   b. No

3. Do you feel more engaged in the lesson when museum collections are being used?
   a. Yes
   b. No
   c. Cannot answer because museum collections are not used
      i. If yes or no, please explain why or why not you feel more engaged?

4. Do you feel more motivated and attentive when museum collections are being used during the lesson?
   a. Yes
   b. No
   c. Cannot answer because museum collections are not used
      i. If yes or no, please explain why or why not you feel more motivated and attentive?

5. Do you believe working with museum collections is an effective way to learn in your course?
   a. Yes
   b. No
      i. If yes or no, please explain why or why not?

6. Would you be interested in working more with museum collections during your course?
   a. Yes
   b. No
      i. If yes or no, please explain why or why not?

7. Please describe your preferred teaching style? What is the role of the academic staff member? What is the role of the student?

Appendix 4:
Copy of Interviewee Consent Form

Research Title: *Fostering Sustainable University-University Museum Relationships: A Study of the Integration of Museum Collections in Higher Education Curricula*

Research Investigator: Philip Sabelli

Research Participant:

Thank you for agreeing to be interviewed as part of the above research project. This consent form is a necessary ethical procedure to ensure that interviewees understand the extent and conditions of their involvement. In order to give your consent for the following interview, please read the accompanying document and then sign this form below to indicate your approval.

- The Interview should take approximately 30-45 minutes
- The interview will be recording and transcribed verbatim
- Access to the interview transcription will be limited to the research team
- If results of this study are published or presented, individual names and personal details will be anonymized, unless given explicit permission by the interviewee
- All or part of the content of the interview may be used

By signing this form, I agree that:

1. I am voluntarily taking part in this project and understand that I can withdraw at any time
2. I give consent to be audio recorded
3. The procedure regarding confidentiality have been clearly explained
4. I can request a copy of my interview transcription and may make any edits I feel necessary to ensure the effectiveness of the agreement made regarding confidentiality
5. I have been able to ask any questions regarding the research project and understand that I am free to contact the researcher with any questions or requests in the future
6. I have read this document in full and understand its contents

Participant:

Name of Participant: Signature: Date:

Researcher:

Name of Researcher: Signature: Date: