Pedagogical Curation: Connecting young children's learning with art museum curatorial practices

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Acknowledgements

Abstract

Young children under the age of five have become an increasingly important audience for art museums around the world with many institutions developing specialised activities, spaces and staff for this age group. However, curatorial practices for this audience differ significantly across the sector; there are diverse perspectives on how art museums can best support children's learning and thus diverse offers. This thesis aimed to support a well-theorised curatorial practice that is focused on learning.

This thesis explored the research question 'how can children's (0-5 years) learning be connected with art museums' curatorial practices?' The aim of the enquiry was to construct a critically reflective framework comprised of theoretical and practical resources to support art museum teams developing programmes with and for this audience.

I mobilised a Critical Participatory Action Research methodology to investigate children's learning and curatorial practices in two art museums in the United Kingdom. The enquiry consisted of two action research cycles: each had a preliminary reconnaissance, gallery activities and analysis. Activity theory was used throughout as a framework for analysing the practice and modifying the critically reflective framework.

Action Research Cycle One, conducted in the early year's Atelier at The Whitworth Art Gallery, drew heavily on Constructivist learning principles to produce a planning guide, reflection strategies, practice principles and information resources to support the action research team in aligning children's learning with the gallery practice. Action Research Cycle Two, run in partnership with the Early Years and Family team at Tate, built on these outcomes to investigate how New Materialist critical theory could both expand and connect the critical framework with the learning team's curatorial practices in the new location. In both art museums, children and their families were also active participants in the gallery activities. Outcomes of the second research cycle were then used to make further modifications to the critically reflective framework.

The learning curators and artists from both the Whitworth and Tate brought specialist knowledge from their pre-existing practices with children and families to the enquiry. Working alongside the art museum teams, my role in the action research was as an active participant in the practice.

The research shows that, for children's learning to be better connected with art museum practices, gallery learning teams benefit from curatorial practices that have clear pedagogical foci. When learning curators and artists actively plan for, facilitate and reflect on children's learning and their practice, learning and pedagogy become concrete and visible. I have called

the critical framework produced by the research 'pedagogical' to indicate that it is a curatorial practice that connects art, learning and pedagogy. Through the action research I also have constructed a set of practical resources that can support art museum teams to align their practice with children's learning. The resources consist of:

- A guide for designing children's learning environments referred to throughout the thesis as the Guide for Pedagogical Curation (GPC). The GPC supports learning curators and artists to select a learning environment's material, conceptual, social and spatial components. This selection is done in order to encourage the scaffolding of children's learning over time
- A set of reflection strategies and methods for connecting children's learning with art museum practices
- A set of practice principles that underpin the practice
- Information resources including a vocabulary list and case studies of children's learning environments.

This research makes a contribution to knowledge through the construction of a pedagogical architecture that can be used to curate learning programmes for young children and their families in art museums. By operationalising both Constructivist and New Materialist theory in gallery practice, the research also highlights the significance of designing creative spaces that take into account the material, spatial, social and conceptual components of learning environments. The outcomes of the research have direct benefits for the practice of learning curators, artists and educators working with children in both art museums and beyond.

Keywords: Early Childhood Education, Visual Art, Museum Education, Learning, Pedagogy, Constructivism, New Materialism, Action Research.

Publications from this research

Prior to the submission of this thesis, three publications have been produced from this research. All of these publications were peer-reviewed and as a result, the thesis has benefited from this feedback. The publications are as follows:

Articles

Penfold, L (2019). 'Material matters in children's creative learning.' *MIT's Journal of Design and Science.* Issue 5 (February 2019): Essay in Exploration - Resisting Reduction. MIT Media Lab/MIT Press.

Book chapters

Penfold, L (2019), 'Connecting young children's learning processes with art museum practices' in Shaffer, S (Ed), *'International Perspectives on Children in Museums,'* Routledge (in-press).

Penfold, L & Turner, L (2019) 'Reflecting on children's play at the Whitworth Art Gallery.' In Hackett, A. MacRae, C. & Holmes, R (Eds.) in *Working with Young Children in Museums: Weaving Theory and Practice,* Routledge (in-press).

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Chapter One: Introduction

From 2011-2015, I worked as a Children's Program Officer at the Ipswich Art Gallery in Queensland, Australia. In my role, I was part of a team of designers, artists and educators to produce large-scale, interactive installations for children under the age of 12. These installations were informed by principles such as 'learning begins with creative play' and 'children explore the environment using all their senses' (Ipswich Art Gallery, 2019). Materials such as light, foam blocks, paper, paint and sound were an important consideration in the design of each activity. For example, in '*Wild Thing' (2012)* (Image 1, below), children were able to create wearable pieces of art using paper, streamers and fabric inspired by the taxidermy animals of Australian artist, Troy Emery. Children could then turn into a 'wild thing' themselves while playing on a giant indoor hill created by fellow Australian artist, Nicole Voevodin-Cash. In another exhibition, *'Construction Site' (2010, 2013),* children built cubby houses using high-density foam blocks, as pictured in Image 2 on page 15. During my time at the Ipswich Art Gallery, I learnt much about the curation of children's creative learning environments especially in relation to designing spaces for babies and toddlers.

During this time, I also visited numerous other cultural institutions in Australia, America and Europe as I was interested in learning about

Image 1: '*Wild Thing'* (2012) at the Ipswich Art Gallery, Australia.

Image credit: the Ipswich Art Gallery, Australia.

different approaches to children's art education in museums. In these visits, I observed great diversity in the philosophies, financial investments and pedagogical approaches that underpinned the learning programmes, leading me to question how curatorial practices could be best developed to support children's learning.
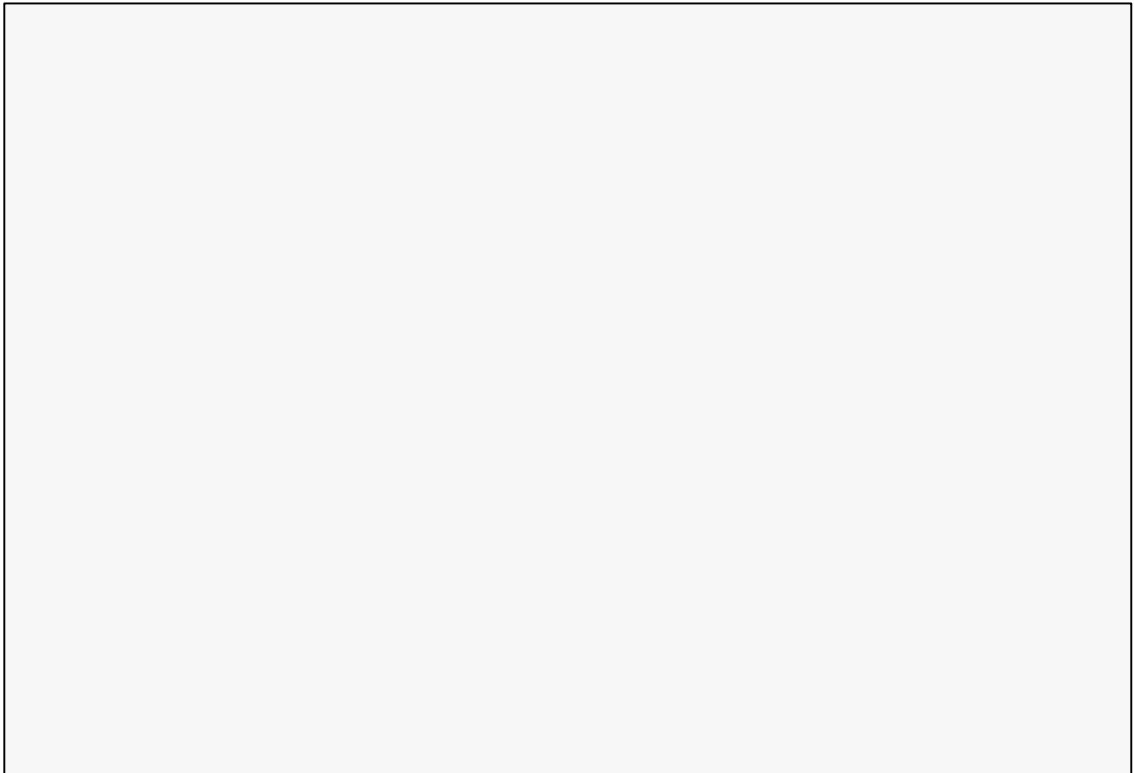
Image 2: '*Construction Site'* (2010, 2013) at the Ipswich Art Gallery, Australia.

(Above image removed for copyright purposes).

While also working at the Ipswich Art Gallery, I connected with an inspiring group of early childhood teachers exploring the recording and reflection of children's learning through Pedagogical Documentation (Rinaldi, 2001). I was fascinated by the complexity of the educators thinking when discussing images and notes on children's learning. It seemed to me that the records generated were not simply being used to evidence student educational outcomes but rather as a way of thinking about the philosophies and possibilities of early childhood practices. The Pedagogical Documentation process reminded me of my own creative research I had engaged in as part of my art practice as a photographer in which I would experiment with different photographic tools, techniques and materials to explore various aesthetic, intellectual and emotional processes. For example, in the artwork *'Ophelia (Save Yourself)'* (Image 3, page 16), I experimented with the use of medium-format cameras and analogue film to explore storytelling, portraiture and emotional transformation. This experimentation led to novel thought processes, feelings and understandings that also generated new starting points for further enquiry. In particular, the process of art journaling with images allowed me to visualise my creative and critical thinking and put these processes into a

form that could be shared with other people, as illustrated in Image 4, below. I could see deep parallels between the reflection processes of the educators and my art journaling process.

Image 3: Louisa Penfold '*Ophelia (Save Yourself)'* (2009)
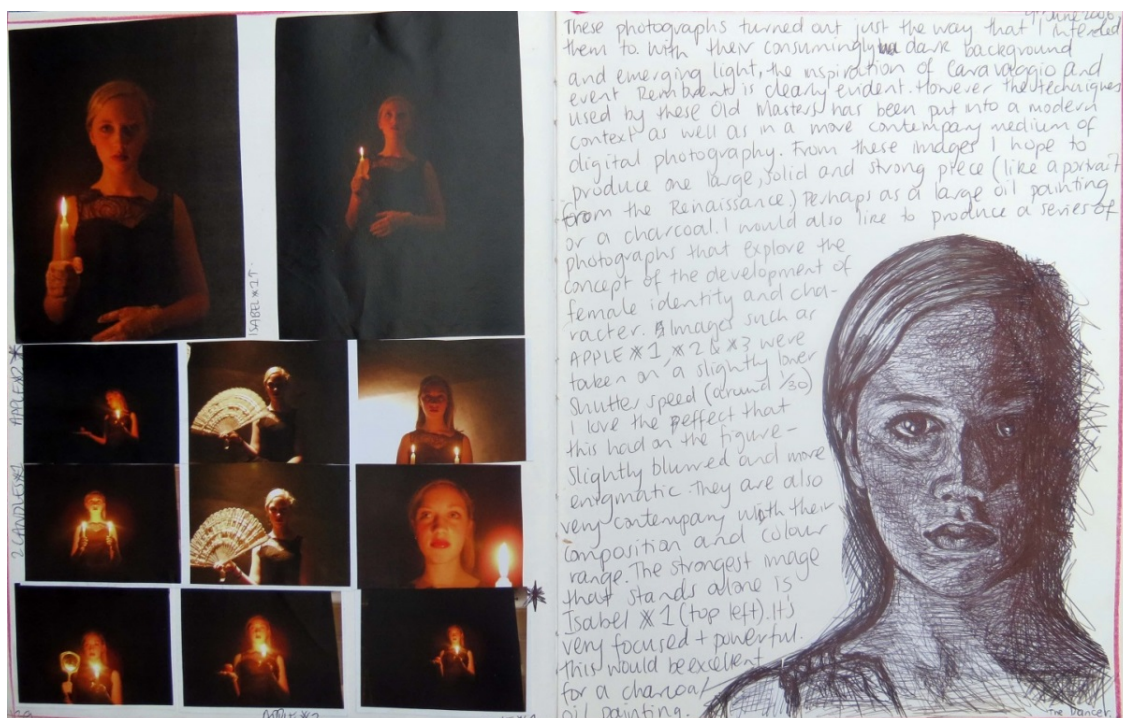
Image 4: Pages of an art journal from my studio art studies

I was also deeply inspired by the teachers' discussions. I had not ever participated in this sort of discussion on children's learning in art museums before. I began to consider how I could integrate a similar critical and creative reflection into my curatorial practice with children in art museums. These curiosities led me to undertake my PhD in Education at the

University of Nottingham, in partnership with the Tate Learning Research Centre. Commencing the enquiry, I identified the general research focus area as exploring how child-centred pedagogy can be constructed in art museums. Starting out my PhD, I also felt there was a strong possibility to integrate my creative approach to photography with the development of a research methodology that connected children's learning with art museum's pedagogical practices. In undertaking the PhD, I planned to produce practically useful resources to support learning curators and artists in developing education programmes for children in art museums.

Introducing action research

To investigate the research focus, I needed to draw on a methodology that allowed for the ability to:
1) Embed myself in the practice of art museum learning
2) Collaboratively work with an art museum team to plan, facilitate, reflect and make changes to learning practices
3) Critically reflect on my practice from within a specific context
4) Facilitate the improvement of art museum education practices, including my own.
The search for such a methodology led me to action research, an enquiry-driven process used across various disciplines to produce 'what works' solutions to practical and contextual problems. The origins of action research can be seen in the work of Lewin (1946, 1948) who wanted to develop a methodology to support social advancement by exploring and solving problems through practical enquiry. Lewin constructed an initial cyclic model for action research cycle that consisted of three steps: planning, acting and change. Lewin's preliminary iteration of action research also positioned researchers as being external to the practice. This positionality limited the researcher's ability to actively participate and facilitate change in the practice. As my enquiry required the ability to participate in the production of art museum practices, I explored additional models of action research that allowed for this to happen. My search led me to Critical Participatory Action Research.
Critical Participatory Action Research (CPAR) builds on Lewin's initial action research model to produce a practice-based methodology that allows people to collaboratively investigate practices with the aim of making them more equal, effective and socially just (Dickens & Watkins, 1999; Kemmis et al., 2014; McCutcheon & Jung, 1990; Reason, 2006). In education settings, CPAR can support educators in exploring the methods and conditions that shape pedagogical practices (Kemmis et al., 2014). In this enquiry, CPAR's sequencing of planning, acting, reflection and change allowed for the rigorous investigation of child-centred pedagogic practices in art museums. However, I was also aware that these sequences are rarely neat and often overlap in fluid and non-linear ways (Thomson & Gunter, 2007).

CPAR departs from Lewin's preliminary action research model in its emphasis on critical reflection in practices. MacNaughton (2005, p.6) characterises reflective practice in early childhood education as the *"hallmark of quality teaching and as the bedrock of professional growth."* From this perspective, reflection can be understood as looking back at education practices to think about what happened from different perspectives. Practice then becomes critical when attention is directed away from an individual and towards the production and effects of power relationships (MacNaughton, 2005). Awareness produced from critical reflection can then be used to transform educators pedagogical practice and allow them to take control of their learning (Wroe & Halsall, 2001). Critical reflection played a central role in investigating children's learning and art museum practices in this enquiry.

Rigour and positionality

The Critical Participatory Action Research process mobilised in this enquiry also emphasised the importance of 'rigour' as a criterion for judging the strength of research. Unlike positivist research, action research does not try to limit or control the variables of a research environment. As a result, the positivist criterion of 'validity' cannot be used to judge the strength of an action research project (Dickens & Watkins, 1999; Herr & Anderson, 2015). Instead the principle of rigour, understood as a researcher's ability to plan, act and make improvements to practice, was central in constructing a robust investigation into art museum's pedagogical practices with children (Reason, 2006). In this research, rigours enactment is described and reflected on throughout the action research cycles.

In action research, a researcher's positionality can shift depending on the order of action research undertaken. First-order action research is driven *by* an insider of an organisation or community as opposed to being conducted *on* others (Herr & Anderson, 2015). Zuber-Skerritt and Fletcher (2007) describe first-order research as the 'core' part of an action research enquiry. In first-order action research, the researcher works as an active participant in an education team. In relation to this enquiry, this positionality allowed me to reflect on my practice as a learning curator while carrying out activities with children in art museums. However, an action researcher's embedded positionality in the practice can also raise ethical concerns in an enquiry. For example, Thomson & Gunter (2011) argue that action researchers have 'multiple identities' in any given enquiry. As a result, I was aware that my position in the action research may shift from being a research to a curator to an artist. At the same time, the research could also involve numerous participants who all produce data. This fluidity in positionality could then blur the lines around the authorship of a collaborative research project. I was therefore aware of the need to discuss the ethics of my positionality in order to create reciprocity

with other research participants in this enquiry (MacNaughton & Hughes, 2011).

In contrast to first-order action research, a second-order enquiry is focused on analysing the nature and dynamics of the first-order activity (Marti & Villasanta, 2009). This is done is produce an academic analysis of the core process. The analytical focus of second-order action research is separate, yet can extend the analysis of first-order action research. Second-order research can be undertaken either individually or collectively. In this research, I undertake the second-order analysis of the practice independently.

Ontology and epistemology

In order to investigate the research focus, I needed to consider my understandings of how knowledge was produced. These epistemological and ontological assumptions were a part of ethical decisions that shaped the enquiry's aims, methods and methodology (Cohen, Manion, & Morrison, 2011). The research was built on a Constructivist ontology, meaning that my perception of how knowledge is produced is shaped by my subjective and continuously transforming understandings of reality (Cohen et al., 2011). An interpretivist epistemology was also mobilised to conceptualise knowledge as a dynamic, contextualised and negotiated construction (Herr & Anderson, 2015). As a result, the outcomes produced from the research were specific to the contexts that the enquiry was undertaken in. As this ontology and epistemology also suggest, 'connections' were formed between things, both human and more-than-human, in dynamic and continuously changing ways. Learning and practice were therefore not static and fixed entities but connected in many ways and mutually transformed one another over time.

Ethically responsive research with children

I understood the ethical considerations of this research to be constructed by power and knowledge relations in a distinct time, place and context (Foucault, 1984). While the research met all requirements of the University of Nottingham's Code of Ethics, the ethical stance I adopted expanded beyond these necessities to include professional integrity, openness, trust and respect for others. While action research has an enduring history in museums (Ampartzaki et al. 2013; Foreman-Peck & Travers, 2013; Lemelin, 2002; Pringle & DeWitt, 2014), this research added to this corpus to specifically look at how children's voices could be integrated into the reflective action research cycles. Consequentially, a significant ethical consideration in the enquiry was how to responsibly collaborate with children in the art museum's learning practices. Chesworth (2018) argues

that researchers need to reflect on the methods and processes used with young children on a minute-to-minute basis. Additionally, how and when children are listened to, and which children are selected for participation is also an important ethical consideration in participatory research (Haw, 2008). As a result, I adopted an 'ethically responsive' approach to children's involvement in the enquiry by continuously reflecting on how and when their voices were drawn on.

MacNaughton & Hughes (2011) state that early childhood action researchers must explore concerns relating to children's ability to give consent to participate in research. While legislation definitions states that legal guardians, such as parents and carers, can give consent on behalf of children under the age of 18, Coady (2001) argues that it is good practice, and in alignment with the UNCRC (1989), to ask children for permission to participate in research when possible. Commencing the enquiry, these ethical concerns were important consideration in constructing a participatory research design with children. I build on these considerations throughout this thesis.

Research questions and timeline

In order to undertake the action research project, I refined the initial research focus to 'how can children's (0-5 years) learning be connected with art museum's curatorial practices?' Under the umbrella of this question, the following three sub questions were produced:

- What are the mediators that facilitate children's learning in art museums?
- How can I develop a process for critically reflecting on both children's learning and art museum practices?
- How can I develop resources (strategies, tools and information resources) for connecting children's learning and art museum practices?

To investigate these questions, I constructed a timeline for the research project consisting of two action research cycles. Each of these cycles featured a preliminary 'reconnaissance' stage of research that outlined the key pedagogical theories, methods, analytical framework and ethical considerations relating to the subsequent research cycle.

An overview of the research timeline, that commenced with Reconnaissance One in September 2015 and concluded with Action Research Two in March 2019, can be seen in Figure 1 (page 21). Revisions of the thesis were then undertaken between March and July 2019.
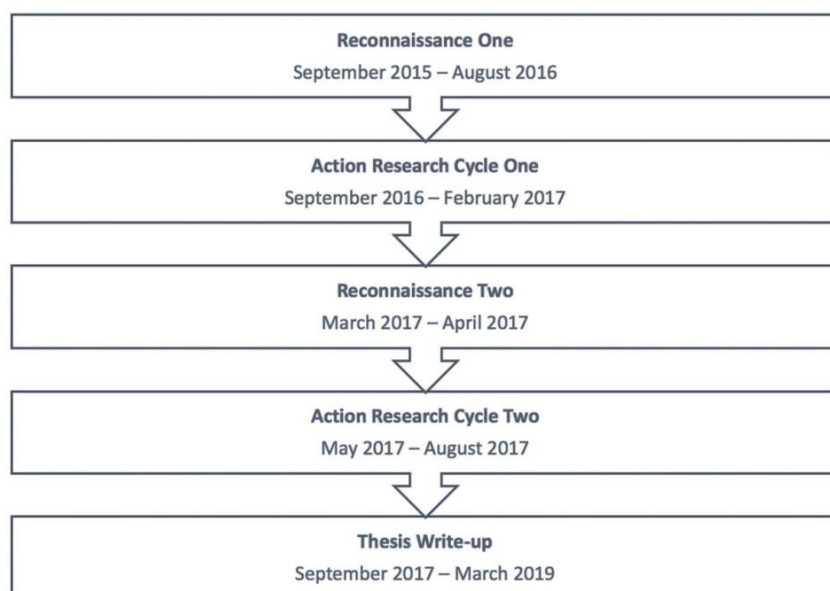
Figure 1: The research timeline

The thesis roadmap

This thesis has not been conventionally structured. The text has been ordered into the approximate chronological order that the research was undertaken in. These activities consist of two first-order and two second-order action research cycles. Each action research cycle facilitates the development of information resources, reflective strategies and planning tools that support art museum teams in connecting their practices with children's learning.

In Chapter Two: The Research Context, I outline the key theories, debates and previous research from museum studies, early childhood education and art education that shaped the enquiry.

Following this, Chapter Three: Reconnaissance One, features four sequential investigations. Part A constructs a conceptual framework for researching children's learning and art museum practices. This framework defines key terms such as pedagogy, learning and practice. I also analyse social constructivism, the design of constructivist learning environments and the role of the physical environment in relation to the research focus. Activity theory is then drawn on as a framework for analysing learning practices in art museums. In Part B I then reflect on four different visits to children's creative learning environments including Tate Britain, The Whitworth Art Gallery, the Atelier van Licht and Lillian de Lissa Children's Centre & Nursery. I intertwine the theories explored in Part A with these reflections to discuss their contribution to the research focus. Part C then outlines the design for the research project, including the methods, ethical considerations and reflective strategies drawn on to connect art museum practices with children's learning. The initial iteration of the planning tool, titled the Guide for Pedagogical Curation, is then piloted in the early year's Atelier at The Whitworth Art Gallery. Chapter Three concludes with a set

of cumulative reflections from Parts A, B, C and D. These reflections are then used to make further modifications to the critical framework's Guide for Pedagogical Curation.

Chapter Four features the first first-order action research cycle, conducted in the early years Atelier programme at The Whitworth Art Gallery. I document and discuss the 12 gallery learning activities produced as part of the action research cycle and illustrate how each of these was used to make modifications to the Guide for Pedagogical Curation. Action Research Cycle One's overall reflections highlight the usefulness of research questions as a strategy for setting pedagogical intentions, the criticality of collaborative reflection to connect children's learning with art museum practices as well as the significance of mediating tools in the design of the Atelier activities. Further modifications are then made to the GPC, including the development of additional practice principles, reflection strategies and resources that connect the Atelier's practice with children's learning.

Chapter Five: Reconnaissance Two, then builds on Action Research Cycle One's reflections to investigate how New Materialist theory can produce an expanded framework for connecting young children's learning with art museum practices. I introduce two new practical strategies, rhizoanalysis and mapping meanings, as tactics for collaboratively reflecting on learning and practices. I also analyse New Materialism in relation to key aspects of the research design including action research, activity theory, Pedagogical Documentation and the use of visual data in participatory research.

Chapter Six: Action Research Cycle Two features the second first-order action research cycle. This stage of research was run in partnership with Tate's Early Years and Family team in their 'Under Fives explore the Gallery' programme. Both rhizoanalysis and mapping meanings are operationalised as strategies for reflecting on children's learning, the practice and the language used to describe these processes. Action Research Cycle Two's overall reflections include the need to position materials as active forces in art museum learning as well as a new conceptualisation of learning as a dynamic process produced across multiple events and multiple entities. These results are then used to make the final modifications to the Guide for Pedagogical Curation, practice principles, reflection strategies and information resources.

In the final thesis section, Chapter Seven, I outline the overall applications, implications and contributions of the research. I argue that in order for children's learning to be connected with art museum practices, gallery learning needs to move towards provision and reflective processes that have clear pedagogical foci. I term the critical framework produced by the enquiry as 'Pedagogical Curating' as a result of its emphasis on supporting art museum teams to actively plan, facilitate and evaluate learning in art museums. This research therefore makes a contribution to

knowledge through its production of new theoretical and practical resources that link children's learning with art museum's curatorial practices.

Chapter Two: Research Context

This Research Context outlines and discusses key theories, literature and debates from museum studies, early childhood education and visual art in response to the research question, 'How can children's (0-5 years) learning be connected with art museum's curatorial practices?' By doing so, the research is positioned in its social, historical and theoretical context. These gaps are then addressed in subsequent stages of the action research enquiry.

Museum education

Historical and contemporary perspectives on art museum's educational purpose

While museums have a long-standing history as sites for education and social reform, their precise educational purpose has been heavily debated (Bennett, 1995; Hooper-Greenhill, 2000, 2007). Differences in opinion have been fuelled by a variation in educational policies, values and practices across cultures and countries that have produced diverse understandings of what 'education,' 'learning' and 'teaching' are (Cannella, 1997). Debates on the educational purpose of museums can also be linked to individuals' perceptions of what the core output of a museum is. For example, Graham (2017) argues that there has been a hierarchical divide between curatorial and education departments since the origin of museums. In this division, curatorial exhibitions are understood to be the core output of museums. Education teams then develop additional resources that seek to communicate a curatorial programme's ideas to the broadest possible audience (Mörsch, Sachs, & Sieber, 2017). An example of this approach can be seen in the 'docent' approach to museum education that has been widely adopted across North America throughout 20th and 21st centuries. Docents are trained education staff and volunteers who lead guided tours and gallery-based activities that seek to encourage participants to build meanings of artworks that connect to their prior knowledge (Burnham & Elliott, 2011). From this perspective, educational activities are an 'add-on' to the core curatorial programme. A museum's educational purpose is then to facilitate the interpretation of objects and artefacts in the collection (Hooper-Greenhill, 1999, 2000, 2007).

Contrasting with this approach, art museum education in the United Kingdom has been influenced by the community arts movement that has advocated for participatory practices between artists, artworks and audiences (Pringle, 2006 & Allen, 2008). Practising artists are understood to facilitate learner's creative, analytical and reflective practices rather

than only focusing on teaching craft-based skills (Pringle & De Witt, 2015 & Pringle 2018). The rise in a 'New Institutionalism' and 'Integrative Programming' in art museums has also challenged the "add-on" model to museum education in the United Kingdom (Tallant, 2009). 'New Institutionalism' broadens the core output of art museums to include different modes of display including events, talks, archives and residencies. These experimental practices re-conceptualise the art museum as a place for the debate and the co-production of knowledge as opposed to solely a site for the collection and display of objects. As a result, art museum education continues to be defined in new and vibrant ways as both institutions and audiences grow and diversify (Pringle, 2018).

The shifting role of curators in art museums

Alongside the rise in 'New Institutionalism,' there has been a gradual shift away from curator's being administrators or carers of collections towards the development of a profession that is central to the production, mediation and dissemination of art (O'Neil, 2012). Broadly defined, the practice of curating can be understood as the process of mediating relationships between artists, artworks and audiences through exhibition creation and display (Ibid). This presentation of art opens dialogic spaces between works of art, artists, curators and the public. Activities including the selection, arrangement and organisation of art are considered alongside an exhibition's spatial layout, design and marketing (Andreasen & Bang Larsen, 2007). All of these decisions affect the way that art is presented and communicated to an audience, which in turn shapes the audience's experiences and interactions with the artworks (O'Neill, 2012). While there is great plurality in styles, processes and practices, mediation is emphasised as having a central part in curating.

Mediating is brought about by curator's questioning the limits and boundaries of art and reconfiguring these understandings to create new ways of producing culture (O'Neill, 2012, p.1). Mediators in cultural production could include artists, collectors, artworks, display spaces and institutions (Bourdieu, 1993). These mediators, both human and non-human, play an important part in driving creative movement and preventing creativity from coming to a standstill (Heinich & Pollack, 1996). Articulated in this way, curating is not merely an administrative, managerial or exhibition-focused activity. It can alternatively be understood as a creative practice of artistic production that does not require a conclusive purpose or outcome (O'Neill, 2010).

The process of curating contemporary art is an expanding field that is continuously redefining itself in new and dynamic ways. For example, curating has also been discussed as a medium of artistic production (Ibid). While an artist must firstly create a work of art before it can be curated into an exhibition, both artistic and curatorial practices have become

increasingly interdependent. This perspective dissolves the separation between artists and curators in art museum practices. The practice of curating has also been redefined to include different formats for the display of art, including biennales and one-off performances (Obrist, 2009). These innovative practices have supported the redefinition of a curator's role in art museums.

In line with the re-conceptualisation of curators, a number of art museum learning departments including Tate and the Serpentine in the United Kingdom, have moved away from defining the role of museum education staff as 'coordinators,' 'officers' or 'programmers.' Instead, these institutions have re-conceptualised these positions as 'learning curators,' to align with New Institutionalist practices.

Learning curators bring specialist knowledge of art practice, education and the mediation of learning between artists, artworks and audiences. Similar to the traditional definition of a curator as a carer of museum collections, learning curators have an additional duty of care towards the public. While this shift in art museum pedagogy acknowledges the expertise of education staff in galleries beyond the "add-on" model to museum education, the profession of being a learning curator remains under-researched and under-theorised (Pringle, 2018).

The 'Education Turn' in contemporary art and curatorial practices

Contemporary art and curatorial practices have also been marked by a 'turn' towards educational formats, methods, terms and processes (May et al., 2014 & O'Neill, 2010). Coined the 'Education Turn,' these practices have drawn attention to the intersection of pedagogy, art and curating by questioning what education is, its purposes and how it can be done differently (Rogoff, 2010). Education itself has also been explored as a subject matter or theme for artistic and curatorial enquiry. The 'turn' has also focused on the critique of universities' commercialisation and one-directional approaches to learning while advocating for activism, non-authoritarian power structures and collective participation in education systems (Bishop, 2012; Graham et al. 2016).

A commitment to producing alternative learning spaces for the enactment of different forms of pedagogy has also been emphasised. However, this artistic movement has not come without its critics. For example, Graham et al (2016) have argued that the 'Education Turn' has explored education as a theme for creative practice without the capacity to produce sustainable change in the practice of education and art in mainstream education.

Much of the previous practice connected to the 'Education Turn' has also focused on tertiary education, meaning that the relationship between curating, pedagogy, art and young children's learning has been relatively

unexplored. Furthermore, very little research on this topic has investigated how pedagogy is enacted or the specific mediators that facilitate learning in artistic and curatorial practices.

The 'Education Turn' also comes in the wake of Nicholas Bourriaud's 'Relational Aesthetics,' a contemporary art phenomena defined as an:

> *"Aesthetic theory consisting of judging artworks on the basis of the inter-human relations which they represent, product or prompt"* (2002, p.112).

Similar to Dewey's notion of experiential learning, 'Relational Aesthetics' focuses on the production of intersubjective relations between people and artworks (Choi, 2013). Art produced within this realm takes into account the whole of human relations and people's social context, as opposed to an individual's independent and private thinking space (Bourriaud, 1998). By drawing attention to the social processes that are produced between people and works of art, 'Relational Aesthetics' provides a useful framework for researching how children's learning is produced through dynamic interactions between people, artworks and in art museums. In this research, I extended on Bourriaud's focus on human relationships in art museums to also consider how mediators that are not human, such as materials and space also facilitate the production of aesthetic relations.

A shift from transmission-based education to constructivist learning in art museums

Alongside the development of New Intuitionalism, gallery education practice has witnessed a move towards Constructivist learning practices over the past fifteen years (Kai-Kee, 2011). In contrast to developmental education theories, Constructivism conceptualises learning in museums as a subjective, contextualised and social process (Hooper-Greenhill, 2000; Hein, 1998 & Pringle 2018). Viewed in contrast to transmission-based education that seeks to transfer knowledge from the 'expert' educator to the novice learner, Constructivism builds on the work of John Dewey (1934, 1938) to recognise the importance of real-life experiences and prior knowledge in learning (Hein, 2004). Hooper-Greenhill (2007) applies Dewey's theory to museum education by arguing that visitors need the opportunity to draw on prior knowledge to help make sense of unfamiliar gallery experiences. An example of Constructivism's application in art museums can be seen in the learning programme of Tate in the United Kingdom. Tate has adopted an enquiry-driven approach to curating learning activities that focus on supporting participants' creative learning processes instead of educational outcomes (Pringle, 2011; Pringle & Anson, 2006; Pringle & DeWitt, 2014).

Constructivist learning theory redefines the role of learning curators and artists in museums as facilitators that create the conditions that produce

learning. By assisting learners to become aware of what they do not know, museum educators can then assist them in navigating their way through unfamiliar content to produce new knowledge (Pringle, 2018). Learning curators and artists can also play a significant part in stimulating a learner's imagination and intellectual curiosity so they can construct their own meanings of artworks (Kai-Kee, 2011; Lankford, 2002). This description can be connected to Hubard's (2007b) explanation of an art museum educator as an individual who decides what contextual information to present or withhold to learners and how to sequence this in relation to artworks. In this enquiry, I expanded on this description of museum educators to consider the role of learning curators in two specific art museum contexts in the United Kingdom. In contrast to Hubard's human-centred description of a museum educator, I also considered how things that are not human, such as artworks and gallery spaces, also facilitate children's learning in a Constructivist learning environment.

While the shift towards Constructivism in museums has opened up new ways of conceptualising museum education practice, very little research has yet looked at how these principles have been practically applied with young children in modern and contemporary art museum contexts. My research builds on Constructivism to investigate how this learning theory is currently being used and can be further applied to curate children's learning programmes in art museums. I also build on previous research and practice to analyse the mediators that facilitate learning in constructivist learning environments in museums. This analysis speaks directly to the research sub-question, 'What are the mediators that facilitate children's learning in art museums?'

Art museums as sites for children's and family learning

Young children frequently visit art museums as part of a family group. In this research, I understood the term 'family' to be subjective in its meaning. However, for the purpose of this enquiry, I define family as a multigenerational group comprised of heterosexual, same-sex or single parents and their children as well as extended families, cohabiting couples and full-time carers (Adams et al., 2010).

Since the 1990's, young children and their families have become a significant audience for art museums around the world with many institutions developing specialised staff, programmes, resources and spaces for this audience (Adams et al. 2003; Bedford, 2015; Bowers, 2012; Buck, 2005; Ringel, 2005; Sousa, 2005; Warwicker, 2014). For example, in 2010, over 90% of art museums in the United Kingdom offered specialised programmes for children and families (Adams et al., 2010). Other art museums have developed interactive spaces for children and families with the aim of engaging this audience with museum content through hands-on learning (Adams et al., 2010; NGV, 2013; Ringel,

2005; Seear & Clark, 2010).

Other cultural institutions have developed more experimental approaches to engaging with children and families including the creation of live performances, artist residencies in preschools and off-site community events meaning that children's learning experiences are no longer solely based around the teaching of collections, expanding understandings of what museums are and who they are for. However, while art museum learning practices with and for children are gaining increasing attention from funding bodies and policy makers, including the Arts Council of England (ACE 2015; Doeser, 2014), institutional policies, philosophies and practices towards this audience differ significantly across the sector (Piscitelli & Penfold, 2015). Consequentially, questions of *how*, as opposed to simply *why* children's learning practices are being created have become a significant issue for learning curators.

An extensive number of studies have been undertaken on children and families' learning in science, natural history and art museums. One of the most significant bodies of research on children in museums was undertaken by the Queensland University of Technology's Museum Collaborative (Piscitelli, 1997, 2001, 2003, 2006, 2012; Piscitelli & Anderson, 2000; Piscitelli, Everett, & Weier, 2003; Piscitelli, McArdle, & Weier, 1999; Piscitelli & Weier, 2002). This research drew on various learning theories including constructivism, social constructivism (Vygotsky, 1978), experiential education (Dewey, 1938) and Gardner's 1982 multiple intelligences to investigate children's experiences in guided tours, interactive spaces and interactions with hands-on resources. This research has produced detailed results on children's museum experiences in Brisbane, Australia during the 1990s and early 2000s. Other research on families in museum has been undertaken in natural history and science museums (Borun, 2002; Borun et al. 1996; Borun et al. 1997; Borun et al., 1995; Ellenbogen, 2002; Kelly et al. 2004; Povis & Crowley, 2015; Sterry & Beaumont, 2006). These studies have offered rich insights into intergenerational learning in these settings.

Children's and families' learning through verbal dialogue has also been the focus of previous museum education studies. For example, research undertaken in American science and natural history museums has analysed the educational outcomes of family's conversations in exhibits (Ash, 2003; Knutson & Crowley, 2010; Leinhardt, Crowley, & Knutson, 2003; Leinhardt, Tittle, & Knutson, 2002; Palmquist & Crowley, 2007). Additional research on social and language-based learning has also been conducted with broader museum demographics including teenagers, young people and adults (Hein, 1998; Knutson & Crowley, 2010; Leinhardt et al., 2003; Leinhardt et al., 2002; Sayers, 2011). These studies have given significant insight into how verbal dialogue facilitates group learning as well as social patterns of behavior between children, their parents and carers. However, this language-based research has also

been critiqued by MacRae et al. (2017) as being heavily focused on social interactions, resulting in a 'human-centric bias' that falls short of taking into account more-than-human components of museums such as physical gallery spaces and artefacts.

Recent research on museum education has also explored children's embodied encounters in gallery spaces (Hackett et al. 2018; Hubard, 2007a; Piscitelli, 2001). This research has drawn attention to how children experience museums in ways that extended beyond verbal communication, such as through movement and touch. The next step in the field is to build a body of research that brings together findings on social and language-based interactions with research on children's sensory and embodied learning in museums. In particular, an in-depth enquiry of how social and embodied ways of learning can be applied in art museum education practices would be a useful resource for learning curators. In this research, I set out to bring these social and post-humanist frameworks together.

While many studies have been undertaken on children's and families' learning in science and natural history museums, less research has been conducted in art museums. Art museums are distinct sites for children's creative learning as they have the ability to provide unique artistic and aesthetic experiences (Pringle, 2009a; 2009b). Previous research on children in art museum includes:

- Kindergarten group's access to galleries (Terreni, 2013),
- Child-led gallery tours (Weier, 2004),
- Children's artistic experiences in contemporary art museums (Savva, 2005),
- The design of children's immersive environments (Piscitelli & Penfold, 2015; Ringel, 2005);
- Children's sensory experiences with objects and materials (MacRae, 2007) and
- Sensory-based learning practices (Shaffer, 2011).

These studies have drawn on various learning and social theories including developmentalism, constructivism and post-humanism. This enquiry aimed to explore how children learn in family groups in the unique setting of an art museum.

Frameworks for evaluating learning in museums

Numerous frameworks have been produced to evaluate learning in museums. For example, Hooper-Greenhill's (2007) Generic Learning Outcomes (GLO) has been widely drawn on by museum educators in the United Kingdom. The GLO builds on constructivist learning principles to examine museum education programmes' purposes, character and outcomes through five key categories including 1) skills 2) knowledge and

understanding 3) enjoyment, inspiration, creativity 4) attitudes and values 5) action, behaviour and progression. This framework focuses on the education outcomes of museum practice that are centred around the interpretation of objects and exhibits. The GLO offers a useful framework for practitioners to report learning outcomes of gallery activities to cultural funding bodies.

As my research was focused on exploring how children's learning could be connected with art museum practices, I needed to further investigate how I could produce an evaluative learning framework that had the capacity to evaluate young children's critical and creative learning processes as well as the learning of art museum teams. I was interested in producing an evaluative learning framework could also be used with 'New Institutionalism' art museum practices including live performances, artist residencies and family workshops.

An additional framework for evaluating art museum learning is Pringle's (2009a) Meaning Making in the Gallery (MMG). The MMG brings together the pedagogic relationship between artists, learners and artworks to construct a gallery-specific model for creative teaching and learning. Similar to the GLO, the MMG focuses on the use of verbal dialogue to facilitate learning between artists, artworks and audiences. The framework conceptualises art museum learning as an experiential process of conceptual enquiry. In this research, I drew on the MMG as a starting point for exploring how a constructivist-driven framework could be used to evaluate young children's learning with artworks in art museums. However, in contrast to the MMG, I was also interested in how learning could be evaluated to take into account more-than-human mediators in gallery activities such as physical spaces, as opposed to a sole focus on verbal dialogue. I explore such mediators in further detail in Part A of Reconnaissance One on page 38.

Researching art museum learning practices

My analysis of the corpus of museum education literature concluded that the vast majority of research in the field has focused on audiences as opposed to the practice of learning teams. As a result of this focus on museum visitors, the profession of art museum education remains under-researched and under-theorised (Pringle, 2018). However, a small number of studies have been undertaken on the practice of museum educators, more specifically on how action research can be used to investigate learning practices in art museums.

For example, research conducted by Lemelin (2002) investigated the implementation of action research in the learning department of one Canadian contemporary art museum. Results from the study identified the methodology's ability to support the professional development and empowerment of museum educators. Action research has also been drawn

on as a process for developing learning practices at Tate (Pringle 2006, 2009b; 2006 & 2014). Tate's programming approach is similar to action research in that the learning team is encouraged to question, reflect and make subsequent changes as a learning programmes progresses (Pringle, 2019 & Turvey et al. 2017). However, the approach also differentiates from the methodology by emphasising that the form and content of learning practices are open to constant reappraisal and significant change (Pringle & DeWitt, 2014). This unique process for producing learning activities moves away from a delivery model and towards practices based on the process of enquiry. Both of these bodies of work demonstrate how action research can facilitate the investigation of learning practices in art museums. In this study, I planned to extend on this research to investigate how Critical Participatory Action Research could be used to research and evaluate the practice of curating activities for children in art museums.

Early childhood education

Dominant constructions of childhood

In early childhood education, best practice is often articulated as taking the child's perspective (Williams & MacNaughton, 1998). However, debates over what 'child-centred' actually means are complex and forever changing. Dahlberg, Moss, and Pence (2007) state that the term 'child-centred' suggests that childhood itself is concrete, universal and exists independently of social relationships and cultural context. In this research, I understood both the notions of 'child-centred' practice and childhood as being pluralistic and varying dramatically across different cultures, places and times (Bloch, 1992). This definition implies that childhood is a social and cultural construction and as a result. As a result, the term 'child-centred' practice is a vague and problematic term in early childhood education. I therefore decided to move away from using this term further in the enquiry.

Similar to other western countries, three constructions of childhood have highly influenced early childhood education in the United Kingdom. These constructions include:

- 'the child as nature'
- 'the child as a reproducer of knowledge, identity and culture'
- 'the child as co-constructor of knowledge, identity and culture'.

(Dahlberg et al., 2007)

I analyse these constructions individually in the following paragraphs.

Individual children's cognitive development through linear stages of biological development are emphasised in the 'child as nature' construction (Dahlberg et al., 2007). Drawing heavily on the work of Jean Piaget (1964), this developmental perspective has been critiqued for its one-size-fits-all approach to children's education as it falls short of

acknowledging the social and cultural differences that effect learning. These differences include class, gender, ethnicity, religion and wealth (Canella, 1997; Grieshaber & McArdle 2010). Art museum practices informed by the 'child as nature' construction may include sequential activities that aim to build children's cognition through iterative stages of physical development.

The second dominant construction of childhood, the 'child as reproducer,' positions young children as empty vessels that can be filled up with predetermined values, identity and knowledge (Dahlberg et al., 2007). Similar to the 'child as nature,' young children are perceived to progress through iterative stages of development that prepare them for subsequent stages of life, such as adulthood. Childhood is then positioned as a preparatory and under-developed stage of life. From this perspective, early childhood education is understood as a foundation for children's success later in life. This is opposed to acknowledging children's agency and ability to participate in the production of knowledge, identity and culture in the present. For example, in the United Kingdom, there is currently a significant focus on children's 'school readiness' in which early childhood curricula are based around advancing individual's numeracy and literacy skills in preparation for their entrance into primary school (Moss, 2012, 2013). In regards to art museum learning, the 'child as reproducer' positions children as needing to be filled up with artistic knowledge and pre-existing cultural values that may then allow them to become fully-functioning adult museum visitor.

Since the 1970s, new sociological perspectives on childhood have emerged and gained increasing popularity in the United Kingdom (Prout & James, 1990). This 'new sociology of childhood' has produced a novel construction of childhood that advocates for children as 'co-constructors of knowledge, identity and culture' (Dahlberg, Moss, and Pence, 2007; James, Jenks, & Prout, 1998; Prout & James, 1990; Qvortrup et al. 1994). Children are understood as capable beings who are able to participate in the production of ideas, spaces and identities that shape their lives. Childhood itself is also perceived as an important stage of life in its own right. By positioning children as co-constructors of knowledge, the new sociology of childhood aligns with Article 12 of the United Nation's Convention on the Rights of the Child (1989) that advocates for children's right to have their opinions heard on topics that affect them. In this research, I drew on this framework to position children as co-constructors of knowledge, identity and culture in art museum practices. This construction of childhood provides a foundation for investigating the active role children play in the production of curatorial, artistic and pedagogical practices.

Early childhood curriculums' deficiencies in play-based learning

As the focus of this research was to investigate how children's learning processes could be connected with art museum practices, understandings of how children learn through play were integral to the enquiry. I understood play as being an important process that facilitated children's learning over time. Sicart (2014) defines play as a creative process that allows people to experience, understand, construct and recreate understandings of themselves and the world around them. Sicart argues that play is not a frivolous activity but a serious, creative and complex process that produces new ways of thinking, expressing and being. This definition resonates with debates on children's human right to play as articulated in the United Nation's Article 31 of the Convention on the Rights of the Child (1989):

> *"Children and young people have the right to have fun in the way they want to, whether by play sports, watching films, or something else entirely… children and young people should be able to partake freely in cultural activities, just like adults."*

While Article 31 is important in advocating for children's right to play, this definition does not discuss the cultural and social contexts that shape subjective understandings of play. Grieshaber & McArdle (2010) argue that educators and policy makers need to critically reflect on play's definition in order to move away from a universal 'one size fits all' approach to children's education. In this research, I therefore understood that the meaning of play needed to be considered within the specific location that it was being constructed in.

In the United Kingdom's early childhood curriculum, there has been a decline in play-based learning in favour of structured learning activities that seek to teach children specific knowledge through pre-set curriculum (Dahlberg et al., 2007; Mangan, 2015; Moss, 2012; Wood, 2013). This approach to teaching has resulted in children's learning being evaluated against standardised educational outcomes as well as a reduction in children's opportunity to play at school. Recent trends in early childhood education have also identified an increase in the safeguarding and 'islanding' of children from school to home, removing them from the 'mainland of urban existence' (Gillis, 2008; Nutbrown, 2006; Prout, 2004). Questions of how informal sites for learning, such as art museums, can support children's play-based learning are becoming increasingly relevant as a result of play's decline at home and school.

This emphasis on structured learning experiences and 'school-readiness' in early childhood education in the United Kingdom has been heavily contested by education researchers (Moss, 2007 & 2012; Moyles et al. 2014; Whitebread & Bingham, 2011 & 2014). To counter this pedagogical focus, Olsson (2009) advocates for educators to adopt an open and experimental mind-set when developing curriculum. By paying attention

to how children form relationship between unforeseen ideas and concepts, educators may then respond to unexpected events that occur in their play. Furthermore, this mind-set may also support educators in attending to the pedagogical conditions that produce children's learning, as opposed to focusing on assessing learning against pre-set curricula such as developmental stages or educational goals. For Olsson, the role of the educator is then to arrange a pedagogical environment that supports children's experimentation. In this research, I endeavoured to support the pedagogical experimentation of learning curators and artists, including myself, while curating children's learning environments in art museums.

Art education

Children's learning with and through art

Investigating the unique possibilities of art in relation to children's learning was an integral part of the research focus. Education theorists including John Dewey (1934, 1964), Elliot Eisner (1972, 1985, 2002), Nelson Goodman (1968) and Maxine Greene (1995; 2000) have argued that the aesthetic experiences produced through the arts have played an integral role in supporting individuals in experiencing the world from new and multiple perspectives. Dewey, in particular, wrote extensively on the relationship between art and education to construct his theory of 'art as experience' (1934). From Dewey's perspective, art is a process that happens when a person and work of art interact with one another. However, in order to make people's engagement with art meaningful, Dewey argued that there needed to be continuity between art and human experience. A significant challenge for art museum educators is to restore such continuity between people's experiences and artworks (Hubard, 2015). I drew on Dewey's theory in this research as a result of its compatibility with the constructivist learning principles outlined in the Museum Education section.

Within the literatures, art is said to be educational as it achieves the following.

1) Art creates ways of experiencing the world that extend beyond language and cognitive skills. Art allows people to experience the world in aesthetic, embodied and sensory-driven ways (Eisner, 1972, 1982, 1985, 1998 & Hubard 2007a, 2007b, 2015). People can combine different modes of sensory exploration including touch, smell, sight and taste. These experiences afforded by art are significant as words and language cannot always communicate complex feelings, moods and dispositions (Wright, 2012).

2) Art supports the development of critical thinking by encouraging new connections between artworks, people and the world around them (Pringle, 2009a);

3) Art celebrates an understanding that there are multiple ways of experiencing and interpreting the world (Eisner, 1998).

4) Art possesses the ability to promote growth, empathy and imagination (Greene, 1995). However, children's mere exposure to art is not enough to guarantee that this process is happening. Greene (1995, pp. 379-380) argues that *"there must be conscious participation in a work, a going out of energy, an ability to notice what is there to be noticed in the play, the poem, the quartet."* Such conscious participation requires an individual to enter into an aesthetic experience and use their imagination to engage with it perceptually, affectively, and cognitively.

5) Art teaches children that subjective judgements can be used to create relationships between things (Eisner, 1998). This is significant as rules prevail in many non-arts disciplines of school curriculum. The arts help children make judgements on qualitative relationships.

6) Art teaches children to think, feel and express themselves through a material and artistic medium (Eisner, 1998).

7) Art opens up 'affective events' that create new possibilities for thinking, learning and being (Pacini-Ketchabaw et al., 2017).

8) Art allows children to come into 'dialogue' with the world, permitting the questioning of judgements about oneself, other people and the world (Biesta, 2017). Art is therefore not just about self-expression but also the dialogic exploration of what it means to engage in aesthetic experiences and who is expressing themselves in works of art.

These debates on the value of art in education provided a rich foundation for exploring its unique possibilities for children's learning in art museum learning. However, while the arts have been identified by the Arts Council of England (2015) as a critical aspect of children's lifelong education, they have been marginalised from the United Kingdom's school curriculum in favour of syllabus focused on mathematics, science and technology (House of Commons Education and Skills Committee, 2007 & Hall & Thomson, 2017). Peters (2003, p.21) describes the content and traditions of curricula as being constructed either implicitly or explicitly by *"someone's vision of legitimate knowledge."* The relationship between power and legitimate forms of knowledge, therefore, needs to be questioned by interrogating by the policy makers and curricula designers designing educational provision (Lyotard, 1979). Applying this perspective to the United Kingdom, policy makers and curricula designers bring subjective values and understandings to the design of curricula that position the arts as a less reputable form of knowledge (Peters, 2003). In this research, I focus on how artworks create unique opportunities for children's tactile and embodied learning in a gallery context.

Summary

This Research Context has outlined the significance of constructivist learning theory, New Institutionalism, the Education Turn and art education in relation to children's learning in art museums. I have also discussed key debates in early childhood education, including the marginalisation of the arts and play-based learning from school curriculum. By exploring these debates, I have also argued for the need to position children as co-constructors of knowledge, identity and culture in art museum curatorial practice.

Chapter Three: Reconnaissance One

In Critical Participatory Action Research, the 'Reconnaissance' acts as a preliminary stage of investigation in which researchers maps out, describes and analyses the beliefs and understandings that inform their practice to date (Kemmis, McTaggart, & Nixon, 2014). In this enquiry, Reconnaissance One, which was undertaken between September 2015 and August 2016, aimed to:

- Analyse key pedagogical theories, strategies and analytical frameworks for investigating the research focus
- Explore different approaches to the design of children's creative learning environments
- Construct a research design, including methods and ethical considerations for the enquiry

By undertaking these activities, I reflect on how these theories, strategies, practices and methods contribute towards the investigation of connecting young children's learning and art museum practices. I report on Reconnaissance One's activities in four parts. In Part A I engage in a second-order analysis to bring together key theories from education, sociology, visual art and architecture to construct an initial conceptual framework for investigating the research focus. I then use these concepts to develop a planning guide for curating children's learning environments. I term this the Guide for Pedagogical Curation (GPC). Part A also defines core terms including 'pedagogy,' 'learning' and 'practice.' I also introduce activity theory as a framework for analysing art museum practices.

Part B then reflects on the diverse approaches of four children's creative learning settings: Tate London, the Whitworth Art Gallery, The Atelier van Licht and Lillian de Lissa Children's Centre & Nursery. Part C discusses the enquiry's research design including the research methods and ethical considerations taken into account to investigate the research focus. Part D then undertakes a first-order action research activity by trialling the initial construction of the Guide for Pedagogical Curation in the early year's Atelier at The Whitworth Art Gallery. The cumulative outcomes of Parts A, B, C and D are then reflected on and used to make further modifications to the Guide for Pedagogical Curation.

Part A: Producing a conceptual framework

This section constructs a conceptual framework for curating children's learning environments in art museums. After defining key terms, I analyse four key theories and frameworks: 1) the design of Constructivist Learning Environments 2) Social Constructivism 3) the role of the built environment 4) activity theory. Each of these areas are discussed for their strengths and limitations in relation to the research focus.

Defining practice

The first core term in need of definition in this study was that of practice. In this enquiry, I understood art museum's learning practices as a process that articulates individual and collective patterns of behaviour, thought and values that shape the enactment of pedagogy (Klitmøller, 2016). These actions are temporarily located, purposeful, patterned and produced through routine and lived experience (Kemmis et al., 2014). Likewise, I understood art museum practices as being both directed towards the future as well as being a continuum of past experiences.

Defining learning

This research mobilised a Constructivist definition of learning as an active and subjective process based on an individual's experience. From this perspective, people link prior knowledge to new or unfamiliar experiences in order to produce new knowledge and understandings (Vygostky, 1978 & Bruner 1985). In a Constructivist Learning Environment, learners create knowledge by actively participating in real-world activities (Jonassen & Rohrer-Murphy, 1999). While the significance of social interactions and the physical environment is debated amongst Constructivist learning theorists, learning is generally understood to be facilitated by an individual's interactions with real-world objects, spaces, materials and people (MacNaughton, 2003).

The teaching technique of 'facilitation' is closely intertwined with this definition of learning. In this research, facilitation referred to the actions educators can undertake to make learning easier for other people (MacNaughton, 2009). They may do this in a way that is meaningful and personally relevant to the learner. Examples of facilitation techniques can include asking open-ended questions, introducing a new vocabulary word, organising a space in a particular way or providing clear feedback on an activity. An important part of facilitation is observing children's behaviours and thoughtfully timing interventions so that the learning is appropriate to the child's interests and needs.

Key questions that educators can critically reflect on in relation to these definitions of learning and facilitation include how a learner's knowledge shifts from unknown to known, the mediators that facilitate learning and how educators can actively support this process. Such critical reflections may assist educators in developing their understandings of what learning means in their setting (e.g. Katz, 1995 & MacNaughton, 2003).

Defining pedagogy

As the research aimed to investigate art museum team's learning practices and its relationship with children's learning, the concept of 'pedagogy' was of central importance. I defined pedagogy in its broadest sense, as the mediators that shape a learning environment as a whole including the relationships, discourses, rules, norms, resources and the physical

environment (Thomson, Hall, Jones, & Sefton-Green, 2012). These mediators interrelate to produce teaching methods, curriculum and assessment practices as well as the patterns of interaction, action and activity in a specific context. I also understood pedagogies to be produced by dynamic relations between people and non-human things across extended timeframes. This definition provided a starting point for how pedagogy was understood in the enquiry. However, additional theoretical resources needed to be drawn on in order to analyse singular aspects of pedagogical practice that shaped curatorial practices. In the following section, I investigate different education theories that discuss the social and physical mediators that shape pedagogy. These resources helped to produce a nuanced framework for examining the research focus.

The design of Constructivist Learning Environments

In Chapter Two I discussed how constructivist learning theory can be used to orientate learning practices with children in art museums. While constructivism is often referenced as the basis of museum pedagogy, very little research to date has looked at the specific mediators that facilitate learning in art museums. In order to investigate this, I needed to draw on further theoretical resources. This led me to the work of Jonassen & Rohrer-Murphy (1999) who have undertaken extensive research on the design of Constructivist Learning Environments. They argue that constructivist learning environments consist of six interrelated components including:

- *The problem space* that provides learners with relevant and engaging problems to solve. The problem space allows individuals to take ownership of their learning by exploring and manipulating real-world problems.
- *Cognitive tools* that scaffold learner's understandings to a more advanced level. Examples of cognitive tools include the introduction of new techniques, skills or vocabulary that open up new starting points for further learning.
- *Collaborative and conversational tools* that encourage social interactions between people. These tools can additionally encourage learners to explore and solve problems together.
- *Case studies* that allow learners to relate their current experience to other's experience, allowing learning from one context to be reflected on in another.
- *Information resources* that provide resources for an individual to use to explore a new problem space. Information resources may be used in conjunction with cognitive tools, related cases and collaboration tools to support dynamic learning in a Constructivist Learning Environment.

In this enquiry, these six components were used as a starting point for curating, facilitating and reflecting on children's constructivist learning

environments in art museums. While Jonassen & Rohrer-Murphy (1999)'s framework added to the research focus by producing a framework for investigating the design of Children's Learning Environments in art museums, additional theoretical resources were needed to consider how social relations could also mediate art museum practices and children's learning.

Social Constructivism, Scaffolding and the Zone of Proximal Development

As this research aimed to explore and produce a mode of art museum practice that directly connected with young children's learning, investigating how children and art museum teams learn in social contexts was highly relevant to the enquiry's focus. To do so, I drew on the theoretical framework of social constructivism, an educational theory that is situated on Vygotsky's socio-cultural paradigm (1978 & 2004). Both activity theory and social constructivism start with the assumption that a learner's mental process can only be understood in relation to their interactions with the cultural and social environments. Like constructivism and action research, social constructivism emphasises how learning is produced by a dynamic and negotiated process within a specific context (Gredler, 2010; Vygotsky, 1978, 2004). This provided a consistent epistemology between the core educational theories and methodology drawn on in the enquiry. Social constructivism also extends the definition of pedagogy introduced at the start of this section to give a detailed description of the role of language, skills, problem-solving and tools in children's learning (Rogoff, 1990, 1995, 2003; Rogoff et al., 1993).

To construct a mode of art museum practice that united with children's learning, I additionally needed an initial understanding of how learning is faciltiated. To do so, I drew on Vygotsky's (1962, 1978) notion of scaffolding and the Zone of Proximal Development (ZPD). The ZPD can be understood as the distance between what a learner can do without assistance and what they can do with the assistance of others. Vygotsky (1978, p. 86) describes this as:

> *"…the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers."*

In the ZDP, Vygotsky argued that 'more knowledgeable others' such as a learner's peers or a teacher played an important role in facilitating learning from unknown to known. This assistance could come in the form of a question, the introduction of a new technique or a vocabulary word (MacNaughton & Williams, 2009). Once a learner has moved through the ZPD, they are then able to independently undertake the task without the assistance of others.

Scaffolding is the process in which a 'more knowledgeable other' helps a child to move through the ZPD (Vygotsky, 1978). In this enquiry, scaffolding was understood as an important part of facilitating children's learning over time in gallery activities. I reflect further on these Social Constructivist processes throughout the following action research cycles.

While Vygotsky's notion of scaffolding offered a useful general direction for understanding and analysing children's learning, I needed to examine more precise social learning processes to understand how children learn with others. I turned to the work of Rogoff (1990, 1993, 1995, 2003, 2008) who has undertaken a series of detailed research studies on the development of children's cognitive development in communities. Rogoff argues that this cognitive development can be analysed through the three interrelated social processes of apprenticeship, guided participation and participatory appropriation. These three planes of analysis were useful to the enquiry as they allowed for a detailed investigation on how children learn with other people.

The first plane of analysis, 'apprenticeship,' can be understood as learning and development that is produced from children's participation in shared activities with other people of varied skills and expertise. Apprenticeship encourages children to develop skills by using cognitive and tangible tools to explore problems. A child's ability to use these tools develops alongside their understanding of the tool's cultural meaning. Their skills and understandings are continuously adapted, appropriated and transformed as children use them. From this perspective, culture and cognition are in a state of continuous development.

In 'guided participation,' a child's understandings, skills and cognitive abilities are developed through their participation in activities with individuals of higher or more diverse skills (Rogoff, 1990). Guided participation allows for knowledge to be produced and distributed in multiple directions and across multiple timeframes, including from children to adults (Mallory & New, 1994). Children's interactions with diverse individuals in social groups may allow them to come into contact with new 'social-cognitive' problems (Mallory & New, 1994) which may then become the catalyst for further cognitive growth.

Children take on new understandings of their roles in communities through the process of 'participatory appropriation.' Participatory appropriation, the third of Rogoff's planes of analysis, is built on the understanding that children's learning is produced from their dynamic and continuously changing role in social groups. Rogoff's three planes of analysis provided a nuanced understanding of how learning is socially mediated.

The coming together of Social Constructivism with the design of Constructivist learning theory and Critical Participatory Action Research provided a more nuanced framework for how pedagogical practices can be produced in art museums. While Social Constructivism and Constructivist

learning theory provided a starting point for producing a conceptual framework for this enquiry, neither of these theories discussed the role of the physical environment in education in detail. To fill this gap, I drew on additional theoretical resources.

The role of the physical environment in education

In this research, the physical environment was understood as a significant consideration that shaped both art museum practice and children's learning. Literature on play environments indicate that playgrounds tend to be fixed in nature which limit children's opportunity to engage in creative play (Dudek, 1996 & 2005; Hughes, 2013). In contrast, by designing play spaces that are flexible, children have the ability to adapt the space to suit their needs, abilities and interest (Ceppi & Zini, 1998; Doorley & Witthoft, 2012; Dudek, 1996, 2005, 2013).

In the 1970's, the architect Simon Nicholson (1971) coined the term 'loose parts theory' to describe play environments that include materials that children can construct, manipulate and transform in a myriad of ways. Loose parts theory raises significant questions around what parts of a learning environment can be pre-constructed by adults and what variables can be left for children to construct. Nicholson's theory provided a useful framework for considering how environments can be designed to encourage children's play in art museums. For example, manipulative parts such as blocks, paint, clay and natural materials may encourage children to interact with gallery spaces in different ways.

In this enquiry, I understood the physical environment as being both an *enabler* that makes learning possible, a *restrictor* that limits what learning can take place and an *enactor* that allows for education practices to be performed (Blackmore at al. 2011). In this sense, the physical environment is an important mediator of pedagogy as opposed to simply being a representation of it. This understanding of space suggests both a direct and indirect relationship between a learning environment's physical setup, such as the building structures, the presence of materials, and the learner's experience (Higgins et al., 2005). In this research, positioning the physical environment as a facilitator of educational practices provided a useful starting point for investigating support for children's learning in art museums.

While there are handbooks that make recommendations about the qualities of learning spaces (Cairns & Wolfe, 2015; Hughes, 1996; Laevers et al., 2005) there is currently very little research that explores how a child learns in physical environments once they are completed. In this enquiry, I aimed to address this gap in post-occupancy research to produce both a framework for evaluating children's learning in a gallery's built environment and a guide to assist art museum teams in curating children's learning environments.

Activity theory as a framework for analysing art museum practices

To investigate the research focus, I needed to mobilise an analytical framework that allowed for a focus on the activity of learning curators. My search led me to Cultural Historical Activity Theory (CHAT) as a framework for analysing the relationship, processes and interactions of such activity (Engeström, 1987, 2001; Jonassen & Rohrer-Murphy, 1999; Kuutti, 1996). CHAT was highly compatible with the research focus as it provided an analytical structure for investigating the specific components of an art museum's activity system including the tools, rules, roles, regulation, motivations and communities that produce pedagogy. The compatibility between activity theory and constructivism was also formed from their shared epistemological assumption that learning emerges from an activity and not as a precursor to it (Jonassen & Rohrer-Murphy, 1999).

Cultural Historical Activity Theory's first generation

CHAT has progressed through three key stages of historical development (Engeström, 1996). Each of these stages has produced strengths and limitation in relation to the focus of this research. For example, CHAT's first generation of development brought together the notion of 'mediation' with people's action (Engeström, 2001; Vygotsky, 1978, 1997). Building on Vygotsky's socio-cultural theory (1978), mediation was conceptualised as a process that focuses on the facilitation of subjects and objects through action, as illustrated in Figure 2, below. In this first generation, the focus on mediation was novel in its proposition that an individual's actions, or 'object,' can only be understood in relation to its contextually-bound subject and mediating artefacts. Learning is similarly understood as being produced through activity and not as a precursor to it. As a result, a learner's mental functioning can only be understood within their social and cultural context. The concept of mediation was useful to this enquiry's focus as it constructed a link between people (the subject), learning (the object) and the mediating artefact (the act of developing the learning programme).
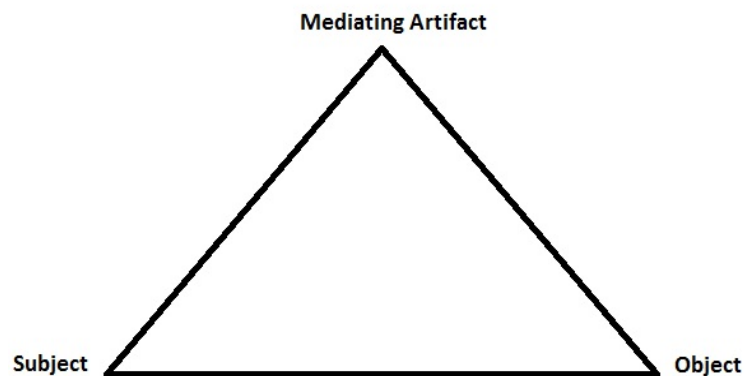
Figure 2: A first generation activity system model taken from Engeström (2001).

Cultural Historical Activity Theory's second generation

Expanding on the first generation's focus on mediation, CHAT's second iteration constructed a distinction between individual and collective action (Leont'ev, 1978, 1981). Activity, as opposed to action, was emphasised too, drawing attention to the interactions between people and the mediating artefacts that facilitate activity.

Another key development in CHAT's second generation was the introduction of specific components that shape activity including rules, the division of labour, communities and mediating artefacts, as illustrated in Figure 3, below. In contrast to the first generation, this second generation also emphasised the significance of contradictions and object-orientated actions in facilitating activity (Il'enkov, 1977), allowing for a more specific investigation of the specific components that shape curatorial activities in art museums.
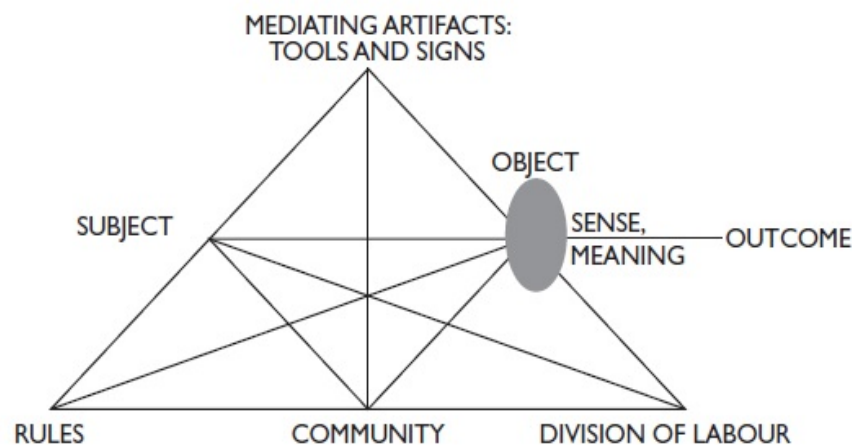
Figure 3: A second generation activity system model taken from Engeström (1987).

Cultural Historical Activity Theory's third generation

CHAT's third generation then built on the first and second generations to discuss the interactions and transformations between different activity systems over time (Bakhtin, 1981; Engeström, 1987, 1993, 2001; Wertsch, 1991). This iteration of the analytical framework conceptualised activity systems as being object-mediated and interrelated with other activity systems, as illustrated in Figure 4, page 46. In relation to this research focus, the coming together of different activity systems can be seen in the merging of my PhD research with the already-established practices of the art museum teams. Engeström (2001) states that this third generation of activity theory consist of six key components including:

- *Subjects* that are comprised of an individual or group participating in an activity. Examples of a subject could include an artist, educator or art museum staff member.
- *Objects* that form an activity's intentions or goals.

- *A community* is made up of the individuals and groups that participate in an activity.
- *Rules and regulations* that mediate an activity and shape what can and cannot occur in a specific context. These rules and regulations may be both implicit and explicit.
- *Mediating tools* are culturally specific artefacts that facilitate, produce and distribute knowledge. These tools shape how people act and engage in an activity.
- *Roles* that define, separate and distribute subject's division of labor. Examples of roles in this research could include the role of the parent, artist, curator and researcher.

Analysis of these six components was useful to this research as it provided an architecture for researching children's learning and how these could be connected to art museum's pedagogical practices.
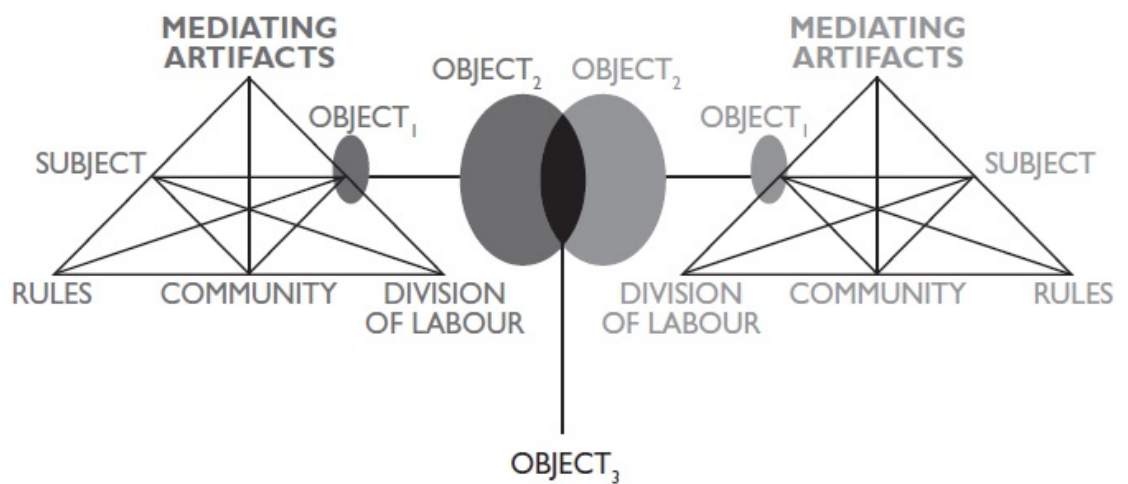
Figure 4: A third generation activity system model taken from Engeström (2001).

Engeström (1987) also states that in this third generation of activity theory, contradictions play an important role in mediating activity amongst groups of people. An emphasis on the different perspectives of individuals is important in facilitating learning and activity. A further distinction with CHAT's third generation is in its positioning of the physical learning environment as an active mediator in producing social and cultural values (Wertsch, 1985). Activity can therefore be understood as a process facilitated by cultural, historical and physical mediators. Activity theory's third generation was drawn on in this research as it offered a detailed framework for analysing the activity of art museum teams to develop children's learning practices.

Background Information	
The art museum team's overall ideas for the session	• Artists and learning curator's intentions • The language used to describe the activity • What educational training has staff facilitating the session received?
The role of the physical learning environment	
Physical location of the activity	• The activity's location in the art museum • The space's architectural layout • Modifications made to the built environment over time – both short-term and long-term
The spatial design	• The selection of materials and tools • The activity's material and spatial arrangement of content • Inclusion of manipulative 'loose parts'
The role of the social learning environment	
Artists (or facilitator's) social activity	• The artist's perception of their social role in the session • How the artist socially interacts with children and families in the activity • Questions asked to children by the artists in their social interactions

Children's social activity	• How children learn individually
	• How children learn in social groups including through:
	    o Guided participation
	    o Participatory appropriation
	    o Apprenticeship
	• How children express or show ideas through language
	• How children develop collaborative learning strategies with their peers and parents. Such strategies may include negotiation, flexible thinking and listening to others

Table 1: The initial iteration of the Guide for Pedagogical Curation

Part A summary

Part A of Reconnaissance One constructed a conceptual framework that combined theories on the design of Constructivist Learning Environments, social constructivism and the literature on the built environment. This section has also defined pedagogy, learning and practice in relation to the research focus. To investigate how this framework could be practically applied in art museum learning practices, I then produced the initial iteration of the Guide for Pedagogical Curation (GPC), presented in Table 1 (above) which was designed to assist learning curators and artists to:

• Construct pedagogical intention in the design of children's learning environments by specifically selecting social and spatial mediators that scaffold learning;
• Critically reflect on children's learning including the mediators of a learning environment that facilitate learning;
• Provide a practical planning guide for curating children's learning environments.

Part B: Reflecting on children's creative learning environments

The Reconnaissance acted as an initial stage of research which allowed me to explore and reflect on my understandings and beliefs that shaped my curatorial practice with children. In this section, I reflect on my visits to four different organisations developing creative learning activities for children, including:

- The BP Family Festival at Tate Britain, London
- The Early Year's Atelier at The Whitworth Art Gallery, University of Manchester, Manchester
- The Atelier van Licht at the Centraal Museum, Utrecht and
- Lorna Rose's Artist Residency Programme at Lillian de Lissa Children's Centre and Nursery, Birmingham.

My intention in visiting these locations was to learn about the different philosophies and reflective processes that shaped their creative practices with children. These particular sites were selected as they all focused on young children's creative learning through art in different ways. These visits also allowed me to further consider the theories and concepts explored in Part A and how these could be further developed in the enquiry. I reflect on my visit to each location and discuss how different aspects of the practices offered new perspectives to investigate the focus of my research.

BP Family Festival at Tate Britain, London (UK)

In October 2015, I attended the *'Bring your tribe'* BP family festival at Tate Britain. The event featured an array of performances, making activities and workshops that aimed to celebrate the creativity and kinship of people coming together. As part of my visit, I met with the Programme Convenor of the Early Years and Family programme at Tate. We discussed the key philosophies that underpinned the programme's current and future development including:

- The role of aesthetics and the 'environment as the third teacher' when curating art activities (Ceppi & Zini, 1998)
- How participatory and socially engaged art practice can offer a collaborative framework between artists, young children and their families in gallery activities
- A focus on intergenerational learning as many children who visit Tate come as part of a family group
- Art museums' unique possibility for supporting children's learning.

My visit to Tate was very informative in learning about the art museum's philosophies and practices involving young children and their families. I was particularly interested to hear about the significance of aesthetics

and intergenerational learning, especially as these were topics I had looked at in the conceptual framework of Reconnaissance One. The Programme Convenor highlighted the significance of the gallery space in children's and family's learning. This chimed with the research on the affordances of space in learning and on the ways in which social relations also influence education practices (Blackmore et al, 2011). From this, I considered how artworks could be further used to support children's learning in Action Research Cycle One. This was a new consideration that I had not specifically looked at as part of the conceptual framework.

The early year's Atelier at the Whitworth Art Gallery, University of Manchester (UK)

In May 2016, I spent a day in the early year's Atelier at the Whitworth Art Gallery. I met with the Early Year's Coordinator to learn about the gallery's range of programmes on offer for young children, as well as the key ideas that underpinned these. Key topics we discussed included:

- The importance of children's learning through play
- The significance of creating a space for children's experimentation and learning with materials in the art museum
- The influence of the Reggio Emilia early childhood philosophy on the activities (Rinaldi, 2006)
- The importance of messy play in children's learning
- The significance of bringing together the outdoor park with indoor activities.

These discussion topics provided points for how I could look at the processes, tools and resources that support art museum teams in curating children's learning environments, in the action research cycles. For example, how the Atelier activities could be developed in both an interior museum space as well as outdoors (as pictured in Image 5 on page 50). The Atelier's focus on children's experimentation with materials also applies Nicholson's theory of 'loose parts' (1971) to the design of indoor and outdoor gallery settings. During my visit to the Whitworth Art Gallery, the Early Year's Coordinator and I also discussed the possibilities of collaborating on undertaking the fieldwork in the gallery's Atelier programme, as we both shared a common interest in how Pedagogical Documentation (Rinaldi, 2001) could be used to support the Atelier's practice.

Image 5: An Atelier session at the Whitworth Art Gallery.

Image credit: Lucy Turner for the Whitworth Art Gallery, University of Manchester.

The Atelier van Licht at the Centraal Museum in Utrecht (The Netherlands)

In January 2016, I travelled to the Netherlands to visit the Atelier van Licht at the Centraal Museum in Utrecht. The Atelier van Licht was a temporary space that aimed to encourage young children's (aged 3-12 years) learning through experimentation and play with materials.

The Atelier was designed by an interdisciplinary team consisting of a scientist, educator, industrial designer and artist. During my visit, I met with the Atelier van Licht's Creative Director to learn about how the team developed and facilitated children's learning in the space. The Director discussed the need to develop more 'creative laboratories' for young children in communities. She pointed out that such a space could be anywhere, including a library, kindergarten, art museum or a science centre. The more opportunities children have to direct their creative learning in communities, the more likely they are to develop creativity as a tool for living.[1]

Image 6: The Atelier van Licht at the Stedelijk Museum, Amsterdam.

Image credit: The Atelier van Licht

I found three aspects of the Atelier van Licht's practice really interesting:

- Firstly, when the team were developing a learning activity, they would often start their planning with a provocation; such as a research question or concept that they wanted to learn about. This question was then used to guide the generation of documentation during the facilitation of the session, and collectively reflected on in the post-session discussion. This documentation was also used to reflect on children's interactions in the Atelier. This enabled further modifications

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[1] An extended review of the visit can be read on my blog 'Art Play Children Learning:' http://www.louisapenfold.com/a-visit-to-the-atelier-van-licht-at-the-centraal-museum-utrecht/

and changes to the space in response to these reflections.

- The emphasis on high-quality social support in the Atelier space. The role of educators was not to direct learning but rather to facilitate and extend children's learning in response to their actions. Educators need to respond to children's experimentation in order to support their learning. This observation resonated with Rogoff's (1990 & 1995) concept of Guided Participation where a child's cognition is developed through their involvement in activities with people who have more advanced skills. Rogoff's notion of guided participation draws on Vygotsky's (1978) concept of scaffolding in which a more knowledgeable person shifts a learner's understanding from unknown to known. From this perspective, the educators in the Atelier van Licht played an important role in facilitating children's creative learning through shared activities over time.

- Finally, I was very inspired by how the materials and their spatial arrangement were simple but with multiple possibilities. For example, the recycled plastic in the space (pictured in Image 6 on page 51) could be used in the shadow play area, on light tables or on the over-head projectors, allowing for the exploration of different concepts such as transparency, opacity, translucency, measurement and size. The materials therefore allowed the children to explore different scientific concepts. The Atelier van Licht's heavy focus on the materials made me consider how materials themselves can scaffold (Vygotsky, 1978) children's learning from unknown to known, in addition to adult educators.

The Atelier van Licht was a very different creative learning environment to Tate in that the focus was on creativity and not art specifically. As this research was investigating children's learning in art museums, I considered how I could integrate aspects of the Atelier van Licht's practice, such as the strong social support of the educators, to focus on children's learning with and through visual art.

Lillian de Lissa Children's Centre & Nursery in Birmingham (UK)

In March 2016, I spent two days at Lillian de Lissa Children's Centre and Nursery working with the artist-in-residence, Lorna Rose. Lillian de Lissa is situated in inner city Birmingham in the United Kingdom. Approximately 90 per cent of children who attend the nursery are of minority ethnic heritage with 80 per cent of students speaking English as a second language (Thomson & Rose, 2012). The nursery runs from 9.00am to 3.00pm every week day and is guided by the school's goal to be inclusive of all children and their families:

> "At Lillian de Lissa Nursery School the needs, best interests and welfare of children are at the forefront of all that we offer. Our provision is non-discriminatory, accessible and sensitive to race,

gender, religion, culture, language, disability, sexuality and differing patterns of family life… Creativity is at the heart of our school and is used to provide learning opportunities for all children, staff and families. We provide an exciting, purposeful and challenging environment taking into consideration the rhythm, space and time needed for every type of learner."

(Lillian de Lissa website, 2019)

Image 7: Lorna Rose at Lillian de Lissa Children's Centre & Nursery

While the nursery does follow England's Early Years Foundation Stage curriculum, they integrate this with their 'child-led' ethos to observe and respond to children's behaviours and interests alongside the implementation of the national curriculum. During my time at the nursery, I assisted Lorna in the art studio (pictured in Image 7, above). This mainly involved helping to set up and facilitate art activities with the children. At the end of my second day at Lillian de Lissa, I undertook a video interview with Lorna. In the conversation, she spoke about the philosophies that underpinned her work as an artist including the importance of open-ended materials, child-centred practice, conceptual and spatial flexibility and reflective practice. The link to the video can be found here: https://vimeo.com/160206410

From my observations and conversations with Lorna, I generated the following reflections:

- Lorna described herself not as an artist but as a 'creative facilitator' that sets up situations, provocation and activities for children to explore and

discover things by themselves. From this perspective, Lorna's role as an artist was integral in constructing the initial learning environment that the children were then able to experiment in.

- Lorna said that communication is not just verbal, and it takes many forms, including through creative forms. Her comment chimed with Eisner's (1972, 1982) notion of 'aesthetic cognition' in which learning occurs through different sensory-based experiences such as touch, smell, sight and taste. An individual is then able to express learning through their senses in non-verbal media such as painting, sculpture or performance.
- Lorna designed the activities so they could be adapted to children that have an array of social, emotional and physical issues. Embedding flexibility in the design of children's learning environments was very important;
- Lorna discussed the criticality of fostering curiosity in children's learning in the art studio. She believed this to be especially important in instances where children were not thriving in reading and writing;
- A need to pay attention to children's learning *process* instead of emphasising the *products* of learning.
- The scaffolding of children's learning happens in many different ways, including by children's peers and parents.[2]
- Lorna noted that a skilled educator can make insightful observations on children's interactions with their peers, concepts and materials. She believed that in order to do so, educators must have knowledge of different education theories as well as being open to new understandings of children's learning that extend beyond what they currently know. Her words echoed with Eisner's concept of 'aesthetic ways of knowing' (1985), in which aesthetic and sensory-based learning cannot solely be evaluated using language-based assessment. Evaluation processes need to also take into account embodied processes that can be captured using photos and video. I further explore the methods and processes used to evaluate children's embodied learning in Part C of Reconnaissance One.

My time at Lillian de Lissa, as well as with my visit to the Atelier van Licht, Tate Britain and The Whitworth Art Gallery allowed me to reflect and learn about different approaches to children's creative learning. The visits encouraged me to consider how the construction of pedagogic practice in art museums differs from that of a pre-school or science centre. I discuss the unique affordances of art museums in children's learning in Action

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[2] An extended reflection on my visit to Lillian de Lissa – including the video interview with Lorna Rose - can be read on my blog, 'Art Play Children Learning:' http://www.louisapenfold.com/creativity-multiculturalism-childrens-learning/

Research Cycle One's overall reflections on page 70.

Image 8: A video still from Lorna Rose's interview

Part C: Research design and ethical considerations

Part A's conceptual framework and Part B's visits to children's learning environments both provided the foundations for developing a critical framework for connecting children's learning with art museums' practices. However, before commencing Action Research Cycle One's fieldwork, I needed to construct a research design that could be used to investigate the research focus. As a result, Part C of Reconnaissance One explored the research methods and ethical considerations of the enquiry.

Connecting children's learning with art museum practices through Pedagogical Documentation

In order to explore the research question 'how can children's learning be connected with art museum's curatorial practices?' I needed to produce a reflective process that was both compatible with Critical Participatory Action Research and that allowed for the integration of children's voices into the curatorial process. Sinclair (2014) argues that for children's participation to influence change, ongoing strategies, as opposed to one-off events, need to be utilised. Remembering my own encounters with early childhood teachers in Australia, I turned to Pedagogical Documentation as a practical, ongoing strategy for joining children's learning with art museum practices in the action research cycles.

At its most general level, Pedagogical Documentation is a reflective process that seeks to make children's and adult's learning visible through cycles of planning, facilitating activities, reflection and change (Pacini-Ketchabaw et

al. 2014 & Rinaldi, 2001). Records such as photographs, videos, audio recordings and conversation notes are generated by groups of people to critically reflect on children's learning and education practices (Fawcett, 2009 & Stacey, 2015). These critical reflections can then be used to construct new subjective and intersubjective understandings of children's learning and educator's pedagogical work, encouraging adults to continuously explore their assumptions, beliefs and practices towards children (Olsson, 2009; Pacini-Ketchabaw et al., 2014; Rinaldi, 2001). This reflective process is built on the post-modern understanding that rather than there being a singular notion of truth, there are many. Pedagogical Documentation can be understood as a complex and open-ended process that encourages dialogue and reflection on children's learning from different people. Inviting multiple perspectives on children's learning encourages diversity and uncertainty to be treated as important values, rather than weaknesses that need to be eradicated (Dahlberg, Moss & Pence, 2013).

Pedagogical Documentation is therefore an enquiry-driven research process that constructs and values provisional and contestable conclusions. Referred to as pedagogical narration in Canada, learning journeys in the United Kingdom and action research in parts of Australia and New Zealand, Pedagogical Documentation can additionally be seen as a process that supports educators in exploring dominant discourses that shape early childhood practices (MacNaughton, 2005; Pacini-Ketchabaw et al., 2014). For example, in the United States, early childhood education has been subjugated by a discourse of development psychology that seeks to design 'Developmentally Appropriate Practice' based on children's biological and cognitive growth (NAEYC, 2009). Such dominant ways of thinking can function as 'regimes of truth' that shape education practices with children (Foucault, 1977). MacNaughton (2005), working with Foucault, proposes that power circulates in complex relationships to produce and legitimise 'truths' in early childhood education. These truths have the ability to regulate how people think, feel and act in their everyday lives. Educators may then challenge the political, historical and social constructions of gender, race, culture and class in their practice and by doing so, become increasingly critically reflective about dominant 'truths.' Educators can then map power structures, and how these operate to shape and maintain assumptions, beliefs and practices towards children. A deconstructive approach to Pedagogical Documentation may disrupt fixed early childhood discourses and practices, supporting the development of thinking that moves away from a singular, universal paradigm of 'best practice' and towards ways of working with children that value uncertainty, contextuality, subjectivity and difference (Pacini-Ketchabaw et al., 2014). Pedagogical Documentation can be understood as a practical application of action research in early childhood education (MacNaughton & Hughes, 2011) as both processes are comprised of cycles of planning, action, reflection and change. Similar to Critical Participatory Action Research

(CPAR), Pedagogical Documentation emphasises the dialogic, subjective, reflective and socially mediated processes of learning. In this enquiry, Pedagogical Documentation formed the 'action' of the first order action research cycles, as illustrated in Figure 5, pictured below.
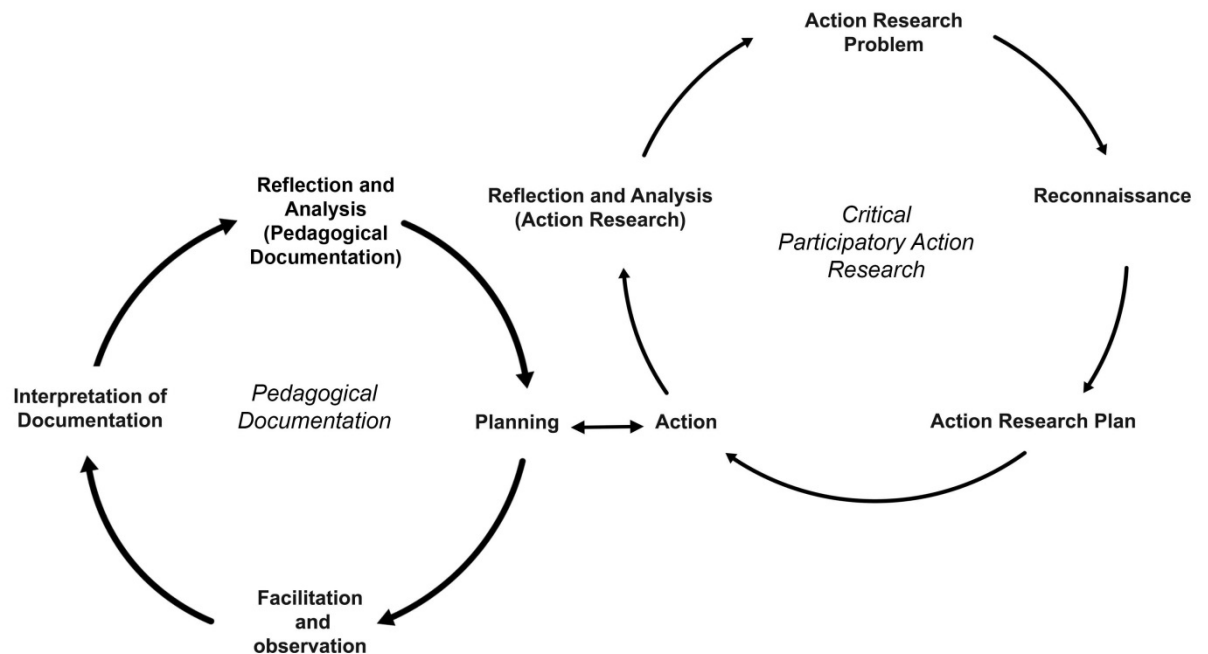
Figure 5: The interrelated CPAR and Pedagogical Documentation action research cycles

Pedagogical Documentation and the surveillance of children's learning and education practice

While Pedagogical Documentation provided a useful starting point for developing practical strategies that unified children's learning and art museum practices, there were also ethical concerns relating to how and why it was used. Foucault (1970, 1977, 1980) notes that educational systems built on aspirations of equality may still, despite best intentions, act to produce and reproduce power structures that control others, unintentionally promoting practices that include some people and exclude others. These discourses may then inadvertently promote practices that include some people and exclude others. For example, the recording and evaluation of children's learning is not necessarily a pedagogical process in itself. Such records could be used as a form of surveillance and neoliberal control of children's learning and educator's practices (Grieshaber & Hatch, 2003).

In order to make the recording and reflection of children's learning a pedagogical process, Dahlberg et al. (2012) stresses the need to continuously examine how, when and why the records of learning are used. Lenz-Taguchi (2009) extends on this concern to argue that documenting children's learning only becomes a pedagogical process when it is used to support learning, facilitate change and support active listening in early

childhood education. This view on what makes 'documenting' pedagogical is supported by Olsson (2009, p.117) who argues that the focus of Pedagogical Documentation needs to be on the processes of learning. In this, learning itself is understood as being *"impossible to predict, plan, supervise or evaluate according to predefined standards."* In this enquiry, I was aware of the need to reflect on the ethics of how the records of children's learning were used to facilitate further learning and enquiry. In Action Research Cycles One and Two, I therefore continuously reflect on how children's learning is recorded, reflected on and used in the specific practice contexts.

Methods for researching children's learning and art museum practices

The ethical considerations surrounding the use of the research methods to generate data on children's learning and art museum practices were a central consideration in this enquiry. I was aware that the application of child-friendly methods without critical reflection risked projecting standardised identities on children under the guise of 'empowering' them (Thomson, 2008). These actions may then unintentionally produce and reproduce hierarchical and binary structures between children and adults (Gallacher & Gallagher, 2008). To prevent this from happening, Chesworth (2018) calls for the need to ethically attend and respond to child-friendly methods used in early childhood research in an ongoing, minute-by-minute basis. In line with this thinking, I adopted an 'ethically responsive' mind-set, as mentioned in this thesis' Introduction. This approach acknowledged the need to critically reflect on how and when the research methods with children were used. These critical reflections are explored throughout Action Research Cycles One and Two.

In this research, I also drew on the work of Thomson and Gunter (2007) to adopt a 'standpoint position' that allowed children's 'voices' to be listened and responded to in the action research. By doing so, children were able to share their expert testimonies on their experiences and have these responded to by the art museum teams. To operationalise my position, I drew on various research methods to record children's learning in the enquiry. These methods were selected for their ability to allow children to participate in the co-construction of knowledge, identity and culture in the research (Dahlberg, Moss, and Pence, 2007). More specifically, methods were selected based on their ability to be:

- Multi-modal, by acknowledging the different ways that different children learn
- Participatory, by valuing children as important agents in the formation of the spaces and ideas that shape their lives

- Reflexive, by supporting educators, parents and children in reflecting on learning practices, meanings and exploring the question of interpretation
- Flexible and adaptable to various education settings
- Focused on children's learning and experiences

(Adapted from Alderson and Morrow, 2004)

As a result of the above considerations and the age group that I was working with, I drew predominantly on visual methods, as discussed in the Mosaic approach (Clark, 2017; Clark & Moss, 2011) and early childhood action research studies (MacNaughton & Hughes, 2011). Methods used to capture data included:

- Photography and videos that allowed children's non-verbal actions, such as movement and touch, to be recorded and reflected on by the action research team. These research methods were able to document aspects of children's learning that other methods, such as audio recording and written accounts, could not do. Visual methods allowed for the visualisation of children's bodies in the participatory research process, allowing their bodies to be integrated as part of their 'voice' in the Pedagogical Documentation process. Visual imagery produced in this enquiry was not a representation of a singular truth, nor used to evidence children's learning outcomes, but rather a provocation for reflecting on learning and education practices from multiple perspectives. I also approached the production of visual data as being an important part of the research process. I understood visual data itself as being a cultural, social and technical construction produced from the:
  - o Selection of the image: Including what content is included and excluded from an image. The perspective an image is taken from additionally alters the construction of the image;
  - o Editing of the image and the image-maker's aesthetic judgements including cropping, filtering or manipulating the image;
  - o Displaying of the image: How an image is presented with others including mounting, lighting and as well as how it is presented online.

(Taken from Thomson, 2008)

The production of visual images was also understood as an aesthetic experience (Eisner, 2002) people engage in to experiment with artistic concepts and sensibilities including light, colour and composition. Similar to my approach to my own art practice discussed in the Introduction, I adopted a self-reflective approach towards the selection, editing and display of visual data in the action research cycles. This reflection allowed me to investigate the social, cultural and technical constructions of photos and videos. I had adults (the artists, learning curators, parents and myself) and children take photos during the gallery activities. I generated visual data on the

artist's and curator's setup of the gallery activities. I also purchased two children's cameras to give to families to record their learning in the sessions.

- Written records including descriptive field notes of children's actions and conversations. These field notes could then be combined with the visual data to construct multiple perspectives on a child's learning process. Written records were also produced in the form of typed transcripts of the action research team's conversations.
- Audio recordings of informal interviews with parents participating in the sessions. These interviews included questions such as, 'does your child do this at home?' and 'why do you think your child is so interested – or not - in the activity?' aiming to give further insights into children's experiences in the art museums. Open-ended interviews with learning curators and artists were additionally used to discuss the gallery activities intentions and philosophies. Questions asked in these informal interviews were adapted depending on the activity being undertaken

These methods generated records of children's learning and the art museum team's practices that were then used to stimulate individual and collaborative reflection in the action research cycles.

Analysing data on children's learning

Children's learning was analysed using individual and collaborative critical reflection. Building on the work of MacNaughton & Hughes' (2011), I understood that the reflection of education practices is best done when involving multiple people so that diverse perspectives on the activity could be generated. As a result, I asked the learning curators, artists, parents and children all participate in the generation and reflection of the learning records.

The reflection of children's learning was done both individually and as a group throughout the enquiry. These processes are described in detail throughout the action research cycles. The analysis of children's learning was also informed by the assumption that interpretation is a subjective process in which people create different judgements based on their individual values, beliefs and understandings. The interpretation of children's learning aimed to:

- Explore and debate what was happening in children's learning *"without reference to a rigid framework or schema of pre-defined expectations"* (Dahlberg et al., 2007, p. xxv);
- Investigate the mediators that facilitated children's learning in the gallery activities and modify the Guide for Pedagogical Curation (GPC) accordingly;
- Revise the critically reflective Pedagogical Documentation process;

- Refine the pedagogical offering for children in the art museum activities.

Siraj-Blatchford et al. (2002) argue that the observation, recording and analysis of the interactions between a child and a learning environment may give significant insights into the depth of an educational experience. To assist the art museum team's reflection of such interactions, the initial iteration of the Guide for Pedagogical Curation, illustrated in Table 2, below, provided a framework for interpreting children's learning as well as investigating the research focus. The Guide for Pedagogical Curation was then further modified throughout the action research activities.

Background Information	
The art museum team's overall ideas for the session	• Artists and learning curator's intentions • The language used to describe the activity • What educational training has staff facilitating the session received?
The role of the physical learning environment	
Physical location of the activity	• The activities location in the art museum • The space's architectural layout • Modifications made to the built environment over time – both short-term and long-term
The spatial design	• The selection of materials and tools • The activities material and spatial arrangement of content • Inclusion of manipulative 'loose parts'
The role of the social learning environment	
Artists (or facilitators) social activity	• The artists' perception of their social role in the session • How the artist socially interacts with children and families in the activity • Questions asked to children by the artists in their social interactions

Children's social activity	• How children learn individually
	• How children learn in social groups including through:
	    ○ Guided participation
	    ○ Participatory appropriation
	    ○ Apprenticeship
	• How children express or show ideas through language
	• How children develop collaborative learning strategies with their peers and parents. Such strategies may include negotiation, flexible thinking and listening to others

Table 2: The initial iteration of the Guide for Pedagogical Curation

Ethical considerations relating to participant involvement

The development of the conceptual framework in Reconnaissance One's Part A indicated numerous ethical concerns relating to the balance between maximising the research outcomes and the participants' risk from partaking in the study (Alderson & Morrow, 2011). Firstly, ethical issues relating to participant involvement were of critical importance to the research, especial young children's involvement. To examine these ethical considerations, I drew on Flewitt's (2005) guideline for ethical reflection

when conducting research with young children. This guideline outlined four key areas for consideration including:

- Negotiating initial consent;
- Negotiating ongoing consent;
- Anonymity, confidentiality and visual data;
- Participant consultation of research outcomes.

These four areas helped me to critically engage in the ethical decisions of my research in a way that maximised the research outcomes while minimises risk to participants (MacNaughton & Hughes, 2011). I discuss each of these areas in further detail below.

Negotiating initial consent

The negotiation of participant consent from the gallery teams, children and families was a core ethical concern in this enquiry. I put together a research plan for how I would maintain the research participant's privacy and prevent unauthorised access to their information. I then constructed an information sheet and accompanying consent forms for both the art museum teams and for children and their families/carers. These consent forms were approved by the University of Nottingham's Ethics Committee and can be seen in Appendix One and Two on pages 266 and 268.

To negotiate initial consent of the art museum teams, I constructed an information sheet outlining key information on the participant's involvement. The information sheets described the risks and benefits of their participation in the research, including the steps undertaken to reduce risks. My intention in constructing the sheet was to ensure that all participants were sufficiently informed of what their involvement would consist of, allowing them to make an informed decision about their participation.

In this research, children and families were selected at random to participate in the research. The random selection was mostly shaped by the number and arrival time of visitors to the gallery activity. Children's parents or legal guardians were then asked to sign the form on behalf of children under the age of 18.

Alderson and Morrow (2004) argue that an important part in requesting participant consent is to clearly communicate their rights in the research. These rights include their voluntary decision to participate, allowing them time to consider their decision, not feeling pressured to be involved and having the capacity to drop out within a specific timeframe without reason. Informed by these ethical concerns, I emailed the participant information sheet and consent form (approved by the University of Nottingham's ethics committee) to both the art museum teams, including the artists and learning curators. This was done a month before commencing the action

research project. By emailing this information in advance, participants were given time to read the document and ask questions if needed.

Likewise, negotiating initial consent with children and families was an important ethical consideration in the research. While it was difficult to inform all families of the research prior to their arrival at the art museums, steps were taken to attempt to do so. For example, in Action Research Cycle One, The Whitworth Art Museum created a short description of the research to put on the gallery's website. This description included general information of what participation in the research would involve, including that their participation in the research was voluntary. I also constructed an information sheet and consent form for children and families that can be viewed as Appendix Two on page 268.

During the session, I then worked with the artists and learning curators to speak with individual children and their families about the research project upon their arrival. In the instances where children were entering the gallery without their legal guardians, for example as part of a kindergarten group or supervised care visit, children were not asked to participate in the research. Due to the volume of families attending the art museum programmes, not all visitors were asked to partake in the research. I handed over the information sheets and consent forms that highlighted the voluntary nature of the research and their right to withdraw their participation at any time without penalty. I also explained that I was interested in learning about how children play in the space and that I would be taking some photos and videos as part of this. I additionally told the children that if they didn't want me to do this, that this was okay and they could tell their parents who could then let me know. While this strategy was somewhat flawed as a result of many of the children not being able to speak yet, I drew on this tactic if and when it felt appropriate. I left children and parents alone to read the information sheet in their own time to make a decision about participation. Following this, signed consent forms were collected from all willing participants. Children and families who gave informed consent were given a yellow sticker to wear on their shirts so that they were easily identifiable. Data generation methods were then adapted to focus on children and families who had agreed to participate in the research.

Negotiating ongoing participant consent

My research project was approved by the University of Nottingham's ethics committee on June 7, 2016. While this meant that the methodology, methods, risks and benefits of the research met the official university standards, I also understood that negotiating ethical practices with participants was an ongoing process. For example, Flewitt (2005, p. 556) articulates children's consent in research as a provisional construction that is: *"…on-going and dependent on the network of researcher/researched*

relationships built upon sensitivity, reciprocal trust and collaboration." Once initial informed consent has been granted, it cannot be assumed as a concrete agreement but rather a negotiated process that needs to be reflected on a minute-by-minute basis (Simons & Usher, 2000 & Chesworth, 2018). Throughout the action research cycles, I continuously revisited and reconsidered whether or not the research was developing within the art museum team's expectations and within the information outlined in the consent form. I understood the significance of responding to children's indications of discomfort that arose from their participation in the research as well. To assist with identifying these moments, I constructed relationships with the artists and parents who were able to let me know immediately if they felt the children's involvement in the research was negatively affecting their gallery experience. I also mentioned to parents that they could tell me if they thought their child was uncomfortable with being involved in the research.

Anonymity, confidentiality and visual data

In this research, I undertook numerous steps to maintain the participant's anonymity and confidentiality while also attempting to maximise the outcomes of the research. Participants were given three options regarding their involvement including:

- Not to participate in the research at all;
- To have their data used for purposes relating to this thesis only;
- To have their data be used for conferences and publications relating to the research.

These options allowed participants to make specific selections in relation to their involvement. An additional ethical concern in the enquiry centred on the confidentiality of participants' identities. To assist in protecting this, all visual imagery, including photos and videos, generated during the art museum activities were downloaded off the cameras and onto a password-protected hard drive immediately following each activity. All data was then deleted off the cameras. Further, I inspected all the videos and pictures and further deleted or cropped images that included imagery of other art museum visitors who were not part of the research project.

Following this, I separated the research participant's details, for example, their names and personal information from the research data. This was done to prevent any unauthorised person from matching the personal information to the data (MacNaughton & Hughes, 2011). When transcribing the notes of participants, I gave each participant a pseudonym that was used to track and share their activities while maintaining their privacy. The removal of the participant's actual names was in alignment with the official British Education Research Association's (BERA, 2018) ethical guidelines suggestions to remove names unless an individual chooses to be identified.

While the removal of participants' names allowed for anonymity in the written transcripts and field notes, the question of how to protect their anonymity in the use of visual data while maximising the research benefits was a significant ethical concern. Although participants' names were changed in written records, they could still be visually recognisable in the photos and video, making them vulnerable to public criticism (Flewitt, 2005). BERA's ethical guidelines (2018, p. 22) in relation to the use of visual methods in education research suggest that:

> *"Anonymity may also need to be reconsidered in the context of some visual methodologies and participatory methods. For instance, the study of facial expressions and gestures and the increasing prevalence of video and multimodal data raise questions about whether concealing identities is always appropriate. Researchers may need to negotiate an ethical course of action here – one that secures very clear agreement about anonymity and about subsequent use of the data. Researchers need to be aware that visual material could be misused by others (for example, as an example of poor practice), and should take steps to prevent this as far as possible."*

This guideline was used to consider how participants' visual images could be used to give rich insights on children's and family's learning without putting them at risk. For example, I felt that children's eye movements and facial expressions were an important part of the interpretation of their learning. Therefore, the decision was made to not blur or censor children's faces in the visual data generated as part of the art museum activities. While most of the children and families participating in the research agreed for their images to be used in both the research and more broadly in publications and conference presentations, I also decided to only use visual imagery of children's faces when it was necessary to do so. Flewitt (2005) argues that researchers should reflect on the degree of visual detail that is needed to explore a research focus. If particular details are not needed, then digital technology can be used to crop or blur details that compromise a child's anonymity. Every effort was made to cut out details of photos and videos in the Pedagogical Documentation that gave away information on participants identity. In the thesis itself, I also decided to not censor the children's facial expressions as they were an important part of the reflection and analysis of learning. In the final version of this thesis (this is publically uploaded), I plan to blur our children's faces.

I was also aware of the need to protect the anonymity of art museum teams. Both art museum websites featured my name and information on the research, making the association between myself and the art museum unavoidable. Securing the anonymity of the art museums that participated in the research was therefore more complex. In this thesis, I have named the institutions that I worked with. However, I was able to take specific steps to protect the art museum staff from being identified, including giving

them pseudonyms and cropping out their visual image when possible. In this thesis itself, I do not censor the images or voices of the artists or learning curators as I believed these to be critical in sharing their ideas and ways of working with children. My decision to do so was shaped by the learning team's request to be acknowledged for their practices with children. Many of the learning curators and artists who participated in this research talked about how the early year's programmes were side-lined within the institution and often seen as less important to the 'main' exhibitions programme. I therefore wanted to assist the art museum learning teams in getting recognition for their work. However, I do propose to cut out the pre-session video interview links in the final published version of this thesis. This step will be done in order to help protect the anonymity of participants in the public sphere.

Participant consultation of research outcomes

Sharing the action research project outcomes with the art museum learning teams was an additional ethical concern. While I worked with the teams during 'action' of the action research cycles, I undertook the reflection of each action research cycle and the write up of the final thesis by myself. This made the question of authorship around the research blurry. I spoke with the teams about how I could consult with them and collaborate with specific research outcomes, such as journal articles, conference presentations and publications. However, I was aware that part of my role as the researcher was to write and analyse the data individually. This analysis would then lead to my PhD qualification. As a result, I made all efforts to share and ask for feedback from the art museum teams on parts of the thesis where I specifically discussed their programme. For example, the programme introductions at the beginning of each action research cycle. However, all additional writing and analysis was done by me, independently of the art museum teams.

Part D: Piloting the Guide for Pedagogical Curation

Following on from Parts A, B and C of Reconnaissance One, I then piloted the first iteration of the Guide for Pedagogical Curation, (Table 3, page 67), in the Whitworth Art Gallery's early years Atelier programme. Before doing so, I approached The Whitworth Art Gallery to ask if they were interested in collaborating on the piloting. During these discussions, we also agreed to work together on Action Research Cycle One. This selection was made based on a shared interest in the research focus as well as the gallery's scheduled programming that aligned with the timeframe that I was hoping to undertake the fieldwork in. Following this decision, I then spent one day in May 2016 in the Atelier piloting the iteration of the GPC.

The pilot study coincided with a 'mark-making' activity, as illustrated in

Image 9, page 68. My intention in piloting the GPC was to further develop and modify it. I also hoped to test out the research methods including the use of video, field notes and photography to get a clearer idea of how these may be used in the gallery activities.

Background Information	
The art museum team's overall ideas for the session	• Artists and learning curator's intentions • The language used to describe the activity • What educational training has staff facilitating the session received?
The role of the physical learning environment	
Physical location of the activity	• The activity's location in the art museum • The space's architectural layout • Modifications made to the built environment over time – both short-term and long-term
The spatial design	• The selection of materials and tools • The activity's material and spatial arrangement of content • Inclusion of manipulative 'loose parts'
The role of the social learning environment	
Artists (or facilitator's) social activity	• The artist's perception of their social role in the session • How the artist socially interacts with children and families in the activity • Questions asked to children by the artists in their social interactions

Children's social activity	• How children learn individually
	• How children learn in social groups including through:
	   o Guided participation
	   o Participatory appropriation
	   o Apprenticeship
	• How children express or show ideas through language
	• How children develop collaborative learning strategies with their peers and parents. Such strategies may include negotiation, flexible thinking and listening to others

Table 3: The initial iteration of the Guide for Pedagogical Curation

Image 9: A mid-session image from the mark-making Atelier

During the Atelier session, I used the GPC as a framework to observe and reflect on the Atelier session. While the activity was being facilitated, I chatted with Sarah (not her real name), the artist, about her planning and ideas for the session. I also talked with parents and children in the session, asking them about their experiences at the Whitworth. I decided not to share the GPC with Sarah but instead use it to make notes on what further modifications needed to be made. I used a combination of field notes and visual data to produce records of children's play. I then used these records to create a short video of children's learning that can be viewed here:

(Content removed to protect participant information).

Following the session, I reflected on the use of the video and children's interactions with the spatial and social components. The first key reflection from piloting the GPC was that I identified the need for the documenting process to have a pedagogical intent that informed it. This reflection came as a result of a huge number of photographs, videos and field notes being generated in the session with no clear purpose on what it was being used for. This became problematic when I went to analyse the records and had no idea where to begin.

Image 10: A video still from the mark-making Atelier

Secondly, I also produced and reflected on the records of children's learning by myself. This process generated a singular perspective on children's learning and the Atelier's practice. Moving forward, I planned to discuss how the Atelier's artists and learning curators could also be involved in this. This collaborative discussion may then assist in producing different perspectives on the learning and practice. I considered the fluid role I played in the Atelier, often shifting from a researcher, to an artist to an educator. I was aware that if Sarah and the rest of the Atelier team were to participate in the pedagogical documenting process, then we would all need to embody these shifting identities.

Thirdly, in relation to the curation of the Atelier environment itself, I observed the need to further investigate the social role of the artists in facilitating children's learning during the Atelier activities. Building on Rogoff's notions of apprenticeship, guided participation and participatory appropriation, I aimed to explore how Sarah and the other Atelier artist were and could further support children's learning through social interactions in Action Research Cycle One.

Finally, during the session, Sarah talked a lot about the significance of the paint in the Atelier. However, she discussed very little about the role of artworks in the programme. Moving forward, I decided to do some more investigation into how artworks could be used to support children's learning in the Atelier. These reflections from the GPC's pilot study helped me to understand the running of Atelier programme, allowing me to making make further modifications to the GPC.

Reflecting

This reconnaissance has explored the research question 'how can children's learning be connected to art museum's curatorial practices?' in multiple ways. Firstly, Part A produced a conceptual framework for researching the research focus. This added to the research focus by producing an initial iteration of the guide to curate pedagogical activities for children in art museums. Part B then featured reflections on four different children's creative learning environments, allowing for the investigation of different organisation's philosophies that shaped creative practices with young children. Part C then outlined the research design and ethical considerations. In this section, I discuss five key reflections from Reconnaissance One's overall enquiry. In Part D, I then piloted and reflected on the initial construction of the Guide for Pedagogical Curation (GPC) in the early year's Atelier programme at the Whitworth Art Gallery. These reflections were then used to make modifications to the Guide for Pedagogical Curation.

Constructing pedagogical intent for children's learning activities

As discussed in the pilot study's reflection, I identified the need for the art museum learning team to construct a pedagogical intent for the planning, facilitation and reflection of each gallery activity. This came as a result of a huge amount of documentation being produced during the session with no clear purpose on what it was being used for afterwards. While I had my overall research questions that informed the overarching action research cycle, is were not specific enough for guiding the art museum team's enquiry for each session.

Furthermore, during the piloting of the GPC, various methods, including field notes, videos and photographs were used to produce records of children's learning. These methods generated much more data than what could be practically analysed by the art museum team following each activity. A need to construct practical tactics that focused the team's intent for planning, producing and reflecting on records of children's learning was necessary.
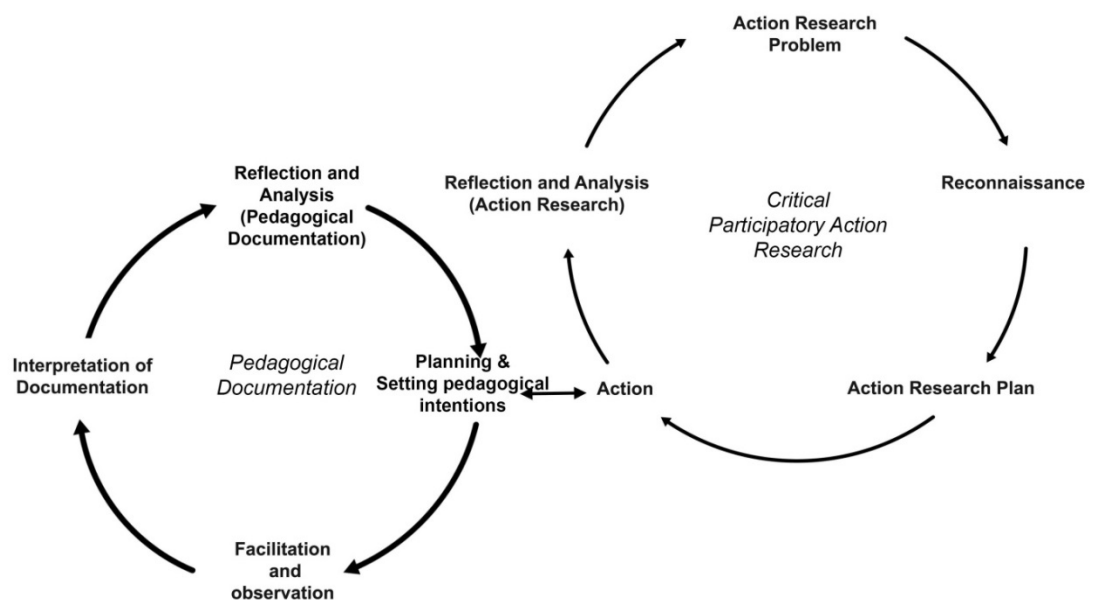
Figure 6: The CPAR and Pedagogical Documentation cycles (post Reconnaissance One)

Moving forward, I decided to explore the tactic of using research questions in each Atelier session. These research questions could guide the generation, facilitation and reflection of children's learning and the practice. The research questions also aimed to assist the team and I in focusing on more specific interactions between children and the constructivist learning environment. Research questions were understood as a practical tactic that could both investigate and produce power structures in the practices (Stengers, 2005). Figure 6, above, illustrates how research questions used in the Pedagogical Documentation cycle were related to the larger CPAR cycle. This can be seen with the additional 'setting pedagogical intentions' components into the Pedagogical Documentation cycle. Building on this reflection, I then added 'research question' section to the GPC. This could then be used to assist the team in constructing a pedagogical intent for the planning, facilitation and reflection in Action Research Cycle One.

A need to focus on art in the curation of children's learning environments

Reflections from the GPC pilot study identified a gap in exploring the significance in the role of artworks in the Atelier's design. As this research is investigating the unique possibilities of art in children's learning, I identified the need to further explore how the Atelier team could use artworks in Action Research Cycle One. This reflection similarly connected to the previous reflection in that constructing a pedagogical intent focus on children's interactions with art (artworks, art materials and art concepts) could produce results on the specific affordances of the art in children's learning. This is opposed to a more general focus on creativity and

children's free play in the Atelier.

Moving forward, the GPC was modified to investigate how art concepts could be embedded in the Atelier's social, spatial and material components. For example, how concepts such as line, form, shape and texture could shape the selection and arrangement of material content. I also separated the GPC's social, spatial and conceptual sections so that these components could be individually considered in each session's planning stage.

Balancing children's freedom to learn and pedagogical structure in the design of learning environments

Reflections from the GPC's pilot study additionally explored the need to balance children's freedom to learn in dynamic ways with a learning environment's pedagogical structure. To support this process, an activity's content needs to be flexible enough to support children's creative play but structured enough to introduce new ideas, techniques and knowledge that then open up new experimental learning pathways. Going back to Vygotsky's notion of scaffolding, learning is much more than just giving children the freedom to play. It is additionally about children encountering unfamiliar experiences, using their prior knowledge as the basis for understanding these and then having supportive 'scaffolds' that bridge the gap between what they know and what they don't know. Such scaffolding does not necessarily happen as a one-off event but as a complex process that occurs over time. The measurement of how successful specific scaffolding processes are is therefore difficult to assess.

Moving forward, my reflections from the GPC's pilot study made me aware of the critical need for scaffolding in the design of children's art museum learning environments as it supports children's learning to become more advanced and complex over time. In Action Research Cycle One, I therefore investigated the specific components of the Atelier environment that could scaffold children's learning. Using the literature examined in Part A of Reconnaissance One, I planned to investigate how the design of a Constructivist Learning Environment could balance children's creative experimentation with pedagogical structure.

Artists and learning curator's important social role in scaffolding children's learning

In Part A of Reconnaissance One, I discussed the significance of scaffolding in relation to the research focus. Scaffolding was then drawn on as a significant process in designing the initial iteration of the GPC. The application of scaffolding in the GPC was implemented by considering how art museum learning practices can draw attention to the interactions between learners and the activity's content. Secondly, how learning activities can be facilitated so that 'more knowledgeable others' – such as

a parent, peer or artist - can introduce new skills, techniques and vocabulary to others, this knowledge may then assist children in undertaking tasks that they would otherwise not have been able to do. The artist or educators may adjust their level of assistance in response to children's abilities.

Moving forward, Action Research Cycle One also aimed to explore how artists and learning curators could support children's learning through social interactions in the early year's Atelier programme. As discussed in the social constructivist literature review on page 42, social relations were important mediators in children's learning. By exploring this in practice, the action research cycle could help to operationalise Rogoff's (1990 & 1995) notions of guided participation, participatory appropriation and apprenticeship. I then modified the GPC to include an individual 'social' component (as illustrated in Table 4 page 75). My intention in doing so was to draw attention to the social role that artists and learning curators have in facilitating children's learning in the Atelier.

Reflecting on children's learning from multiple perspectives

During the piloting of the GPC, I was the sole generator and interpreter of children's learning records. While this allowed me to test out the data generation methods, I realised it was also creating a singular perspective on children's learning. Having all the Atelier team generate documentation on children's learning was an important part in allowing children's learning to be explored from multiple perspectives. This reflection has been echoed by Edwards et al. (1993) who argue that a critical part of Pedagogical Documentation is allowing people to form subjective and intersubjective perpsectives on children's learning.

Moving forward in Action Research Cycle One, I aimed to investigate how the other team members, such as the learning curators and artists, working on the programme, may additionally be involved in this process. For this to happen, all members of the action research team needed the opportunity to look at, individually reflect and then collaboratively discuss children's learning from different perspectives. This process may then encourage both subjective and intersubjective learning to occur (Rinaldi, 2006). Rather than approaching the reflection of children's learning as a one-off event, Pedagogical Documentation needs to be approached as an on-going process (Pacini-Ketchabaw et al., 2014). Creating processes and practical tactics that are sustainable are consequentially an important part of using Pedagogical Documentation in art museum practices.

I decided to speak further with the Whitworth early years team about their involvement in participating in producing records of children's learning. I divided the GPC into three distinct stages: planning, during the session and post-session discussion. This division highlighted the different focuses and activities that happen before, during and after each session. For example,

the planning section focused on the artist's selection of material and conceptual content. The facilitation section then focused on how children produced learning processes through experimentation with the activity's components. The post-session discussion then looked at how the team reflected on learning in the session.

Changes

Leading on from Reconnaissance One's Part A, B, C and D, further modifications were made the Guide for Pedagogical Curation, as illustrated in Table 4 on page 75.

Activity: (For example, mark-making)

Background information: (For example, the physical location and architectural layout of the learning environment and the art museum's institutional structure including its vision, aims, structures and philosophies.

Planning: (For example, planning a pedagogical intention by setting a research question and planning the conceptual, spatial and social mediators of a learning activity) **Social:**   - What social role does the artist and gallery staff plan to have in the activity?   - What sorts of social interactions would they like children to have?   - How has the space been designed to promote this?   - If other staff present, what will their social role be?   **Conceptual:**   - What are the artist's conceptual intentions for the session?   - Have they selected a particular art concept or art form to explore?   - Have artworks been used to design the space? If so, how?   - Is there anything they don't they want to see in the session?   - What does it mean for children to explore mark making in a gallery space as opposed to in another education setting?   **Spatial:**   - Why have the materials been selected?   - Why has the material's space arrangement been selected?   - What sorts of possibilities do these materials and their arrangement offer children?

During the session: (For example, how do children experiment and learn through the activity's mediators?) **Social mediators:**   - Physical movement in the space,   - Children's play individually and in groups (watching, talking, listening to others)   - Children's observation of others   - Body language   - Spontaneous participation in group activities   - Children's discoveries become part of the thinking of the group   - Children show interest and take pleasure in seeing their theories and ideas develop, Children's use language of thinking and feeling (i.e. I have an idea, do you like it?) (taken from Rinaldi, 2001)   - Artist socially interacts with children and parents such as asking questions. With who and how often?   - Are there any ways in which children assess or self-assess their learning, for example, does the robot's arms move?   **Spatial mediators:**   - How do children use, appropriate and transform the materials?   - What changes are made to the materials and the spatial arrangement throughout the activity?   - How does the artist, children and parents respond to these changes?   **Conceptual mediators:**   - How do children take up and explore the artistic concepts?

Post-activity collaborative reflection: (For example, what are the reflections from the session? How did children take up, extend or challenge the activity's mediators? What did children learn?

Future planning: (For example, how could the reflections be used to construct future learning activities)

Table 4: The GPC's second iteration following Reconnaissance One

Chapter Four: Action Research Cycle One (The Atelier at the Whitworth Art Gallery)

Moving forward from Reconnaissance One, more data needed to be generated to explore and produce connections between young children's learning and art museum practices. To investigate this in Action Research One, the over-arching researching question 'how can young children's learning be connected with art museum practices' remained the same. However, to make the sub-research questions align with the Reconnaissance One's outcomes and the specific context of the early year's Atelier, further modifications needed to be made. The sub-research questions were then further refined to:

- What are the mediators that facilitate children's learning in the early years Atelier?
- How can Collaborative Participatory Action Research and Pedagogical Documentation be used as strategies to connect the Atelier's practice with children's learning?
- How can I develop resources (planning guide and practice principles) that facilitate the connection between children's learning and the Atelier team's practice?

These questions provided the focus for the research cycle's activity.

This chapter reports on the action research activities undertaken in partnership with the early year's Atelier team at the Whitworth Art Gallery at the University of Manchester. I begin by outlining background information on the Atelier, including how the programme's focus on children's play-based learning constructed a commonality with my research focus. I then provide an overview of the first-order action research activities undertaken in Action Research Cycle One. These included nine Atelier sessions, one Continuous Professional Development session for teachers and artists, a sharing session with parents and a sharing session with museum educators. For each activity, I describe how the action research methodology was used to plan, facilitate, reflect and make changes to the Atelier's practice.

I draw on the six-step analytical framework constructed by Jonassen and Rohrer-Murphy (1999) that uses activity theory as a framework for analysing the practice. In this chapter's final section, I engage in a second-order analysis to reflect on the activity's overall outcomes in relation to the research focus. These reflections then lead to the development of resources including:

- A modified version of the Guide for Pedagogical Curation
- A set of practice principles for connecting children's learning with art

- museum practices
- Reflection strategies
- Information resources to support the use of the GPC, reflection strategies and practice principles.

Planning

The Whitworth Art Gallery at the University of Manchester

The Whitworth Art Gallery, located in the Whitworth Park at the University of Manchester, was founded in 1889 by Robert Dukinfield Darbishire after receiving a donation from Sir Joseph Whitworth. The Gallery then became incorporated as part of the University of Manchester in 1958. In 2015 the Whitworth underwent a £15 million redevelopment. Upon its reopening, the art museum received over 440,000 visitors and was then awarded the Art Fund Museum of the Year in the same year. The Whitworth's vision for the re-development aimed to open up relationships between the gallery's interior architecture and the surrounding nature of the Whitworth park. Self-described as 'historic and contemporary, academic and playful' (Whitworth Art Gallery, 2019), the art museum aspires to make a significant contribution to national and international visual culture by producing displays and events that are accessible to a wide range of visitors. The Whitworth states its mission as being to 'fully realise the potential of the Whitworth Art Gallery as one of the world's premier university art galleries' (Ibid). Learning is also a strategic priority of the museum with young children, school students, young people and the elderly regarded as key audiences (Whitworth Art Gallery, 2012).

The early years Atelier at the Whitworth Art Gallery

The early year's Atelier was developed by the Whitworth Art Gallery's Learning and Engagement team in 2015 to coinside with The Whitworth's re-opening. The Atelier is designed as a multi-sensory play session for young children and their families. The sessions are run as free, drop-in activities every Monday from 10am-3pm. The programme draws on the Reggio Emilia tradition of the 'atelier,' or art studio, as a point of inspiration. In the Atelier activities, children can lead their learning through experimentation with an array of materials including clay, paint, natural materials, cardboard and fabric. Each session is developed and facilitated by an 'atelierista,' or artist educator. Most of the Atelier activities are run in the Whitworth's Clore Learning Studio, a multi-purpose space constructed on the ground floor of the art museum. The programme runs alongside many other early years' activities including sensory play sessions for babies and their families and forest school inspired nature session held

in the Whitworth Park.

Creating a partnership with the Whitworth Art Gallery learning team

The Atelier programme was selected as the location of Action Research Cycle One as a result of a common interest in the research focus. Prior to commencing the fieldwork, I visited The Whitworth on three occasions, as outlined in Parts B and D of Reconnaissance One. On the third visit, in August 2017, I met with Claudia, the Early Year's Coordinator, to discuss the Whitworth's programming schedule for the second half of 2016. We then put together a timetable for when the fieldwork would be undertaken. Claudia also asked me to put together a paragraph of text for the Whitworth website to let parents know that the research would be happening during the sessions.

As part of creating the partnership with the Whitworth Art Gallery team, I discussed with them how Pedagogical Documentation could be used to critically reflect on children's learning in the Atelier. For example, I emphasised that we would explore with using the strategies of Pedagogical Documentation and research questions together. However, this would be an experimental process in which I would be learning about the practical application of these strategies alongside them. They were happy to do this as the Atelier's approach was already based on the Reggio Emilia education philosophies' experimental and enquiry-driven learning practices. I hoped that through sharing these concerns with Claudia and the Atelier artists that it would construct a realistic expectation of what would happen in the enquiry.

Data generation overview

Action Research Cycle One's fieldwork ran from September to December 2016. During this time, I spent four months living in Manchester and working closely with the Early Year's Coordinator (Claudia)[3], the programme's two artists (Alice and Sarah) and education volunteer (Jane). Together, the five of us formed the action research team for the first research cycle. I have decided to not include specific background information on each staff member as this would allow them to be

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[3] Pseudonyms were given to all art museum staff participating in the research. This was done to align with the University of Nottingham's anonymity requirements in the Code of Ethics.

Date	Event/Atelier focus
November 30, 2016 (11am-1.00pm)	Meeting with Early Year's Coordinator and initial observation of Atelier programme
May 16, 2016 (9.00am-4.00pm)	Piloting of the initial GPC
August 24, 2016 (1.00-2.00pm)	Meeting with Early Year's Coordinator to discuss the fieldwork and information to go on the website.
September 12, 2016 (9.00am-4.00pm including setup & reflection)	Activity One: Tape Atelier
September 19, 2016 (9.00am-4.00pm)	Activity Two: Clay Atelier
September 22, 2016 (1.00pm-5.00pm)	Activity Three: Drawing Atelier
September 26, 2016 (9.00am-4.00pm)	Activity Four: Cardboard/Space Atelier
October 3, 2016 (9.00am-4.00pm)	Activity Five: Natural Materials/ Arrangement Atelier
October 10, 2016 (9.00am-4.00pm)	Activity Six: Acetate/ Colour-mixing Atelier
October 17, 2016 (9.00am-4.00pm)	Activity Seven: Cardboard and Fabric/ Space Atelier
October 31, 2016 (9.00am-4.00pm)	Activity Eight: Paint/ Coverage Atelier
November 7, 2016 (9.00am-4.00pm)	Activity Nine: Natural Materials/ Construction Atelier
November 8, 2016 (9.00am-4.00pm)	Activity Ten: CPD session for preschool teachers and artists
November 21, 2016 (9.00am-4.00pm)	Activity Eleven: Research sharing session with parents
December 9, 2016 (10.30-11.30am)	Activity Twelve: Research sharing session with gallery staff

Table 5: Action Research Cycle One's events

identified in the thesis, disrespecting their right to remain anonymous if requested. Action Research Cycle One consisted of twelve key events including nine Atelier sessions, a Continuous Professional Development (CPD) session for teachers, a research-sharing session with parents and a research-sharing session with gallery staff. These events are illustrated in Table 5 (above). Pedagogical Documentation was used to concurrently analyse the Atelier programme's components and make changes to the GPC before, during and after each session. Simultaneously, the Pedagogical Documentation process was also modified as the action research cycle progressed, as discussed in each activity's post-session reflection.

As this research was situated on an interpretive epistemology that positioned knowledge as subjective and produced in different ways and from different perspectives, data was generated using numerous methods including photographs, video footage, interviews and meetings. Over the duration of Action Research Cycle One's activities, 62 observations were

generated from 42 different children. The length of time the children were observed for ranged from 10 minutes through to 2.5 hours. Nine children participated in the process of Pedagogical Documentation across the nine Atelier sessions. Some of the records of children's learning were then selected for further group reflection. Outcomes of these reflections were then used to construct posters that shared children's learning and the action research team's interpretation of the learning.

Analysing the Atelier-research activity

Activity theory was drawn on as a framework for analysing the components that shaped the enquiry's activity, as detailed in Part A of Reconnaissance One. In Action Research Cycle One, the 'Atelier-research' activity system consisted of many interconnected components that transformed over the research cycle. These components produced the conditions that the practice was produced in (Engeström, 1999). As a result, the 'Atelier-research' activity system needed to be continuously analysed within its specific context. Figure 7 (below) illustrates the Atelier programme's activity system at the beginning of Action Research Cycle One. This modelling provided a starting point for analysing the components in further detail throughout each event in the research cycle.
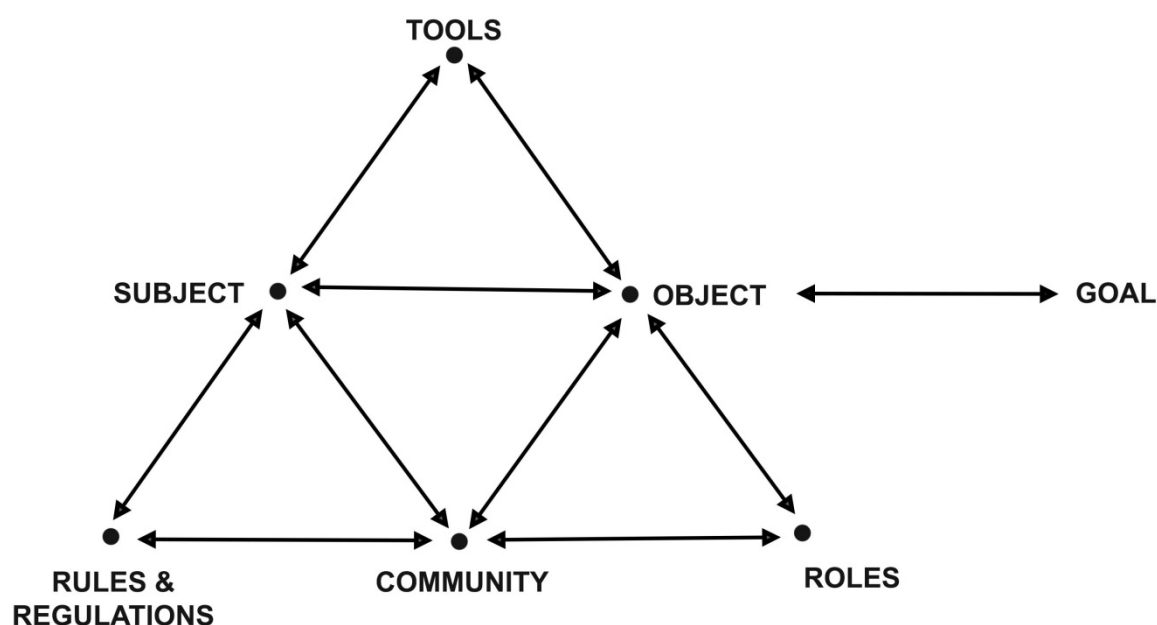
Figure 7: The third-generation model drawn on to investigate the 'Atelier-Research' activity system

Activity theory simultaneously provided an analytical framework for investigating the curation of the Atelier activities. To operationalise the analytical framework in the enquiry, I drew on Jonassen and Rohrer-Murphy (1999) six steps for using activity theory as an analytical framework for designing the tasks, needs and outcomes of constructivist learning environments. I divided Action Research Cycle One's Atelier

activities into each of the six steps, allowing for the activity system's components to each is analysed sequentially. Table 6 (below) illustrates the breakdown of Action Research Cycle One key activities with Jonassen and Rohrer-Murphy's analytical steps. Data generated from each step gave insights into the Atelier programme's social, historical and cultural context. However, each step's analysis was not always clear-cut as data was produced from a combination of the team's discussions that naturally arose and the planned analysis.

In regard to analysing the data produced throughout Action Research Cycle One, some aspects of the practice were analysed collaboratively with the art museum action research team. I then analysed other sections of the data by myself. For example, I analysed each of Jonassen and Rohrer-Murphy (1999) six steps individually throughout the research cycle's activities. The reflections on of the records of children's learning from each Atelier activities were done both individually and when possible, as a group. These reflection sessions were held immediately following each Atelier's pack-up.

Step number	Step focus	Activity
1	Clarifying the programme's motivation	Activity one: Tape Atelier Activity two: Clay Atelier
2	Analysing the programme's systems including the subject, object, community, rules and division of labour	Activity three: Drawing Atelier
3	Analysing the programme's activity structure	
4	Analysing the programme's mediating tools	Activity four: Cardboard/Space Atelier Activity five: Natural Materials/Arrangement Atelier
5	Analysing the programme's context including internal and external bounds	Activity six: Acetate/Colour Mixing Atelier Activity seven: Cardboard & Fabric/Space Atelier
6	Analysing the programme's overall dynamics including the interrelationships between components	Activity eight: Paint/Coverage Atelier Activity nine: Natural Materials/Construction Atelier Activity ten: Continuous professional development (CPD) session for early years educators and artists Activity eleven: Research sharing session for parents and children Activity twelve: Research sharing session for gallery staff

Table 6: The breakdown of Action Research Cycle One's activities and analytical steps

Following this post-session discussion, I then took the records of the children's learning and did further analysis of them using the GPC. I then constructed a poster that featured snapshots of children's learning, including both visual images and a brief interpretation of the learning. I mostly did this additional analysis by myself, the key reasons for this being that the learning curator and artists did not have allocated time for group reflection.

Acting

In this section, I simultaneously summarised and analysed Action Research Cycle One's key activities. The reporting on each activity begins with an overview of 'key events' followed by:

- A descriptive overview of the session's planning, facilitation and reflection of the activities

- A pre-session video interview with the Atelier artists

- Records of children's learning generated throughout the Atelier session

- The completed GPC for Activities 3-12.

This format for reporting on the activities was selected as it created a rigorous running record of the planning, facilitation, reflection and change that occurred throughout Action Research Cycle One. As I summarise and analyse each activity, I simultaneously highlight the cumulative developments that were made to the CPAR/Pedagogical Documentation process, GPC, practical principles and information resource throughout the research cycle.

Activities 1 and 2 focused on investigating the Atelier programme's over-arching purpose. As clarifying the intention of an activity is critical before beginning the design and modification to a constructivist learning environment, I decided to introduce the GPC in Activity 4 of Action Research Cycle One. I was then able to consider any initial modifications that may be needed to be made to the GPC in Activities 1, 2 and 3.

Step One: Clarifying the Atelier programme's purpose

The analytical focus of Atelier activities one and two focused on the programme's over-arching purpose. As Jonassen and Rohrer-Murphy (1999) state, it is fundamental that a team firstly clarifies their intentions and purpose before beginning the design of a constructivist learning environment. This can then be used to construct a collaborative problem-space for further investigation. Data on this analytical step was generated using the questions outlined in Table 7 on page 83. These questions are discussed and analysed in Activity One: The Tape Atelier and Activity Two: The Clay Atelier and were adapted from Jonassen and Rohrer-Murphy (1999, p. 71) guide:

1.1 Understand relevant context(s) that the activity occurs within	Generate a list of problems that the team often deals with: • Who are the programme's team members? • What sorts of issues have the team already identified in the programme's production? • When and where do these issues occur (prioritise this list)? • How does the team typically communicate with one another? • What is the art museum's purpose for producing the programme?
1.2 Understand the subject, his or her motivations and interpretations of perceived contradictions in the system	Generate a list of subject-driven motives and goals for each of the groups involved that might drive the activity: • What are the expectations of the artists and curators working on the programme? • What might contribute to the programme's dynamics? • Why are individual staff members motivated to work on the programme?

Table 7: Questions for analysing the 'Atelier-Research' activity system's purpose

Activity one: Tape Atelier

Key events from the activity:

- Pedagogical Documentation introduced to the Atelier programme;
- An artwork used as the starting point for curating the Atelier's content;
- I was the sole adult generator of records of children's learning during the session;
- One post-session group discussion held immediately following the activity.

Image 11: Sarah's setup for the Tape Atelier

During the planning for the Tape Atelier, Sarah -the artist – drew on Faith Wilding's installation *'Crocheted Environment'* (1972, 1995), illustrated in Image 12 (below), as inspiration for developing the Atelier's content. When discussing the selection of materials, tools and layout, Sarah commented:

> *"I looked at this artwork and was interested in its web-like formation. I would like to encourage the idea of things connecting and coming together. Objects can be separate yet connected like the way a spider web stretches from one place to another in a free yet also structured way. A lot of my artistic practice has been installation-based such with different parts connecting. Exploration of space is a theme that I am personally interested in."*

Sarah then selected tape as the main material for the session. She additionally chose content including scissors, electrical tape, masking tape, cardboard boxes, plastic tape, tissue paper and pipe cleaners. All of these materials and tools met the art museum's health and safety requirements for children including the removal of any choking hazards or toxic substances. The pre-session interview with Sarah (Image 13, page 85), featuring footage of the material arrangement, can be viewed here: *(Content removed to protect participant information).*
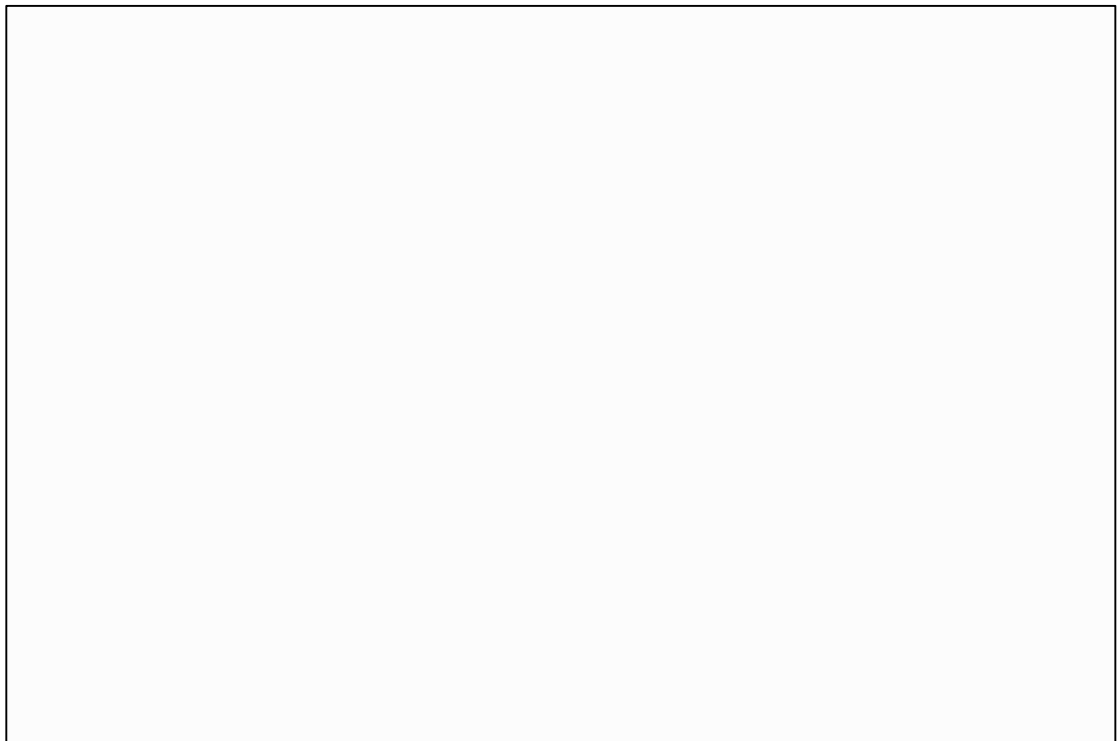
Image 12: Faith Wilding *'Crocheted Environment'* (1972, 1995)

Image credit: The Institute of Contemporary Art Boston, picture by Charles Mayer *(Image removed for copyright purposes)*

In this research, children and their families were randomly selected to participate in the research. These random selections were made as a result of factors such as how many families were in the Atelier and which families gave consent to participate in the research. The moments of children's learning that were recorded were based on the action research team's

curiosities that in turn constructed a sense of 'wonder' (MacLure, 2010, p. 228). This wonder was produced through a positive tension being formed between the action research team both knowing and not knowing what was happening in children's learning.

Four children and their families participated in the research of Activity One. I also produced a combination of photos, videos and field notes in the session. From these records, I selected one boy's, Child S, encounter for further reflection (Image14 on page 88). These records were also used to produce a visual narrative of his experience.

Image 13: A video still from Sarah's pre-session interview (Tape Atelier)

Immediately following the Atelier session, Sarah, Claudia and I met to reflect on the activity, including the records of children's learning generated. Key themes discussed in the post-session collaborative conversation were:

- **Pedagogical Documentation:** We acknowledged that while there were many similarities between the Reggio Emilia tradition of Pedagogical Documentation and the process being used to generate records of children's learning in this enquiry, there were also fundamental differences. For example, Pedagogical Documentation in Reggio Emilia works with children in the formal learning context of a kindergarten. In this research, children were entering an informal learning context. This is to say that they many children and families may only visit the gallery once and not return again. Pedagogical Documentation's sole purpose in the Atelier should therefore not be to extend individual children's learning across multiple activities. As a result, Sarah commented that she needs to be reactive to children's experimentation in the specific activity, as opposed to over multiple sessions. Finally, an issue with the use of Pedagogical Documentation in the Atelier was that too many records of children's learning were produced with no clear focus on what

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was being 'researched.' Overall, the Pedagogical Documentation process seemed to help support Sarah and Claudia in joining their artistic process with children's learning. Sarah commented that:

> *"For me, this (the Pedagogical Documentation process) is just brilliant to reinforce what I am doing because sometimes that can get lost and it's like 'what am I doing?' So, it is nice to see the journey that the children are taking and reflecting upon it."*

- **Scaffolding (Vygotsky, 1978) children's learning** also emerged as an important reflection topic. Sarah commented that she often found it difficult to know when to intervene in children's play. Finding a balance between pedagogic structure and children's freedom to experiment with materials can be difficult if an adult considers 'child-led practice' as making no interventions at all. We discussed how interventions in children's learning are ethical decisions that educators make.

- **The social role of parents, peers and gallery staff.** Key challenges relating to the Atelier's social context included families entering and exiting the space at different points. This consideration made it difficult for Sarah to introduce different artistic skills and techniques to children as there were so many people in the space who were doing very different things. Sarah commented that parents bring behaviours from home that then influence how they interacted with their children in the Atelier. Likewise, different families have different motivations for participating in the Atelier activities. These motivations then impact children's experience. For example, one family had specifically come to the gallery to participate in the Atelier session. The mother, who played a lot with her son, commented that they live in a small apartment and that she wanted her son to have space to run around and play. Another mother and son attended the session as part of a mother's club. This mother spent a lot of time talking with other parents and not interacting with her child. The parent's interactions with their children seem to influence how children experience the Atelier activities. Sarah's facilitation of the session then need to take into account how to support parents in scaffolding their children's learning. Additionally, due to the drop-in nature of the Atelier, there was no singular starting and finishing time for visitors. Consequentially, families stay in the Atelier space for various amounts of time. This variation in time is often dependent on factors outside of the Gallery's control.

- **Materials and spatial arrangement can support the scaffolding of learning.** We discussed how artists and parents are one of the multiple components of the Atelier learning environment that scaffolded children's learning. Materials and the gallery space also scaffolded children's learning. Sarah mentioned that one of the issues faced by artists facilitating the Atelier sessions was that children are often reluctant to play with one another as they often do not know each other before the visit. As social constructivism (Vygotsky, 1978) emphasises

the importance of social interactions in learning, I suggested that perhaps we could experiment with how the material's spatial layout could be done to encourage children's interactions with one another and their families.

- **Understanding the Atelier's purpose:** Claudia and Sarah both discussed the purpose of the Atelier's production. From their perspective, its purpose centred on providing children with the opportunity to experiment and learn through play in an open-ended way.

- **Understanding the Atelier's contradictions:** The division of the artists, curators and volunteer's roles seemed to contribute to the construction of the Atelier problem-space. For example, the division between staff delivering the programme and staff making administrative decisions created tension around how their individual reflections could be used to influence future Atelier activities. Furthermore, different people seemed to have different understandings of education terminology including 'child-led,' 'documenting,' 'scaffolding' and 'Zone of Proximal Development.' These different understandings can create confusion amongst the action research team.

Leading on from this session, Sarah decided to consider how the Atelier's material selection and spatial layout could encourage social interactions between people. We also decided to experiment with using a research question to construct a 'pedagogical intention' for the following session. We planned to produce this research question as part of the following week's Atelier pre-planning. The question could then be used to help generate documentation during the session and reflect on learning afterwards. I suggested the research question included an art concept such as line, form and shape to encourage a connection between the materials and visual art. We also planned to share this question with families on arrival. For example, *welcome to the Atelier, today we are exploring the concept of space.'*

In relation to the Pedagogical Documentation process, we agreed that everyone on the team needed individual time to read and think about the documentation by themselves before discussing it as a team. This would then help produce both subjective and intersubjective interpretations of children's learning. Following the reflection, I produced two pieces of documentation from the session. The first record was an A4 page of Child S's 'Spider Encounter' as illustrated in Image 14 on page 88.

Child S (2 years 5 months). Child S comes to the Atelier most Mondays with his Mu. They often stay a few hours and also attend the Gallery toddler music class. English first language. The mother comments that their reason for visiting today was: "we come every week, S really loves to explore. He is not so much into sitting and making but exploring and running around.' The pair spend a total of 70 minutes in the Atelier today.

"Let's make a spider. Can you cut this for me?"
S remains close to his Mum while watching other children.
S: "I know, let's look for spiders outside!"

S: "We found a spider web in the garden outside"

S: "Let's put it in the web!"

S is searching for more webs in the bushes
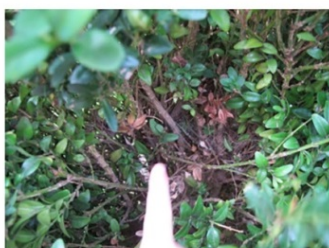
S: "We found some."
Picture taken by S

S: "The grass is soft and nice to roll on"
Picture by Louisa

My interpretation of Child S's play: Reflecting on photos and notes of S's play, I considered the social and spatial components of the Atelier environment and how S interacted with these. In S's play, he explores links between fantasy and imagination. For example, he created the fantasy web with the make-do materials first then went outside to explore and discover real-life webs in the garden. S seemed to lead the development of the story with the spider with his mother supporting and responding this. It was interesting to see the link he made between the make-do materials inside the Clore Learning Studio and the garden outside.

Sarah commented: "Looking at this to me shows that you should try and put out fewer materials to start and then add more. It might also be good to set little challenges around key concepts, for example we could put two boxes apart and asked the children, how can you get the tape to go from one place to another? This could be a way of finding a balance between little activities and the bigger ideas. I do feel that children can get more out of it if the experience sometimes if the activity is slightly more focused to begin with."

Image 14: Child S's learning record produced from the Tape Atelier

While Sarah, Claudia and I discussed Child S's documentation together briefly in the post-session discussion, this conversation did not focus on interpreting his learning. The records were mainly used to start a discussion on the Atelier's purpose. As Claudia and Sarah did not have time to engage in a further reflection on Child S, I interpreted the records by myself. I only selected this one singular record of a child's learning process for further interpretation as this allowed for an in-depth reflection. I picked this particular encounter as I found the boy's interest in the spider, and how this shifted from playing inside the Clore Learning Studio to the Whitworth Park, really intriguing. I was curious to discuss further with the team to get their perspective on Child S's play.

Image 15: The Tape Atelier documentation poster

When doing this, I focused on the social interactions between people and the spatial as outlined in the initial iteration of the GPC. For example, I considered how Child S talked with and watched his mother play with the pipe cleaners. I also reflected on how he used the materials to create a spider and while doing so tell an imaginative story about a spider web. However, I did not use the GPC to make conclusive statements on Child S' learning. I was more interested in using it to open up new connections his play and new ideas on learning. As MacLure (2010, p.231) states:

> *"…we need to be attentive and open to surprise to recognise the invitation; and once invited in, our task is to experiment and see where that takes us."*

This open-ended approach to reflecting on children's learning was an important part in using Pedagogical Documentation to facilitate learning and enquiry in the practice. The second piece of documentation produced from Activity One was a large poster that included snapshots of different children's play and accompanying interpretations. The poster is illustrated in Image 15, on page 89.

I created this poster by myself as Sarah and Claudia did not have time to further discuss the documentation. The documentation poster featured an array of children's quotes that I had written down while the session was being facilitated. My aim in displaying the poster was to make the learning visible and in a material form that could be shared with other people. I created a poster, as opposed to a video or a written report, as it was easy to display, put up and take down in each week's Atelier session in the Clore Learning Studio. Moving forward, we planned to display the documentation poster (that I made following the post-session discussion) in the following week's Atelier session so that parents could read and share their perspective on the interpretation of children's learning.

Personal reflections

Following Activity One: The Tape Atelier, I had three key points of personal reflection. The first reflection was connected to **my shifting positionality in the research and the practice**. At times, I was felt I was co-facilitating the Atelier activities with Alice and Sarah. At other times, I felt like an observer to the practice. I was the key driver of the Pedagogical Documentation process. I felt slightly uncomfortable with this role as I was also learning a lot about the recording and reflection of children's learning as I was undertaking the interpretation by myself. Furthermore, the need to have one key person facilitating the Pedagogical Documentation enquiry made me question who in the team could continue to lead this process once I left. Learning curator may need to play a central role in facilitating the individual and collaborative enquiry surrounding children's learning in the future.

Secondly, I considered how **constructivist learning environments aim to make children's learning more complex over time.** Sarah commented the only restriction of the Atelier was to meet basic health and safety requirements. My personal reflections on this understanding made me think that there were very few limitations on what children were doing in the Atelier learning environment. For example, while a philosophical approach of 'children can do whatever they want' may encourage children's creative experimentation, it does not consider how children's learning can

be scaffolded in more complex ways over time. In line with this definition of learning, the design of Constructivist Learning Environments (CLEs) starts simple and then allow learning to become more complex over time by introducing new materials, artistic skills or demonstrating how to use an art tool. These skills and techniques can then open up new opportunities for children's further experimentation,

My final personal reflection following activity one was how the Pedagogical Documentation process may support the Atelier team in **making learning curator's and artists implicit thinking surrounding their practice visible**. As education practices can be perceived as *"how things are done around here"* (Mullins, 2002), ways of working pedagogically with children can be embedded in a system of assumptions and implicit understandings. Moving forward, I needed to consider how I may able to develop new strategies for art museum teams to further reflect on these assumptions and make this implicit thinking visible.

Activity Two: Clay Atelier

Key events from the activity:

- Research questions introduced as a strategy for setting 'pedagogical intention' for the Atelier activity;

- Parents gave reflections and feedback on documentation via email;
- The focus of Pedagogical Documentation was on children's interactions with materials, other people, concepts and tools;
- I (the researcher) was the sole adult generator of documentation during the session.

Activity Two: the clay Atelier, was facilitated by Alice, an experienced art educator who had been working on the Atelier for numerous months. Alice selected clay as the main material for the session. This decision was made as Alice was interested in the tactile possibilities of clay in children's learning. Unlike Sarah from the previous week's Atelier, Alice chose not to use a specific artwork as a starting point for planning the Atelier. Instead, she used the material itself as the point of inspiration. She commented in the pre-session interview that:

> *"I have removed as many tools as possible, as I want the children to kind of use their body as a tool to engage with the material, so it feels very natural. It is all about textures, different textures and the children's interactions with them."*

Additional tools and equipment such as paintbrushes, rollers, plastic tarp, cardboard and corrugated cardboard were selected to introduce to children throughout the session. These tools and equipment were left in the cupboard with the intention of being introduced to particular children at a later time if and when appropriate. Alice placed the clay in a large, square

plastic tube in the centre of the room, as illustrated in Image 16, below. She chose this layout as it was like a 'camp fire' for the children to gather around. The layout also aimed to encourage social interactions between different children and their families.

Image 16: Alice's setup for the Clay Atelier

While Alice was setting up the session, she commented that she believed that any element in the Clore Learning Studio Space could act as a tool for children's learning and development, including the windows or rubbish bin. The research question for the Atelier was: how can children investigate clay as a tactile material? The pre-session interview with Alice can be viewed here (a video still from Alice's pre-session interview can also be seen in Image 17 on page 93):

(Content removed to protect participant information)

During the session, three children and their families participated in the research. I was also the sole adult generator of documentation during the session. Following the session, I selected one boy's encounter with the clay for further investigation in the post-session reflection. We began the post-session discussion with the general question "what are our thoughts on what happened in the Atelier today?" and "how did children investigate the clay?" Key topics Alice, Claudia and I then discussed were:

• **The social role of parents:** Alice said that she had noticed many of the parents trying to direct the children's play by comments such as *'why don't you make a cat out of the clay'* or *'how about we sit on the chair,*

so you do not get dirty.' Alice observed that some parent's idea of education may be that it needs to be structured and product-driven:

"…this attitude removes the joy of experimenting by saying "you have to do this." There is no experimentation in making a snail. There is nothing wrong with it, but it is nice just to have that messy, chaotic exploration of materials as opposed to saying, 'make something."

Image 17: A video still from Alice's pre-session interview

In contrast, the children seemed quite happy to explore the tactility of the clay without instruction. Alice found this interesting as she was not telling parents to make an object out of the clay, they did this of their own accord. We then discussed how difficult it can be for parents to find the balance between being supportive of children's learning and controlling their creativity. If parents give too many direct instructions on what the child should be producing in their play, this behaviour could limit children's opportunities for experimentation. Alice and Claudia commented that Activity One's documentation poster was useful in sharing with parents the Atelier's focus on children's experimentation and learning with parents. This is in contrast to documenting learning experiences that are overly directive and instructional-based. I suggested we think about what additional resources could be produced to support parents in being supportive of children's learning while not over-steering it. Alice mentioned that a family's visit to the Atelier is an educational resource in itself as the session may demonstrate new ways for parents to interact with their children.

- **The spatial arrangement's ability to transform.** The Atelier space became very messy throughout the session. This factor may have deterred some parents who prefer their children to play in a clean environment. However, one parent commented that she preferred the space to be messy as she knows her child will inevitably make mess.

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Child J (20 months). Child J and his mother come to the Atelier every week. The pair arrive 20 minutes after the space has opened. J's mum has brought a spare pair of clothes as she knew it was a clay session and wanted him to be able to get his outfit dirty without concern. As they entered the room today they saw the documentation poster from the Tape Atelier featuring them. J'S Mum was very excited to see it.

1. J enters, sits next to the plastic tube. For a few moments, they sit and watch the other children

2. J puts his foot in the clay then stamps it on a piece of paper next. His Mum then paints his foot with clay using a paint brush. They then stamp it again. Mum: *'that's your foot!'*

3. J walks through the 'mud.' Each time he researches the end of the clay tub he steps back onto the plastic tarp and makes footprints.

4. J gives his Mum a high-5 (repeats this action seven times). His comments to me that: *"he loves to high-5 at the moment. I think he is doing lots as they feel different to usual with his clay hands.'*

5. J grabs handfuls of clay and drops them into the tube. This action makes a splashing noise. He squeals and giggles every time, making a splash. Squeals and giggles every time the clay drops into the tub.

6. Mum (to me): *'He loves going to the river and throwing rocks in. I think he has connected his time at the river to what is in here… we are happy it is a messy week!'*

Email from Mum received the next day: Hiya Louisa, today the first thing J got involved with was the sticks he then moved onto the clay he quickly discovered the clay colored water and was happy walking through this. During this activity J did ask for my hand as he realised it was very slippery he used it for support although not every time just more for stepping out. On the first attempt, he did take my hand but I think that was more for reassurance. J moved onto finger marks in the clay then stick marks. He also used the end of the rollers to make circle imprints. I tend to stay until J   has had enough. He usually lets me know. J also put his clay covered dummy in my mouth I think this was to show me it tasted different to normal. We also did clay handprints and footprints. We do a lot of prints at home so J is aware if he has paint or clay on his hands he is able to make a stamp print. Not sure if any of that is helpful but thought I'd give you my take!

My interpretation of J's records: J seems to use his body as a tool for exploring and connecting with the clay. The relationships between J and his Mum also seem very relaxed. His mother seems to trust him and not worried about the mess. In image four, J seems to be exploring the interaction of clay with the different surfaces. The clay dries on the cardboard but becomes slippery on the tarp. He repeats the action of throwing the clay into the container. I wonder how throwing the clay into the tub is different or similar to throwing the rocks in the river?

Image 18: Child J's learning record produced from the Clay Atelier

- **Scaffolding children's learning through the material and spatial layout:** Similarly, to Activity One: The Tape Atelier, we talked about the importance of materials and the spatial arrangement in scaffolding learning. However, in this discussion I reflected on the importance of the clay's ability to transform and how this scaffolded Child J's play over time. For example, as the clay became sloppier, this transformation seemed to invite different sorts of play such as the throwing of harder clay pieces into the sloppy, wet clay puddle. **The materials and spatial arrangement changed throughout the session as a result**

of children's experimentation and movement of the loose parts. I commented that:

> *"…the transformation of the space seemed to open up new possibilities. These transformations are not something that interfere with the initial artistic concept but opens up further possibilities."*

As a result, a child's experience in the Atelier varies dramatically depending on the spatial and material layout when they enter the room.

- **Pedagogical Documentation:** We briefly discussed Child J's encounter with the clay. Alice asked me what she thought we should reflect on when documenting children's learning. Building on Reconnaissance One's outcomes, I suggested we focus on the boy's interactions with the material, the Atelier space, his peers and his mother. I suggested we think about how these things transform through one another. Alice discussed the significance of his body – his hands, his feet, his soggy clothes, his finger - as a tool for exploring the clay. She reflected on how children had congregated in parts of the room where there was lots of wet and sloppy clay, such as in the plastic bucket:

  > *"I think it is a tactile thing; it feels nice. You can rub it all over your body. Being able to do that is unusual. Also, observing other children doing it themselves and thinking 'I want to see what that feels like as well."*

Leading on from post-session discussion, Claudia, Alice and I decided to experiment with selecting materials and spatial arrangements that supported both children's social interactions with other people and children's interactions with materials in unusual ways. We considered what further resources such as tools, artistic techniques and additional materials could be introduced to individual children if and when appropriate to make their learning more complex over time. These resources could include artwork images, vocabulary and videos of artists' material experimentation. We also planned to record parent's responses to the documentation posters to incorporate into our group discussions.

Following the post-session discussion, I used the images and notes from the post-session discussion to create an A4 poster that shares the visual data and the interpretation of Child J's play in the Atelier as illustrated in Image 18 on page 94. Following the reflection, I created a large poster that interpreted and shared three different children's experimentation with clay during the session (illustrated in Image 19, page 96). I created this poster by myself. My interpretation of the children's play focused on how they engaged with the tactility of the material, in alignment with Alice's research question for the session. Similar to the previous week, I selected the images for the poster based on my curiosity surrounding the children's play with the clay. I then laminated the poster in preparation for its display in the following week's Atelier session.
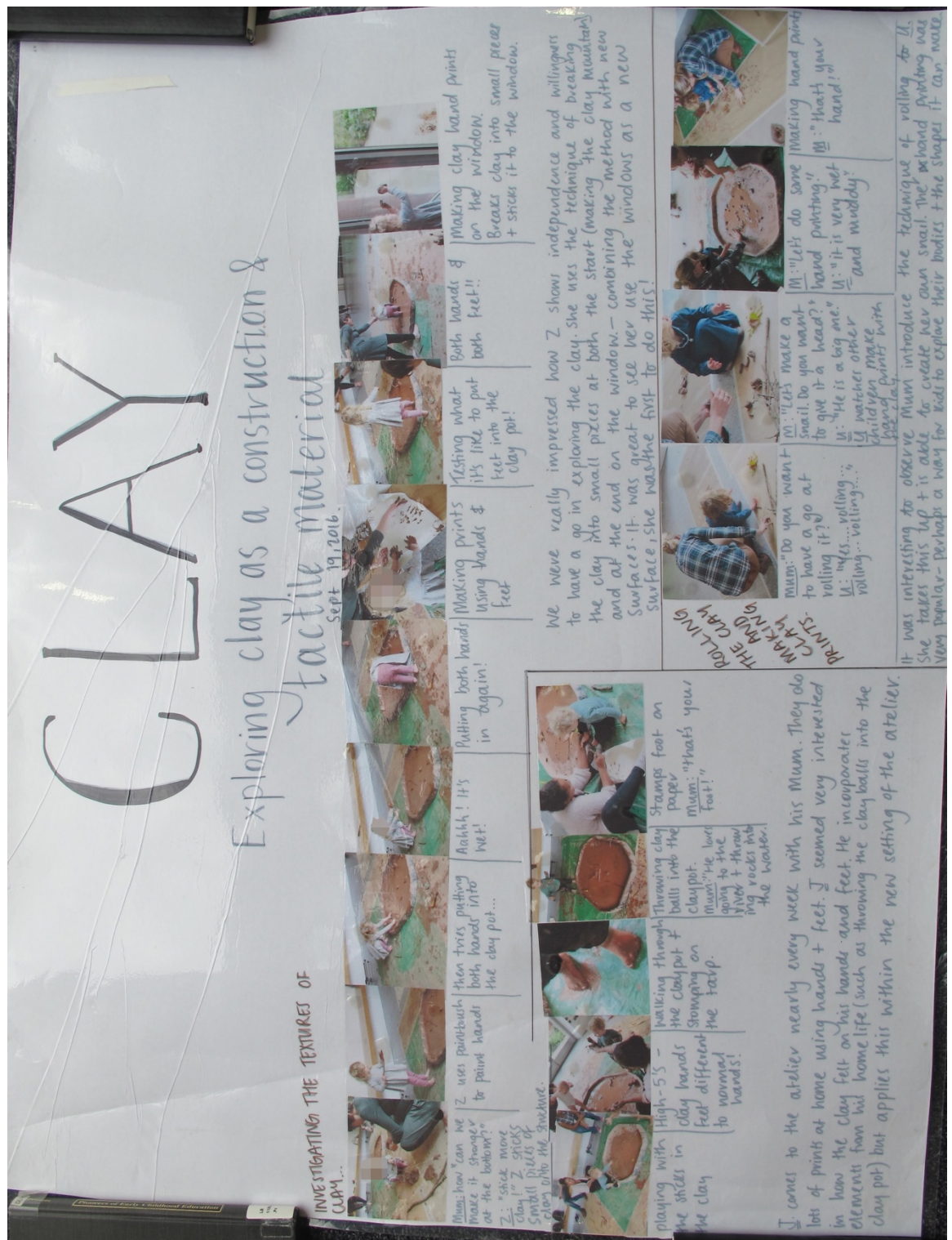
Image 19: The Clay Atelier documentation poster

Personal Reflections

Following Activity Two: The Clay Atelier, I further reflected on the Atelier's overall approach activities including **the importance of artist's social role in scaffolding children's learning.** I noted that both Sarah and Alice's social interactions with children in activities one and two had been

quite limited. At the same time, both Sarah and Alice have more advanced understanding than the children on artistic techniques and skills. From a social constructivist perspective, more knowledgeable others help to scaffold children's education through guided participation (Vygotsky, 1978). As Bruner (1973) suggests, the social role of the educator is important in facilitating children's development and growth over time. As discussed in Reconnaissance One, social interactions play an important role in scaffolding children's learning. Moving forward, I considered how I could modify the GPC to support the social interactions between the artists, children and their families in a way that encouraged children's creative experimentation and learning.

Step one change: Clarifying the Atelier programme's purpose

Following on from Atelier's One and Two, I identified the need to modify and develop four new resources:

1. A modified version of the GPC;
2. An outline of the CPAR/Pedagogical Documentation process;
3. A set of practice principles for supporting the curation of the Atelier;
4. Information resources such as a vocabulary list to support parents, artists and learning curators curating children's Constructivist Learning Environments.

The development of these resources became the purpose of the 'Atelier-research' activity system, as illustrated in red in Figure 8, below:
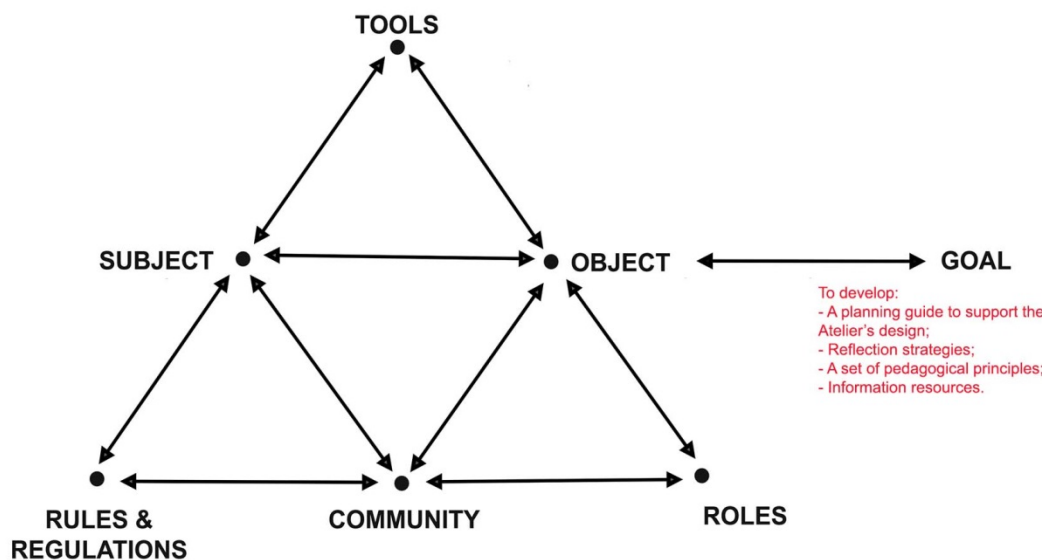
Figure 8: A model of the 'Atelier-Research' activity system's purpose

Each resource had a specific intention to support connections between children's learning and art museum practices:

1. **The Guide for Pedagogical Curation's** purpose was to support the Atelier team in planning, facilitating and reflecting on the curation of each activity. The GPC aimed to both share and produce each team

member's subjective and intersubjective knowledge. To do this, the GPC needed to support the art museum's enquiry-driven approach to practice. Building on Reconnaissance One's reflections that discussed the importance of 'pedagogical intentions' in curating children's creative learning environments, research questions were a useful strategy that supported the team's enquiry before, during and after each Atelier activity. In Atelier One and Two, the research questions produced an open-ended 'purpose' and 'problem-space' for each session. These research questions were useful in providing a starting point for the team's collaborative and critical reflection in the post-session discussions. The GPC additionally intended to support the Atelier team in finding a balance between each activity's pedagogical structure and children's freedom to play. This balance additionally related to the use of research questions that could be used to help select and design each activity's content. Including a formal art concept, such as line, space, shape or form in the research question could help to find a balance between freedom and agency in the Atelier while still keeping the opportunities for children's learning open-ended. The GPC also intended to support the Atelier team in constructing conceptual, spatial and social real-world 'problems' that children could work to explore in each activity.

2. **The CPAR/Pedagogical Documentation processes** aimed to support the Atelier team's pedagogical practice through critical, participatory and collaborative reflection on children's learning. However, there was still some ambiguity on what the team should focus on in the reflection of children's learning. Building on the outcomes from Reconnaissance One plus Atelier One and Two, I noted that educators could consider:

   o How children learn through interactions with the Atelier's social, conceptual and spatial components;
   o How children explore and develop social and emotional skills in the Atelier such as hand-eye coordinator, fine motor skills and teamwork;
   o How a material's properties and physical capacities shaped children's learning;
   o How Pedagogical Documentation is used in this enquiry is different from how it is used in Reggio Emilia early childhood settings. For example, in this enquiry, it was apparent after Atelier One and Two that there was needed to generate records of children's learning from multiple sources, not just from me. Moving forward, I considered how Claudia, Sarah, Alice and children's parents may be able to generate records on children's learning.

3. **Practice principles** intended to function as understandings for curating pedagogical learning environments for children in art museums. Leading on from Atelier One and Two, these practice principles emphasised how artists and parents can support children's learning through social interactions. In this, the 'more knowledgeable other' (Vygotsky, 1978),

whether that be an adult, peer or material, can facilitate learning from unknown to known by scaffolding children's current level of understanding to a more advanced level. Such an intervention could include introducing a technique, setting a challenge or asking a reflective question.

4. **Information resources** intended to assist the Atelier team in curating constructivist learning environments at the Whitworth. Two key information resources were identified as needing developing following step one's analysis. The first being a list of key educational terms related to the curation of constructivist learning environments. The second being a document sharing information on what artists and educators could focus on when recording and reflecting on children's learning.

Steps two: Analysing the Atelier's structure and step three: Analysing the Atelier's activity

Moving forward from step one's analysis of the activity system's purpose, I then focused on step two that aimed to define the Atelier activity's components. These components included the subjects, community, rules and regulations and object. Understanding the subject was critical in defining who the learners were in the activity system. The object was the activity system's component that moved the learners towards their goal. The community was understood as the component that shaped the social beliefs, values and norms that the subject participated in. Table 8, on page 100, outlines the questions used to describe and analyse the Atelier's structure. These questions were adapted from step two of Jonassen & Rohrer-Murphy's framework:

2.1 Defining the subject	• Who are the participants in the Atelier programme? What are their roles? • What is the expected collaborative outcome of each Atelier session? • What criteria will be used by the artists and curators to analyse the tasks, needs and outcomes of each session? Who will apply this criterion? • What are the programme's goals and how are they related to the art museum's overall goals? • How do the artist and curators perceive their roles? How do other team members see others roles? • What perceived rewards or gains await the team and children when they accomplish their goal? • What challenges have the team already gone through to reach their current state?
2.2 Defining relevant communities	• How long has the team been working together? • How formal are the art museum's rules and regulations such as conservation requirements and health and safety measures? • How does the team social interact with one another? • How does the broader gallery team view the programme? Do they value its goals and purpose?
2.3 Defining the object	• What is the expected outcome of the research partnership? • What criteria will be used to evaluate the quality of the result? • Who will apply the specified criteria? • How will the project outcome be presented? • How will achieving the outcome move forward or transform its participants – both individual and collectively?

Table 8: Questions for analysing the 'Atelier-Research' activity system's structure

Alongside analysing the activity system's structure, I also analysed its activity, forming step three of Jonassen and Rohrer-Murphy's framework. I understood these activities to be motivated by both conscious intention (Linnard, 1995) and automated routine behaviours (Jonassen & Rohrer-Murphy, 1999). Step three's outcomes aimed to describe the Atelier team's activities, actions and operations that were required to produce the activity system's purpose. The questions in Table 9 on page 101 were used to analyse step three. Both step two and three were analysed in Activity Three: Drawing Atelier, as outlined in the following section.

3.1 Defining the activity itself	• How is the programme being done in practice? • What activities are the subjects participating in? • What significant developments has the programme been through? • What theoretical foundations have shaped the programme's development? • What does the team think about these theoretical foundations? • Are there any contradictions that the subjects have perceived?
3.2 Decomposing the activity into its components actions and operations	• How are the different subject's tasks performed? These tasks could include setting up equipment, communication with one another and meeting routines.

Table 9: Questions for analysing the 'Atelier-Research' activity system's activity

Activity Three: Drawing Atelier

Key events from the activity:

- A research question used to guide the Atelier's development. This question directly referenced the Atelier's material content;
- The Atelier-research team identified the need to start simple with one material and minimal tools in each activity. Additional extension materials, tools, vocabulary and artistic techniques were then introduced to children in response to their experimentation.

Summary

Activity Three: Drawing Atelier was developed as part of The Big Draw festival at the Whitworth Art Gallery. Sarah curated the session to encourage children to experiment with different ways of drawing. The Atelier content included tools such as pens, chalk, sticks and electrical tape. Additional materials, tools and equipment comprised of scissors, pens, chalk, tape, natural materials such as stones and twigs. These material and tools were laid out as small stations for children to move around (Image 20, page 102). Sarah and I developed the research question *'how can children draw using different materials?'* while planning the Atelier. The pre-session interview with Sarah can be viewed here (a still from the video can be seen in Image 21, page 102):

(Content removed to protect participant information)

Sarah's setup and discussion about her practice in the interview gave insight into how she performed the task of planning, facilitating and reflecting on the Atelier. An important focus of step three's analysis was on defining the activity itself; this video provided a useful piece of data for considering how this was done.

Image 20: The Big Draw Atelier (mid-session)

Image 21: A video still from Sarah's pre-session interview (Big Draw Atelier)

During the session, three children and their families participated in the research. All three of the children were not interested in using the children's camera during the activity. As a result, field notes and images were generated solely by me as Sarah did not feel confident in recording children's learning while simultaneously facilitating the session. Following the session, we reflected on the following topics while packing up the Atelier space:

- **The importance of embedding 'art' in the Atelier's content**. The Drawing Atelier seemed to lack any clear aesthetic or artistic focus. Without a conceptual structure connected to art in the activity, the children's experiences became more about free play as opposed to the pedagogical possibilities of art. My individual reflections were that there was little focus on art. This reflection was also a key outcome of Reconnaissance One. For example, there was no discussion had on how to incorporate artworks into the children's learning, sharing artistic techniques, vocabulary and skills. This observation made me question the role of artists in the Atelier. For example, if the children's learning is just about free play then couldn't any creative practitioner run the activity? In the post-session discussion, Sarah and I discussed the necessity of introducing artistic skills and techniques to children as they played with materials as this opens up further possibilities for experimentation. I suggested to Sarah that we consider how art concepts could be integrated into the Atelier's curation. When suggesting this, I talked about how concepts could be understood as an abstract mental idea that was in a state of continuous transformation and interrelations with other concepts (Vakhterov, 1913). However, while I was aware that this definition offered an initial understanding of what a concept is, Vakhterov's conceptualisation felt limited in its discussion of how children take up and acquire knowledge of concepts. Moving forward, I planned to do more reading around the role of concepts in children's learning. The outcomes of this reading are discussion in Action Research Cycle One's overall reflections.

- **Linking art concepts to material content:** Atelier One and Two identified the importance of materials in the Atelier's design. However, to consider how material content could support children's learning, I proposed to correlate the art concepts with the material contained in each activity's research question. I then modified the GPC to facilitate this association between concepts and materials.

- **Starting simple and making children's learning more complex over time.** Sarah and I both agreed that there were too many materials put out at the beginning of the activity in the Drawing Atelier. We discussed strategies for making children's more complex over time. One tactic I suggested was beginning the Atelier simply, with only one material and then slowly introducing 'extension' materials and tools to individual children if and when appropriate. These extension materials could then open up new possibilities for children's experimentation with materials. Finding a balance between transmitting technical knowledge and letting children experiment with materials was critical.

Image 22: The Big Draw Atelier mid-session

- **The Whitworth's institutional rules and regulations shape the Atelier team's pedagogical practice** including the art museum's conservation requirements, the number of gallery visitors permitted in the space, the sociocultural norms, children's health and safety requirements and the programme's budget.

- **Team communication:** The Atelier team's central means of communication was email. Opportunities for face-to-face discussion and reflection on children's learning were limited to the clean-up time following each session. As Sarah and Alice worked on the Atelier in alternating weeks, there was very little possibility for the team to collaboratively reflect on children's learning or their individual practice together. Moving forward, I asked Claudia if there may be an opportunity for Sarah, Alice and the two of us to have a reflection as a larger team at some point.

- **Learning environments become more complex over time:** By starting the curation of the learning environment simply with one material then adding more mediating tools over time, children's learning can be scaffolded in divergent ways throughout the duration of the experience in the Atelier.

Following the session, Sarah and I also reflected on the research question together. I also shared some photos on one boy's play with the car pens in the Atelier which I proposed to be used for a subsequent reflection following the discussion. While Sarah was interested in being involved in a

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further reflection of the boy's play, she did not have time over the following week to meet again to discuss the documentation. Consequentially, I typed up my field notes of the boy's encounter by myself and produced an individual interpretation of his play, as illustrated in Image 23, below. I then showed this record to Sarah at our next meeting at the Activity Four: Cardboard/Space Atelier and together we produced the 'group collaborative interpretation.'

THE DRAWING ENCOUNTER

Child L (3 years 7 months). Mandarin is L's first language, English second language. Mum: "We have visited the gallery many times before. We came today especially for the Big Draw and to do the activities"

1. OHP area. L is playing with the pen car, driving it from one wall, along the paper and up the other wall. Mother standings back, speaking to L occasionally in Mandarin. "Is it ok if he draws off the walls?"

2. Crawling, drawing with the pen.

3. Picks up tape, gives to Mum. Mum peels and sticks it in small pieces to the floor making a face. L copies and makes his own face. Mother sits back, continues cutting small pieces. L: "I made it!"

4. Izzy hands L an orange roll of tape: "Do you want to try with the orange tape?" Tape gets tangled. Mother hands him scissors. Mum: "He hasn't used tape before. I think he likes using it with the scissors and cutting it."

5. Makes longer strips of orange. Has now been working on the drawing for 30 minutes. After 45 minutes L and his Mum leave to partake in another gallery activity. She comments that he really enjoyed the tape and car.

Group documentation interpretation: The child seems to be creating lines with the car, physically holding the car and not a little pen may be easier for the younger children to create marks. Image four: Artist, "what he is doing is quite process-based. He has created his own method where he lines up the tape and puts it on the floor. We wonder if the marks are Mandarin characters? Image five: L spent a significant amount of time working on his artwork. He creatively explores how tape can be used to make lines, creating his experimental methods for cutting the tape – it is a new material for him.

Image 23: Child L's learning record produced from the Big Draw Atelier

Leading on from the Drawing Atelier, Sarah and I discussed the possibility of having a tighter link between art concepts and material content in the Atelier environment's curation. This concept and content could then be used to construct the research question that then informed the design of the activity. Following the post-session reflection, I created a poster visualising and analysing two children's learning in the Drawing Atelier as illustrated in Image 24 (page 106). In the analysis, I considered how the children interacted with social and spatial mediators including their

interactions with their parents and the materials. Consideration was additionally given to how the children explored concepts such as line. The documentation was then displayed in subsequent Atelier sessions.

DRAWING ATELIER
Exploring different ways of drawing.
Sept 22, 2016

Atelier setup (detail)   Atelier setup (detail)

Using the truck pens to draw **lines** along the wall, across the floor and up the other wall.

Engaging in **kinesthetic learning** through drawing and crawling in the atelier

Cutting and sticking. Mum: "he hasn't used tape before, he likes using it with the scissors."

Isobel introduces a new material: "*Do you want to try orange tape?*"

"*I made it!*"

After 30 minutes the tape drawing is finished.

Atelier detail (during session)

"*Mum, can you draw a baby for me?*" Mum **demonstrates** the drawing. "*Now you have a go!*"

Exploring coverage – using the pink chalk to cover the cardboard in colour.

Creating lines using the truck pen to makes squiggles back and forth.

Sticking pieces of tape to the window. "*It's sticky.*" Mum: "*Show your sister how to do it/*"

Making new relationships. M hands a tape roll to another Mum. Together they unroll it & stick it to the floor.

Image 24: The Big Draw Atelier documentation poster

Personal reflections

My personal reflections from Activity Three: Drawing Atelier centred around the ethics on what to focus on when recording and interpreting children's learning. The question of what makes documentation a pedagogical process seemed to be an integral consideration in this. As discussed in Reconnaissance One, Lenz-Taguchi (2009) describes the necessity of using documentation to fuel learning and change amongst educators. I was unsure whether or not the Pedagogical Documentation process was being used to drive learning and change or to describe current practice in the Atelier. Furthermore, as I was interpreting and analysing the records of children's learning by myself, I also felt that the poster and records were representational of my pedagogical understandings and not necessarily of Alice, Sarah and Claudia's. Moving forward, I planned to ask Sarah if she may be interested in participating in producing some small-scale records of children's learning while the Atelier session was being facilitated.

Step 2 and 3 changes: Atelier structure and system

Using Step two's questions as an analytical guide, I examined the components of the Atelier-Research activity system in detail. The Atelier-research *community* consisted of the gallery, early childhood, families and the art museum community. The Atelier-research *subjects* included the children, parents, learning curators, artists and researchers, as illustrated in Figure 9 below. The *object* of the system was to better understand how children learn in the Atelier and to develop art museum practices that relate to children's learning.
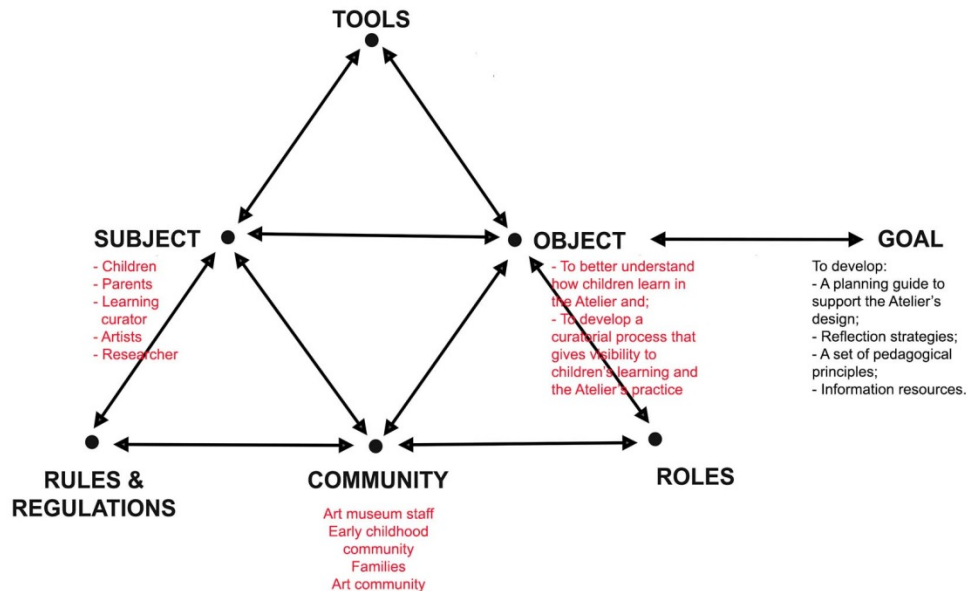
Figure 9: A model of the 'Atelier-Research' activity system's structure

Examining the Atelier-research system also gave insights into the programme's rules and regulations. For example, a significant constraint identified was around the artist's and learning curator's division of labour. This division made it difficult for the team to come together collaboratively to reflect on children's learning and the Atelier's practice. To resolve this problem, I suggested to Claudia that we consider what opportunities could be created for Sarah and Alice to engage in the reflective process together.

The 'Atelier-research' activity was further defined by analysing step three of Jonassen & Rohrer-Murphy's framework, as illustrated in Figure 10 on page 108. This step gave further insight into the Atelier's activity including the Whitworth's operational process and actions. For example, the responsibilities and recruitment methods for staff working on the Atelier.
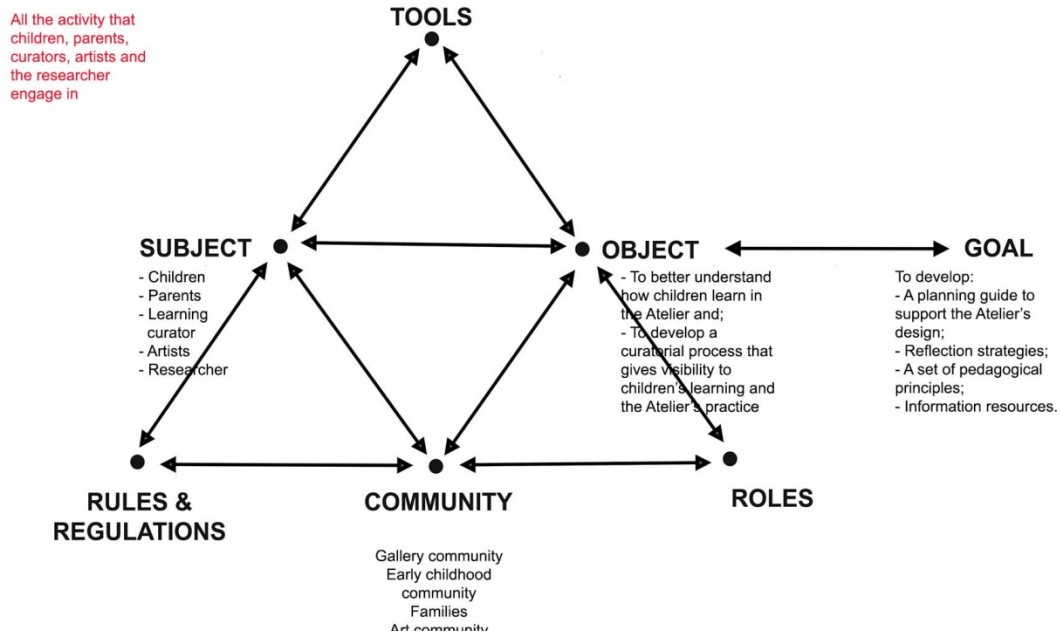
Figure 10: A model of the 'Atelier-Research' activity system's activity

Additional insights were gained in relation to the Whitworth's recruitment of artists working on the Atelier. This process seemed to be predominantly done by word-of-mouth. From my experience working in art museums in Australia, this seemed like a common recruitment process as opposed to the formal advertisement of positions.

Exploration of the Atelier-research system and structure then led to changes being made to the GPC, CPAR/Pedagogical Documentation process, practical principles and information resources as outlined below:

1. The GPC needed to interconnect each Atelier activity's material content and art concepts in a way that gave structure to children's learning but allowed for open-ended outcomes. Materials therefore needed to be a focus of the Atelier design. Moving forward, I made further modifications so that the GPC linked each activity's material content with an art concept. I then made further changes that included a focus on 'mediating tools' that scaffold learning between the art concept and material content. These 'mediating tools' included construction tools, artistic skills, the layout of materials and reflection questions. To scaffold children's learning through the Zone of Proximal Development, artists and learning curators need to be observant, assess children's current level of understanding and respond to children's experimentation through introducing additional mediating tools. In the 'spatial' section of the GPC, I made note of the need to arrange the material content in a way that encouraged social interactions between children, their families and the artists. In the 'spatial' section I made note that Sarah and Alice could consider the inclusion of visual imagery, such as artwork imagery, in the Atelier's curation. This imagery could be used as information resources for children's further experimentation with materials. Moving on from steps one, two and three, I divided the GPC into three sections

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consisting of the pre-planning, facilitation and post-session reflection. These sections were not understood as a fixed sequence of events but rather a starting point for thinking about the planning, recording and reflection of children's learning and art museum practices. I summarised the key steps in using the GPC to design the Atelier learning environments as follows:

Planning the learning environment

1. *Selecting a material:* Choose an artwork as a starting point for the Atelier's creative development. While considering the artwork's possibilities for children's learning, the following questions may be useful: What materials have this artist used to produce the artwork? What artistic techniques has the artist used to experiment with the materials? How could these material practices be used as a starting point for curating a children's material-led constructivist learning environment?

2. *Selecting art concepts:* Consider what formal art concepts, like shape, form, colour or pattern are being explored in the artwork? How has the artist explored concepts through the material? How could one of these concepts be linked to the core material? For example, concepts associated with the material of paint may be colour, coverage or form.

3. *Selecting a research question* that connects the art concept and with the material content. For example, 'how can we explore paint through coverage?'

4. *Selecting additional mediating tools,* such as additional materials, tools and equipment. These mediating tools could be introduced to extend children's learning and experimentation over time. These mediating tools can be introduced if and what appropriate. Consider what social facilitation techniques could be drawn on to support children's experimentation with the materials and art concepts. For example, what artistic techniques, suggestions, demonstrations or modelling could extend children's learning between the material content and art concepts?

5. *Selecting the spatial arrangement of materials:* Consider how the materials can be spatially arranged to support children's creative experimentation between the material content and art concept. Further consideration could also be given towards how the spatial layout of materials could encourage social interactions between people.

Facilitating the learning environment

1. *Recording children's learning*. These records could focus on the interactions between children, materials, concepts and other people. To generate records of children's learning from multiple perspectives, different people can participate in the documentation including children, parents, artists and researchers.

Post-session reflection

1. *Reflecting on the research question.* The activity's reflection could begin with a discussion on the research question, for example, 'how did children's exploration challenge, support or extend the research question?' This reflection could additionally include looking back at the documentation of children's learning to ask: what were children's discoveries? What changes were made to the material/spatial arrangement during the session? What sort of interactions did children have with the materials, space and other people? What materials could have been added or taken away? What changes could be made to the spatial arrangement? What have we learnt? How could we feed these reflections into future practice?

2. *CPAR/Pedagogical Documentation process:* The analysis of steps two and three indicated a need to include more people, including inter-departmental staff and parents in the reflection of children's learning. To support these discussions, the learning curator needs to play a critical role in facilitating enquiry across different art museum departments. At the same time, developing the Atelier as a constructivist learning environment required a close curatorial relationship between the artists and an individual who has extensive understandings of constructivist learning principles. Furthermore, the art museum needs to function as a community of learners to explore children's learning together if children are to have an important place in the overall gallery intuition.

3. *Practice principles:* The first practical principles to be constructed from step four were the critical significance of materials in children's learning in the Atelier. In Activities, One to Three, the materials of tape, clay and paper were important in opening up new ways for children to engage and experience the gallery space.

   Secondly, the importance of starting children's constructivist learning activities simply and encouraging learning to become more complex over time was important. By starting the activity off simply with one material and gradually introducing more materials in response to individual children's exploration of materials, the artists were able to extend, challenge and make children's learning more complex over time. Thirdly, art concepts can be used to think about materials in different ways. Linking the Atelier's material content with concepts can assist in constructing a problem-space for the children to explore. Problem-based learning environments help to shape the educational experience. A significant part of children's learning can be understood as a person's ability to move freely between the different memory layers to explore and find solutions to these problem spaces (Claxton & Lucas, 2004). From this perspective:

   > *"…concepts do not identify, organise, and represent experience under the sign of a concept. Instead, they reorient thought."*
   >
   > (Lenz-Taguchi & St.Pierre, 2017, p. 643).

The purpose of using concepts in the Atelier was not to 'teach' children about them but to consider what future thought processes could emerge from their coming together with materials.

Fourthly, social interactions remained an important catalyst for children's learning. This principle needed to be integrated at both the level of the Atelier team's practice and in children's play. Children's ability to explore and solve problems alongside other children of different ages, skill level and expertise can support them in learning in different ways (Rogoff, 1990).

Finally, all of the above principles can be underpinned by a deeper understanding that learning is a dynamic, creative and enquiry-driven process. This principle requires artists to be continuously responsive to what is happening and supporting children's divergent learning on an ongoing basis.

4. *Information resources:* Leading on from the analysis of steps two and three, two further information resources were identified as needing development. These included a list of art concepts including construction, coverage, balance, assemblage, shape, line, colour mixing, texture and pattern. Secondly, an archive of related case studies of other children's constructivist learning environments informed by the same practice principle and CPAR methodology. Moving forward, I aimed to begin to construct such an archive of the Atelier activities run throughout Action Research Cycle One.

Step four: Analysing the Atelier's mediating tools and Step Five: Analysing the Atelier's contextuality

Moving forward from the analysis of steps one to three, step four and five of Jonassen & Rohrer-Murphy's (1999) framework were investigated that focused on the Atelier's mediating tools and contextuality. The Atelier's mediating tools included the roles, rules, regulations and tools that facilitate the practice. In this enquiry, mediating tools were understood to transform over time. As a result, the GPC needed to be continuously re-analysed in each Atelier activity (Jonassen & Rohrer-Murphy, 1999). The questions in Table 10 (page 112) served as a starting point for such an analysis:

4.1 Tool mediators and mediation	• How can mediating tools be used in the programme? • How readily available are these tools to participants? • What are the physical and cognitive tools used to perform activities in different settings and across different activities? • How have/do the tools changed over time? • How do participants use these tools? Is there flexibility in the tool's use? • What social and cultural meanings surround the tools?
4.2 Rule mediators and mediation	• What are the institutional rules (official or unofficial) and assumptions that guide the programme's development? • How have these rules and assumptions changed over time?
4.3 Role mediators and mediation	• How have the roles (artist, curator and volunteer) been taken on? • How do the roles and responsibilities affect the way subjects communicate with one another? • How much freedom do individuals have to change or take on new roles and responsibilities?

Table 10: Questions for analysing the Atelier-research activity system's mediating tools

Alongside the analysis of the 'Atelier-research' activity system's mediating tools, I also analysed the activity system's context in step five. As activity theory is built on the understanding that activity can only be understood in its social, cultural and historical context (Engeström, 1987, 2001), analysing the Atelier's context was essential in understanding the continuously changing dynamics between the Atelier's mediating tools and components (Jonassen & Rohrer-Murphy, 1999). I understood the activity in the 'Atelier-research' activity system to be shaped by both internal factors including the team's beliefs and assumptions and external factors including formal rules, laws and funding bodies. Internal factors included individual beliefs, assumptions, models and methods. External factors included the director's agendas, the art museum's physical size and institutional regulations. Table 11 (page 113) illustrates the question drawn on to investigate the Atelier's contextuality. These questions were adapted from step five of Jonassen and Rohrer-Murphy (1999) framework for using activity theory as a framework for curating constructivist learning environments:

5.1 Internal or subject-driven contextual bounds	• What are the team's beliefs, methods and assumptions that shape the programme? • What language does the team use to describe their experiences? • What processes does the team currently use to produce the programme? • What processes have been used by the team in the past?
5.2 External or community-driven contextual bounds	• How much freedom do individuals have when entering the Atelier team? • Are there any limitations placed on the programme by outside agencies? For example, funding bodies or health and safety organisations. • What formal or informal rules, laws or assumptions guide the activities?

Table 11: Questions for analysing the 'Atelier-Research' activity system's context

Activity Four: Cardboard/Space Atelier

Key events from the activity:

- The GPC was introduced to the Atelier programme;
- Research question used to link material content and art concept;
- One material presented in the initial learning environment. Additional 'mediating tools' were then introduced to children if and when necessary.
- The material's spatial arrangement aimed to encourage social interactions between groups of people.
- The artist, participated in recording and reflecting on children's learning throughout the session;

In Atelier Four: Cardboard/Space, we introduced the GPC to the Atelier programme. This was the first time the GPC was used in the Atelier as a framework for curating and reflecting on the practice. Prior to planning the Atelier, I spoke with Sarah about the GPC's purpose and asked her thoughts on it. She was excited to try it out and see if it made any changes to how the Atelier activities were already being run. She selected the material of cardboard and the art concept of space as the starting point for activity four. Sarah then selected additional 'construction tools' such as masking tape, scissors and pegs. These mediating tools were selected based on their abilities to open up children's experimentation between the material content and art concepts. Further details on Sarah's selection of content for the activity can be seen in Table 12 on page 115. The pre-session interview with Sarah can be viewed here:

(Content removed to protect participant information)

Image 25: A video still from Sarah's pre-session interview (Cardboard Atelier)

Image 26: Sarah's setup for the Cardboard/Space Atelier

During the session, four children and their families were involved in the research. The activity was busy with lots of children and families arriving at different times. Sarah and I both individually produced records of children's learning during the session. Following the Atelier's facilitation, Sarah, Claudia and I then met to record our reflections from the session. As we were talking, I wrote key points from the conversation into the GPC's 'post-session notes' section (pictured on the right-hand column of Table 12).

Research question (connecting content to concept):		
How can we explore *space* through *cardboard?*		
Artwork used as starting point for inquiry: N/A		
Ideas, points for experimentation, curiosities relating to the artwork:		
Pre-planning notes	Facilitating notes	Post-session notes
Spatial: material, tools and equipment: - Core material: Cardboard boxes and paper (different types and sizes) - Construction tools: Masking tape, scissors, pegs. Extension materials: Fabric, more recycled boxes and card, crayons, pens & electrical tape. - Artistic skills: Ripping tape, changing the box's shape - Layout of materials encouraged social interactions between groups of people	See documentation	
Social: - Introducing research question to parents on arrival. Setting material-led challenges for children if/when appropriate. E.g. "can you build a tower out of the boxes?" "How could we make the roof stay up?" - Asking open-ended questions such as "how can I help you?" and "how did you start making this?" How to rip/cut card could be demonstrated to children.	See documentation	- Introducing challenges for children worked well.
Conceptual What formal art concepts are being explored in the atelier through the material? E.g. Space!	See documentation	Concepts explroed also included shape, form, measurement and size.

Table 12: The GPC for the 'Cardboard/Space' Atelier

During the post-session discussion, the three of us spent 15 minutes reflecting on the records of children's learning. One girl's encounter with the cardboard was selected for further reflection by Sarah and I (pictured in Image 27 on pages 116 and 117). We selected this record as the girl had spent an extended period of time playing with the cardboard with her father. While the girl was quite young, her experimentation with the material was quite extensive. Sarah and I were curious to reflect further on the material's creative possibilities in her learning.

The majority of the post-session discussion focused on our reflections of Child A's play. For me, Child A's extended experimentation with the cardboard seemed to be supported by its ability to transform. For example, the cardboard could be cut, reshaped and stuck together in many different ways, creating a myriad of possibilities for Child A's learning about concepts such as construction, space, measurement, height and gravity. These transformations seemed to play an important part in encouraging Child A to learn in different ways. The significance of the child's learning with the cardboard seemed particularly important, especially with play-based learning and the arts being marginalised from the early childhood curriculum in the United Kingdom (Moss, 2012).

EXPLORING SPACE AND MEASUREMENT THROUGH CARDBOARD

Child A (1 years 11 months). The father and daughter have visited the gallery many times before. They were going to go to the pool today but it was too cold so they came to the gallery instead. Although Child A remained in the atelier space for nearly 1.5 hours, the documentation explores a series of short interactions and investigations with the material in the space

1. A walks over to the standing corrugated paper (setup by artist).
A: "Dad, hiding!" Dad closes paper, hiding A inside

2. A: "hiding!!"

3. A: "Boo!"

4. A: "Tall Dad." A sources some tubes, hands them to her father who then places them on top of one another.

5. A wants her Dad to lift her to try putting the cone into the tube. A's father lifts her up to place the cone in the tube.

6. It fits in!

7. Does this tube fit on another cardboard cone? …Yes.

8. And again!

9. Testing to see if the tube fits into the plastic spindle. Yes!

10. Placing the small tube inside the larger one.

11. It fell down the bottom.

12. Dad: "Let's build a house."

13. A: "I am bringing this over!!"

14. D: "A box in a box." A brings the box over to her father and puts it inside the other box.

Group documentation interpretation: A and her father seemed to interact and collaborate continuously throughout their time in the atelier. This undoubtedly scaffolds her learning in the space and encourages her to remain focused and exploring the materials. Of particular interest is how A initially learns the technique of placing one tube into another and she goes about exploring this with different objects using the same technique. She uses her body as an instrument for measurement inside the boxes – connecting her own physical size with the size of the materials. She seems particularly interested in the concepts of closed and open spaces and again how her body can be used to explore this idea. In images four and five she also seems to be exploring the size, height and measurement of the cardboard spaces and tubes, often in relation to the size of her own body.

Image 27: Child A's learning record produced from the Cardboard/Space Atelier

While discussing Child A's play, Sarah and I talked about the important role the girl's father played in her experimentation with the cardboard. The father didn't seem to direct his daughter's play but rather play along with her by taking her lead. This then led to a discussion on the need to aim to make children's learning more complex in the session. This was perhaps because many children attended the gallery irregularly. It was therefore difficult to extend learning across multiple gallery visits. Adults, including parents and artists, can aim to be observant and reactive to children's learning at the moment.

My personal reflections

Following Activity Four, I reflected on the significance of **embedding problems, provocations and challenges in the activities.** At particular times, children need not only the opportunity to explore materials, but they also need problems that are worthy of their attention. These problem-spaces could be set by children or as an open-ended challenge by the artist running the session. For example, *"how do you think we could make a tower out of these boxes?"* These problems may then help children to produce new problem-solving strategies. Both art museum teams and children need time, space and freedom to openly experiment, play and investigate problem-spaces (Grainger & Barnes, 2006). These problems space could be comprised of concepts, meanings as well as more-than-human things like materials, images and space.

Image 28: The Cardboard/Space documentation poster

Further modifications were then made to the GPC, and practice principles were made:

1. **GPC:** The previous modifications to the GPC seemed to construct a space that combined the artist's pedagogical structure while leaving space for uncertainly and the unknown (Claxton, 1997) in the facilitation of the session. Sarah commented that GPC helped in making the children's learning seemed more personalised through introducing materials, tools and equipment for individual children if and when appropriate. Doing so seemed to encourage children to engage in

experimentation with a material for longer. Moving forward, I added an 'extension material' section to the GPC. These extension materials were left to the side and introduced to the children by artists if and when appropriate, aiming to extend further, challenge and make children's learning more complex over time.

2. **Practice principles:** Firstly, I made note of the significance to **select the Atelier's materials on their ability to be transformed, remixed and appropriated**. Secondly, that children's **learning can also be facilitated during an activity**. Artists can model curiosity towards materials that parents can then replicate.

Activity Five: Natural materials/Arrangement Atelier

Key events from the activity:

- Introduction of 'extension materials' and 'mediating tools' to the GPC. These mediating tools scaffolded connections between material content and art concepts;
- 'Conceptual' section introduced to the GPC;
- GPC made into a large poster displayed in future Atelier activities;
- An artwork used as a starting point for designing the Atelier;
- Direct instruction acknowledged as an important part of teaching artistic skills and techniques;
- All Atelier staff generated documentation.

Anya Gallacio's *'Ghost Tree'* (2016) sculpture provided the starting point for curating the conceptual, spatial, material and social components of the fifth activity. 'Ghost Tree' is a large, metal sculpture of a tree that was a commission for the Whitworth's 2015 re-opening. The artwork provided an unusual way for Sarah, Claudia and I to think about the creative possibilities of natural materials in children's learning. Activity Five's planning occurred in Activity Four's pack-up time. Sarah and I further planned the content via email throughout the week. This content included leaves, sticks and stones from the Whitworth Park as well as clay and cardboard. Sarah used the GPC to select the materials, tools, concepts, equipment and spatial arrangement for the Atelier. She chose 'natural materials' as the core material and the art concept 'arrangement' as the starting point for the activity. Further mediating tools such as art tools, sub-concepts, challenges and open-ended questions were brainstormed in the Atelier's planning session. These mediating tools were understood as having the possibility to transform children's social, cognitive, emotional and aesthetic activity during the session. At the same time, the children also had the ability to transform how the tools were used and their meanings (Jonassen & Land, 1999). Image 29 (page 120) and Image 31 (page 123) share the initial set-up of the space.

Image 29: The Natural Materials/Arrangement Atelier mid-session

Image 30: A video still from Sarah's pre-session interview (Natural Materials/Arrangement Atelier)

Details of the additional 'mediating tools' selected for Activity Five can be viewed in Table 13 on page 121. A pre-session interview with Sarah can be viewed here (A still of the video can be viewed in Image 30, above): *(Content removed to protect participant information)*
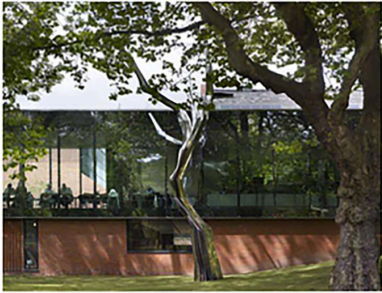
Research question (connecting content to concept): Exploring arrangement through natural materials		

Artwork used as starting point for inquiry: Anya Gallaccio's 'Ghost Tree' (2016). Pictured below:

Ideas, points for experimentation, curiosities relating to the artwork:		
Pre-planning notes	**Facilitating notes**	**Post-session notes**
Conceptual: - Core concept: Arrangement - Sub-concepts: colour, shade, balance, line and construction.	- Challenge of 'can you create a journey using the materials' appealed more than 'can you make a line' E.g. Child F. The former is more narrative driven.	- Additional concepts explored: 'movement' and 'pathways' with the natural materials (e.g. child F). - Child F also created complex stories/narratives around whilst experimenting with materials - **Future action:** Set challenges that encourage storytelling and narrative.
Spatial/material, tools and equipment: - Core material: Natural materials (sticks, leaves, stones and bark) all sourced from the Whitworth Park - Construction tools: Clay, masking tape and string - Extension materials: Water colour paints, mirrors, vase, small plastic containers for 'sorting' - Artistic skills & techniques connecting content and concept: Stacking, clay, ripping tape, tying string and ripping tape. - Spatial layout: A large area covered in brown paper (6 x 3m) - Artwork images: Andy Goldsworthy & Richard Long	- Placed materials back in baskets where possible. - The space needed to be continuously reset - Moved easels closer to paper to make a more enclosed area - Relocated artwork images off the walls and onto the brown paper. These images aimed to expand children's thinking around the material's possibilities -Children were not really looking at the walls while making, the artwork imagery therefore needed to be re-positioned onto the brown paper.	- Soil plates were a great blank canvas. Children understood immediately the possibility of the 'challenge' and willingly started arranging, - One big space (as opposed to little ones) worked well as it created a more enclosed space in the Studio. - **Future action:** Could use play dough in addition to clay next time - **Future action:** Amy will source and print out artwork images to include in upcoming atelier sessions.
Social: - Introducing research question to parents upon arrival. - Challenges: 'can you make a path using the leaves? Can you arrange them like a... snake' and 'can you stack them like this picture?' - Open-ended questions: "Can you tell me about what you are making? How did you start making this? How can I help you?"	– The artist created straight lines with tape and asked children if they could line the leaves up along these – When the artist introduced a new material, she did this by saying, 'I have a got some containers here, could you use this in your creation?' This encouraged further experimentation & thinking that isn't didactic.	-Introducing research question to families on arrival helped new visitors get an idea of the atelier -Guided participation included direct instruction from more knowledgeable others -Brainstorming challenges, open questions and artistic techniques in advance helped the artist feel more comfortable with social interactions and complexifying the children's learning -Challenges seemed a good way to get children started who are initially hesitant or have lost focus. Whilst it is important not to intervene too early, we do not want a child's experience to be defined by their silence.

Table 13: The GPC for the 'Natural Materials/Arrangement' Atelier

During the session, nine children participated in the research. Sarah, Jane, Claudia, four parents and I also generated records while the session was running. The session was reasonably well attended with those families that did participate in spending a lot of time in the Clore Learning Studio. This allowed records of children's learning to be produced from different perspectives.

In the post-session discussion, Sarah, Claudia and I talked about the following points:

- **The need to separate the material content from the spatial arrangement in the GPC.** While these are both physical things in the space, they are also separate forces and need to be individually considered. Moving forward, the spatial and material components were separated out in the GPC.

- **Scaffolding learning through mediating tools, including artistic techniques, skills, art materials, new tools and questions.** Our discussion again returned to the need to find a balance between the Atelier's pedagogical structure and children's freedom to play. I mentioned that I understood children's creativity to be limited by what they know and what they don't know. In this sense, teaching children artistic skills and techniques are incredibly important in opening up new opportunities for further experimentation and learning. This understanding can be linked to Csikszentmihalyi's (1988) concept of flow that states that 'flow' typically occurs in: *"clearly structured activities in which the level of challenges and skills can be varied and controlled…"* In the state of flow, a child must increase the complexity of the activity by learning new skills and engaging in more difficult challenges over time. Building on this idea, the introduction of extension or 'mediating tools' in the GPC aimed to create pedagogical structure in the Atelier activities while still encouraging children to learn new skills and develop new understandings over time. As flow suggests, children need to develop new skills and encounter more difficult problems over time. These mediating tools scaffold new links between the material content and art concepts, creating new cognitive challenges for children to explore. What children did with a material provided the impetus for what practitioners do next. Every 'mediating tool' introduced needed to come as a consequence of a children's experimentation. Younger children or children with disabilities may need more intense forms of scaffolding, especially about learning artistic techniques and social interacting with other people (Mallory & New, 1994). An example of scaffolding with young children could be demonstrating how to roll the clay in their hands to make round shapes. This new artistic technique may then open up new possibilities for the clay to change form and be experimented with in new ways.
- **Scaffolding children's learning with vocabulary:** I suggested to Sarah and Claudia that children's learning in the Atelier could be

scaffolded through introducing vocabulary words. While the language is not the Atelier's core focus, the introduction of vocabulary could open up new opportunities for children's play with materials. From a Vygotskian perspective, these words may then encourage children to verbally reflect on their learning (Pellegrini & Galda, 1998; Wertsch, 1979) and support metacognition (Bruner, 1973). By naming concepts, artists may assist children in defining, applying and negotiating the meanings of abstract concepts within a specific context (Woods, Comber, & Iyer), allowing them to develop new discursive resources (Comber, 2001). Drawing on Vygotsky's notion of the Zone of Proximal Development, Sarah and Alice may first consider a child's current level of vocabulary before introducing a new piece of vocabulary.

Image 31: Sarah's setup for the Natural Materials/Arrangement Atelier

- **The material's ability to transform.** We again discussed the importance of selecting materials that can transform over time and how these transformations can scaffold learning. Leading into Atelier six, we selected the materials of cardboard and fabric as these materials had properties that could easily be transformed.
- **Children's storytelling through making:** I noted that many of the children in Activity Four seemed to tell stories as they played with the Atelier's materials. I referred to documentation generated on Child G playing with the stones (Image 32 on page 124).
- **Pedagogical Documentation process:** We discussed how Sarah's participation in generating records during the session constructed an alternative perspective on children's learning that was different to mine. Moving forward, we considered how other people's involvement, such as parents and interdepartmental staff, in the Pedagogical Documentation

process may assist in making the Atelier's pedagogical practices more complex (Pacini-Ketchabaw et al., 2014).

Following the post-session reflection, Sarah typed up and emailed her records of one child's encounter with the natural materials for further reflection (featured in the bottom right corner of Image 33 on page 125). In addition to this, I typed up and collated the record of Child G's (Image 32 (below) encounter with the rocks. I then emailed this to Sarah and Claudia. We planned to spend time reflecting individually on these pieces of documentation and making notes before collectively discussing them at our next pre-planning meeting.

THE STONE SUNSET

Child G (2 years 0 months). G and her Mum last visited the gallery for the tape atelier. It is their second time at the art gallery. Upon leaving Mum comments that they will come back next week with G's brother. As they are walking into the space, I (Louisa) welcome them and say 'today we are exploring making arrangements using natural materials. Would you like to have a go at decorating this plate?' The pair notices their documentation on the wall from the Tape atelier upon walking into the space. Mum, "G, do you remember that? What were we making?" G: "I was making the spider and the icky spider web."

G: 'I need some string.' Mum: 'What are you going to do with that?' Georgia: 'Put it in." Mum: 'Do you want to wrap it around the pot?'

Ties string around the branch. G: 'yes, it is around now.'
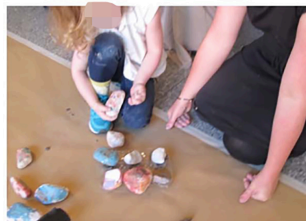
Holds branch and string up, walking around dangling it. Mother watches on (does not talk)

The pair moves to another area of the atelier. G places a stone on top of another one. *'I am making a see-saw out of the rocks.'* The rocks will not remain balanced on top of one another

One of the atelier's artwork provocations is situated near G. We do not know if she saw the image before making her own arrangement.

Moving on, G arranges the rocks into composition, "It is a sunset."

Group documentation interpretation: G carefully selects her construction tools and the string. We found it fascinating how G seemed to connect real-life concepts with imaginary creations. Again we see storytelling as a mean of constructing meaning whilst making art. Through making and thinking with the natural materials, G explores the properties of the materials as well as concepts such as balance, shape, line and form. G makes stories while playing and making with the stones.

Image 32: Child G's learning record produced from the Natural Materials/Arrangement Atelier

Following the post-session discussion, I then created a Pedagogical Documentation poster featuring three different children's encounters. Two of the children's learning were collated and interpreted by me (Child J and Child Z). Sarah collated the other (Child F). This poster was displayed in future Atelier sessions.

NATURAL MATERIALS

Exploring arrangement through natural materials. Oct 3, 2016

Documenter: Mum

J started by pushing the leaves into the clay. He then collected stones in the basket (he loves stones and collects them by the river at home). He then put the stones in the egg box but was disappointed when he had more stones than spaces in the box. I hid a stone in the clay he pulled the clay apart until he found it then asked me to repeat it by saying 'again!' This seemed to give him the most pleasure. I then threw leaves on his head, he later he went off by himself and started putting leaves on his own head. Just before we left, J tried to stack the logs but they were different sizes and wouldn't stand straight.

Documenter: Louisa (researcher)

The boys last visit to the atelier was during the clay atelier. During their previous visit and today, the family work closely together.

They start by using clay to connect two sticks to the big piece of bark. Z rolls and squeezes the clay in his hands while watching his mother do the same, although she uses the technique to connect the leaf.

Z finds a stick and stabs it into his clay, 'look, a hammer.' He walks around the space talking quietly to himself and using it to pretend hit things.

After 5 minutes Z returns and sits with his family, now they are placing stones, sticks and leaves onto a soil plate

© Louisa Penfold

Documenter: Sarah (the artist).

F first created a "garden" in plant pot tray, then looked round for other things around.
She traps a leaf under a stone: "it doesn't blow away now".
She found a small log and tried to fix it in the tray. As it doesn't fit F lay it at the side of the tray. Me – "Is that a path?" and walked my fingers along the log
F - "Yes"
F then found other items to add to the path
F - "Walk along here, climb up the log and jump off the otherside and home."

F finds a "tree" which has been made earlier.

She unassembles the tree.

F experiments with the string wrapping it around the twig and unwraping.
She sees the picture on the floor. (Anna Gallardo's Door)
"Flowers look like big leaves".

F continues to wrap and unwrap the twig for around 5 minutes, at one stage the string forms a loop around the twig.
"Oooooooh!"
As she discovers the loop can move up and down the twig.

F experiments twisting the string around other items.

F finds some grass.
"We need this by get home"
(finds piece of grass and wraps it around the log)
"We go on the grass and get all the way here..."

F shows me "I made this!"
- "Great - is it a kite?"
F- "Yes for when its windy outside!"
F adds more leaves and shows Amy.
F-"I got my kite ready to fly!"
Goes to show dad what she has made.

Image 33: The Natural Materials/Construction Atelier documentation poster

Activity Six: Cellophane/Colour layering Atelier

Key events from the activity:

- Material and spatial content separated into two distinct sections in the GPC;
- Vocabulary words introduced to the GPC;
- Construction equipment section added to the GPC;
- Construction tool section added to the GPC;
- Records of children's learning generated by the artist, volunteer, researcher, parents and children during the activity;

Atelier Six: Cellophane/colour layering drew on David Batchelor 'Plato's Disco' as the starting point for designing the activity's content. 'Plato's Disco' is a sculpture located in a stairwell at the gallery. The large-scale artwork has been made from metal and different coloured glass and features a rotate device that allows it to slowly turn in the stairwell, creating translucent colour projections on the surrounding walls. Alice, the artist, selected the concept of 'colour-layering' and the material of plastic as the starting points for Atelier's design. An outline of the core material, extension materials, tools, equipment, vocabulary and open-ended questions can be seen in the completed GPC on Table 14 on page 127. A video of the pre-session Atelier layout and artist interview can be viewed here: *(Content removed to protect participant information)*

Image 34: Alice's setup for the Plastic/Colour Layering Atelier

Research question (connecting content to concept): Exploring colour layering through cellophane.

Artwork used as starting point for inquiry: David Batchelor *Plato's Disco* (2015)

Ideas, points for experimentation, curiosities relating to the artwork:

Pre-planning notes	Facilitating notes	Post-session notes
Conceptual: -Core concept: Colour layering -Sub-concepts: Primary colours, secondary colours, transparency, opaqueness, translucency	-Starting out, we felt something was not quite right with the materials, layout & construction tools but it was difficult to pinpoint what the problem was. Once the children entered, we added, removed & changed different materials, tools and the layout in response to their experimentation.	- Artists and curators needed to conceptually and pedagogically move, be flexible and react to children's experimentation with materials. -Initial atelier set-up is a starting point for inquiry; new things will emerge through children's play and experimentation. -Additional concepts explored: Composition, shadow and light.
Material, tools and equipment: - Core material: Colourful cellophane and acetate of different colours, shapes and sizes - Construction tools: Tape (clear), water spray bottles - Construction equipment: OHP, light box, studio windows, - Extension materials: Tape, more spray bottles - Spatial layout: The windows were used as one large area for children's experimentation - Artwork images: Plato's disco, pictures of the colour wheel	- Masking tape was too difficult for babies & toddlers to use. Most children showed preference in using the water spray bottle; we therefore made the decision to remove all other construction tools. - Curator, "I think the children enjoy using the water in a new and unfamiliar way." - Additional construction tools introduced: Pegs, more spray bottles. -Extension materials allowed artists to be reactive to children's experimentation in the moment	- Surprise appropriation of the materials: Child K making the waterfall experimented with the water and cellophane in an unpredictable way. -After technique of water spraying was demonstrated to him, he then experimented with this in new situations. - 3D spaces in addition to 2D spaces moved the atelier from a craft activity to an immersive creative environment. - Spatial arrangement changes children's interactions with one another
Spatial: -A combination of 2D & 3D construction spaces - Introduced music to the space: A playlist of mambo and funk instrumental tracks	- Moved light box to the side in the first 20min, opening up further access to the windows.	- Children moved straight towards the windows. - Staff continuously refreshed the atelier's materials and layout, creating new starting points for further experimentation. - Music & lighting also changed atelier's mood
Social: - Introduced research question to families on arrival. - Artistic techniques: Ripping, sticking, layering, hanging, layering cellophane -Questions: "How can I help you? Why do you think the torchlight goes through the cellophane and not the chair?" - Vocab words: See key concepts	- Introduced concept of 'light' to children by handing them a torch and cellophane on arrival. Without light, colour mixing through cellophane cannot happen. - Additional Artistic Techniques: How to spray water bottle, cut with scissors, rip, scrunch, tape. - Used the colour paddle to demonstrate what colour mixing is.	- The social support of children's peers, parents and artists assisted in making social, emotional, cognitive and aesthetic links between materials and concepts. - Children told stories through making: water from water bottles became 'rain' and 'waterfalls.'

Table 14: The GPC for the 'Plastic/Colour Layering' Atelier

During the session, ten children and their families participated in the research. Their participation involved taking photos and videos of their experimentation using the children's camera. Alice and I also generated records of children's learning including field notes, audio recording, photos and short videos. A copy of all the photographs, field notes and reflections of children's learning from the session can be viewed in Appendix Three on page 270.

Image 35: A video still from Alice's pre-session interview for the Plastic/Colour layering Atelier

Following the session, Alice, Claudia and I met to reflect on the activity. Our conversation began with talking about the importance of artist's and parent's being willing to respond to children's experimentation in the Atelier.

Image 36: A video still from Child K's interview

THE YELLOW WATERFALL

Child K (2 years 0 months). K and his Mum come to the atelier every week. They do a daytrip from Wakefield and spend the entire day at the Whitworth Art Gallery. "I like the combination of both indoor and outdoor spaces here. It is free play and I like seeing him explore the space. We also go to the toddler class and usually play in the park if it is not raining." The pair spent a total of 1.5 hours in the atelier.

1.15pm. Mum (to Louisa): "This is the first time he has used the water spray bottle… as you can see he is loving it and squirting everyone and everything." K sprays and sprays (water visible on the floor)

2. K sprays the window… not sticking cellophane. Mum: "I think he likes the look of the water falling"
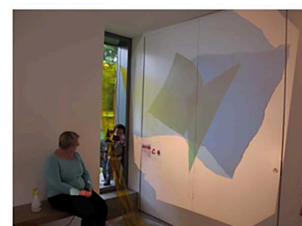
3. 1.25pm. Moves to the corner. He finds some cellophane pieces on the floor & starts spraying the yellow roll of cellophane and sticking the pieces on. K: "I am making colours"

4. K: "the yellow is leaking!" The dye in the cellophane starts to drip down from the water being sprayed on it. K: "it is a yellow waterfall!" Lou: "K, what are you making here?" K: "I stuck on all of these colours." L: "How are you doing that?" K: "with the sprayer." L: "were there any tricky bits?" K: "(looks at cellophane and moves it with his hand) silent." L: "…and what is it?" K: "it's perfect!"
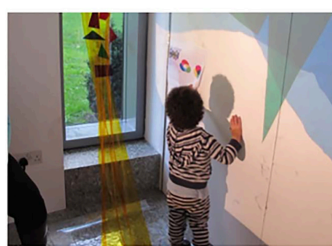
5. K stands back and looks at the waterfall from further away. He notices the artwork printout on the wall. K (to Louisa): "Can I take it?" Louisa: "Yes, you can have it."

6. Places it inside his waterfall on the window

Group documentation interpretation: K seems to feel comfortable exploring the materials space in his own time. His experimentation with the water takes him on different tangents, from the windows to the corner and then the floor. He learns the technique of spraying the bottle on arrival in the atelier (his mother comments that he has not used this before). He then uses this technique in various material explorations such as spraying the water to transform the cellophane. This then changes the plastic's properties so that they transform in unexpected ways such as making the colour run. The water spray was used as a construction tool to connect cellophane pieces, these were then stuck on top of one another to create new colours. In K's creation of the 'yellow waterfall,' the construction tool of the water also became the material. Materials and tools are interchangeable experimental things. He seems very proud of his waterfall creation, claiming that 'it is perfect.'

Image 37: Child K's learning record produced from Plastic/Colour layering Atelier

One boy's encounter (Child K) with cellophane and water was selected for further discussion. This documentation can be seen in Image 37 (above). This documentation was selected as both Alice and I were watching the boy as the event unfolded. He was very engaged in the activity for an extended timeframe. Furthermore, it was interesting to talk about the cellophane's ability to transform as he squirted the water onto it. As Child K did so, the colour from leaked off the material, creating an unexpected pool of water on the floor. The boy constructed and told an elaborate story about making a house and a waterfall as this happened. A video of a short

discussion between Child K and I can also be viewed here: *(Content removed to protect participant information).*

Image 38: The Plastic/Colour Layering Atelier documentation poster
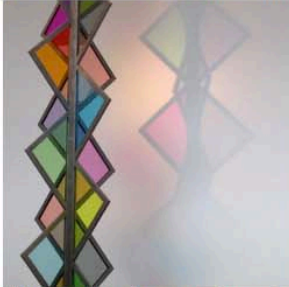
Moving forward, Alice and I decided to experiment with exploring the conceptual, social, material and spatial mediators of children's learning in the documentation. Modifications made to the GPC included a 'material' section. Previously, the material and spatial components were grouped together. Following the group post-session discussion, I then created a final documentation (Image 38, above) poster of different children's

learning. My analysis of the learning focused on how the children interacted with the material's properties, the art concepts, the art tools, equipment and space.

Personal reflections

Reflections following Atelier Six included:

1. **Practice principles:** Learning seemed to be constructed from a myriad of things including the artist's interests, the physical gallery space, social interactions, artworks, materials and parents. The documentation of children's learning consequentially can consider how learning is produced across multiple time frames and multiple entities (Lenz-Taguchi, 2009).
2. **CPAR/Pedagogical Documentation process:** In Atelier Six, there were multiple people involved in recording and reflecting on children's learning including Alice, the children, parents and I. As a result, the records on children's learning seemed to deepen and make the Atelier-research team's reflections more complex. For example, when discussing the documentation of Child K in the post-session discussion, Alice mentioned that the boy and his mother had been regular Atelier attendees over the past six months. She mentioned that she often notices Child K telling stories by himself as he plays with materials. Claudia also said that she has never seen him play with other children and that he seems to prefer playing by himself. During the Atelier activity's pack up, we discussed Child K's documentation. As this discussion happened immediately following the event, there was not time for everyone to individually reflect on the photos and field notes. I realised that allowing time for people to develop individual reflections and then engaged in collaborative reflections was essential in supporting the development and debate of different perspectives amongst the team. These different perspectives may then help to bring to light *"new and unexpected elements that help us constantly to reconsider the limitations and possibilities of the context"* that the Atelier practice was being curated in (Filippini, 2001, p. 54).

Activity Seven: Fabric and Cardboard /Space Atelier

Key events from the activity:

- Atelier session run in the Whitworth's South Gallery;
- Materials used as a starting point for curating the Atelier.

Image 39: The Fabric and Cardboard/Space Atelier mid-session

Activity Seven: The Fabric and Cardboard/Space Atelier session drew on the materials of fabric and cardboard as the starting point for curating the Atelier. This was in contrast to Activity Six that used an artwork as the starting point for the design. While Sarah was planning the Atelier's content, she used the GPC to construct the research question 'how can construction be explored through cardboard and fabric?' She also mentioned that her aim in the Atelier was to encourage children to make dens or cubby houses.

Image 40: A video still from Sarah's pre-session artist interview (Fabric and Cardboard/Space Atelier)

In contrast to the previous week's Atelier's in the Clore Learning Studio, the Fabric and Cardboard/Space Atelier activity was run in The Whitworth's South Gallery, a space displaying numerous artworks from the collection. Sarah's selection of material, spatial, social and conceptual 'mediating tools' can be viewed in Table 15 on page 134. The pre-session interview with her can be viewed here (Image 40 on page 132 shares a still from the video): *(Content removed to protect participant information)*

The Cardboard and Fabric/Space Atelier was a very busy session with lots of families coming and going. Also, as it was school holidays there were also many families with primary and secondary-school aged children. Participants tended to create dens together as a family group. In the post-session discussion, Sarah, Claudia, Jane (the Atelier education volunteer) and I discussed the following topics:

- **The importance of material content and art concepts in construction the Atelier's 'problem-spaces:'** Sarah commented that:

  "We have reflected through our observation and documentation and seen how simplifying what is going on. For example, using one material, and one concept and then enlarging that with the extension materials helps to focus the Atelier content. Thinking about different concepts allows for new ways of connecting with the material."

- **Demonstrating artistic skills and techniques through guided participation:** In the Atelier session, many children attended who were under the age of 3. This became a challenge in the activity as many of them were not big enough to make dens. Sarah, Jane and I tried to introduce new skills and techniques to some of the toddlers to help them. These skills included showing them how to clip pegs to the fabric and cardboard through the process of guided participation (Rogoff, 2008 & 1993)**.** Jane, the volunteer, commented that by introducing new these artistic techniques via demonstration, that this opened up new opportunities for children's experimentation:

  "We are not telling children what to do with the tool; we are just giving the knowledge of the tool and how to use it. The children then take that knowledge to explore the possibilities between the tool and the materials. It is up to the child to choose what they do with that knowledge. It is important that you give them that bit of knowledge - that's the scaffolding - without that knowledge of the tool, they limit what they can do. It doesn't have to be a detailed set of instructions but just showing them how to rip the material, or peg a material or spray a material."

- **Display of Pedagogical Documentation posters.** Parents were showing an increasing interest in children's learning being shared in

Research question (connecting content to concept): Exploring space through card and fabric		
Artwork used as starting point for inquiry: None		
Ideas, points for experimentation, curiosities relating to the artwork:		
Pre-planning notes	**Facilitating notes**	**Post-session notes**
Conceptual: - Core concept: Space - Sub-concepts: height, dimension, open/closed spaces, space, measurement, 2D and 3D spaces	- The atelier very quickly shifted from conceptually making spaces to how children inhabit space and create stories in spaces. Lots of fantasy storytelling inside the dens (castle, house, cave). - Addition concept explored: Balance - Children's activities needed to fit with their physical abilities - Children's play in the atelier deviated from the core concept and that's okay	- Numerous changes were made to the materials, spatial arrangement and social scaffolding throughout the day. - Many young children's play centered around exploring pre-built spaces as opposed to constructing new ones themselves.
Material, tools and equipment: - Core material: Card and fabric - Construction tools: Masking tape, string, pegs - Construction equipment: Garden canes that were pre-constructed into triangle frames - Extension materials: Torches, play tools (pots, pans, blankets), crayons, pencils, scissors, pot plants - Artwork images: None. Multiple artworks on display in the South Gallery where the atelier was run.	- Some of the construction tools did not fit the children's physical abilities - Extension materials needed to be removed and introduced as appropriate. - Construction tools: Can experiment with using the same tool with different materials across different activities - Some children explored the possibilities of materials before using it within a formal creation. - Additional artistic techniques explored: Wrapping and pegging.	- Torches introduced as extension tool, many children who attended last week's colour atelier were familiar with how to use these. For example, Child J took the torch with a piece of cellophane, placed it against the window while shining the torch through, like she did in the colour atelier.
Spatial - Spatial layout: South Gallery. 3-4 pre-constructed dens for babies to play in.		- Initial atelier was just a starting point for children's experimentation. The space was flexible & open to change.
Social: - Introducing research question to parents on arrival - Artistic techniques to demonstrate: Ripping, stacking, balancing, folding, sticking and draping. Also using pegs, ripping tape and tying string - Challenges: Can you make a… doorway, window, tunnel, bridge, pathway, roof, igloo, pyramid, house, tent, and dome? - Open-ended questions: 'Can you tell me about this?'' How can I help you?' Listening to children's stories	- Demonstrating: Volunteer: "a small demonstration of a tool can go a long way." Parents introduce techniques/possibilities of materials and tools as well as gallery staff. Adults introduce techniques via guided participation - Lots of babies (0-2 years) came to this session. - Children's behavior in the space is impacted by multiple factors (not slept well, sick, grumpy)	- We needed to more intensely scaffold baby's learning and play (0-2 years) as well as children with disabilities. - Social interaction between parents was important too: being a parent can be isolating, the gallery is a space for parents to socialize with other adults. - Staff needed to maintain a balance between greeting new parents & focusing on the children who were already there - Parents often intervened in children's 'creative problems' very early in their experimentation. When a parent solves a children's problem for them, something was lost. - Findings a balance between what is pre-constructed and what we leave for the children to construct is a continuous challenge

Table 15: The GPC for the 'Fabric and Cardboard/Space' Atelier

the posters. Having the documentation on display seemed to be producing a common understanding with parents around the importance of children's learning, and not just the outcomes of what they were being taught.
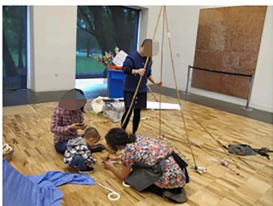
- **Designing activities within children's physical abilities:** Finally, we talked about how the process of making a den was too physically advanced for babies and toddlers. From this reflection, we learnt that

the materials, concepts and tools presented in the sessions need to be within the physical abilities of the children participating in the activity.

Moving forward, I selected one boy (Child J's) encounter with the fabric and cardboard for further reflection, as illustrated in Image 41 (below). Both Claudia and Sarah said they would not have time to do a further reflection on the records this week as they had very busy schedules. Consequentially, I did the reflection and interpretation by myself. I selected this particular child's encounter in the Atelier as I felt it provided an interesting starting point for my personal reflection on scaffolding very young children's learning. I created a documentation poster from the session featuring numerous children's encounters with the materials, tools, equipment and concepts (Image 42 on page 136).

'DEN (CUBBY HOUSE) MAKING ATELIER'

Child J (1 years 4 months). J and his mother are the first to enter the space. Izzy and Angharrad are still setting up some dens using the garden dens.

J is interested in what the artist is doing with the tape and garden canes. The artist demonstrates wrapping the masking tape around the cane.

J's Mum takes one of the aluminum sheets and clips it onto the wooden frame using the peg. J then takes one of the larger pegs and does the same.

He enters the den. Lots of smiles and giggles

J discovers the basket of masking tape and... more pegs!

He takes 4 pegs and clips them on. They stay for 10 minutes before leaving

Group documentation interpretation: All staff know J and his Mum by name, he enters the space smiling and walking towards the gallery staff. He seems familiar with the space and is not afraid to try new things and new activities. He uses his body to explore the size, height and measurement of the spaces inside the den, needing to crouch down to fit his body inside the smaller spaces. The mother demonstrates how to use the construction tools through a process of guided participation. He is then able to take this skill and use it to experiment further with the materials.

Image 41: Child J's learning record produced from the Fabric and Cardboard/Space Atelier

Personal reflection

The Atelier started off with many different materials and tools out. Sarah, Jane and I all immediately observed this and made comments about what could be modified in the space. As a team, we all identified there were too many materials out. We then had to decide which materials to remove and to re-adjust the spatial arrangement to encourage children's

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experimentation with space. Sarah removed some of the extension materials, such as the pots and pans, that were not connected to the concept of space. Sarah then went around and demonstrated to children how to use the pegs to clip the fabric to the cardboard. This action illustrated her ability to identify and respond to children's learning in a way that balanced pedagogical structure and children's freedom to play.

Image 42: The Space/Card and Fabric Atelier documentation poster

From an ethical perspective, I reflected on the notion of authorship and copyright in the research this week. I was very conscious that the data being generated was collaborative knowledge and it was impossible to

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attribute ownership to a singular person. I hoped this would not cause tension later on in the research project when I would analyse the activity by myself, resulting in the publication of my thesis and subsequent postgraduate degree.

Finally, I felt there was a shift in how Pedagogical Documentation was being used to curate the Atelier this week. The process felt like it was facilitating learning and enquiry between the Atelier team and me. While the documentation was being used to evaluate children's learning, and how it was being mediated, it was also being used pedagogically to facilitate the team's critical reflections on the assumptions and 'image of the child' that was underpinning the Atelier's practice.

Step Four and Five changes: Mediating tools and activity system context

Activities Four to Seven described and analysed the Atelier-research activity system's mediating tools and context. This analysis was done by myself, without consultation with the Atelier team. Figure 11, below, that illustrates the activity system's mediating tools (rules and regulations, roles and tools) identified by step four. The tools mediating the activity included the Pedagogical Documentation process and the GPC. The rules and regulations included the conservation requirements, the sociocultural norms, the gallery visitor numbers and the Atelier programme's budget.
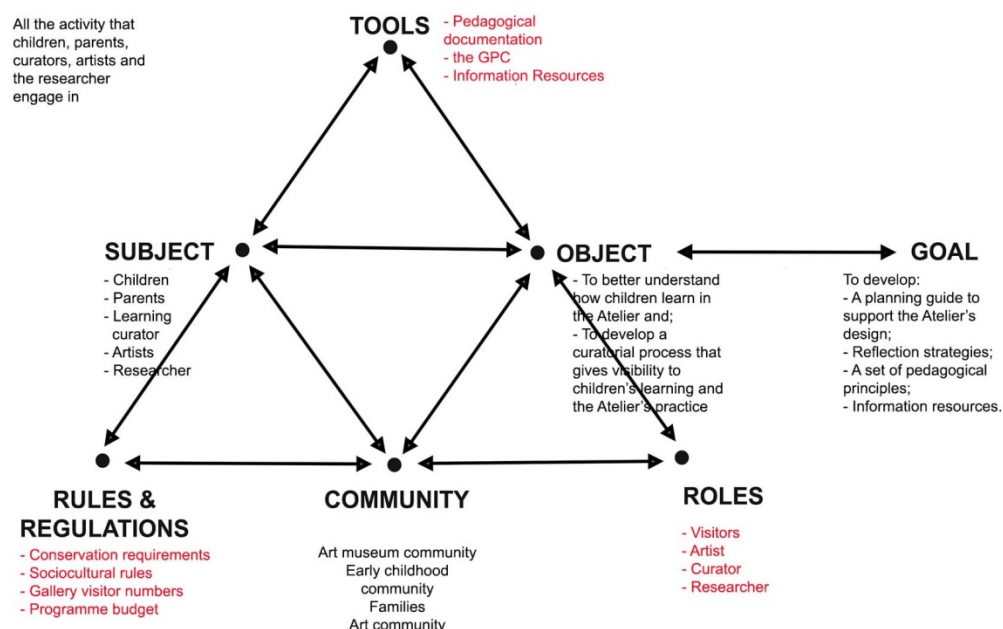
Figure 11: A model of the 'Atelier-Research' activity system's mediating tools

Step five analysed the context of the 'Atelier-research' activity system, as illustrated in Figure 12 on page 138. This context included investigating the internal bounds of the Atelier's activity including the beliefs, language and processes as well as external bounds such as rules and outward limitations. These bounds included the language used by Sarah, Alice and Claudia to describe the practice, which often consisted of words such as

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'child-led,' 'messy play' and 'Reggio inspired.' For example, Activity One's group discussion explored how different people including the artists, learning curator and parents have different understandings of these terms. As a team, we did not have the opportunity to critically reflect on this terminology and language together. However, moving forward I aimed to investigate what practical strategies could be drawn on in Action Research Cycle Two to deconstruct the meanings behind the language used to describe art museum practices. However, I also felt that many of the programme's internal bounds were assumptions that were implicitly held by the staff. As a result of these implicit assumptions, it was difficult to identify the bounds simply by asking the Atelier team members what they were. Moving forward, I aimed to further develop strategies for making implicit assumptions visible and in a form that could be discussed as a group. I explored this further in Action Research Cycle Two.
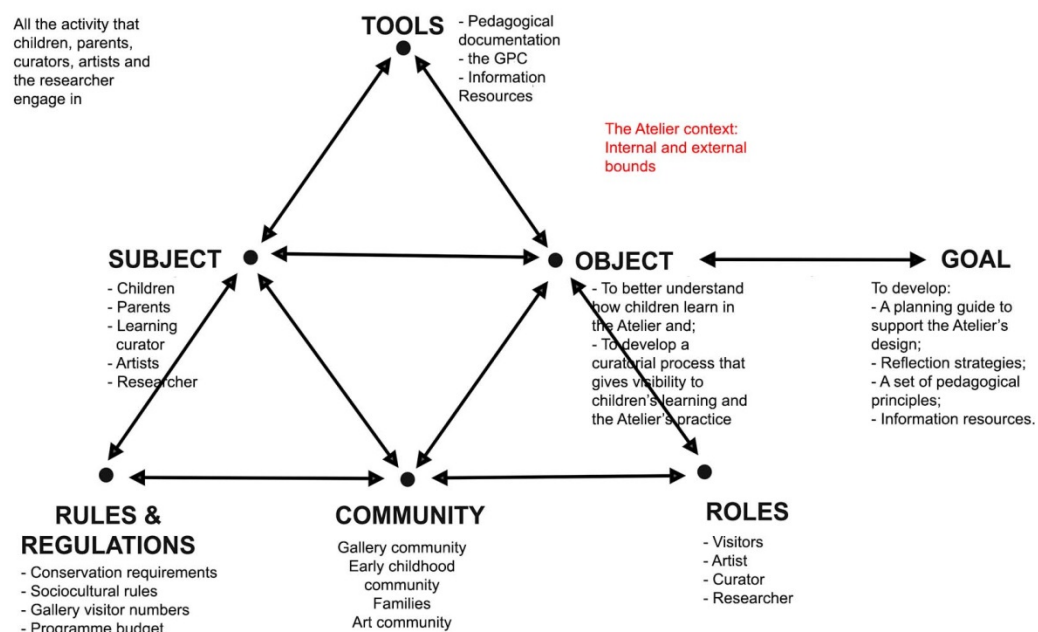
Figure 12: A model of the 'Atelier-Research' activity system's context

An internal bound for producing the GPC, CPAR/Pedagogical Documentation process, pedagogical principles and information resources was finding the time to reflect on the documentation as a group. For example, Sarah and Alice usually ran the Atelier with one hour of planning, setup, five hours of facilitation and one hour of pack-up. This made it difficult to find a time to look at the documentation individually and then discuss it as a team. Moving forward, I noted the significance of having a second collaborative reflection amongst the art museum team that would allow for extended reflections on children's learning and the practice. I intended to explore this further in Action Research Cycle Two.

An external bound in the activity system was the nature of the funding received by a governmental cultural body. This evaluation of the programme was therefore centred on the evaluative criterion of this organisation, as opposed to the Atelier team's criterion of what was

important consideration of children's learning, as discussed in the Pedagogical Documentation. Additional external bounds included the formal and informal institutional rules. For example, in Activity Seven, Whitworth's conservation requirements meant that only particular materials could be used in close proximity to the artworks. The art museum also had an institutional policy on the number of people allowed in the gallery at any time.

Following the analysis of step five, further developments were made to the GPC, the CPAR/practical principles, documenting process and information resources including:

1. **The GPC:** I **separated out the material and spatial categories** in the GPC's 'planning column.' Secondly, I reiterated the need to **link the material content with art concepts** in the curation of the Atelier. This was important as it created the 'problem-space' that children were then able to investigate. I made note that artists may also re-set new material provocations while the session is running. For example, rearranging the materials in different ways to create new and imaginative starting points for children's experimentation. Thirdly, **the importance of demonstrating artistic skills and techniques** to children was highlighted. For example, Activity Seven featured many young children who needed more intense forms of scaffolding to be able to participate in the activity. To give further consideration of how skills and techniques could scaffold children's learning in the Atelier, I introduced a new 'tools' and 'equipment' sections to the GPC.

2. **The CPAR/ Pedagogical Documentation process:** The analysis of steps four and five reiterated the significance of generating and interpreting records of children's learning from multiple perspectives during the session. To support collaborative reflection, art museum teams need to develop practical strategies that allow time for both individual and group reflection. Finally, I considered how the reflection of children's learning could involve broader participants including parents, teachers and other children.

3. **Practice principles:** To support the enquiry-drive process of connecting children's learning with art museum practices, art museum team's need to be open, reflective and intellectually curious. **Research questions can then be used as a practical strategy for supporting the Atelier's enquiry-driven practice**. Secondly, steps four and five reiterated the importance of reflecting on the balance between pedagogical structure and children's freedom to experiment. Pedagogical Documentation may then assist with the reflection on this balance. Furthermore, for enquiry-driven practice to be implemented across an art museum, there needs to be an institution-wide commitment to learning. The display of the Pedagogical Documentation posters in communal areas where interdepartmental staff can view the documentation may then give visibility to children's learning within the

institution and encourage further discussion and reflection with staff beyond the learning team. Finally, to support the connection between young children's learning and art museum practices, it would be useful if external funding bodies acknowledge the importance of learning – as opposed to educational outcomes and visitor statistics– in grant acquittal. Children's learning could be shared with funders through visual records of their learning, offering qualitative insights into children's experiences as opposed to a focus on statistic information when reporting on funding activities.

4. **Information resources:** Three new information resources were noted as being useful in supporting the team's reflections. Firstly, **samples of Pedagogical Documentation for different audiences** including for children, parents, for other art museum staff and the public. Secondly, concise **information on constructivist learning theory for parents** and finally, **information on what artists can focus on when recording and reflecting on children's learning.**

Step Six: Analysing the overall programme dynamics

Investigating the 'Atelier-research' activity system's dynamics was the sixth and final analytical step. This step was analysed through Activities Eight and Nine. Analysis of the overall dynamics allowed for the investigation of the nuanced interactions between the activity system's components. Table 16 (below) illustrates the questions used to examine the 'Atelier-Research' system's overall dynamics as these were adapted from Jonassen and Rohrer-Murphy's (1999) framework:

6.1 What are the interrelationships that exist in the activity system's components?	• What are the dynamics that exist between the Atelier system's components? • How formal or informal are the relationships described? • Are there any contradictions or inconsistencies within the needs of the team? • How does the development of the collaborative planning, facilitation and reflection guide change the way that the Atelier team has worked together?
6.2 How formally established are those relationships?	• How formally will the relationships between members be determined? • How lasting and permanent are these changes?
6.3 How have those interrelationships changed over time?	• What factors have driven the formation of the art museum's early year's programme over time? • How lasting and permanent have these groups been in the past? • What factors kept those groups together or drive them apart?

Table 16: Questions for analysing the 'Atelier-Research' activity system's overall dynamics

Activity Eight: Paint/Coverage Atelier

Key events from the activity:

- Multiple artworks and artists' material processes drawn on in the Atelier's planning;
- The documenter's name stated on the record of children's learning;

Image 43: The Paint/Coverage Atelier mid-session

The 'Paint/Coverage' Atelier explored the research question 'how can we explore the concept of coverage through paint.' As this was the final Atelier session with Sarah, I also asked for her final insights on using the GPC. She responded saying that the tool had allowed her to consider new ways to refine the Atelier's focus so that it became less about:

> *"…getting the paint everywhere and more about the thought-processes connected with paint and coverage. Now we are thinking about the idea of coverage and how the children would cover card with paint, we have been thinking how we can extend their play through the extension materials and additional tools such as rollers, paint brushes and printing blocks."*

While setting up, I suggested to Sarah that we try playing music in the Atelier space as an 'extension material' that could be introduced or removed from the space if and when appropriate. We found an old CD player and plugged in my iPod. I selected a handful of mambo, salsa and tango songs that we then played on shuffled throughout the session. When the Atelier became very crowded and noisy, we turned the music down and then back up again when it felt appropriate. Unlike previous weeks, multiple artworks were used to curate the Atelier activity. The completed GPC from the session can be viewed in Table 17 on page 143-145.

The pre-session interview with Sarah can be viewed here:
(Content removed to protect participant information)

Image 44: A video still from Sarah's pre-session interview (Paint/Coverage Atelier)

Research question (connecting content to concept): Exploring coverage through paint.

Artwork used as starting point for inquiry: Peter Lanyon, 'Glide Path' 1964. The Whitworth Colleciton

Ideas, points for experimentation, curiosities relating to the artwork:

The following text has been taken from the Reggio Emilia Australia Information Exchange Journal, 'The Challenge.' The article was a conversation between myself and Chris Celada, an Australian arts educator. I talk about the production, facilitation and post-session discussion of the paint/coverage atelier.

"'Glide Path' captures a sensation of flow, freedom and elevated movement over surfaces, space and earth. For me, this painting cannot be reduced to a bird's-eye representation of the English countryside. It is a feeling of turbulence, rushing motion and emotion, things colliding and intersecting in chaotic ways in a changing moment. A sense of soaring and drifting in unrestricted ways but always with the possibility of falling from a great height. This complexity of thought and affect offered a rich starting point for deeper collective inquiry amongst the team.

Lanyon's use of paint made it a natural fit to bring into the Atelier. The artists of the Whitworth's learning team were very interested in encouraging hands-on 'messy' play throughout the sessions. Paint presented possibilities of very tactile and sensory experiences for young children. As a team were not solely interested in teaching children about the techniques and properties of paint, such as how to roll it or how to use a paint brush, although these are very important, but to also consider the thought process that this material might provoke, how it might challenge children and their families to think differently through the process of playing and experimenting with it.

The intricacy of 'Glide Path' offered many possibilities to connect and explore an array of concepts such as line, form and shape. These all had strong potentials however there was something in the combination of 'coverage' and 'flying' that made a particularly strong pairing worthy of deeper investigation. The action of 'covering' seemed intricately connected to a feeling of gliding. Just like the wind changes a glider's speed from rapid to slow, thought patterns and making in the Atelier continuously flux through different rhythms too - from grand outbursts of paint pouring to gentle drips, quiet consideration and stillness. Like the creative process, the act of gliding is unpredictable – plunging into the unknown, an awareness of freedom, movement but also the possibility of stagnation, disappointment and falling.

The concept of 'coverage' was approached as an invitation for children and their families to think with, through and about the concept. Evidencing a linear relationship between introducing the concept and a child 'learning what this is' was never the goal. Instead we began to consider the possibilities for research – social, emotional, aesthetic and intellectual research – with and through the concept and paint.

Such explorations of 'coverage' are also philosophical ones. What is presented? What is concealed and protected? What is revealed? How does someone or something transform through different layers being taken away or others being positioned on top? What new relations can be construction between coverage, paint and other complexities of the world?

The Atelier's 'reconnaissance' stage allowed the gallery team to debate our subjective ideas into the beginning of a pedagogical inquiry of the artwork. Looking at how other artists, such as Dale Frank, Jackson Pollock and Cy Twomby, had used paint to explore the concept of coverage expanded our thinking of what could be done with the material."

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Pre-planning notes	Facilitating notes	Post-session notes
Conceptual: - Core concept: Coverage - Sub-concepts: Mark-making, consistency (think/thin), surface, texture - Artistic techniques: Spreading, rolling, dripping, mixing, brushing - Non-artistic skills we want to encourage: Decision making, transformation of materials, collaboration, problem solving	- "Starting off the atelier content simply then gradually adding to it allows children to enter (on a cognitive, social, emotional and aesthetic level) at different points and then take their experimentation in whatever direction they like." Artist - "The initial content is like a starting point for inquiry; children enter and take the materials and concepts to a much higher creative potential through experimentation." Researcher	- The materials, tools, concepts and spatial arrangement came together immediately. This was in contrast to previous weeks, such as the dens and colour ateliers, where the initial atelier content selection went through rapid change once the children entered the space. - We observed children exploring the materials and tools in both familiar and unfamiliar ways. For example, Child K and Child J. Children did mostly explore the concept of 'coverage' as opposed to mark-making or colour mixing.
Material, tools and equipment: - Core material: Paint (2 colours, limited palette) - Construction tools: bodies (hands, feet), rollers, sponge, paint brushes - Construction equipment: different cardboard surfaces (corrugated card, cardboard boxes, acetate, and mirror card) provided a large floor 'canvas.' - Extension materials: Easel & additional cardboard surfaces including additional paper, boxes (large and small), printing blocks. - Artwork images (creative resources):	- We began the atelier with minimal construction tools and material selection - Like previous weeks, the paint was simple but had high creative potential. Children were able explore the creative possibilities of the material through their play.	- Child K used different surfaces (the window, cardboard, studio floor) to experiment with the transformation of paint's consistency. - Limited colour palette seemed to work well for children to explore coverage as opposed to shifting too much into the concept of colour-mixing. - Multiple children used their bodies as a tool for material exploration, including babies. A volunteer commented that paint has a strong sensual quality.
Spatial: - Layout: One large area (cardboard covering the surface of the studio space), large 3D cardboard boxes selected that encouraged children to work together and interact with one another - Introduced music to the space: - Artwork image printouts: Peter Lanyon, Idris Khan, Cy Twomby & Jackson Pollock.	- Parent's interest in documentation posters increased. They seemed to have become a pedagogical tool in their own right. The learning curator commented that for her it is immensely beneficial to use pedagogical documentation as it encourages rigorously thinking around materials, tools, concepts and how this these interconnect with artworks.	- Artwork images assisted artists, curators and children to make connections and open possibilities for deeper material and conceptual experimentation.
Social: - Introduced research question (materials and concept) on arrival. - Artistic techniques: Rolling, brushing,	- The same artistic techniques can be explored on multiple surfaces - what different do the two surfaces make? - Many of the parents seemed active	- We also observed children producing imaginative stories through material play. The children were not just having an automated

pouring, smudging, drying, holding brushes. - Challenges: Introduced a new piece of 'construction equipment, like a cardboard box. The artist did not need to say anything, just placed it next to a group of children. - Open ended questions: where/if appropriate - Vocabulary words: As outline in 'sub-concepts' above.	in the atelier today. We discussed what it was about the materials, spatial design, tools and concepts that may have encouraged this.	response to the materials. - Cardboard boxes & windows provided opportunities for collaborative experimentation. - Planting opportunities for social interaction in the design of the space was important, individual play can happen in a collaborative activity but collaboration cannot occur in an individual learning activity.

Table 17: The GPC from the Paint/Coverage Atelier

During the session, 14 children and their families participated in the research. The session was busy, very messy with paint going everywhere over the floor, windows and children (Image 45, below). Some parents did not want their children to participate in the activity as they did not want the paint to damage their clothes. Sarah, Jane and I also made field notes, photos and videos of children's experimentation. While the photos were taken by different people, I did the interpretation and reflection of the children's learning by myself as Sarah and Jane were both away on holidays during the week.

Image 45: The Paint/Coverage Atelier mid-session (detail)

Image 46, on page 146 and Image 47 on page 147 shares the records of two different children's learning, and the accompanying interpretations during the session.

Child R (3 years 0 months). Documenter: Louisa. R is visited the atelier with his mother and baby brother. They arrive at a point when there is only one other family in the space. It is the late afternoon (2.10pm) and the atelier is quieting down. "We have visited the gallery a few times before. We used to come when R was a child but since his little brother was born we haven't been coming. We came for the atelier today." R asks his Mum is he can take off his clothes immediately upon arrival. His Mum says, 'yes but leave your underwear on!'

Putting hands in paint and covering his body. "Can I take my undies off?" Mum asks me if he can take his undies off. I reply: "it might be best for hygiene purposes to leave undies on."

"I am the biggest painted monster in the whole world."

Uses the rollers to cover the box in paint, swaps between covering the box and covering his tummy in paint. "I am using the rollers on my tummy."

"It is squishing on me." Upon leaving I ask R what his favourite part was. "The Paint" he replies. His Mum takes him to the bathroom to wash up before going home.

Louisa's interpretation: R is particularly interested in the connection between the material (paint) and his body from the moment he enters the atelier. He explores this in various ways including applying the paint to his body using the rollers and paint brush. He explores the texture and sensation of the paint through rolling in it and letting it dry on his skin. His body seems to become both a tool and a surface for material experimentation. His body is like a canvas, a colour mixing palette and tool all at the same time.

Image 46: Child R's learning from the Paint/Coverage Atelier

Following the activity, Sarah and I discussed our reflections from the session. These included:

- **How imagery of artworks or videos of artists experimenting with materials can act as information resources for children.** In the Atelier session, Sarah stuck images of the artworks on the floor, children were then able to look at these, paint over them or ignore them.

- The large boxes encouraged groups of toddlers to interact with one another while exploring the paint. This spatial layout played an important part in encouraging children's social interactions between one another (Vygotsky, 1978).

- Child K's experimentation with paint transformed the material's properties over a series of encounters (Image 47, below). For example,

the paint changed from a thick to thin liquid as he added the water. **The ability for the material to transform and be remixed was important** in opening up new possibilities for his experimentation.

"A RAINY DAY" PAINTING

Child K (2 years 9 months) Documenter: Louisa. K arrived at the Atelier early. He smiles and jumps around when he realises it is a paint session. He waves to Sarah and I. I then showed him the documentation poster from the colour-mixing Atelier (which he was featured) and I ask him if he remembered the yellow waterfall he made. He said 'yes' but seems disinterested in discussing it further – the yellow waterfall was in the past! He then asked for the children's camera. We are curious to see what he will document today.

1. K moves beings is play with the cardboard on the floor and a paintbrush. He spread the paint across the floor. He is protective of the camera and does not want to put it down.

2. He moves towards to window. *Louisa to Mum:* "What is he making?" *Mum:* "Apparently he is making a 'rainy day."

3. K's photo taken by himself on the children's camera
K: "It's the rain."
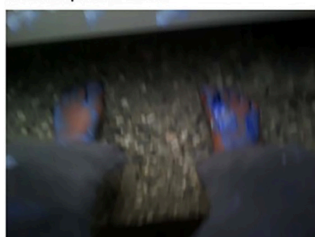
4. K's photo taken by himself on the children's camera

5. K photographs his painting of "a rainy day."

6. K: "I need more paint." Sarah gives K a small cup of paint. He pours it onto the cardboard 'house.' K: "It is sliding."

7. K asks for more paint. K: "Can you put water in it too?" Sarah adds some. He takes the cup and empties it onto the acetate. He watches it fall and spread onto the cardboard

8. K during experiments with the paint
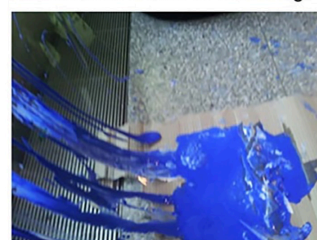
9. K's photo taken with the children's camera

Louisa's interpretation: K explores the transformative possibilities of the paint throughout his experimentation. K explores mark-making using the paint and brush. As he does so, he documents results using the children's camera. K's experimentation centres around the transformation of the paint. For example, he researchers the transformation of pure paint with a thick consistency and how this can be changed to a watery, think consistency through adding water. He tests the results on numerous surfaces including the cardboard, window and plastic sheet. He tells stories as he experiments with materials (i.e. making the rainy day with the paint on the window).

Image 47: Child K's learning record from the Paint/Coverage Atelier

Image 48: The Paint/Coverage Atelier documentation poster

- Following our post-session discussion, I created a poster featuring various children's learning from the Atelier. I put this poster together by myself, including the interpretation and reflection of children's learning. The poster is featured in Image 48 (above).

Personal Reflections

Moving forward, I considered the different team member's roles in the Atelier and how these contributed to the CPAR/Pedagogical Documentation

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process. For example, what does the artist bring to the curatorial process? What do artists need to know about children's learning? What information resources may they need if they have not worked with young children before? What does the learning curator bring to the curatorial process? What information resources may the learning curator need if they have not worked with young children before? What do children bring to the practice? What do parents bring? I discuss these questions further in Action Research Cycle One's reflections on page 165.

Activity Nine: Natural Materials/Construction Atelier

Key events from the activity:

- Video footage used to record and reflect on children's learning instead of photos and field notes.

Image 49: Alice's setup for the Natural Materials/Construction Atelier

The Natural Materials/Construction Atelier was the final Atelier session in Action Research Cycle One. Alice ran the activity. She drew on Anya Gallaccio's *'Untitled'* 2016 as a starting point for her creative planning. During the pre-session interview, Alice discussed her creative thinking behind the selection of materials, tools and arrangement including:

> *"…The ethos of the gallery since its re-opening has been to bring the outside indoors. So we have taken that in a very literal sense, combing some materials that we have gathered in the park and some logs which we got from a tree surgeon. We are thinking about how the children will interact with these natural materials - in a*

simple way. We are trying not to give them too many building and construction materials; we want to see how they naturally interact with the space with the materials we have put out. We have also put out clay. This is included as we were thinking about how the children could build and construct the logs. We also have the string. And that's it - really straightforward, really simple but with a lot of scope for the children to develop the materials and concepts through their experimentation. I imagine this Atelier might be a little different to others, especially with the materials being indoors, to have something so outdoors-y indoors might change children's interaction with the materials."

An outline of the initial materials, tools, equipment and spatial layout that shaped the Atelier can be seen in the completed GPC in Table 18 on page 151-152. A video of the pre-session setup and interview with Alice can be viewed here: *(Content removed to protect participant information)*

Image 50: A video still of Child J's play in the Natural Materials/Construction Atelier

Research question (connecting content to concept): Exploring construction through natural materials

Artwork used as starting point for inquiry: Anya Gallaccio's 'Untitled' 2016. The Whitworth Art Gallery

Ideas, points for experimentation, curiosities relating to the artwork:

Pre-planning notes	Facilitating notes	Post-session notes
Conceptual: - Core concept: Construction - Sub-concepts: - Artistic techniques: Tying, wrapping, binding clay, stacking, leaning, balancing, arranging, leaning, sorting - Non-artistic skills we wanted to encourage: Ephemerality of art, seasons changing	- Introducing vocabulary enabled children to talk about their process, observations and experiences, opening up new possibilities for experimentation - Concept of 'bringing the outside indoors.' The atelier was about nature's connection with art & not just 'nature play.' - Sound of materials sparked children's curiosity – banging stones on the tree branches (Child F: "I can hear the singing." - Taste: We saw babies exploring the taste of the materials - New techniques: Piling (as opposed to stacking), creating, bringing objects together, snapping	- Kinesthetic play: the logs themselves became a space for physical place like balancing beams - Imaginative play: Child F's father commented that they had gone to bonfire night and she was afraid of the fire. In the Atelier, she created three different fires out of different materials: storytelling about the fire as she selected, arranged and played with the materials: "its night time now" and "Watch out! It is hot." - Sub concept: Balance was explored through construction with the materials and physical movement of the body. - Additional sub-concepts: weight, sound, taste.
Material, tools and equipment: - Core material: Natural Materials (4 x GIANT branches!!, leaves, bark, sticks) - Construction tools: Clay (put in small plastic pots), string, soft wire. - Construction equipment: Branches, leaves, twigs. - Extension materials: Small plastic containers, soil, OHP's, pots, acrylic mirrors, masking tape.	- Construction tools: started with a very limited amount of these, gradually added more. - Handing the construction tool to the child on entering the atelier (i.e. a small amount of clay) introduces the connection between the materials and the concept - Kinesthetic play: Large branches became a space for physical play.	- Extension materials: introduced more rocks and leave. Removed clay that had dried up and become un-useable. - Construction tool: clay was used as a construction tool however it didn't become a 'core material.' We intentionally kept the clay to a minimum through presenting it in small plastic pots.
Spatial: - Layout: Large white rectangular "canvas" of white paper on the floor (3m x 6m approx.) Logs positioned on top of this. -Introduced music to the space: - Collaborative play area: Large logs in the middle of space automatically create a 'collaborative challenge' - Artwork images: Andy Goldsworthy and Anya Gallaccio	- Music: Changes mood dramatically - Spatial layout: Branches naturally created a central point of energy and play in the room -Artwork imagery: Mum: *"What do you think that is?"* Child: "I've seen that, it's a sculpture." Interesting that she identifies it as an artwork and not part of nature.	- Arrangement: the spatial organization & layout worked well. The branches and large paper 'canvas' on the floor naturally brought the space together. - Making familiar materials unfamiliar: Having the natural materials indoors provoked new exploration of a familiar material. The unexpected created starting points for experimentation with the material. - **Future action:** More sensory opportunities – including smells

		(essential oils) in future natural materials ateliers.
Social: - Introducing research question (materials and concept) on arrival. - Artistic techniques: Stacking, placing, arranging, sorting - Collaborative challenges: 'Can you arrange these branches in new ways?' - Open ended questions: where/if appropriate: I've got some string here, how could we use that to connect the leaves to the branch? I wonder what would happen if…? How can I help you? -Vocabulary words: As outlined in 'sub-concepts' above.	- Managing risk: Children need to experience and learn how to manage risk, i.e. pointy edges of the branches and sticks. The world is full of risk and it's detrimental to children's development to remove it completely at a young age - Collaborative challenge: Branches naturally created a central point of energy and play in the room - Children K, L & C: String collaboration "Charlie's Boat." First time we have seen K worked as part of a group. -Open-ended questions: Need to support children's material experimentation	-Collaborative play: We observed an abundance of collaborative play today. The big branches were a central location for this. -Artist/staff demonstrating techniques: Needed to demonstrate how to tie string (e.g. child F) as this was a new technique for some of the younger children. - Social conversation supported material exploration: "Did you smell it?"

Table 18: The GPC for the 'Natural Materials/Construction' Atelier

During the session, 8 children and their families participated in the research. Two children's encounters were then further reflected on in Images 51 and 52 on pages 153 and 155. For example, I used video footage, as opposed to photography, to record a mother and child's play with stones and plastic pots. I then used this data to construct a short reflective piece of documentation, illustrated in Image 51 on page 153. The video clip of the child's encounter can be viewed here: *(Content removed to protect participant information)*

Image 51: Child J's learning record produced from the Natural Materials/Construction Atelier

As this was the final Atelier session for Action Research Cycle One I focused on the overall reflections from our collaboration:

- **The GPC:** Alice commented that the Guide for Pedagogical Curation had allowed each Atelier setup to have a more defined 'suggestion' or initial structure as opposed to just letting the children do whatever with a bunch of materials:

   "I think the Atelier has always been child-led and that's still the case however over the experience of reflecting, we are not just thinking about the natural interactions that happen but how we can use more defined suggestions and questions to the children as opposed to

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> *"let's go and get them to explore." What we are doing is still subtle, it is still child-led but now what we do is a bit more thought-out. On reflection, you can see what the children naturally do and what we can learn from that. We have learnt a way of interacting with children that is slightly more formal intact but still allows them to explore."*

Alice then expanded on the topic of critical reflection to discuss the use of the GPC:

> *"I found it has given the Atelier a lot more focus. In a way, we are now starting to link our findings from one week to another. I guess the idea of starting with the material; it gives me sort of - not a formula- but a useful thinking process. I start with 'okay, this is the material that we are basing the workshop around.' From this, I can then start to imagine how the children may creatively explore it and focus the other supporting materials, tools and spatial design to connect with this. For example, when we were doing the planning for the upcoming paint atelier, and we were thinking about coverage then that's your starting point to thinking 'well how can I support that learning and what way could I put the materials out to support that learning? Also, I have thought about what extra materials can be left to the side. These materials are good for thinking about 'well some children may take it this way' and we will have these materials here to give to them to respond to their play. The extra materials make use also think about how children's learning can be scaffolded. Also, by having a concept and material also gives us more of a focus so that when the families arrive, we can introduce the idea to them."*

Alice's reflections on the development of the GPC articulated a shift in thinking that occurred between the start and end of the research project. Like Alice, I had similarly observed a transformation in my own way of thinking about my practice with children in art museums. For example, instead of their being a vague connection between an artwork and a children's activity, the GPC produces a clear and strong pedagogical relationship between artworks and children's learning with the materials. The GPC helps learning curators and artists to concisely consider what conceptual aspects of the artwork can be used in children learning environments and what additional material practices of an artwork can then help to facilitate children's learning over time. The GPC encourages children's learning environments to have a structured starting point while still maintaining a play-based learning ethos. I discuss the development of the GPC and the artist's responses to this in Action Research Cycle One's final reflections at the end of this chapter.

Following the session, I analysed the records of children's learning using the GPC. I undertook this analysis by myself. I then a poster of children's learning as illustrated in Image 53 on page 156.

NATURAL MATERIALS ENCOUNTER

Child N (1 year 5 months) Documenter: Louisa. N and his mother, like most weeks, were the first to enter the atelier today. This encounter between N and the atelier plays out over about five minutes.
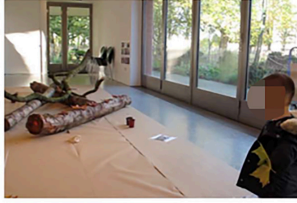
1. N stands looking at the atelier space, not moving closer. He watches the space for 2 minutes

2. 10.02am. Louisa then moves into the space, takes a small ball of clay out of a pot and starts squishing it in her hands

3. N runs over, Louisa hands him a small piece of clay. He holds it in his hands

4. Louisa takes a leaf, sticks the clay to its bottom and attaches it to the log. No words have been spoken yet. N watches.

5. N's mother enters comes closer to the logs, Louisa hands her the clay. Louisa moves away from the log and N's mother is now in the space. N picks up the leaves, dropping them back onto the log.

6. 10.05am. N places all of the leaves onto the log. He walks around the outside of the logs before his Mum mentions that they need to leave for the baby art time class.

Group documentation interpretation: Upon arrival in the space N takes his time to observe the space – it is very different to previous weeks. In image one, N observes the materials and logs. It is a very different setup to previous weeks. Image two, Louisa demonstrates the technique of 'squishing' the clay and showing its malleable properties. N then picks up the clay himself and squishes it in his hands, looking at Louisa – perhaps encountering the texture and consistency of the material for the first time? Image six, arrangement and placing of the leaves on the log.

Image 52: Child N's learning record produced from the Natural Materials/Construction Atelier

Personal Reflections

Leading on from Activity Nine, I was still concerned about the ethics of using Pedagogical Documentation in a collaborative way in the Atelier. As is the case with any partnership work, the team's collective production of knowledge meant that everyone must get recognition for the practice. At the same time, not every aspect of Pedagogical Documentation was necessarily collaborative. For example, after most sessions, I did the interpretation of children's learning by myself. I constructed the posters by myself. The ethics of collective copyright were therefore complex. I engage in a more comprehensive reflection on the ethics of Pedagogical Documentation in Chapter Four's final reflections.

NATURAL MATERIALS

Exploring construction using natural materials

Nov 7, 2016

© Louisa Penfold

Construction tools: clay & string

Materials: Four big logs, leaves, bark, sticks and moss. Atelier detail image (above).

Wrapping the string around the sticks. *"I am making a café." "The sticks come apart," "I need to tie is harder next time."* **Persisting** after initial failure.

Demonstrating **tying** the leaf onto the string. Learning **new techniques** to explore the materials with.

The boys **work together** to pull the basket to test the **strength** of the string and knot. *"We are strong but not as strong as the log!"*

Finding & selecting materials our own materials... and re-using the new technique of **tying** to connect the string with the basket. The other end of the string is **wrapped** and **tied** around the big log.

Using the **body as a material to balance** on the logs.

Sorting, arranging & placing the stones into plastic containers. **Self-organising** play spaces with a clear purpose in mind.

Setting challenges & creatively solving problems: *"How can we get the string to stay on the log?"* *"The play-dough... and with squishy fingers."*

Image 53: The Natural Materials/Construction Atelier documentation poster

Activity Ten: Continuous Professional Development (CPD) for Educators and Artists

Key events from the activity:

- CPD session run with early year's educators and artists;
- Twelve participants (eight early years educators and four artists);

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- The session was facilitated by Claudia, Sarah and I;
- I identified the need to modify the GPC for different audiences, including teachers.

Since 2015, the Atelier team has been running CPD sessions for early childhood educators and artists. The aim of the CPD was to share the Atelier programme's philosophies and practices with educators and artists. Coincidently, one of these sessions was run at the end of my fieldwork in the Atelier. Claudia asked me if I would like to be involved in the session. In particular, she asked me to share the GPC and CPAR/Pedagogical Documentation process that had been developed throughout our research project. I was excited to do so as it meant I could discuss the ideas and share the resources with a new group of people.

The session was divided into two parts. The first section comprised of Sarah demonstrating previous Atelier setups, including sharing the documentation posters I had constructed from my fieldwork. The second section featured a hands-on activity where participants were able to use the GPC to develop Ateliers of their own in small groups (pictured in Image 54, page 158).

As part of introducing the GPC to the group, I showed them case study examples of Activities Six to Nine from Action Research Cycle One. I also discussed the use of artworks and how the artist's material practices can be used to curate children's material-based learning environments. I encouraged the educators and artists to walk around the Whitworth Art Gallery and use artworks from the collection as a starting point for thinking about how materials, concepts and mediating tools can be brought together in the GPC.

Personal Reflections

Overall, the GPC worked well in facilitating the educator's and artist's thinking surrounding the curation of children's material-based learning environments. For example, how they could connect material content, art concepts and 'mediating tools' such as art tools, extension materials, spatial arrangement and artistic techniques. A few of the educators commented that they liked the idea of the mediating and extension tools as these allowed children's to extend learning over time. I was impressed by how quickly the teachers picked up on the constructivist learning principles and were able to use the GPC. The documentation posters were very popular with the teachers as they provided concrete examples of what could be constructed using the GPC.

I loved how all the groups produced very different Ateliers activities using the GPC. For example, Table 19 (page 160) illustrates one group's Atelier design using the GPC. The Atelier aimed to explore the concept of *line* through the material of *string.* Image 54 (below) is an action shot of the

group selecting 'mediating tools' for their learning environment, including masking tape, pegs and ribbon. These tools were selected to scaffold children's learning between the material and concept.

Image 54: Teachers use the GPC during the CPD session

Following the session, one of the teachers commented that she would like further practical resources on how to bridge the content of Atelier activities with the Early Years Statutory Framework (DfE, 2018). Moving forward, I planned to construct a guide for early childhood educators that gave suggestions for making these curriculum links. Additionally, I made note that some of the language used in the GPC may be synonymous with words used in the EYLF. For example, the GPC uses the term 'practice' however the educators seemed to refer to this as 'provision.'

Image 55: Sarah works with a group of educators to curate a Thread/Line Atelier

As nearly all the early childhood teachers did not have a specialisation in art, some participants asked what possible art concepts could be. I made a note of the need to develop a specialised information resource for teachers that featured a list of possible art concepts such as line, colour mixing, pattern, space, line, colour mixing, coverage and form. These concepts were not intended to be used as a definition but as options for thinking about materials in experimental ways.

Research question (connecting content to concept): 'Exploring line through string'		
Artwork used as starting point for inquiry: Carl Plackman *Consumption* (1992). Mixed media. This artwork was used as a starting point for the group's inquiry.		
Ideas, points for experimentation, curiosities relating to the artwork: Artist alive 1943-2004. Every day objects as theatrical props. Blackboard, twine, wood, paint.		
Pre-planning notes	**Facilitating notes**	**Post-session notes**
Conceptual **Core concept:** Line in 3D form **Sub-concepts:** pattern, interconnection, straight lines, curve **Artistic techniques:** Wrapping, weaving, connecting and joining **Non-artistic skills we want to encourage:** Working together, teamwork, kinesthetic movement, fine motor skills, spatial awareness, respect, sharing, adaptability and flexibility in letting things emerge through making.		
Material, tools and equipment: **Core material:** String **Construction tools:** Tape, pegs **Construction equipment:** Upside down tables and poles as structures that the string can go around **Extension materials**: torches, thread, ribbons, beads, music making, hole punches, scissors.		
Spatial Layout: Artwork image printouts: Carl Plackman images (various) including 'Consumption' and 'The Immigrant.' Chloe Leaper's 'Slipping space spheres' (2013, pictured below).		
Social **Introducing research question:** how can we explore line through string? **Collaborative challenges:** Use large upside down tables that allow for groups of children to work together Open ended questions: What would happen if we cut the string? Can you **Vocabulary words:** Line, string, wrap, cover, tie, line, form, shape		

Table 19: The GPC completed by CPD participants

Activity Eleven: Research sharing session with parents

Key events from the activity:

- A drop-in sharing session with parents run throughout an Atelier session.

Image 56: A father looks at the Pedagogical Documentation posters

Following the conclusion of Action Research Cycle One's activities, Claudia asked me if I would like to organise a 'sharing session' for parents. The goal of the session was to present and invite feedback on the process of connecting the Atelier's practice with children's learning. I also developed a four-page parent resource on 'developing Atelier activities for children at home' (Appendix Four). I handed this resource out to parents on the day with most parents expressing that they were really happy to be given such a resource. As the session was quite casual, parents were able to ask questions about the documentation posters and the resource.

All parents seemed very interested in the Pedagogical Documentation posters that shared the recording and reflection of children's learning. Many parents were eager to ask questions about how they could support children's learning at home. I tried to use the posters to ask some of the children featured in the image about what they were doing in the photos. These reflective questions were not so successful as many children had forgotten what they were doing in the previous Atelier sessions. Overall, I felt the sharing session was helpful in opening up conservations surrounding the importance of supporting children's creative learning with parents.

Activity Eleven: Research sharing session with art museum staff

Key events from the activity:

- Action Research Cycle One's emergent findings shared with museum educators from the Whitworth, Manchester Museum, Manchester City Gallery and Tate Liverpool;

Activity Eleven aimed to share Action Research Cycle One's findings with other learning curators. 11 people attended the session. Six were from the Whitworth Art Gallery, three from the Manchester Museum, one staff member from Tate Liverpool and one from the Manchester City Gallery. I gave a one-hour presentation on the research, focusing on how Pedagogical Documentation was used to connect children's learning with the Atelier's practice. The session also featured a 20-minute group discussion where participants could ask questions and give feedback. These questions provided insights into the challenges other learning curators face when implementing Pedagogical Documentation in their programmes. The conservation centred around two key questions: the first was how parents could be further involved in the process. Secondly, another learning curator asked what the key points of CPAR/Pedagogical Documentation were and any suggestions I may have for applying them on a day-to-day basis in her museum programme.

Step Six: Analysing the Atelier's overall dynamics

An illustration of the Atelier-research activity system's overall dynamics can be seen in Figure 13 on page 163. Activities nine to eleven allowed for the analysis of the Atelier-Research system's overall dynamics including how the development of the GDP had facilitated change in the curation of the Atelier activities. While it was difficult to assess how lasting these changes to the practice were, they nevertheless allowed for an investigation into the relationships between the activity system's components.

Leading on from step six's analysis, the following changes were then made to the GPC, Pedagogical Documentation process, practice principles and information resources:

1. **The GPC** planning section curated the initial design of the Atelier environment. From this starting point, children were then able to make their learning more complex over time through experimenting with the different materials, tools, concepts and equipment.

TOOLS
- Pedagogical documentation
- the GPC
- Information Resources

All the activity that children, parents, curators, artists and the researcher engage in

The 'Atelier-Research' activity system's overall dynamics

The Atelier context: Internal and external bounds

SUBJECT
- Children
- Parents
- Learning curator
- Artists
- Researcher

OBJECT
- To better understand how children learn in the Atelier and;
- To develop a curatorial process that gives visibility to children's learning and the Atelier's practice

GOAL
To develop:
- A planning guide to support the Atelier's design;
- Reflection strategies;
- A set of pedagogical principles;
- Information resources.

RULES & REGULATIONS
- Conservation requirements
- Sociocultural rules
- Gallery visitor numbers
- Programme budget

COMMUNITY
Gallery community
Early childhood community
Families
Art community

ROLES
- Visitors
- Artist
- Curator
- Researcher

Figure 13: A model of the 'Atelier-Research' activity system's overall dynamics

As discoveries, curiosities and transformations emerged from the experimentation, Sarah and Alice were then able to respond to this through adding extension materials, vocabulary words, tools and asking open-ended questions, allowing children's learning to become more complex over time. The Atelier's physical, conceptual, emotional, social and material components were continuously transforming with and through one another, generating unexpected trajectories for children's learning and experimentation.

An additional modification made to the GPC was in relation to the use of artwork imagery. More specifically, the link between artist's exploration of materials and concepts was emphasised. Previous Atelier session had drawn on artworks as the starting point for curating the components of the GPC. For example, in the Natural Material/Construction Atelier, Anya Gallico's '*Ghost Tree'* was drawn on to consider how natural materials and arrangement could provide the pedagogical basis for children's learning in an Atelier session. However, other Atelier session had not drawn on artworks at all. For example, in the Cardboard and Fabric/Space Atelier, the materials of cardboard and fabric were instead used as the starting point for the activity instead of an artwork. As this research was focused on exploring the unique aesthetic experiences of art, I suggested to Alice, Sarah and Claudia that we have a further think about how artworks can be used in the curation of Atelier activities. For example, images of artworks could be used by children as a cognitive resource that opened up further experimental learning pathways.

2. **The CPAR/Pedagogical Documentation process** provided **a framework for facilitating enquiry amongst the team.** However, in Action Research Cycle One, I was concerned that the reflection of children's learning was mostly being done by me. Moving forward, this reflection drew my attention to **the necessity of having two post-**

session collaborative discussions. The first reflection could happen following the completion of the children's activity, such as during the pack-up, and the second a few days later. The second reflection would allow time for the team to think individually about children's learning before coming back as a team to discuss these thoughts as a group. Following the analysis of the 'Atelier-Research' activity system's overall dynamics, **the following points were identified as being an important part of the Pedagogical Documentation process:**

- Stating the name and position of the documenter on the record of children's learning;
- Including background context on each documenter such as their position and professional background;
- Stating the broader context on each piece of documentation including how many times the child has visited the gallery and who they are with;
- Considering the cognitive, emotional, social and embodied processes of learning when reflecting on the documentation. To focus solely on one of these elements is to paint an incomplete perspective of how learning is produced;
- Documentation posters or visual display of children's learning can include both the descriptions and interpretations of learning. Over time, these posters can construct an archive of 'case studies' that other practitioners can then refer to.

3. **Practice principles:** Analysis of step six drew attention towards how learning did not just occur in children's minds but arose from interactions with many different things including people, materials, the gallery space and values. This analysis suggests that both social relationships and material content were important in catalysing learning. Additionally, **the Atelier's social and material components were not in opposition to one another but rather considered to complement one another.** For example, children's social interactions with one another were supported through the material layout of the Atelier such as in the Paint/Construction Atelier where the large boxes provided the opportunity for groups of children to play with the paint together. Finally, the need to select materials, tools, concepts and equipment within young children's physical capacities was also an important consideration in the GPC's design. If content and concepts are too advanced for children, they may lose interest quickly or feel like a failure.

4. **Information resources:** Following step six's analysis, two new information resources were identified as needing development. The first was an **archive of related 'Atelier' case studies** that outlined the material, art concept, spatial arrangement, tools, collaborative challenges and social components used to construct children's constructivist learning environments in art museums. I also considered what information resources could be developed to support early

childhood educator's use of the GPC. Building on the CPD feedback from teachers, I made a note to develop a list of possible art concepts, a list of materials and samples of artwork images. Additionally, a typed-up and completed version of the GPC could also be used as an information resource for teachers. If the GPC were to be used by early childhood educators in the future, there may need to be an additional section added to the GPC where teachers could make curriculum links with the Early Years Statutory Framework (DfE, 2018).

Reflecting

Action Research Cycle One Reflections

Action Research Cycle One set out to investigate how children's learning could be connected with the Atelier's curatorial practice. Under the umbrella of this question, the research cycle additionally asked:

- What are the mediators that facilitate children's learning in the early years Atelier?
- How can Collaborative Participatory Action Research and Pedagogical Documentation be used as strategies to connect the Atelier's practice with children's learning?
- How can I develop resources (planning guide and practice principles) that facilitate the connection between children's learning and the Atelier team's practice?

Reconnaissance One enabled the construction of a conceptual framework that brought together the definitions of pedagogy, practice and learning with the design of constructivist learning environments, social constructivist learning theory and the literature on the built environment. After constructing the initial iteration of the Guide for Pedagogical Curation, Action Research Cycle One then operationalised and expanded the critical framework by undertaking a series of first-order action research activities in the Atelier programme. In this section, I engage in a second-order analysis to reflect on the cumulative activities in relation to the research focus of Action Research Cycle One.

Pedagogical Documentation can produce multiple perspectives on children's learning and art museum practices

The literature review for Reconnaissance One introduced Pedagogical Documentation as a form of action research that connects young children's learning with educator's practices (MacNaughton, 2005). Action Research Cycle One then practically applied and explored this reflection strategy in the Atelier programme. Step one of Jonassen and Rohrer-Murphy's (1999) analysis of the 'Atelier-Research' activity system explored the purpose of the collaboration. The purpose was identified as developing the Guide for

Pedagogical Curation alongside the reflection strategies, practice principles and information resources. An important part of the development of these resources was the need to produce different perspectives on children's learning and the Atelier practice. In different Atelier activities, the reflection on children's learning was executed both by myself individually and collectively as a team depending on staff availability. For example, at the beginning of Action Research Cycle One I was the sole producer and interpreter of children's learning. As the action research cycle progressed, Sarah, Claudia and Alice also participated in the process where possible including Activity Six: The Colour-Mixing/Acetate Atelier. The poster created from this Atelier session (Image 57, below) illustrates how the involvement of different team members in the reflection allowed for more complex interpretations of children's learning. These different perspectives could then be fed into future Atelier's activities. For example, Alice's reflection on how children use their body as a tool to explore materials was then fed into the design of the Paint Atelier. By creating the poster, the Atelier team's thinking could be made visible and put in a form that could be shared with other people, including other gallery staff and new parents visiting the Atelier for the first time.

Image 57: The Cellophane/Colour Layering Atelier documentation poster

Furthermore, the action team identified the differences in the gallery team's understandings of core terminology such as 'child-led,' 'pedagogical documenting,' 'scaffolding,' and 'Reggio-inspired' in the post-session group reflection sessions. While different understandings can catalyse activity in a community of learners (Mallory, 1994), these differences may also lead

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to confusion between people. For example, Sarah commented in the Activity One reflection that different people, including parents, have different interpretations on the meaning of 'child-led' practice. However, these differences in meanings may help to produce diverse perspectives on children's learning, as opposed to being perceived as a weakness in the practice. These multiple perspectives may also assist educations to explore subjective and intersubjective understandings of theory and practice (Rinaldi, 2001).

Research questions can be used as a strategy for connecting young children's learning with art museum practices

The analysis of step one identified the need for the 'Atelier-Research' activity system to be driven by a process of enquiry. To do so, research questions were introduced as a strategy to reflect on children's learning and the Atelier's practice. These research questions created pedagogical intentions for facilitating enquiry before, during and after each session. Questions included, 'how can construction be explored with natural materials?' and 'how can coverage be explored with paint?' While the research questions develop pedagogical intentions, they also allowed for unexpected events to occur in each session. Additionally, step two of the analysis suggested that learning curators play an active role in guiding individual and collective enquiry amongst an art museum learning team. This outcome indicates that learning curators can bring specialist knowledge on constructivist learning theory that supports both children's learning and the learning of other learning curators and artists.

While research questions were useful in constructing an enquiry-driven approach to the Atelier's practice, Grieshaber and Hatch (2003) also warn of the 'uncritical transfer of ideas' of the Reggio Emilia approach to new contexts. The action research team therefore needed to continuously reflect on how the records of children's learning were being used to facilitate further learning amongst the group, as opposed to being used to make conclusive statements about learning and practice. I reflected on how Pedagogical Documentation could be refined to support the team's learning. I identified three key ways that this could be done.

Firstly, the post-session discussions each week focused on similar topics including the need for both pedagogical structure and freedom in the design of the activities and the significance of open-ended materials in children's learning. Additionally, in Activities One, Two and Three I used the records of children's learning to evidence the 'child-led' philosophy of the Atelier. For example, in the Tape Atelier, the recording and interpretation of children's learning records described the session's practice as opposed to driving further enquiry amongst the team. Olsson (2009) argues that by doing this, educators risk retelling and nailing down what is already known about children and learning as opposed to opening up new ways of experimenting in education practices. However, in the Fabric and Cardboard/Space Atelier and the Paint/Coverage Atelier, the research

questions supported the 'Atelier-Research' team in using the records of children's learning to question the assumptions that shaped the practice and fuel new possibilities for future Atelier sessions. Moving forward, I aimed to explore how new strategies could be used to reflect on learning and practice in Action Research Cycle Two.

Secondly, the refinement of the Guide for Pedagogical Curation could also assist with using research questions to connect children's learning with art museum practice. In particular, the planning guide seemed too linear in its construction. For example, having the horizontal lines separating the material, conceptual, social and spatial components in the planning, facilitation and reflection sessions suggested that these stages of were separate and easily divided. However, it was clear from the team's discussions that knowledge produced before, during and after each session interconnected in unexpected and overlapping ways. As a result, I made modifications were to the GPC to support a more dynamic approach to the GPC. More specifically, the horizontal lines were removed from the GPC's 'facilitation' and 'post-session' sections.

Art museum practices are embedded in assumptions and ethical decision-making

The analysis of Action Research Cycle One explored the 'Atelier-Research' system's structures, mediating tools and dynamics. Reflections from each of these steps indicated that the Atelier activity was being underpinned by a complex system of ethical decision-making informed by the team's assumptions of what learning is. Education can then be understood as a political and ethical practice (Moss, Dahlberg & Pence, 2000).

In this enquiry, these assumptions shaped the practices being produced. They were also influenced by the internal and external bounds of the Atelier programme including the social, cultural and institutional constraints, as analysed in step five. For example, Alice, Sarah, Claudia and I all had unique understandings of key terms such as 'learning,' 'child-led' and 'pedagogy.' These different understandings and assumptions then shaped what we then individually recorded and reflected on in the records of children's learning. However, there seemed to be further scope for exploring these assumptions and ethical decisions in Action Research Cycle Two. Moving forward, I considered how I could develop new strategies for helping art museum teams investigate the assumptions and ethics that shape children's learning and art museum practices. For example, I planned to research new critically reflective strategies for deconstructing and giving visibility to the power structures and the language used to describe education practices.

Children's learning is mediated by social, emotional, cognitive and embodied processes

At the beginning of Action Research Cycle One, children's social relations and interactions with the physical space were the focus of the recording and reflection of children's learning. These were illustrated in the Tape Atelier poster (Image 58 on page 170). Analysis from each subsequent Atelier activity identified that focusing on social interactions and the physical spaces were falling short of acknowledging the additional emotional, cognitive and embodied processes that shape learning. As the action research cycle progressed, the analysis of children's learning records indicated that learning was being mediated by embodied learning, including touch, smell, taste and movement as well as cognitive concepts of space, construction and coverage. As a result, these embodied and cognitive learning processes became an increasingly important focus in the subsequent analysis of children's learning. Additionally, children's interactions with more specific non-human entities such as artworks, materials and art tools also gained stronger traction as the action research cycle progressed. Image 59 (page 170) illustrates a documentation poster produced from analysing a combination of children's social, emotional, cognitive and embodied learning processes. More specifically, the poster highlights how children's embodied learning through touch, taste and movement were analysed in the Paint/Coverage Atelier through their interactions with:

- Concepts such as coverage, texture and surface;
- Materials including paint and cardboard;
- Mediating tools such as the spatial arrangement, questions and tools.

This conceptualisation made for a rich analysis of how children were learning through interactions with different components in each Atelier activity. Moving forward, I planned to further investigate how children learnt through embodied processes in a new art museum context in Action Research Cycle Two. I also planned to do further research on how more-than-human entities such as the physical posters and physical data generation tools played a part in the CPAR/the Pedagogical Documentation process.

TAPE ATELIER

September 12, 2016

Playing hide & seek in the box

Making a spider out of the make-do materials. *"I know, let's look for a spider web outside."*

Discovering a spider web in the garden. Making links between the real and imaginary worlds.

Searching for more webs.. Found some!

Making a spider to go inside the web. *"What could we to make the spider's legs? "* *"Blue tape! I will find some."* Collaboratively problem solving.

Mum: *"To stick the tape to the floor we need to put our finger on it."* G: *"Mum I need your help. Where should we stick it?"*

"How did the shapes get on the wall?"

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"When they move here, they also move on the wall.."

Making the links between the projector materials & shadow on the wall.

Engaging in imaginary role-play. *"I think spiders like to eat food..."*

Reenacting experiences. *"Mummy, can you make it rain?"*

Making new relationships. *"Will shape play with us? Come in, we are having an adventure."*

O Finds her own box & plays with her Dad.

Image 58: The Tape Atelier documentation poster

PAINT ATELIER
Exploring <u>coverage</u> through <u>paint</u>
Oct 31, 2016

Exploring how **paint** can be used to **cover** different cardboard **surface textures**

Construction tools: paint rollers, stamps & brushes

Combining resources such as materials (**paint, card**), tools (**paint rollers, paintbrush, hands**) and techniques (**spreading, rolling, brushing**) in creative ways to cover the **surface** of the box. After one hour *'the brother trap'* is complete... a great display of **sustained concentration**!

The large boxes became a site for **collaborative exploration** between groups of children. How can we **cover** the box using the rollers?

"I made a rainy day." The paint changed consistency and texture on the new surface of the window. **Self documenting** the research process using the camera.

Experimenting with the paint's ability to **transform consistency** from thick to thin via adding water. *"It is sliding."*

© Louisa Penfold

Using the **body as a tool** for **spreading, stamping and mixing** the paint. The body also became a **surface** for material experimentation.

Exploring the **taste** of paint.

Image 59: The Paint/Coverage Atelier documentation poster

Material content and art concepts produce 'problem-spaces' for learning

Action Research Cycle One built on the outcomes of Reconnaissance One to construct a definition of learning as a dynamic and unpredictable process. From a constructivist learning perspective, learning is understood to become more complex over time as initial conceptions are challenged and expanded upon. To operationalise this definition, I designed the GPC so that each Atelier began with one 'core material.' These materials provided a starting point for the design of the learning environment. I conceptualised materials as both tangible substances such as clay, paint, natural materials and plastic and intangible substances such as sound. Examples of the core materials from Action Research Cycle One included natural materials, paint, clay, tape and acetate. The nine Atelier sessions of Action Research Cycle One identified and explored how materials could produce different ways for children to think and learn. This investigation added to the conceptual framework of Reconnaissance One that identified the physical environment as important components in an educational setting. However, in contrast to Reconnaissance One, Action Research Cycle undertook a more specific investigation of the role of materials in a physical environment.

Action Research Cycle One also built on Reconnaissance One's reflection that children's constructivist learning environments can focus on the unique pedagogical possibilities of art (Eisner, 1978). To investigate how this could be done, Alice, Sarah, Claudia and I selected an art concept to connect to the core material in Activities Four to Nine. These concepts were drawn on to create new ways for relationships to be formed between the artist's practices and children's learning. For example, the concepts of construction, colour mixing, arrangement and coverage were connected to materials such as paint, plastic, natural materials, clay and tape. These art concepts were not understood as static constructions but invitations to think about art practice, materials and children from new perspectives (Pacini-Ketchabaw et al., 2017). Concepts, and their meanings, were therefore contingent constructions and in a state of constant transformation. Deleuze (1995) conceptualises thought as a process that occurs when an individual's mind is confronted by an encounter with an unfamiliar or unknown force. This experience then forces the learner to think. As learners cannot have a fixed or secure foundation for knowledge, they are then encouraged to create, experiment and invent. Applying this idea to the Atelier, children's unfamiliar and unexpected interactions with concepts were important catalysts for encouraging different modes of experiment with the activity's materials.

As the research cycle progressed, the GPC was modified to identify specific connections between artworks, artist's material practices, artist's exploration of concepts and the curation of children's material-based learning environments. For example, the core materials and art concepts

selected for the activities took inspiration from artworks contained in the Whitworth's displays. These artworks provided dynamic starting points for combining the artist's material practices with the material and conceptual design of the Atelier activities.

Moving forward, a further literature review was needed to explore the role of materials in the curation of children's art museum constructivist learning environments. While materials have long been an important part of early childhood education and art practice, how they are positioned in relation to children's learning differs significantly across different education theories. Exploring the position of materials in art museum learning practices therefore became a central focus for the investigation plan for Action Research Cycle Two.

Mediating tools help to make learning more complex over time

Reconnaissance One analysed the components of constructivist learning environments that facilitate learning, including the significance of mediating tools that scaffold a learner's understanding to a more advanced level (Jonassen and Rohrer-Murphy, 1999). To operationalise this, mediating tools were introduced to the GPC to support the selection of a learning environment's components that scaffold learning through the Zone of Proximal Development (Vygotsky, 1978). Tools were defined as both physical and cognitive apparatuses that could be used to transform the learning process (Jonassen and Rohrer-Murphy, 1999). For example, physical tools could include a hammer or computer while a cognitive tool could include a diagram or information resource. Simultaneously, these mediating tools, including their social and cultural meanings, were understood to be produced and transformed through children's interactions with them (Jonassen & Rohrer-Murphy, 1999). In the research, these tools influenced how children learnt in the Atelier activities. As creativity is restricted by what a child knows and what they did not know, the introduction of mediating tools was significant in opening up opportunities for children's scaffolding of learning as well as the experimentation with materials and concepts over time. Examples of mediating tools in Activities Five to Nine included artistic techniques, art tools, vocabulary, images of artworks and open-ended questions.

The mediating tools selected in each Atelier session aimed to allow children to enter into the activity at their current level of understanding and then build on this through play with materials, concepts and mediating tools. For example, in the post-session reflection of the Cardboard and Fabric/Space Atelier, Alice commented that:

> *"…by starting off the session so simple with one material and one concept, then gradually adding tools, new cardboard and questions to the Atelier made it easier and more relaxed with the set-up. I think this also allows the children to all enter at the same level when they arrive, and then they decide, through their play and exploration, which way they*

take the materials and concepts."

If a mediating tool was being introduced via social interaction, the session facilitators, including myself, needed to firstly assess the children's current zone of proximal development. This was done through visual observation and asking questions to their parents and the children about the materials and concepts. Depending on how the child then experimented with the materials and concepts, further tools could then be introduced. Alice and Sarah hence played an important social role in facilitating children's learning.

At the conclusion of Action Research Cycle One, the mediating tools were divided into four key sections in the Guide for Pedagogical Curation. These included social, spatial, materials and conceptual sections as outlined below:

- *Socially-based mediating tools*. Building on Reconnaissance One's analysis of social constructivist learning theory, social relations were understood as an important mediator in children's learning. The important social role of artists and educators in scaffolding children's learning was then discussed in the overall reflections of Reconnaissance One. This was operationalised in the GPC by emphasising social interactions as a mediating tool that allowed children to participate in culturally organised activities with people of varied and higher skill levels (Rogoff, 1990, 1995, 2003). Scaffolding children's learning through socially-based mediating tools was explored in many ways. For example, the team demonstrated artistic skills through the process of guided participation. Other examples included asking open-ended questions, making a suggestion and talking about the meaning of an art concept. This scaffolding aimed to support and make children's learning more complex over time.

  Sarah and Alice were also able to support children's development of non-artistic skills such as teamwork and sharing through the introduction of socially-based mediating tools. For example, we introduced 'collaborative challenges' as a mediating tool in Activity Five as a way to encourage children to explore problems and concepts together.

  Direct instruction was also explored as a mediating tool in Activity Seven. This was interesting as traditionally, gallery education practices in the United Kingdom have stepped away from any form of instructional-based education practice. However, Action Research Cycle One's results indicate that depending on children's prior experiences, some children may need to be directly told how to perform an artistic technique or how to play gently with their peers in order to participate in the Atelier activities.

- *Spatially-based mediating tools:* Reconnaissance One explored the significance of the physical environment in education settings. Extending on this, the spatial arrangement of materials, artworks and mediating tools were explored in Action Research Cycle One. For example, the spatial layout of materials was considered for how these components

could scaffold children's learning between the material content and art concepts of each activity.

Additionally, the spatial arrangement in each activity was considered for how it encouraged different forms of sensory-based learning (Dudek, 1996, 2005, 2013). For example, in 'Activity Eight: Paint/Coverage Atelier,' the paint was arranged on the floor to encourage children to experiment the material using their bodies. We decided to do this, as opposed to presenting the paint as a table-based craft activity using paint brushes, as it allowed children to explore the material using all of their senses.

Additionally, in other Atelier activities, the materials were laid out to encourage the social interaction between groups of children and their families. For example, in the 'Paint/Coverage Atelier,' large cardboard boxes were situated in the space to encourage children to paint the boxes together.

The ability for the Atelier's spatial arrangement to transform over time was also recognised as an important consideration in the design of the activities. For example, in 'Activity Four: Cardboard/Space Atelier,' Sarah discussed how she chose to continuously re-arrange the cardboard to create new invitations to children throughout the day.

Finally, artworks were discussed as an important spatially-based mediating tool. While very few of the activities actually featured the physical artworks in the Atelier space due to conservation requirements, the imagery of artworks was incorporated into the design of Activities Five to Nine. For example, in 'Activity Nine: the Natural Materials/Arrangement Atelier' print-outs of Andy Goldsworthy's art were stuck across the Atelier space.

- *Material-based mediating tool:* The materials in each Atelier activity also transformed as children played with them. These transformations then created new opportunities for children's learning to be scaffolded. They also created new starting points for further experimentation. For example, in 'Activity Six: The Acetate/Colour-mixing Atelier,' Child K transformed the yellow acetate by spraying water on it. As the acetate crumpled and dripped its colour, the change in the material's properties created a new starting point for further experimentation.

- *Art tool mediating tools:* Art tools were identified as an important mediating tool in the GPC. While the artists were using tools in their Atelier's content prior to the research project, the development of the GPC allowed for a deeper consideration of what tools were being selected and how these could be used to scaffold links between material content and art concepts. Examples of tools used in the Atelier activities included paint brushes, rollers, hammers and scissors as well as children's physical bodies.

The results of Action Research Cycle One suggested that materials and the spatial arrangement of gallery spaces played an important role in mediating children's learning and the art museum team's practice. Moving

forward, I considered how an emphasis on material content, art concepts and mediating tools could be investigated in a new art museum context. To explore these outcomes further, an additional literature review was needed that analysed the relationship between children's learning, materials and art.

Case studies of children's constructivist learning environments can support the production of future art museum practices

In Action Research Cycle One, case studies of the various Atelier activities were used to construct an archive that the team could refer back to when developing subsequent activities. These case studies also made visible the Atelier team's thinking surrounding each activity. While case studies have been identified as an important part in the design of constructivist learning environments (Jonassen & Rohrer-Murphy, 1999), Action Research Cycle One specifically looked at how these could be used to create relateable examples for the Atelier team to reflect on when developing new activities. Moving forward, I planned to produce and share additional case studies in Action Research Cycle Two.

Changes

Action Research Cycle One's reflections produced a provisional iteration of the Guide for Pedagogical Curation as well as modifications to the Critical Participatory Action Research/Pedagogical Documentation process, practice principles and information resources. These are presented in Appendix Five on pages 284. The resources were shared with the Early Years & Family team at Tate in February 2017 to commence Action Research Cycle Two.

Chapter Five: Reconnaissance Two

Planning

My search for a critical theory that brought together education, materials and artistic practice led me to New Materialism. New Materialism can be understood as an interdisciplinary mode of social, cultural and political enquiry that has emerged over the past 20 years (Fox & Alldred, 2015; MacLure, 2015) across a myriad of fields including quantum physics (Barad, 2001, 2003, 2007, 2014), actor-network theory (Latour, 2005), critical cultural theory (Bennett, 2010; Coole & Frost, 2010; Van der Tuin, 2011) post-humanism (Braidotti, 1994, 2013; Murris, 2016) and art practice (Barrett & Bolt, 2013; Hickey-Moody & Page, 2016; Hickey-Moody, Palmer, & Sayers, 2016). My intention in investigating New Materialism was to identify how a New Materialist framework could extend, support and modify the development of the GPC, practice principles, CPAR/Pedagogical Documentation process and information resources generated from Action Research Cycle One.

In this chapter, I set out to further explore 'how can children's learning be connected to art museum's curatorial practices from a New Materialist perspective?' To align with this particular focus, Reconnaissance Two's sub-questions were refined to:

- What are the mediators that facilitate children's learning in art museums from a New Materialist perspective?
- How can Collaborative Participatory Action Research and Pedagogical Documentation be used to connect art museum practices with children's learning from a New Materialist perspective?
- How can I further develop resources (practice principles, strategies and planning tools) for reflecting on children's learning and art museum practices from a New Materialist perspective?

In this Reconnaissance, I engaged in a second-order action research analysis to investigate the relationship between New Materialism and the research focus.

Acting

New Materialism literature review

New Materialism in education research and practice

New Materialism has been explored across various areas of education research and practice including children's relationship with place (Hackett,

2015; Ritchie, 2013; Taylor, 2013; Taylor & Giugni, 2012), human-nature relations (Blaise et al., 2013; Malone, 2017; Malone & Tranter, 2003; Ritchie, 2013), literacy (Hackett & Somerville, 2017; Somerville, 2015), Pedagogical Documentation (Lenz-Taguchi, 2009 & 2011b), post-qualitative research methods (Koro-Ljungberg, 2013 & 2015; Koro-Ljungberg & MacLure, 2013; Ulmer & Koro-Ljungberg, 2014) and museum education (Hackett et al., 2018; Macrae, 2007; MacRae, Hackett et al. 2017).

In this enquiry, the framework draws attention to the relationships between all living things and the material environment (Lenz-Taguchi, 2009). Physical things such as materials and objects can be understood as vibrant and participatory forces that actively work to produce power and change (Dahlberg & Moss, 2010). Agency, therefore, does not just exist solely in people but is generated through the coming together, and mutual transformation, of human and non-human forces - a process that has been described as 'intra-action' (Barad, 2003, 2007). Intra-actions acknowledge the direct engagement between people and the world in which both meaning and matter are mutually entangled and inextricably bound. As people and matter intra-act, they produce unpredictable transformations with and through one another. This assumption of New Materialism has been discussed for its ability to challenge the ontological assumptions of constructivism and post-structuralism that position discourse and language as central to knowledge production (Alaimo & Hekman, 2008). New Materialism recognises that phenomena are produced by 'a multitude of interlocking systems' (Coole & Frost, 2010, p. 9). From this perspective, children's learning can be understood to be produced across multiple time frames, events and entities.

New Materialism and art practice

A recent 'materialist turn' in contemporary art has emphasised material's aesthetic, multisensory and agentic abilities in the production of knowledge (Barrett & Bolt, 2013; Boivin, 2010; Ingold, 2011, 2013; Robertson & Roy, 2017), providing a novel theoretical perspective on the relationship between materials, makers, ideas and audiences. New Materialism in contemporary art practice challenges the idea that artworks are a representation of social and cultural discourse (Barrett & Bolt, 2013). Instead, the artistic practice can be understood as *"not the kind of thinking where one finds answers to questions, but rather where one contemplates and experiences situations, themes or feeling complexes"* (Boutet, 2013). In relation to this enquiry's focus, the coming together of the New Materialist approach to education and art practice provided an innovative starting point for investigating the relationship between children's learning with materials and art museum's learning practices.

However, the attentive relationship between artists and materials is not a new concept in art education (Garber, 2019). The study of material culture over the past few decades has investigated the applications and meanings of human-made physical objects, artefacts and craft (Bolin & Blandy, 2003). A New Materialist perspective on material culture in contemporary art practice draws attention to material's active role in the formation of knowledge. This is in contrast to previous discourse on material culture and art that has articulated artists' creations with materials as 'expressions' of their inner worlds (Bolin & Blandy, 2003). New Materialism sheds new light on artists' relationship with materials and how these entities transform through one another.

New Materialism and children's learning with materials

While materials have long held a significant place in early childhood learning (Pacini-Ketchabaw et al., 2017), how they have positioned in relation to children's learning varies dramatically across different education theories. Froebel observed children's play with materials as having immense creative possibilities, provided the materials themselves were not used in static and fixed ways (Bruce, 2012). Piaget's (1952, 1964) developmental approach to education then explored children's manipulation of physical objects through linear stages of cognitive development. While developmentalism acknowledged the active role children have in learning, Piaget also believed that a child's biological development preceded the human thought processes required to explore objects. Developmentalism assumes that biological and cognitive development occur as independent precursors to children's interactions with materials, producing a chronological division between mind, body and matter. Beyond Piaget, children's self-expression through art materials has been a lively topic in early childhood education (Gandini et al., 2015; Vecchi & Giudici, 2004). This perspective on children's learning has explored the critical role of emotions and subjectivity in art making. However, an 'art as expression' conceptualisation of creative learning situates artworks as representations or reflections of children's pre-existing inner worlds. This perspective implicitly suggests that human thought and meaning is produced before a child's encounter with a material. The matter is then reduced to a passive substance that human meaning is projected onto.

Extending off these education theories, a New Materialist approach to education repositions materials as active forces in children's learning. From this perspective, materials are not just a passive substance for children's manipulation or self-expression but active and participatory entities that work in dialogue with people to mutually transform one another (Barad, 2003 & 2007; Bennett, 2010; Braidotti, 2013). A New Materialist approach to education suggests that as children play with materials, they are

learning with and through the world, not merely about it (Hultman & Lenz-Taguchi, 2010). This suggests that different materials invite different learning processes in children (Lenz-Taguchi, 2009; Lenz Taguchi, 2011a; Odegard, 2012; Pacini-Ketchabaw et al., 2017).

As children play with materials, they are learning about the properties of the material, such as how they can be rolled, stacked or moved. At the same time, the material's unique physical attributes also make suggestions that actively influence children's thought processes. For example, a child's play with plastic cylinders may open up learning around construction, arrangement, balancing and stacking. Alternatively, play with large paper sheets may invite thought processes that explore concepts such as movement, gravity, weight and measurement. A material's properties may additionally transform as a child plays with it. These transformations then generate new possibilities for further experimentation and learning. Materials can, therefore, produce rich opportunities for children's cognitive, social, emotional, aesthetic and embodied learning.

In relation to this research's focus, a New Materialist approach to children's art museum practices drew attention to the role of materials, artworks and the physical environment in children's learning and art museum pedagogy. In relation to the CPAR/Pedagogical Documentation process, it also drew attention to the role of the recording tools, visual imagery and the physical display of documentation posters. Instead of artworks, space and documentation being representations of human thought, these materials were understood as active participants in the formation of knowledge in art museums.

Reflecting

Reconnaissance Two Reflections

New Materialism and Cultural Historical Activity Theory

Reconnaissance One explored the shared epistemological and ontological assumptions between activity theory and constructivist learning theory. In both of these frameworks, the unit of analysis is grounded in action that is mediated by humans, artefacts and specific socio-cultural contexts (Jonassen & Rohrer-Murphy, 1999). Activity systems are goal-orientated, transformative with other activity systems (Engeström, 2001).

Activity theory and constructivism's principles produce both congruencies and differences with New Materialism. Firstly, from a New Materialist perspective, an activity system's activity is not solely produced from human-mediated activity but 'intra-active' encounters between a system's human and non-human components, including the physical environment

and materials. This shifts the unit of analysis from human-mediated action to the transformative interactions between people and non-human components in an activity system. Secondly, a congruency between New Materialism and activity theory can be seen in the shared assumption that activity is produced by multiple forces coming together in dynamic ways. However, a New Materialist approach departs from Engestrom's (2001) third generation of activity theory to suggest that an activity system does not necessarily move towards one singular goal but can rather take many different trajectories.

New Materialism and Critical Participatory Action Research

New Materialism also offered two key considerations in relation to action research. Firstly, that action does not just occur between people in a community of practice (Wenger, 1998) but across non-human things such as physical spaces and materials. Secondly, the New Materialist framework re-emphasised the embedded position of the researcher in educational enquiry. This is to say that a researcher is themselves part of the phenomena that they are investigating and transforming. In Action Research Cycle Two, I set out to further investigate these considerations in art museum learning practices.

New Materialism and Pedagogical Documentation

In Reconnaissance One, I discussed Pedagogical Documentation as a process that supports educators in exploring dominant discourses that shape early childhood practices (MacNaughton, 2005; Pacini-Ketchabaw et al., 2014). A New Materialist approach to Pedagogical Documentation builds on MacNaughton's (2005) post-structuralist framework to both critically reflect on the power structures that shape education practices while also encouraging new trajectories for learning practices (Davies, 2018). However, unlike post-structuralism, New Materialism values creative experimentation in education research and practices over critique while simultaneously never jumping:

> "...clear of its entanglement in the structures and processes that are also its targets, but nevertheless has the potential to open up possibilities for movement and change" (MacLure, 2015, pp. 2-3).

From this perspective, New Materialism draws attention to the role of the physical recording tools, such as cameras, notebooks and pens and how these shapes what children's learning can and cannot be recorded (Lenz-Taguchi, 2009). Finally, New Materialism drew attention towards the specific pieces of documentation that were selected for the art museum team's collaborative and critical reflection. Instead of approaching these records that the art museum team selected, New Materialism considered

how the documentation made 'themselves intelligible to us' (Murris, 2017, p. 66). This New Materialist perspective offered a new perspective for investigating the CPAR/Pedagogical Documentation process in Action Research Cycle Two.

Furthermore, a New Materialist approach to art education emphasises the interactions not only between children and materials but also between materials themselves (Garber, 2019 & Hekman, 2010). In relation to the documentation of learning, the interactions between non-human things such as objects, materials and spaces could also be recorded and reflected on in the Critical Participatory Action Research process. However, focusing solely on non-human components of a learning environment could also raise ethical issues around children's rights and their involvement in the production of education practices.

New Materialism and generating visual data

The introduction of New Materialism to the research focus allowed for a new perspective on how visual data is produced and analysed in the enquiry. Firstly, the New Materialist approach to connecting children's learning with art museum practices drew attention to the active role of the physical recording tools in recording and reflection of learning (Lenz-Taguchi, 2008, 2009 & 2011b). This is to say that particular recording tools, such as cameras, pens and notebooks all can document some modes of learning and not others. These physical tools and material artefacts of learning were significant in what learning could and could not be recorded. These restrictions then shaped how future practices and learning could be produced through Pedagogical Documentation. Moving forward, I made note that future research may critically engage in the different recording tools specific limitations and possibilities in linking children's learning with art museum practices. Furthermore, a New Materialist perspective on Pedagogical Documentation drew attention to the role of physical images and videos in the reflective process and how these also 'talk back' to the art museum team to spark curiosity.

New Materialism and analysing visual data

New Materialism's introduction to the research problematised *"the humanistic notion of the child and learner as an autonomous subject, independent and detached from its environment"* (Hultman & Lenz-Taguchi, 2009). While the role of the built environment was an important consideration throughout the enquiry, as first highlighted in Reconnaissance One, New Materialism brought attention to the role of materials, artworks and physical gallery spaces in a more specific way. In relation to the analysis of visual data in this enquiry, New Materialism gave a new starting point for critically reflecting on learning activities from a

perspective that gives equal weight to children and more-than-human entities such as materials, artworks and the built environment.

Changes

New strategies for connecting young children's learning with art museum practices

Strategy one: Reading texts through one another (rhizoanalysis)

To explore the New Materialist approach to young children's learning and art museum practices in Action Research Cycle Two, I drew on two new practical strategies: rhizoanalysis and mapping meanings. While both of these processes have been used in post-structuralist early childhood research (MacNaughton, 2005; Pacini-Ketchabaw et al., 2014), I aimed to further experiment with these tactics to bring them together with New Materialist thinking. Both of these strategies have been taken from Glenda MacNaughton's book *'Doing Foucault in Early Childhood Studies'* (2005). My aim in using these strategies was to produce new critical reflection processes for the art museum teams to connect children's learning with their practice.

Rhizoanalysis extends on Deleuze & Guattari's (1987) concept of the rhizome, a metaphor for how meanings and knowledge are produced through non-hierarchical offshoots, expansions and pathways. The rhizome has no pre-defined structures and can be entered at any point. In line with this metaphor, rhizomatic thinking challenges cause and effect logic to construct new possibilities for thinking (Cunningham, 2014, p.137). In critical theory, rhizoanalysis can occur when different texts are read through one another, producing alternate understandings through linking discourses, meanings and materials in new ways (Pacini-Ketchabaw et al., 2014). Such texts may be language-based (field notes, meeting transcripts), visual (photos, videos) and object-based (artworks). Rhizoanalysis in Pedagogical Documentation may encourage new ways for educators to record, document and evaluate children's learning while simultaneously allowing educators to deconstruct the politics, ethics and assumptions that shape practices. MacNaughton (2005, p. 120) explains:

> *"Rhizoanalysis deconstructs a text (e.g. a research moment or a child observation) by exploring how it means; how it connects to things 'outside' of it, such as its author, its reader and its literary and non-literary contexts (Grosz, 1990); and by exploring how it organises meanings and power through offshoots, overlaps, conquests and expansions (Deleuze & Guattari, 1987). Rhizoanalysis reconstructs a text by creating new and different understandings of*

it, and it does so by linking it with texts other than those we would normally use."

This quote suggests that rhizoanalysis may open up alternate 'readings' of educator's work of observing, documenting and analysing children's learning. An example of this could be a piece of video footage of a child's encounter with an artwork that could be 'read' through a quote from an academic journal article. The video footage could then be re-read at a later date through a developmental psychology text to produce different trajectories for thinking and art museum programming. By reading the text through one another, educators may then generate new combinations for thinking about children's learning practices. These combinations may bring together new mixtures of theories, children's learning records, artworks and practices. Rhizoanalysis may then have the ability to then encourage an experimental and New Materialist approach to consider how people, texts, language and theory can come together to construct new creative possibilities for education practice.

MacNaughton (2005) states that exploring post-structuralist strategies, such as rhizoanalysis, can be shocking and unsettling as a result of their ability to bring to light power structures. In this research, I aimed to draw on rhizoanalysis to explore and produce new ways for the art museum team and I to think about the production of children's art museum practices as well as how these may expand beyond the constraints of existing structures to produce new educational practice. My aim in exploring rhizoanalysis through Pedagogical Documentation so was to generate new ways of creatively experimenting with ideas and practices on children's learning, New Materialism and curating in art museums.

Strategy two: Mapping meanings

In addition to rhizoanalysis, a second strategy of 'mapping meanings' was also drawn on to experiment with how children's learning could be reflected on in art museum practices. This particular tactic focused on deconstructing the art museum team's language used to describe their practice (MacNaughton, 2005). According to Dahlberg, Moss & Pence (2013), the language practitioners use constructs conventions and discourses towards children. Language can therefore play a part in shaping and directing attention and understandings of the world.

MacNaughton describes mapping meaning's purpose as being to explore the beliefs, assumptions and meanings that shape language. Mapping meanings connects to Derrida's (1997) strategies of binary analysis, erasure and metaphor to draw attention to 'the other' in educational practices. My intention in exploring the mapping of meanings was to investigate how discourse surrounding children's learning shaped art museum practices. This strategy aimed to support the art museum team's thinking surrounding language so that the meaning of language is not

understood as being singular or fixed but rather provisional, subjective, contextualised and interconnected with other meanings.

Summary

In Chapter Five I have analysed New Materialist critical theory in relation to activity theory, action research, Pedagogical Documentation and the use of visual data in the enquiry. By doing so, I have highlighted the contribution New Materialism makes to the research focus. This chapter has also introduced and analysed two new reflection strategies: rhizoanalysis and mapping meanings as tactics for exploring connections between children's learning and art museum practices in Action Research Cycle Two.

Chapter Six: Action Research Cycle Two (Under Fives explore the Gallery at Tate)

Action Research Cycle Two overview

This chapter reports on Action Research Cycle Two's activities that were run in partnership with the Early Years and Family team at Tate London. This research cycle brought together the outcomes of Action Research Cycle One with the New Materialist framework explored in Reconnaissance Two. Together, this allowed for the investigation of how the GPC, CPAR/Pedagogical Documentation process, practice principles and information resources could be further developed in a new practice context.

To assist in applying the New Materialist framework to the research focus, I introduced the concept of 'intra-action' (Barad, 2003, 2007) to the over-arching research question. This was done to highlight the mutual transformations that were occurring between children's learning and the curatorial practice in the research. As a result, Action Research Cycle Two's central research question was modified to "how can children's learning intra-act with Tate's curatorial practices?' Under the umbrella of this question, the research cycle also investigated:

- What are the mediators that facilitate children's learning in the Early Years and Family programme at Tate from a New Materialist perspective?
- How can Collaborative Participatory Action Research and Pedagogical Documentation be used as strategies to connect Tate's learning practices with children's learning from a New Materialist perspective?
- How can I further develop resources (the practice principles, strategies and planning guide) for reflecting on children's learning and art museum practices from a New Materialist perspective?

This section begins with a description of Tate's Learning programme, including how the collaboration between the Early Years and Family team and came about. I then outline the four activities undertaken as part of the Under Fives explore the Gallery programme and describe how the Guide for Pedagogical Curation, practice principles, Pedagogical Documentation process and information resources were further developed throughout these. Similar to Action Research Cycle One, I draw on Jonassen and Rohrer-Murphy's (1999) six-step framework for using activity theory to analyse the first-order action research cycle activities and the running of the practice. Particular consideration was given to how these analytical steps assisted in investigating how Action Research Cycle One's outcomes worked in the new practice context.

Planning

Tate Gallery

Tate Gallery was originally founded as the National Gallery of British Art in 1897 (Tate, 2019a). Renamed in 1932 after Henry Tate, a British sugar entrepreneur, the art museum is currently one of the most renowned international modern and contemporary art museums. Tate is currently comprised of four sites: Tate Modern, Tate Britain, Tate Liverpool and Tate St Ives. Across these locations, the Gallery hosts approximately seven million visitors per year (Cutler, 2019). Tate's institution-wide mission is to promote public understanding and enjoyment of British, modern and contemporary art by championing art and its value in society. The Gallery's vision is shaped by nine priorities including supporting art and artists, welcoming diverse audiences, inspiring learning and research, promoting digital growth and engagement as well as developing partnerships, people and culture (Tate, 2019b).

The Tate Learning Programme

Tate's Learning consists of various specialist teams including the young people's programmes, schools and teachers, interpretation, public programmes, digital learning and the early years and families' team. In line with the museum's broader priorities, the vision of Tate Learning is based on democratic and inclusive values that:

> *"…generate new ways of learning with art, and specifically with Tate's collection, reach a wider audience and promote positive change, dialogue and engagement in contemporary cultural and artistic life"* (Cutler, 2019).

Tate Learning's programming approach is modelled on a 'one third' rule in that one-third of the programme is based around the art museum's collection, one third on temporary exhibitions and a third on broader arts-learning agendas in the public realm. Tate's learning programme also aims to support learning through the audience's engagement with contemporary artists. Tate's practice can be connected with the 'New Institutionalism' of art museums that moves away from a sole focus on teaching information on artworks and towards experimental ways of producing and presenting gallery activities. Staff from the learning team work collaboratively with practising artists and other curators to build an understanding that:

> *"…art is a powerful catalyst for creativity, critical thinking, emotional reflection and social connectivity. It is vital to the growth of our children and is core to innovation and the creative economy."* (Cutler, 2019).

Personalised and co-constructive ways of working with the public are emphasised, shifting away from the art museum from being a private holder of knowledge to an open resource for civic debate.

Since 2011, the curating of Tate's learning programme has been based on an enquiry-driven and reflective pedagogical approach. Termed 'Transforming Tate Learning,' this approach functions in a similar way to action research and by constructing five key stages including identifying the values and conditions for learning, applying these to the programme, implementing evaluative mechanisms, analysing the practice and feeding these findings into future activities. By engaging in this reflective process, the Tate Learning team builds new modes of practices. Tate's pre-existing enquiry-driven practices provided a congruency with the enquiry-driven Collaborative Participatory Action Research methodology used in this research.

The Early Year's and Family 'Under Fives explore the Gallery' programme at Tate Britain

Prior to commencing Action Research Cycle One's fieldwork, I met with the Early Years and Family team 13 times between June 2015 and May 2017 to discuss the collaborative research project. During these discussions, a joint interest in the research focus was formed. These meetings also allowed me to learn about how the Early Years and Family team were exploring Tate's 'research-led practice' in their day to day activities (Pringle & DeWitt, 2014). For example, the team had been setting open-ended research questions at the start of each year to guide their collective enquiry throughout different activities.

Following Action Research Cycle One, I shared my emergent results (as illustrated in Appendix Five on page 284) with the Tate Early Years and Family team in March 2017. I then met with the Programme Convenor and Curator to get their insights on the results and discuss how these could be explored further in the 'Under Fives explore the Gallery' activities. The Convenor and Curator explained that they were hoping to develop a series of gallery activities that aimed to support family confidence and engagement at Tate Britain. The team were also planning to co-curate and facilitate each activity with a practising artist. This conversation allowed me to consider how the art museum's pre-existing early year's practice could be brought together with the research focus to construct the 'Tate-research' activity system.

Six key participants were involved in Action Research Cycle Two's fieldwork. These included the Early Years and Family Programme Convenor named Lauren; the Learning Curator, Anna; the Assistant Curator, Kate;

the Learning Assistant, Claire and the practising artist named Leila.[4] All team members played an active role in planning, facilitating and reflecting of the 'Under-fives Explore the Gallery' sessions.

Data generation overview

The 'action' of the first-order action research activities was carried out over a 15-week timeframe between May and August 2017. The enquiry consisted of two pre-planning meetings, four facilitation sessions at Tate Britain, four post-session discussions immediately following the gallery activities and four post-session critical discussions four to five days after each gallery activity. The latter was a new step introduced in the CPAR/Pedagogical Documentation process. The intention of doing this was to allow time for the team to deepen their thinking and discussion around children's learning and art museum practices. Similar to Action Research Cycle One, Pedagogical Documentation was used to evaluate each gallery activity session and to support the action research team's thinking before, during and after each session. A final meeting with the Head of Learning Practice and Research at Tate was additionally held to discuss the research cycle's overall results. These events are illustrated in Table 20 on page 189.

Data produced from Action Research Cycle Two's activity consisted of records including photos, video footage, field notes, meeting transcripts as well as interviews with gallery staff and the artist. A total of 16 observations of 16 different children were generated and used to drive the team's reflections on connecting young children's learning with the Under Fives explore the Gallery practice. The length of time of each observation ranged from 10 minutes to 2 hours. From each session's planning, facilitation and post-session reflections, new practice trajectories were then produced.

The Early Years and Family Team's feedback on Action Research Cycle One's outcomes

Prior to commencing the fieldwork of Action Research Two, I met with the Kate (the Curator) and Anna (the Assistant Curator) to discuss the GPC,

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[4] Not learning curators and artist's real names

Date	Event	Description
Action Research Cycle 2 'Planning and Reconnaissance'		
September 2014	Skype with EY&F Convener	Focus of research project, timing of programmes
July 2015	Skype with EY&F Convener	Focus of research project, timing of programmes
November 2015	Observation of BP Family Event at Tate Britain	Gain a deeper understanding of Tate's wider offering for children and families, discuss collaboration on PhD research
November 2015	Face to face meeting with EY&F Convener at Tate Britain	Research focus, 2016/2017 EY&F programme
June 2016	Involvement in 'Assembly' schools event at Tate Modern	Gain a deeper understanding of Tate's wider offering for schools and teachers
June 2016	Involvement in the EY&F 'Generators' event at Tate Modern	Gain a deeper understanding of Tate's wider offering for children and families
July 2016	Face to face meeting with EY&F Convener, curator and assistant curators at Tate Modern	Discuss COS paper (literature review and proposed research methodology for project). Discussion of 2016/2017 EY&F programme.
October 2016	Face to face discussion with EY&F Curator and two EY&F Assistant Curators at Tate Modern	Discuss emergent findings from action research cycle one
November 2016	Skype with EY&F Curator	Discuss development of Under 5's in the gallery programme
March 22, 2017	Face to face meeting with EY&F Convener and Curator at Tate Modern	Discuss development of Under 5's in the gallery programme
April 1, 2017	Observation of 'Under-Fives explore the gallery' event at Tate Britain	Observation of the 2 hour programme facilitated by the artist. 10 children plus parents in attendance.
Action Research Cycle 2 'Activity'		
May 10, 2017	Face to face meeting with Head of Learning Practice & Research, EY&F curator & convener. 3.00pm-4.00pm	My role, learning curator's role and artist's role in the project.
May 24, 2017	Face to face meeting with EY&F Curator and Assistant Curator at Tate	Staff gave feedback and we had a general discussion around the findings document I sent through in March.
June 3, 2017	Activity one: Under-Fives explore the Gallery session: 'Experiments in line'	2 hour session + 1 hour post-session discussion (Artist, learning assistant, learning curator and researcher)
June 8, 2017	Session 1 Skype reflection	45-minute post-session meeting to discuss pedagogical documentation (Artist, learning curator and researcher)
June 24, 2017	Under-Fives explore the Gallery session 2: 'Experiments in shape.'	2-hour session + 1 hour post-session discussion (Artist, learning assistant and researcher)
June 30, 2017	Session 2 Skype reflection	60-minute post-session meeting to discuss pedagogical documentation (Artist, learning assistant, learning curator and researcher)
July 1, 2017	Under-Fives explore the Gallery session 3: 'Experiments in texture.'	2-hour session + 1 hour post-session discussion (Artist, learning assistant and researcher)
July 6, 2017	Session 3 Skype reflection	60-minute post-session meeting to discuss pedagogical documentation (Artist, learning curator and researcher)
August 5, 2017	Under-Fives explore the Gallery session 4: 'Experiments in colour.'	2-hour session + 1 hour post-session discussion (Artist, learning assistant and researcher)
August 10, 2017	Session 4 Skype reflection	60-minute post-session meeting to discuss pedagogical documentation (Artist and researcher)
August 13, 2017	Meeting with EY&F Curator at Tate Britain.	Put up the display of documentation in the learning office (Learning curator and researcher)
August 20, 2017	Meeting with Head of Learning Research/Practice and Research documentation	Discuss emergent results and final.

Table 20: Key events from Action Research Cycle Two

CPAR/Pedagogical Documentation process and information resources produced from Action Research Cycle One. This conversation was important as it allowed for further modifications and changes to be made

to the critical framework before commencing the activity at Tate. Key points from the discussion included:

- **The team currently uses research questions on a general level but not for individual activities.** The strategies of rhizoanalysis and mapping meanings therefore seemed like a stronger fit for critically reflecting on the Early Years and Family team's practice instead of using research questions.

- A key outcome from Action Research Cycle One was that art museum learning practices are embedded in a system of assumptions. Kate commented that different parents, carers and grandparents who visit Tate bring different ideas on what children can do in the gallery activities. Both Kate and Anna agreed with this outcome, stating that considering **the assumptions that shape people's ideas of children in society, as opposed to just within a gallery context,** is also an important consideration of the Early Years and Family programme.

- The Early Years and Family team **emphasised intergenerational engagement and family relationships as opposed to just children's learning.** As a result, it is important to consider how interactions between children and adults were facilitated.

- **The Early Years and Family team use the terms 'gallery space' and 'experiences' as opposed to 'learning environment.**' Kate commented:

  > *"…for me, I associate certain connotations with 'the environment.' For example, I very much think about a physical studio that is set up in a physical place. But in this programme, the space is always changing and the environment is the gallery and the gallery is a social and historical space."*

  I found this an interesting insight as I had been considering the term 'environment' to refer to a physical space but also the social, material, emotional and cognitive environment. I noted that it could be interesting to further reflect on the difference between an environment and an experience in the research cycle in the 'mapping meanings' reflection strategy.

- A commonality between Action Research Cycle One's outcomes and the existing Early Years and Family programme is **the understanding that art museums are a space for the negotiation, debate and exchange of ideas.**

- **Teaching skills and techniques:** Teaching learning strategies, such as critical thinking and problem solving is often more important than exploring an artistic technique itself. Artists' expertise lay in how they play with ideas and how this way of thinking can open up conversations between families about art.

- **Artists model creative learning behaviours that parents can then replicate.** This point is an important part of the Under Fives explore the Galleries activity however, this is not something that was discussed in the outcomes of Action Research Cycle One.

- **The Early Years and Family programme do not currently focus on children's explorations of material content and art concepts, however,** Anna mentioned that this is something they were open to exploring further in the activities run as part of the research process.
- **Guided participation, participatory appropriation and apprenticeship** are not currently talked about in the programme. However, the team was interested in exploring these tactics further in the fieldwork. In particular how they could be used as strategies to involve parents and carers in the gallery activities.
- **The evaluation of learning.** As the 'Under Fives explore the Galleries' was funded by the team's core budget, only visitor figures needed to be reported on to the management team. Anna commented that it could be interesting to explore how Pedagogical Documentation could also be used as an advocacy tool for children's learning alongside the visitor statistics. She remarked that:

> *"I think that sometimes, people underestimate what we are doing and we are trying to improve that. The Directors are always talking about how important families are to the organisation but they never give us more budget. Perhaps this research will help to give visibility to our work."*

These points of discussion provided insights into how the outcomes of Action Research Cycle One could be further extended on and modified in Action Research Cycle Two.

Acting

Action Research Cycle Two in the 'Under Fives explore the Gallery' programme at Tate Britain

This section details the four 'Under Fives explore the Gallery' activities run in Action Research Cycle Two.

The six analytical steps

I again drew on the six analytical steps of Jonassen and Rohrer-Murphy (1999) that use activity theory as a framework for analysing activity. Table 21 (page 192) illustrates how the six analytical steps were used to investigate the four activities. These analytical steps allowed me to describe and analyse the activity system's purpose, subject, structure, rules, roles, mediating tools, context and overall dynamics. As I analysed each of these steps, I made continuous changes to the GPC, the CPAR/Pedagogical Documentation process, the practice principles and information resources. Furthermore, as Reconnaissance Two explored the role of materials in children's learning and education practices,

consideration was given towards how these material components also shaped the 'Tate-Research' activity system. To do so, questions to each of the analytical steps to draw attention to the materiality of the practice (outlined in red text).

Step number	Step focus	Activity
1	Clarifying the programme's motivations	Gallery visits and pre-planning meetings
2	Analysing the programme's systems	
3	Analysing the programme's activity structure	Activity one: Experiments in Line
4	Analysing the programme's mediating tools	Activity two: Experiments in Shape
5	Analysing the programme's context	Activity three: Experiments in Texture
6	Analysing the programme's overall dynamics	Activity Four: Experiments in Colour

Table 21: Activities and analytical steps of Action Research Cycle Two

Step one, two and three: Clarifying the programme's purpose, system and structure

The Tate-research activity system's over-arching purpose, system and structure were analysed in Activity One: Experiments in Line. To do so, the following questions from Table 22 (below) were drawn on:

1.1 Understand relevant context(s) that the activity occurs within	Generate a list of problems that the team often deals with: • Who are the programme's team members? • What sorts of issues have the team already identified in the programme's production? • When and where do these issues occur (prioritise this list)? • How does the team typically communicate with one another? • What is the art museum's purpose for producing the programme? • *What is the physical space that the activities are run in? Are there any perceived problems with these?*
1.2 Understand the subject, his or her motivations and interpretations of perceived contradictions in the system	Generate a list of subject-driven motives and goals for each of the groups involved that might drive the activity: • What are the expectations of the artists and curators working on the programme? • What might contribute to the programme's dynamics? *Including non-human forces like materials and space?* • Why are individual staff members motivated to work on the programme?

Table 22: Questions for analysing the purpose of the 'Tate-Research' activity system

Analysis of the programme's purpose was carried out alongside the step two analysis that investigated the 'Tate-research' activity's system. Similarly to Action Research Cycle One, step two aimed to define the activity's subjects, community, rules, regulation and object through the following questions, as illustrated in Table 23, below.

Alongside steps one and two, step three was also analysed in Activity One. This focused on the 'Tate-Research' activity system's structure, including the nature of the team's engagement. This step also sought to describe the 'Under Fives explore the Gallery's' activities, actions and operations required to produce the practice. The questions outlined in Table 24 on page 194 were used to analyse this structure.

2.1 Defining the subject	• Who are the participants in the Atelier programme? What are their roles? • *What materials (artworks, art materials) also participate in the programme?* • What is the expected collaborative outcome of each Atelier session? • What criteria will be used by the artists and curators to analyse the tasks, needs and outcomes of each session? Who will apply this criterion? • What are the programme's goals and how are they related to the art museum's overall goals? • How do the artist and curators perceive their roles? How do other team members see others roles? • What perceived rewards or gains await the team and children when they accomplish their goal? • What challenges have the team already gone through to reach their current state?
2.2 Defining relevant communities	• How long has the team been working together? • How formal are the art museum's rules and regulations such as conservation requirements and health and safety measures? • How does the team social interact with one another? • How does the broader gallery team view the programme? Do they value its goals and purpose?
2.3 Defining the object	• What is the expected outcome of the research partnership? • What criteria will be used to evaluate the quality of the result? • Who will apply the specified criteria? • How will the project outcome be presented? • How will achieving the outcome move forward or transform its participants – both individual and collectively?

Table 23: Questions for analysing the structure of the 'Tate-Research' activity system

3.1 Defining the activity itself	• How is the programme being done in practice?
	• What activities are the subjects participating in?
	• What significant developments has the programme been through?
	• What theoretical foundations have shaped the programme's development?
	• How could a new materialist theoretical framework be brought together with the programme's other educational approaches?
	• What does the team think about a new materialist theoretical foundation for the programme's development?
	• Are there any contradictions that the subjects have perceived?
3.2 Decomposing the activity into its components actions and operations	• How are the different subject's tasks performed? These tasks could include setting up equipment, communication with one another and meeting routines.

Table 24: Questions for analysing the activity of the 'Tate-Research' activity system

Activity One: Experiments in Line

Key events from the activity:

- Pedagogical Documentation introduced to the 'Under Fives explore the Gallery' programme including the use of cameras in the gallery session;
- A second post-session reflection was held five days after the gallery activity to reflect on the Pedagogical Documentation;
- Pedagogical Documentation explored from both a Constructivist and a New Materialist perspective.

Summary

Activity One: Experiments in Line was co-curated by Lauren, Anna and Kate from the Tate Early Years and Family team in collaboration with Leila, the artist. The activity aimed to encourage children and family engagement with art at Tate through three different activities. These provocations were 1) creating pathways with string 2) drawing with string and 3) creating sound through the string. The activities were designed to encourage participants to investigate the creative possibilities of line in art, architecture and everyday items. In the planning phase, Leila discussed how she was approaching line as a concept that 'could trigger movement, negotiation and spontaneity in children's play.' Leila selected the material of string as a starting point for the participants' investigation into how line can set things in motion. Leila and the Early Years and Family team gave consideration towards how this provocation could be adapted to children's

and their family's interests in the facilitation of the activities.

During the session, Leila (the artist), Kate (the learning curator) and Claire (the learning assistant) arranged to meet the participants, who had pre-booked their places online, in Tate Britain's Clore Learning Studio. The Studio is a multi-purpose studio space off the art museum's central Duveen Galleries. In preparation for the group's arrival, Leila set up the studio floor with semi-unravelled balls of string, as pictured in Image 60 (below). These materials were set up as an invitation for children to play with on their arrival to the studio. During Activity one's planning, Leila also mentioned that she was approaching the sessions as a series of experiments to see how the materials, artworks, people and spaces interact in different ways.

Table 25's (on page 197) planning notes in the GPC outline the conceptual, material, spatial and social components Leila and the Early Years and Family team curated for the session. The team did not use the GPC to plan the activity. Instead, they curated the content independently, and I entered the information into the GPC after the activity had occurred. This provided me with the opportunity to evaluate what parts of the GPC worked well in the 'Under Fives Explore the Gallery' activities and what needed to be modified.

Image 60: Leila's material setup for the Experiments in Line activity

Throughout Activity One children, parents, Leila, Kate and I recorded children's learning using a combination of photography, video and notes. A total of two children and their mothers participated in the generation of documentation. These participants were given cameras to record their

experimentation with the string. Immediately following the session, Leila, Kate, Claire and I met again to reflect on what happened during the session.

In the first post-session discussion, Leila talked about her **timing when introducing new tools and techniques** to the children in the session. Leila commented that she felt it was important to allow children time to explore and experiment with each new material before introducing a new one. We also discussed the activity's location in the Duveen Galleries and how the space itself encouraged other families to join in the session who had not booked it. The 'post-session notes' outlined in the completed GPC (Table 25, page 197) share key points discussed in this reflection session.

We also talked about one girl's (named Imogen) play with the string under the *'Forms in Space… by Light (in Time)'* artwork which was on display in the Duveen Galleries. Kate, Leila and I had observed the play during the session and were fascinated by her curiosity in photographing different circles. I suggested we use the records of this moment for further reflection in our second group discussion. Everyone agreed.

Image 61: A family plays with string and pipe cleaners during the 'Experiments in Line' activity

Content and concept: Exploring line (concept) through string (material).

Artwork used as starting point for inquiry: Cerith Wyn Evans' *'Forms in Space…by Light (in Time)'* 2017 pictured below (image credit: Joe Humphreys).

Ideas, points for experimentation, curiosities relating to the artwork: In the pre-plannig session, Leila disussed how she is approaching each session as an experiment. In the pre-planning of this session, the artist was considering how children may be able to explore line through movement and sound. This may include following, crawling, walking, dancing and counting lines. She selected string balls as a 'route finder' throughout the galleries where string was used able to used in many spontaneous ways. This included connecting people, decorating, and imagining. Line can also be explored through architecture (paving, tiles, walls, columns), in artworks (Bridget Riley, Patrick Heron, Peter Blake, Cerith Wyn Evans) and in everyday objects (stripes on clothes, shoe laces, ribbons, scarfs, limb).

Pre-planning notes	Facilitating notes	Post-session notes
Conceptual: - Core concept: Line - Sub-concepts: N/A - Non-artistic skills: N/A **Material, tools and equipment:** - Core material: String - Construction tools: Scissors - Construction equipment: N/A - Extension materials: Black paper, pipe cleaners, masking tape **Spatial:** Part 1 in the Clore Studio layout: String balls arranged on the floor. They are presented as half unraveled and unopened (approx. 25). These balls were an invitation to play, arrange and follow the lines. These balls of string ideally will stay in the space and we will have a new selection to play with/work with in the galleries. Families were encouraged to work together to create large 3D drawing using their own bodies as connecting points and as a way to infuse the group with the spirit of collaboration. Part 2 layout – Moving through the Tate Britain galleries, first stop was the Duveen Galleries. - Collaborative play area: - Artworks: 'Forms in space' **Social:** - Introducing research question: N/A - Artistic techniques: Tying - Open ended questions: 'can you see lines anywhere else in the gallery.' - Vocabulary words: N/A	Duveen Galleries. No notes taken, only visual data generated. Children, artist, curator and researcher all generated visual data on cameras.	- The philosophy underpinning the 'plan' was not seen as a fixed way of approaching the session but rather: *"I think what I had planned were open invitations but it was really interesting to consider what it ended up emerging from them. For me, what was being explored by families was material in a space being used in different ways. The plan is an invitation to experiment into the use of material and space rather than being a prescribed. It is about the potential of the material."* The artist. -Conversations and suggestions happen verbally and non-verbally. E.g. In the session throwing string towards new families that were in the gallery gave an invitation to the activity that was not verbal. This is particularly important for pre-verbal children - There was not that much verbal conversation in the session, gestures were made with the string. - Locating the session in the gallery space allowed new people to join in who were passing by - Modelling a skill or technique with the string can open up possibilities. Whether they take it up or not is a different thing. By us playing showing the possibility it opens things up. -The social role of parents: it is important to include parents in the design of the programme as they are the ones that ultimately decide when the child arrives and leaves.

Table 25: The GPC from 'Experiments in String'

Following the first post-session reflection, I collated all of the team's photos and videos of Imogen from the session, including the pictures Imogen had taken herself. I then made note of who had taken each image. I then put together four questions that the team could use as a starting point for the second group's reflection. Whilst I was interested in the possibilities of New Materialism in relation to Pedagogical Documentation, I felt it was not right

to solely set research questions that focused on my personal interest and not that of the team. The research questions were as follows:

1. What is the child researching?
2. What are her questions?
3. What invitations do the materials (the artwork, the string, the concept of line and other people) provoke in the child's play?

Image 63 on pages 199-200 share the visual documentation, field notes and questions that I sent to Leila, Kate and Claire in preparation for the second post-session discussion. The intention behind selecting both constructivist (questions one and two) and a New Materialist question (question three) was to have a group discussion around both of these learning theories.

Five days after the gallery session, Leila, Kate and I met on Skype to reflect on the documentation. Before this discussion, all team members had the opportunity to look at and interpret the documentation. During the conversation, each person also had the opportunity to share and debate these reflections. Key discussion points from the second post-session discussion are illustrated in the documentation poster featured as Image 64 on page 202. At the conclusion of the second group reflection, both Leila and Kate commented that reflecting on the session using the records of children's learning was new to them. They mentioned they were looking forward to exploring this in subsequent gallery activities.

Image 62: A child plays with the string during the Experiments in Line activity

THE SPIDER ENCOUNTER

Imogen (5 years, not real name). Imogen and her mother have visited Tate Britain many times before. Her mother is an artist and the pair visit art museums frequently. They spontaneously joined the group about 10 minutes after the others entered the Duveen Gallery. Imogen spends her first 15 minutes rolling the ball of string around the Duveen Gallery space while her mother sits off to the side. Once all the string balls have been unraveled, Imogen goes to her mother and asks for the camera. This is where the observation beings.

1. Louisa: *'What is this?" Is this a line?"* Imogen: *"No, it is a circle that's made out of lines."* Imogen looks at the circle on the ground, looks up at the artwork on the roof. Picture by the researcher.

2. Touches and plays with the string on the floor quietly. Imogen: *"how can we make the line go to the other room?"* She then walks along the string in different directions. Picture taken by the researcher.

3. Picture by Imogen

4. Imogen to Louisa: *'Look at this, it's a circle.'* Picture by learning curator

5. Pictures 5-21 taken consecutively by Imogen within 9 minutes

6. Picture by Imogen

7. Picture by Imogen

8. Picture by Imogen

9. Picture by Imogen

10. Picture by Imogen

11. Picture by Imogen

12. Picture by Imogen
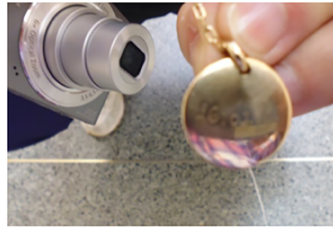
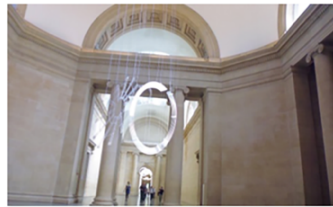13. Picture by Imogen   14. Picture by Imogen   15. Picture by Imogen

16. Picture by Imogen   17. Picture by Imogen   18. Picture by Imogen

19. Picture by Imogen   20. Picture by Imogen   21. Picture by Imogen

Further notes: Gallery team comment in post-session reflection that they noticed Imogen continuously looking at the artwork while playing with the string.

Collaborative thinking through documentation:
Questions we asked were:
What is she researching?
What are her questions?
What invitations do the materials (the artwork, the string, the concept of line and other people) provoke in her play?

Summary of group discussion: Imogen seemed to explore forms such as circles, bundles and shapes from various angles and distances. She made continuous links between the string, the artwork, the architecture and her personal belonging. The circles are a line of inquiry that she follows, firstly in the string and then in the broader gallery space. Around image 16, the learning curator asked her if she noticed any circles anywhere else. This was done as a provocation to open up further thought processes. The curator commented that looking back at the documentation that she saw that Imogen had explored this to a certain extend but then moved onto new explorations such as 'how can I photograph the camera if I am holding the camera?' It was interesting to observe the way that Imogen responded to the changes in the string's form. For example when the ball ends, the string is then bundled into a messy pile. The artist commented that the close-up images of the material was perhaps about Imogen trying to get physically and conceptually closer to the artwork, shapes and forms. There seemed to be verbal and non-verbal 'conversations' happening between children, other people, the string, the architecture and the artworks during the session. We also discussed the role of the string in children's learning. The learning curator commented that the material were a way of exploring ideas without actually touching artworks. As the string transformed from a ball to a messy pile, it created new possibilities for children's experimentation and play, allowing thinking to complexity over time. Art tools such as the scissors and techniques also opened up further possibilities for children's experimentation. The artist commend that she was very interested in how things change shape and become something new depending on how children play with it.

Image 63: Imogen's learning record produced from the Experiments in Line activity

Leading on from the group reflection, Leila considered how she might be able to 'plant' different materials, tool and equipment in future activities in a way that opened up opportunities for children's learning and experimentation. This experimentation may include introducing techniques or selecting a material that can transform over time as children play with it. Leila also commented that she was planning to space out the introduction of materials, tools and techniques in the following session. This was to allow children to have time to experiment with each new tool

or material before something new was presented. Leila also mentioned that she wanted to think about how she could better support the parent's participation in the activities.

Personal reflections

Following Activity One, I reflected on my role in the Tate-research activity system. My position at Tate felt very different from my position at the Whitworth Art Gallery. Firstly, at Tate there was quite a distinct separation between the role of the artist, learning curator, learning assistant and me. The programme's development was also quite different. For example, before commencing the curation of the programme, the Early Year's and Family team approached Leila and asked if she may be interested in 'co-producing' the activities. After an initial discussion with the art museum team, Leila then developed activity ideas independently. The Early Years and Family team then corresponded with Leila via email to make further suggestions on what content could be incorporated or taken out of each activity. During these discussions, I observed the team's conversations but was not actively involved in curating the content of the activities. This was in contrast to my position at the Whitworth where I had been a more active participant in developing each week's Atelier content.

While the programme was being planned, Anna the Early Years Curator was extremely helpful in sharing important information on Tate's institutional rules and conservation policies including the use of flash photography as well as what materials and tools could be used in the gallery spaces. While the session was running, Leila's role was additionally quite distinct. She led the group's engagement in the gallery space by making decisions on when to introduce new materials, ask questions and initiate a group activity. Her facilitation style was very flexible and responsive to children's interests. My position shifted between generating photos, videos and field notes on children's learning observing the children, interacting with children and their families and assisting Leila to setup and move resources. However, I felt that my main role in the facilitation of the session was as a researcher. At many points Leila, Kate and Claire looked to me to guide the Pedagogical Documentation process, asking questions such as what to take photos of. I always replied to these questions to the best of my knowledge but simultaneously felt slightly uneasy with being 'the expert' as I was still learning so much about the process myself.

Furthermore, the Duveen Gallery was a unique site for learning. For example, Cerith Wyn Evans' *'Forms in Space… by Light (in Time)'* artwork seemed to play an important part in Imogen creating relationships between the circles in the artwork, the circles in the material and the circles in the gallery space. The aesthetic characteristics of the artwork,

Imogen's encounter

Imogen* and her mother have visited Tate Britain many times before. The pair has not booked into the session and spontaneously join the group. Imogen spends her first 15 minutes rolling the ball of string while her mother watches. Once all the string has been unraveled, she asks for the camera. This is where the observation beings.
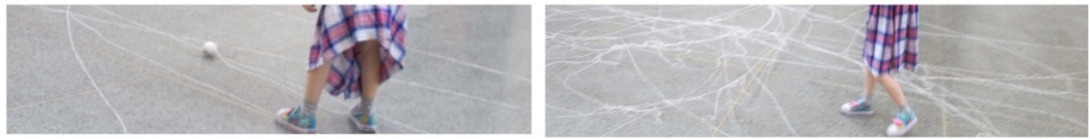
Below: a series of images taken by Imogen over a nine minute timeframe.

What is Imogen researching? What are her questions? What does the environment (the artworks, the architecture, the materials, the concept, the gallery and other people) provoke in her play?

"I found myself thinking what is being exchanged verbally and non-verbally?... I was thinking about how she was spending time with the material to explore it in a very different way… 'what does this mean?' Is she trying to get closer to the artwork? Is she trying to get a view of something close, as she can't get close to the artwork because it is high up but she can get close to the string through the camera? I wondered if these images of the close-up bundle of string were about her trying to get to the core of understanding something, like putting it under a microscope." *Artist*

"… she was noticing lots of links between the material itself and the artworks which is fantastic as that starts to happen from the moment she starts to engage with the experience. I was thinking of ways I could extend her possibilities beyond that in the architecture and with her personal items. So, because she decided that circles were the avenue that she was exploring, I then offered her the question of 'are there other types of circles that you can see in the space?' She was making lots of references to the artwork and the material so I was trying to open her thought process to look beyond that." *Learning curator*

"…if we start to think about learning and children's learning in the gallery emerging through a creative and dynamic process as opposed to a linear one of 'we introduce an idea or a concept and then moves onto the next stage in which she has learned it' it is fitting that her exploration of the string enters and exists at different various points." *Researcher*

"I like observing her and not disturbing her too much when she is in her exploring mood… I am always fascinated to see her creativity and how she obviously approaches a task differently than I would... I think Imogen felt a connection through the art, space and materials used. The result keeps developing and transforming… The search of a connection between the art and the materials create fun and engaging activity for Imogen. I believe her questions are probably related around how she can push the play further but also, how can she connect it to the things she knows. I believe through play and imagination; Imogen makes connections with her reality that helps her understand art but also purpose." *Mother*

*not child's real name

Image 64: The Experiments in Line documentation poster

for example, how the artwork lit up the room and how its florescent tubes curved in different directions to create shapes, all helped to create unique thought processes in Imogen. At the same time, the physical space of the Duveen Galleries also seemed to construct a unique learning environment. For example, the size and height of the space were much larger than most spaces Imogen would be in, such as her house or kindergarten classroom. The physical and embodied sensation of moving across the floor may also

have contributed to Imogen's array of physical activities in the gallery space. From this perspective, both the physical artwork and the gallery space were important components of the learning environment.

Following Activity One, I considered how MacNaughton's (2005) strategy of rhizoanalysis could be drawn on in Activity Two to extend the team's reflection on children's learning and art museum practices. I felt this was important as while Activity One's reflection did produce interesting discussion on Imogen's interactions with the string, the artwork, the Duveen Gallery space and her family, much of the conversation focused on pre-existing ideas such as 'artist-led' gallery practice and intergenerational 'engagement' in the activities. I was curious to think about where the team's reflection might go with the introduction of New Materialism explored through the tactic of rhizoanalysis.

Finally, my personal reflections following Activity One also focused on the significance of the material's physical properties and how these transform through children's play with them. For example, in the session, the string began in a ball and was then rolled out over the Duveen Gallery floor. Finally, the string was bundled into one large bale and cut into smaller pieces using scissors. Each of these transformations opened up new opportunities for children's and their family's experimentation.

Steps one, two and three changes

Activity One described and analysed the 'Tate-research' activity system's purpose. Similar to Action Research Cycle One's purpose, the goal or 'object' of the activity system was to better understand the components that mediate children's learning in art museums, as illustrated in red text in Figure 14 (page 204). More specifically, the object aimed to explore how this could be done by drawing on a New Materialist framework, as illustrated in red text in Figure 15 (page 204). Alongside the analysis of the 'Tate-research' activity system's purpose; the subjects and communities were also analysed in Activity One. The blue text in Figure 16 (page 205) illustrates the additional New Materialist components that were taken into consideration in Action Research Cycle Two. These included the analysis of the artworks and art materials. The red text illustrates Action Research Cycle One's subjects that carried over into Action Research Cycle Two. The subjects of the 'Tate-research' activity system included the children, parents, learning curators, artists and researchers. The 'Tate-research' activity system's community components remained the same as Action Research Cycle One however further consideration was given towards the role of the gallery space, artworks and materials.
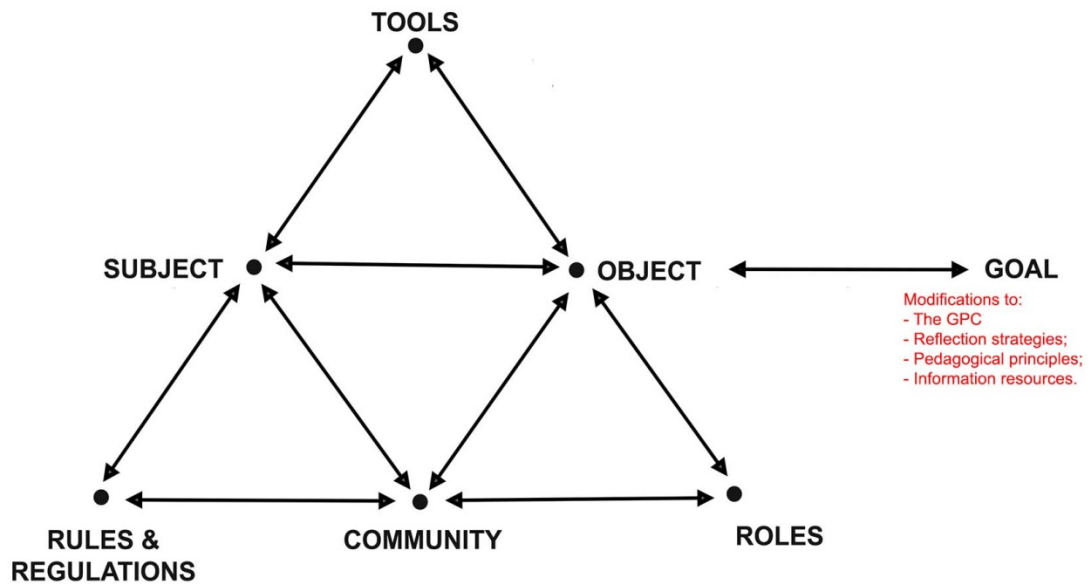
Figure 14: A model of the 'Tate-Research' activity system's purpose or goal

The activity's structure highlighted the importance of allowing time for the team, including the learning department staff to engage in two post-session reflections.
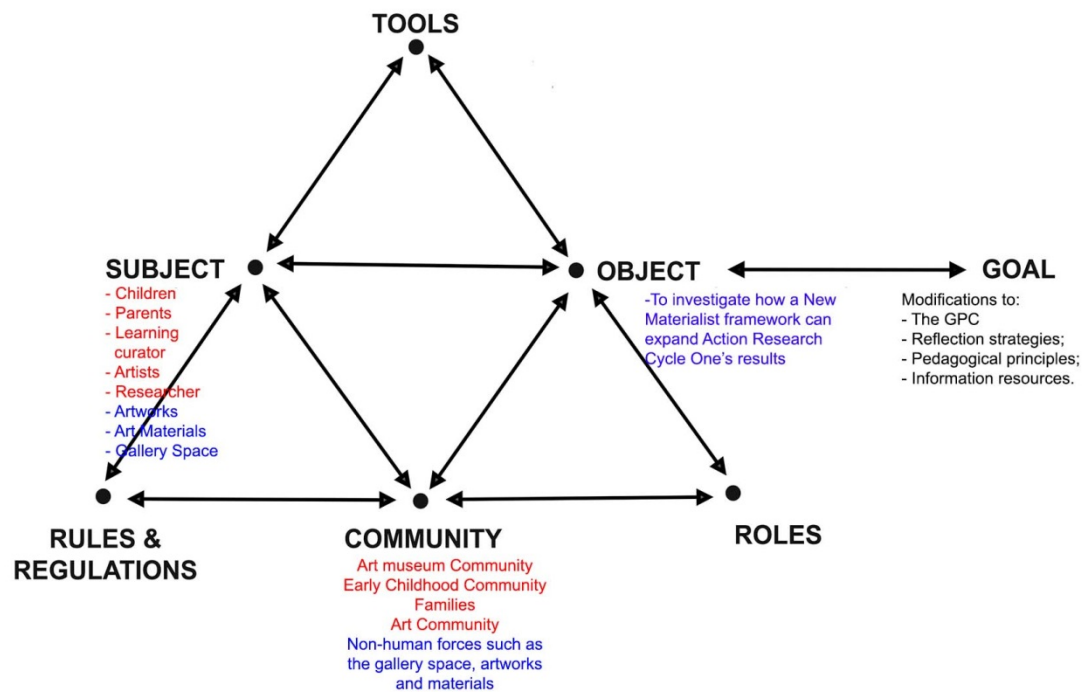
Figure 15: A model of the 'Tate-Research' activity system's structure
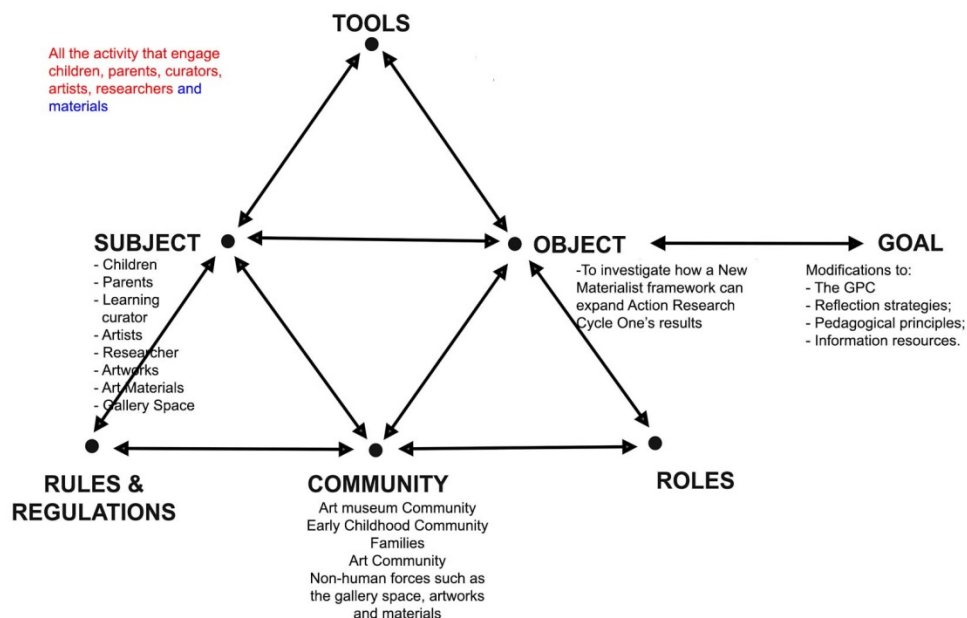
Figure 16: A model of the 'Tate-Research' activity system's activity

Following on from Activity One, I made further modifications to the GPC, CPAR/ Pedagogical Documentation process, practice principles and information resources as follows:

1. **GPC:** Considerations was given towards how materials and tools open up non-verbal 'conversations' between children and the activity's components. For example, during the session, the string interacted with the large granite floor to make unique opportunities for Imogen to spread out the material on a large-scale.

2. **CPAR/Pedagogical Documentation process:** The second group reflection session worked extremely well in supporting the team, to make deeper considerations on the relationship between children's learning and art museum practices.

3. **Practice principles:** No changes

4. **Information resources:** A resource that outlines how rhizoanalysis can be practically used by art museum learning teams.

Step four: Analysing the programme's mediating tools

Step four of Jonassen & Rohrer-Murphy's (1999) framework was investigated in Activity Two: Experiments in Shape. This step focused on analysing the 'Tate-research' activity system's mediating tools. By practically applying the New Materialist framework, this drew attention towards how materials and gallery spaces were important mediating tools that facilitate learning and practices in the 'Under Fives explore the Galleries' activities. Table 26 (page 206) illustrates the questions were used to generate descriptions of the mediating tools. The red text indicated the questions introduced in Action Research Cycle Two in relation to the

New Materialist framework:

4.1 Tool mediators and mediation	- How can mediating tools be used to facilitate learning in the programme? - How readily available are these tools to participants? - What are the physical and cognitive tools used to perform activities in different settings and across different activities? *How can artworks be used as mediating tools for learning?* *How can materials be used as mediating tools for learning?* - How have/do the tools changed over time? - How do participants use these tools? Is there flexibility in the tool's use? - What social and cultural meanings surround the tools?
4.2 Rule mediators and mediation	- What are the institutional rules (official or unofficial) and assumptions that guide the programme's development? - How have these rules and assumptions changed over time?
4.3 Role mediators and mediation	- How have the roles (artist, curator and volunteer) been taken on? - How do the roles and responsibilities affect the way subjects communicate with one another? - How much freedom do individuals have to change or take on new roles and responsibilities?

Table 26: Questions for analysing the 'Tate-Research' activity system's mediating tools

Activity two: Experiments in Shape

Key events from the activity:

- Rhizoanalysis introduced to the Pedagogical Documentation process;
- Documentation of children's learning read through a quote by Tim Ingold (2013) ;
- Post-session discussion separated into 'post-session reflection one' and 'post-session reflection two' on the GPC.

Summary

In Activity Two, Leila and the Early Years and Family team drew on Jessica Dismorr's *'Related Forms'* (1937) as a starting point for planning the 'Experiments in Shape' activity. The session aimed to explore how 'shape' could be used to dissolve binary ways of thinking about gender and the human body. During the activity's pre-planning, Leila commented that Dismorr's artwork helped her to think about how:

> *"The shapes laid out on the canvas can't be pinned down to any real-world reference – object, body, emotional state – but all those*

possibilities are in play. They don't touch, but their 'related' forms allow us to imagine infinite different ways they could be combined"

For the session, Leila selected different papers such as tissue paper, tracing paper and foil. She also selected tools such as pencils, tape and sticky tape for children and families to experiment with. She intended to lay these materials and tools out in a particular way, as illustrated in her visual planning notes in image 65 (below). The 'planning notes' in the completed GPC on Table 27 on page 208, share the details of Leila's selection of materials, tools and concepts for the activity.
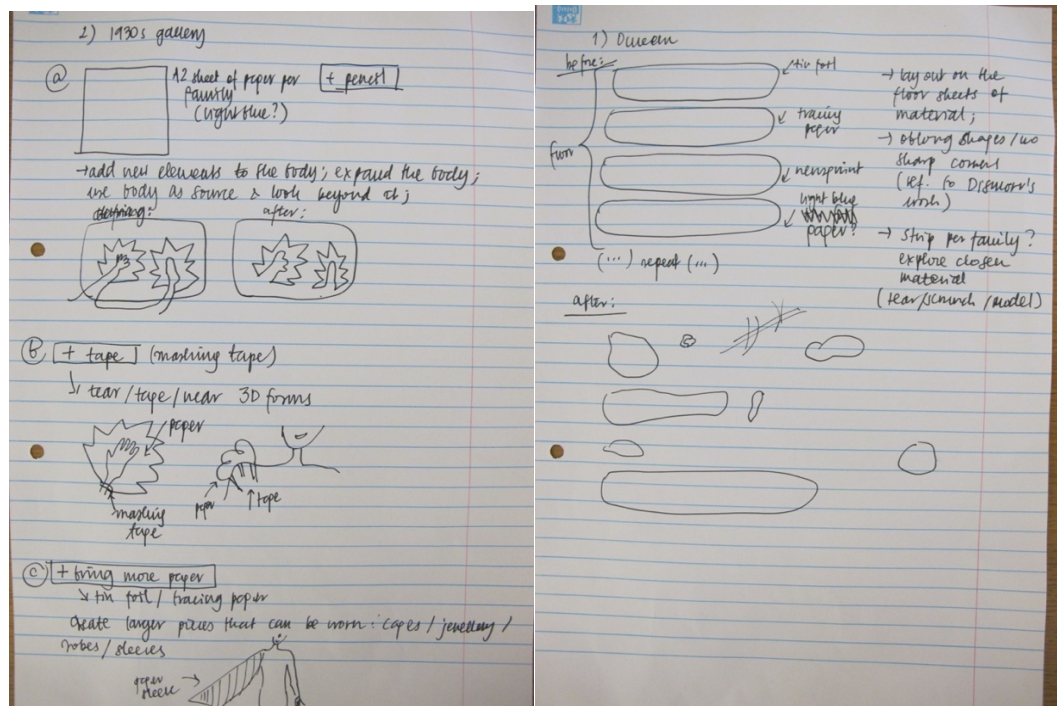
Image 65: Leila's visual planning notes for the activity

Activity Two: Experiments in Shape was run as part of the 'Queer and Now Festival 'at Tate Britain. On the day, Leila arrived early to prepare the area. She cut the paper into large oblong shapes and laid them across the floor of the Duveen Galleries, as pictured in Image 66 (page 209). A total of 3 children and their families participated in research during the session. Image 67 on page 209 shares a mid-session photo from the 'Experiments in Shape' session. Both Leila and Claire were quite busy running the activity. As a result, I was the primary person recording children's learning. Due to the festival being run around the activity, we were unable to give children and families cameras during the session.

Research question (connecting content to concept):		
Artwork used as starting point for inquiry: Jessica Dismorr's 'Related Forms' (1937)		

Ideas, points for experimentation, curiosities relating to the artwork: See pre-planning description in thesis text		
Pre-planning notes	**Facilitating notes**	**Post-session notes**
Conceptual: - Core concept: Shape - Sub-concepts: N/A - Non-artistic skills: Exploring binaries between male/female	Lots of visitors due to the Queer and Now festival. Experiments in shape session one of many activities happening at the same time in the Duveen Galleries.	**Post-session reflection one** Many 'conversations' that happened in the activity, did not occur verbally through social interactions. Instead they happened through the materials Observation is an important part of social interactions in art museums
Material, tools and equipment: - Core material: Paper (tissue paper, foil, butcher's paper) - Construction tools: Bodies, scissors, pencils, masking tape - Construction equipment: N/A - Extension materials: N/A	Babies seemed very attracted to the floor-based nature of the activity	**Post-session reflection two** Need to approach pedagogical documentation as a diffractive process A material's need to transform in an activity
Spatial: - Layout: 2 x Large spatial layout in the front area of the Duveen Galleries at Tate Britain -Introduced music to the space: N/A - Collaborative play area: Yes, two large areas - Artwork images: N/A	Paper and foil continuously transformed throughout the session. Leila rearranged the materials in different ways as they changed shape	Materials as an active force in children's learning Spatial arrangement of materials Shared vs. separate materials Children's physical capabilities also influences what can and cannot be done in the activity
Social: - Research question: Experimenting with shape through paper - Artistic techniques: Scrunching, molding, shaping - Vocabulary words:		The artist's social role in learning is complex

Table 27: The GPC from the 'Experiments in Shape' Atelier

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Image 66: Leila arranges the materials for the 'Experiments in Shape' activity

Image 67: The 'Experiments in Shape' activity mid-session

Immediately following the session, Leila, Claire and I met to reflect on the session. Much of this conversation focused on the role of the paper in the children's and their family's engagement. We additionally, talked about

how the paper opened up 'non-verbal' conversations between children and the Tate gallery space. For example, we discussed how **many of the interactions between children and the paper happened through their bodies** and not with words. Additionally, each type of paper – the foil, tissue paper and tracing paper - each seemed to have slightly different textures and create different sounds and sensory experiences for children.

At the conclusion of the post-session discussion, we decided to further discuss the role of the paper in children's engagement in the second post-session reflection. I had recorded a 1-minute video of a 10-month-old boy's, named Tom,[5] crawling across the paper in the session. I suggested we use the video as a point for further reflection. I found this piece of documentation particularly interesting as Tom was by far the youngest participant in the session. Leila and Claire agreed that it would be a nice challenge to think deeply about how a baby may experience the Duveen Gallery space through play with the materials.
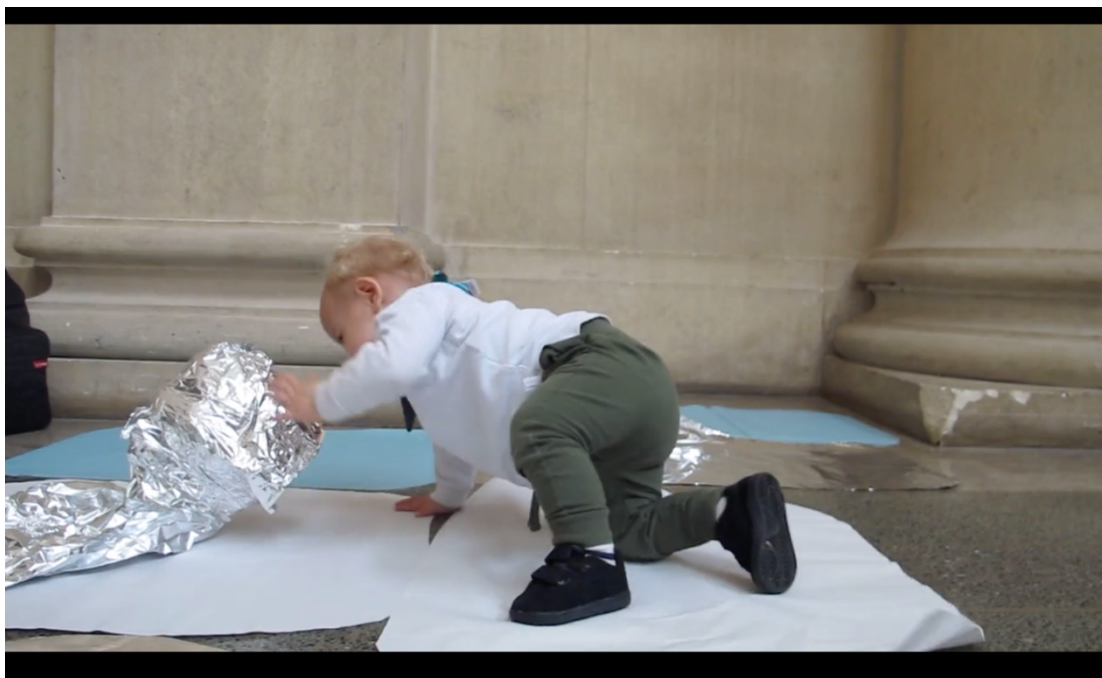
Image 68: A still from a video taken in the 'Experiments in Shape' activity

Leading into the second group reflection, I suggested we 'read' the video through a Tim Ingold quote. I explained that this might be an interesting way to experiment with generating new ideas by connecting the video and written text together. This process may open up new ways of thinking about Tom's learning and the 'Under Fives explore the Gallery's' practice. The video of Tom crawling through the paper can be viewed here (Image

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[5] Not child's real name

68, above, shares a video still from the footage): *(Content removed to protect participant information).*

Following the session, I then selected the following quote by Tim Ingold (2013, pp. 6-7) to 'read' the video through:

> *"In the art of enquiry, the conduct of thought goes along with, and continually answers to, the fluxes and flows of the materials with which we work. These materials think in us, as we think through them… To practice this method is not to describe the world, or to represent it, but to open up our perceptions to what is going on there so that we, in turn, can respond to it. That is to say, it is to set up a relation with that I shall henceforth call correspondence… We need it in order to not accumulate more and more information about the world, but to better correspond with it."*

I selected this quote as it made associations with the dynamic and creative processes that both constructivist learning theory and New Materialism are situated on. I also thought the quote could be an exciting starting point for experimenting with both New Materialist ideas and rhizoanalysis in the Pedagogical Documentation process. I then constructed three questions to share with the team:

1. What 'correspondences' do the materials open-up?
2. What is the role of materials in facilitating Tom's 'correspondences' at Tate?
3. Could these 'correspondences' be facilitated in other ways outside of materials?

These questions were used as a starting point for reading the texts. I then sent the video, quote and questions to Leila, Claire and the rest of the Early Years and Family team by email. Six days after the running of Activity Two, Leila, Claire, Lauren and I met again on Skype to share our reflections. An excerpt of the post-session critical reflection can be read in Appendix Six on page 297.

Key points of the post-session discussion included discussion of **Tom's multisensory encounter with the paper and the Duveen Gallery space.** I commented that the paper seemed to open up a series of delightful surprises for him. To me, he was using his body as a tool to explore the diverse surfaces, textures and space. His experience in the gallery during these encounters is very embodied, tactile, sensory and physical. I thought that Tom seemed to be exploring the paper's properties through his body such as how it can be pulled, moved around and re-shaped while simultaneously exploring concepts such as heaviness, measurement and gravity.

I introduced the idea of **approaching Pedagogical Documentation as a 'diffractive' process (Barad, 2007)** that is in a state of continuous change and movement. Lauren, the Programme Convenor, commented on

this saying that she often feels uncomfortable presenting on the programme as talking about one conclusive point undermines the programme's philosophical approach. When I suggested approaching Pedagogical Documentation as a diffractive process she commented that:

> *"I thought 'that's it' as it is opening things up, not narrowing them down. This conversation is not about coming to one singular understanding, and that's what the bigger programme is really about too."*

Pedagogical Documentation is, therefore, more a process for learning and facilitating change in thinking rather than creating concrete statements about these things. Documentation's interpretation is therefore never a conclusive summary of events.

Furthermore, we discussed how **the materials in the session were 'active' in children's learning** (Bennett, 2010). I commented that the materials increase Tom's capacity "to act" in the gallery (Ingold, 2013). The materials are not just an invitation to explore the artwork but additionally an invitation, mediator and agent for individuals to explore and produce meanings more generally in the art museum. These 'correspondences' are facilitated and extended on by more than just materials. They are also produced by the material's spatial arrangement, tools, accompanying equipment, social interactions and the wider cultural and institutional context that the activity is occurring in. I suggested that different materials and the introduction of new tools in the space may encourage different ways for children to learn over time. For example, in Experiments in Shape, the activity could have included some additional clips or tape that children could use to attach the paper to their bodies in different ways.

Leila commented that for her, the inclusion of the paper and foil was not on the material itself but on the 'correspondences' that they opened up. Lauren agreed by saying that **the material is not the subject matter but a facilitator for thought processes**. The physical location of the materials also influences the pedagogical 'relations' that are produced by a child. For example, if a child was playing with the materials in front of one particular artwork, their play may be different from playing with the material in front of another artwork. The selection of materials needs to open enough to allow for connections to be made. However, these materials also need to be structured enough to encourage children's thinking through different pathways. Furthermore, a material's ability to transform may encourage children to have extended engagement with it. For example, as Tom crawled through the paper, it made physical and aural transformation including crinkling and swooshing sounds. These transformations are all happening at once with no clear beginning or end to each one.

In both Activities One and Two, the large pieces of string and the large roll

of bubble wrap encouraged children and their families to socially interact with one another. **The material's ability to be shared was therefore important** as it allows for both individual and collaborative play. In contrast, materials that can only be used individually, for example, a small piece of paper, do not tend to encourage social interactions amongst groups of people. I mentioned **the significance of Tom's sensory encounters with the materials and the physical gallery space.** Leila discussed how she would like to consider how the remaining activities could be curated to encourage children's physical and sensory interactions in the galleries. Similar to activity one when we reflected on Imogen's play with the string under the '*Forms in Space'* artwork, the physical gallery space that included the display of artworks, created a unique experience for Tom as he was also to able to come into contact with their distinct aesthetic qualities.

Leila commented that she was thinking about each 'Under Fives explore the Gallery' activity as a possibility or provocation rather than a set of instructions. During the sessions, Leila commented that she is happy to let go of this planning and respond to the unexpected events that happen through the children's play. **The artist's unique 'signature pedagogies' (Thomson et al., 2012)** were important in constructing an open-ended learning experience for children and their families.

In concluding the second post-session discussion, I suggested that we again experiment with the use of rhizoanalysis in the following activity's reflection. Everyone seemed excited to do so.

Moving forward, I then created an A1 poster that brought together the video stills of Tom's play, the Ingold quote and snippets of the group reflection. When creating the poster, I included quotes from the action research team to articulate the subjective interpretations each action research participant had in the reflection. The display of the team's quotes helped to share these subjective and intersubjective reflections on Image 69 on page 214. Similar to previous weeks, the poster aimed to share the thinking of the team before, during and after the session running. As Dahlberg, Moss & Pence (2007) state in their book '*Beyond quality in early childhood education and care,'* each participant must take responsibility for their point of view without hiding behind an assumed scientific criterion offered by experts in pedagogical documentation.

Personal reflections

My position in the team during the 'Experiments in Shape' session continued in a similar way to Activity One. I assisted with the session's setup and facilitation. During the session, my role was primarily as the researcher generating records of children's learning. These positions gave a unique opportunity to both experience and observe the practice, allowing

me to be involved in what was happening but not directly influencing the running of the activity itself.

Tom's encounter

"In the art of inquiry, the conduct of thought goes along with, and continually answers to, the fluxes and flows of the materials with which we work. These materials think in us, as we think through them... To practice this method is not to describe the world, or to represent it, but to open up our perceptions to what is going on there so that we, in turn, can respond to it. That is to say, it is to set up a relation with the that I shall henceforth call correspondence... We need it in order to not accumulate more and more information about the world, but to better correspond with it." Tim Ingold (2013).

What 'correspondences' are the materials being constructed? What is the role of the materials in facilitating Tom's 'correspondences' at Tate? Could these 'correspondences' be facilitated in other ways that does not use materials?

"There is continuous movement in his actions and continuous change in the materials... as different things change form, they seem to invite new behaviours and thinking. These transformations are all happening at one with no clear beginning or end." *Researcher*

" ...the materials were opening up new experiences in the space rather than being about the materials themselves. It appeared to me at first look that Tom was enjoying the different resistance and give of each material and surface... "
Learning curator

"Our approach requires a huge amount of very careful balancing and a lot of thought to be responsive and open yet at the same time the need to provide enough material and content that people can make the connections." *Learning curator*

"Something I picked up was in the string session was that everyone worked a lot together. In this session, it was more individual instruction. So, I am thinking about the environment and how busy it was and whether or not that changed that people's interactions." *Learning Assistant*

"...this is pedagogic practice that only works and is built upon difference of opinion, uncertainty and a constantly emergent and expansive process. So, having a fixed ideas about something is not part of it." *Researcher*

"To me, the materials are presenting manipulable possibilities for 'correspondences' in Tom's gallery experience that allow for the construction of new relations between artworks, the gallery space, other people and himself. Exactly what relations these are is difficult to say but perhaps the materials increase his and his family's capacity "to act" in the gallery. ... these correspondences are facilitated or extended upon through more than just materials its also through the spatial arrangement, social interactions, the institutional and how this experience fits within the broader context of his life." *Researcher*

"Instruction is something that I am trying to reduce in children's explorations, I am instead trying to think of instruction as possibilities, invitation or provocations rather than directions... I find it both challenging and exciting in equal measures to take on something that is dependent upon how people use the material, what sort of instructions they discover themselves." *Artist*

"I am interested in this idea of how shared material encourages shared exploration and the difference this has with individual exploration." *Artist*

"Perhaps it is about making sure that the material has the possibility of being used to make many connections and those connections being able to be easily made but not making it too specific to one particular artwork because doing that would be slightly didactic..." *Learning curator*

Reference: Tim Ingold (2013). 'Making: Anthropology, archaeology, art and architecture.' Routledge, New York, pp.6-7.   *not child's real name

Image 69: The Experiments in Shape documentation poster

Step four changes

Figure 17 (below) illustrates the mediating tools (tools, roles, rules and regulations) that were produced from step four's analysis. These mediating tools included the use of artworks and materials in addition to the use of Pedagogical Documentation and the GPC. The significance of artworks as mediating tools for learning can be related back to Pringle's (2009a) MMG model that positions art as a central facilitator of meanings and interpretation in art museums. Additionally, artworks and materials were also mediating tools that facilitated learning and activity in Activity Two. In regard to the 'Tate-research' team's roles, these were broken down into visitors - including both children and their families – in addition to the artist (Leila), the learning curators (Lauren, Anna and Kate), the learning assistant (Claire) and the researcher (me). While these roles were at times fluid, they were also understood as individual positions in themselves. The 'Tate-research' activity system's rules and regulations included the art museum's conservation requirements, socio-cultural values, visitor capacity numbers and the learning programme's budget. All of these rules and regulations shaped how the practice could be produced.
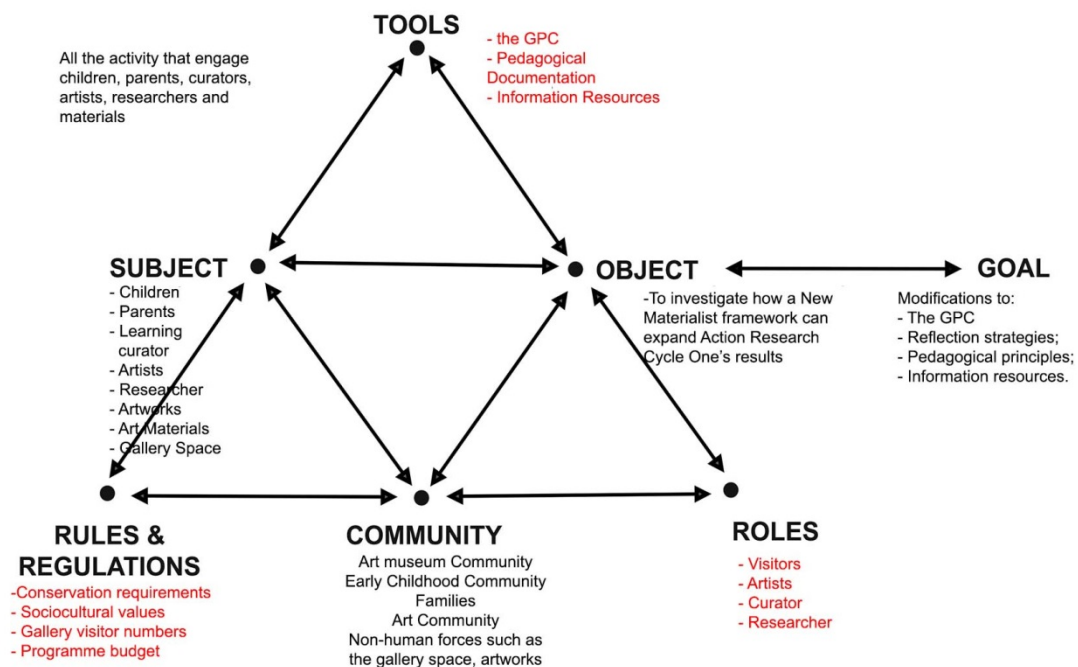
Figure 17: A model of the 'Tate-Research' activity system's mediating tools

Analysis of the 'Tate-research' activity system's mediating tools led to the following modifications to the GPC, the CPAR/documenting process, the practical principle and the information resources:

1. **The GPC** further emphasised the need to focus on the material's transformations during the session. As discussed in the group reflections, these transformations are important in making new invitations to children over time.

2. **The CPAR/Pedagogical Documentation process** was also shaped by the materiality of the documentation itself, such as actual photos

and videos. These videos 'speak back' to the art museum team to invite new pathways for exploring children's art museum practices. The physical recording tools, such as the cameras, notebooks and pens shaped what parts of children's learning can and cannot be recorded.

3. **The practical principles:** Materials are a critical part of children's sensory learning in art museums. They are both a mediating tool and an active force in learning.

4. **Information resources:** No modifications.

Steps five and six: Analysing the programme's context and overall dynamics

Steps five and six considered the 'Tate-research' activity system's context and overall dynamics. Describing the context was important in investigating the specific social, cultural and historical context that the practice was happening in. Practically applying the work of Engeström (1993) I understood the programme's context to be shaped by a complex system of internal bounds such as implicit beliefs, assumptions, models and methods as well as external bounds such as institutional regulations. The following questions, outlined in Table 28 below, were used to explore the 'Tate-research' contextuality. The red text illustrates the additional questions introduced the analysis to draw attention to the New Materialist components of the practice:

5.1 Internal or subject-driven contextual bounds	• What are the team's beliefs, methods and assumptions that shape the programme? • What language does the team use to describe their experiences? • *How can pedagogical documentation be used to deconstruct the team's language?* • What processes does the team currently use to produce the programme? • What processes have been used by the team in the past?
5.2 External or community-driven contextual bounds	• How much freedom do individuals have when entering the Atelier team? • Are there any limitations placed on the programme by outside agencies? For example, funding bodies or health and safety organisations. • What formal or informal rules, laws or assumptions guide the activities? • *How do a material's properties create thought processes? How do these materials influence what can and cannot be done with it?*

Table 28: Questions for analysing the 'Tate-Research' activity system's context

Alongside step five, the 'Tate-research' activity system's overall dynamics were also investigated. This step was the sixth and final stage in Jonassen and Rohrer-Murphy (1999) analytical framework. The following questions

were used to explore these dynamics in Activities Three and Four (Table 29):

6.1 What are the interrelationships that exist in the activity system's components?	• What are the dynamics that exist between the Atelier system's components? • How formal or informal are the relationships described? • Are there any contradictions or inconsistencies within the needs of the team? • How does the development of the collaborative planning, facilitation and reflection guide change the way that the Atelier team has worked together?
6.2 How formally established are those relationships?	• How formally will the relationships between members be determined? • How lasting and permanent are these changes?
6.3 How have those interrelationships changed over time?	• What factors have driven the formation of the art museum's early year's programme over time? • How lasting and permanent have these groups been in the past? • What factors kept those groups together or drive them apart?

Table 29: Questions for analysing the 'Tate-Research' activity system's overall dynamics

Activity three: Experiments in texture

Key events from the activity:

• Rhizoanalysis dawn on to support 'diffractive readings' of children's learning and the art museum practice;
• A Doreen Massey quote used to 'read' the video documentation;
• The documentation's focus was on the material's transformation as opposed to one individual child's play.

Summary

In Activity Three: 'Experiments in Texture' Leila and the Early Years and Family team used the physical space of the Duveen Galleries and David Medalla's artwork 'Cloud Canyons No.3: An ensemble of bubble machines' as the starting point for curating the gallery session's content. Leila selected bubble wrap as the main material for the session as it could be used in many different ways including being scrunched, rolled, laid flat, thrown in the air and laid flat. Leila also hoped that the bubble wrap might encourage children to use their bodies to interact with the material and space in unusual ways. She also considered the various textures in the Duveen Galleries, including the floor, pillars and floor grates, that participants could interact with. Details of Leila's selection of materials, tools and spatial arrangement for the session are featured in Table 30 on page 219. Similar to Activity One, the Early Years and Family team and

Leila setup the Clore Learning Studio floor with a material arrangement of string and bubble wrap, as pictured in Image 70 (below).

During the session, data was generated by Leila, Claire, Anna and I. A total of 5 children and their families also participated in the research. These children and families were all given hand-held cameras to take photos and videos during the sessions. All additional children attending the session were also given a camera to document their play; however, this footage was not used in the research. During the gallery activity, the children played with the bubble wrap in a myriad of ways including unrolling it in the Duveen Galleries (Image 71, page 220), sliding under it and cutting it up using scissors. After 1.5 hours, Leila then led the group into the Clore Learning Studio. For the session's final 10 minutes, she projected some of the children's images onto the studio wall, as illustrated in Image 72 on page 220. Leila then used these images to encourage the group's reflection of the session by asking questions such as *'what was happening here?'* and *'what were you playing with?'*

Image 70: Leila's material layout for the Experiments in Texture activity

In the post-session discussion immediately following Activity Three, Leila, Anna, Claire and I discussed **the sequencing of materials and tools in the activity.** While we all enjoyed seeing the children engaged in tactile and physical play, many of the children slipped on the bubble wrap as it slid over the marble floor. To prevent any injuries, Leila introduced masking tape to the children so they could stick the bubble wrap to the floor. She commented that when the children did stick down the bubblewrap, it changed form and invited new behaviours in children. For

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example, the masking tape allowed the material to be stuck to the floor and to be bunched together. Before this, the children were using it as more of a duvet or sheet for rolling, hiding and wrapping themselves in. **The material's transformations were important in creating new opportunities for children's experimentation.**

Research question (connecting content to concept):		
Artwork used as starting point for inquiry: David Medalla's artwork *Cloud Canyons No.3: An ensemble of bubble machines*		
Ideas, points for experimentation, curiosities relating to the artwork:		
Pre-planning notes	**Facilitating notes**	**Post-session notes**
Conceptual: - Core concept: Texture - Sub-concepts: N/A - Artistic techniques: Wrapping, sculpting, draping, rolling and lifting the paper - Non-artistic skills:	Visual data generated using hand-held cameras. Materials – sticky tape introduced 45min into session Many families joined in while the session was being facilitated	**Post-session reflection one** Follow the material's transformation instead of a child or group of children's encounter in the session. Experiment with what this produces.
Material, tools and equipment: - Core material: Foam/bubble wrap paper - Construction tools: Children's bodies, sticky tape - Construction equipment: N/A - Extension materials: Duveen Gallery floor, cardboard		**Post-session reflection two** Duveen Galleries – size and scale of the space allowed for children to have lots of opportunities for embodied and physical play Massey's idea of a 'meeting place' quite abstract but an interesting way of thinking about the connections the bubble wrap created in the session.
Spatial: - Layout: One large spatial layout in the Duveen Galleries (children arranged the foam in the space themselves) -Introduced music to the space: N/A - Artwork images: N/A		New materialism opens up new debates around the ethics of children's art museum learning practices.
Social: - Introducing research question - Artistic techniques: - Open ended questions: what can we do with the bubble wrap? - Vocabulary words: N/A		Artist's facilitation of the session needs to be responsive to what happens in children's play during the session.

Table 30: The GPC from the 'Experiments in Texture' activity

Image 71: The 'Experiments in Texture' activity mid-session

Image 72: Leila projects the children's photos onto the studio wall

Furthermore, the **Duveen Gallery space itself seemed to encourage children's kinaesthetic play.** The Duveen Galleries' scale allowed children to explore the materials in a very physical way. As a result of this discussion topic, we decided to select children's relationship to gallery

space as the theme for our second post-session reflection. After also discussing the importance of the bubble wrap as a mediator in children's learning, I suggested that we follow the bubble wrap's transformations over a 30-minute timeframe from the session. This was in contrast to the reflections from Activities One to Three that focused on one singular child's learning in the session. I hoped that by focusing our attention on the material that our reflection may open up creative experimentation in our thinking instead of exploring the critical power structures that shaped the practice (MacLure, 2015).

Following the first post-session interview, I collated all of the visual data from the session. I then used this to put together a short video that focused on the bubble wrap's transformations from the first 30 minutes of the session. A still from the video can be seen in Image 73, below. The full video can be viewed here: *(Content removed to protect participant information)*

Image 73: A video still from the Experiments in Texture activity

Continuing with the use of rhizoanalysis, I selected the following quote by Doreen Massey (1994, p. 154) to 'read' the video through:

> *"... what gives a place its specificity is not some long internalized history but the fact that it is constructed out of a particular constellation of social relations, meeting and weaving together at a particular locus. If one moves in from the satellite towards the globe, holding all those networks of social relations and movements and communications in one's head then each 'place' can be seen as a particular, unique, point of their intersection. It is, indeed, a meeting place. Instead then, of thinking of places as areas with boundaries around, they can be imagined as articulated moments in networks of social relations and understandings, but where a large proportion of those relations, experiences and understandings are constructed*

on a far larger scale than what we happen to define for that moment as the place itself..."

This quote was selected as it both aligned and extended on the understanding that learning is a dynamic and creative process. I was also interested in it as a result of 'space' and 'place' being important topics in the first post-session reflection. My intention was not for the team to develop a common understanding of place and space but more so to think through and debate the meanings of these in relation to the 'Under Fives explore the Gallery' programme. Like the Ingold quote, it therefore drew attention towards the non-human forces that shaped children's learning and the team's practice. To support the connections between the quote and the video, I generated the following three questions:

- What 'places' are being constructed in the documentation?
- How is this happening?
- How do the physical space of the Duveen Gallery and the materials (the bubble wrap) contribute towards shaping these?

Five days following Activity Three's facilitation, Leila, Anna, Claire and I met again on Skype to share our reflections. Key points from our conversation included the use of **Pedagogical Documentation and how this supported the team in reflecting what was happening in the activities from multiple perspectives**. Also relating to this idea was the importance of involving parents in the reflection of children's learning as they offer deeper understandings into children's lives than what the art museum team can see.

We talked about **the ethics of a New Materialist approach to Pedagogical Documentation**. I commented that I found reading the video footage through the Massy quote very challenging and unsettling. It pushed me to consider the ethics of education practices that draw attention away from children. For example, is the process of developing 'democratic' pedagogic practice (Dewey, 1916) with young children just about considering what children are doing or is it about collectively discussing what learning is and how learning practices are produced. The quote made me consider how more-than-human things, such as the physical space and materials additionally have agency.

We discussed **Massey's notion of a 'meeting place'** and how the art museum is a 'meeting place' for many things. Leila remarked that she enjoyed looking at the events happening on the peripheries of the video to see what children were doing who were not playing with the bubble wrap. Anna also discussed how the idea of a meeting place fits in with the broader aims of the Tate Early Years and Family programme that seeks to make children and families visible and at the heart of the institution.

I commented that I felt that Massey's idea of a 'meeting place' was quite abstract and I did struggle with this at times, especially in relation to **how children's democratic rights fit within a post-humanist education approach.** Massey's quote also challenged me to "read" the

documentation very differently to Activity One that was more focused on one particular child's play. While 'reading' the documentation, I thought about how Massey's idea of place could connect with the video. I began to see the children's and family's play as part of a network of relations between the materials, the physical space of the Duveen galleries with the social, emotional and cognitive 'spaces' of the children and families and how these intertwined. At the same time, I felt uneasy at not focusing on children's learning specifically in my reflections.

I mentioned that while 'reading' the quote through the video, the 'places' Massey talks about seemed to be continuously on the move. I was unable to grasp a specific 'place' to analyse in the documentation. I then considered why it was so difficult to analyse. I re-read Massey's quote numerous times and watched the documentation video over. I focused on specific moments of the video to try and analyse what was happening between the children, their families and the bubble wrap in the activity. These seemed to be coming together in a way that transcended a physical 'place.' My focus shifted from big philosophical ideas to a close-up examination of individual children's behaviour.

Image 74: The Experiments in Texture activity mid-session

I found Massey's proposition of a 'meeting place' to be disruptive and inaccessible to read the documentation through. This came as a consequence of the 'meeting place' being unfixed.

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The material encounter

"... what gives a place its specificity is not some long internalized history but the fact that it is constructed out of a particular constellation of social relations, meeting and weaving together at a particular locus. If one moves in from the satellite towards the globe, holding all those networks of social relations and movements and communications in one's head then each 'place' can be seen as a particular, unique, point of their intersection. It is, indeed, a meeting place. Instead then, of thinking of places as areas with boundaries around, they can be imagined as articulated moments in networks of social relations and understandings, but where a large proportion of those relations, experiences and understandings are constructed on a far larger scale than what we happen to define for that moment as the place itself..." *Massey, D. 1994. Space, place and gender. University of Minnesota Press: Minneapolis. p.154.*

Above: Video stills from documentation collected throughout the session

What 'places' are being constructed in the documentation? How is this happening? How does the physical space of the Duveen Gallery and the materials (the roll of foam and the bubble wrap) contribute towards shaping these?

"I was thinking a lot about the space of the Duveen Galleries and linking it to Doreen Massey's quote through the space and symbolism of the Duveens. This is a space that has historically been the center of this grand museum that has this big flight of stairs up to it. In terms of the history of museum space, I was thinking how important it is for children and families to connect with that space through the use of the material and through their interactions with other people. I saw that happening on Saturday in an exciting way, from the unraveling of the foam to the covering up of the gold on the floor. I think that is also a major aim of the programme: to make children and families very visible and to be at the heart of the building and not be missed by visitors." *Learning Curator*

"One of the things I am thinking about for the next session is around selecting materials that are more fluid and allow for movement between the spaces." *Artist*

"The children and families seem to be are part of a 'world' of active materials and an active construction of space and place. Place and space are the product of many different interconnected components that are constructed through intra-actions between people and non-human things. They both mutually transform through coming together. Everything is in a continuous state of emergence." *Researcher*

"I like the fact that Massey is talking about space as a 'meeting place.' I liked looking at the peripheries of the video where we have one boy swimming through the main part of the space but we also have children on the peripheries and his 'meeting place' includes many different people as he navigates the 'water' of the bubble wrap. It is interesting how he decides not to disturb other children's play but at the same time he does not shy away from others. So, it is this idea of 'who he met?' and where the meeting points for him were in the space?" *Artist*

"This week's interpretation of the documentation pushed me to consider the ethics of what we focus on in the process of pedagogical documentation. Is the process of developing a democratic pedagogic practice with young children just about considering what the child is researching or is it the broader considerations of the 'agency' and 'transformation' of other things such as materials, the physical space and other people? The framing of place as a 'meeting place' of unique, temporal and contextualized networks of social relations, movements and communications was quite abstract... everything felt like it was continuously on the move - forming, deconstructing and reforming. I noticed that my mind start to wander and very different ideas around children's experiences. New ideas slowly started to emerge. We seemed to be moving away from a human-centered approach to children's experiences in the gallery." *Researcher*

Image 75: The Experiments in Texture documentation poster

The size of the Duveen Gallery space allowed for children to engage in large-scale, physical explorations of the bubble wrap. As well as this, situating the activity in the same location for the entire session allowed children to transform the material over an extended period. Perhaps if the group had moved around to different gallery locations, this would not have been possible. Leila commented that the scale and size of

the bubble wrap that was much larger than the scale children would normally encounter in a domestic environment. The **activity, therefore, allowed for unique, embodied experiences for children in the gallery.** Moving on from the second post-session group reflection, I then created an A1 documentation poster that shared some of the key points from Activity Three's planning, facilitation and reflection. This can be seen in Image 75 on page 224.

Next steps

Moving forward, Leila commented that she would like to investigate how children and families could move through different gallery spaces in Activity Four. As Activities One to Three were all based in the Duveen Galleries, this would explore a new approach to the programme.

Activity four: Experiments in Colour

Key events from the activity:

- Derrida's tactic of 'mapping meaning' used to connect children's learning with the art museum practices.

Summary

In Activity Four: Experiments in Colour, Leila and the Early Years and Family team experimented with the idea of colour. In planning for the session, Leila commented that *"I am curious to see where this idea of overlapping colour might lead us."* She drew out her session plans, as in Images 76 and 77 on pages 226. This drawing illustrates her selection of acetate, cellophane, scissors and tape for the activity's facilitation including the material, conceptual, spatial and social content selected. The GPC's planning column in Table 31 on page 227 illustrates the components selected for the activities in detail.

During the session, 15 children and their families attended the activity. A total of 5 children and their families participated in the research. The 'Experiments in Colour' session began in the Clore Family Room at Tate Britain. As this was the final gallery session for the research collaboration, we displayed the documentation posters from Activities One, Two and Three in the space to share the team's thinking with parents. Leila then led the group into the gallery space and sat them in front of David Bomberg's '*In the Hold'* (1913-4) pictured in the background of Image 78 on 228. Leila mentioned that she selected this artwork as a result of its intricate overlapping, jarring and combinations of colours. While in front of the artwork, Leila handed out numerous pieces of cellophane to children.

She gave no formal instructions for how they should use this (Image 79 on page 228). All children naturally started to play with the material without hesitation.
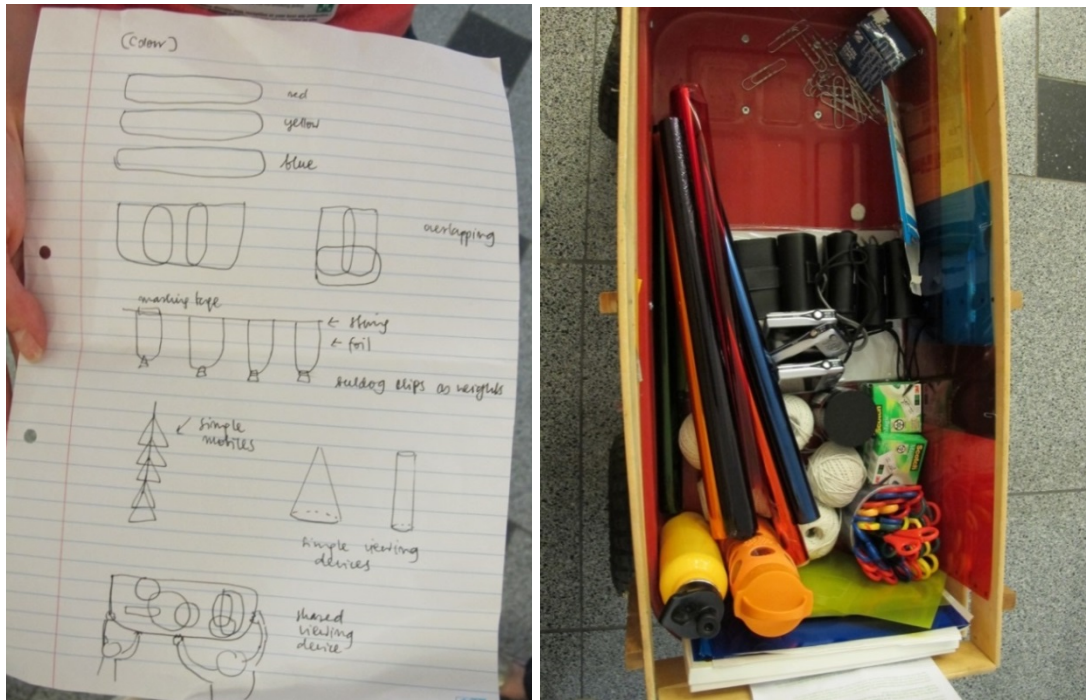
Image 76 (left): Leila's planning sketches for the Experiments in Colour activity.

Image 77 (right): Leila's materials and tools for the activity

Following the session, Leila, Claire and I met for our first post-session discussion. The focus of this conversation was on the surprising or unexpected events that arose in the session. Activity Four's most significant challenge was managing Tate's conservation requirements with the children's play. Many of the children wanted to touch the artworks but were unable to do so due to these conservation requirements. Leila commented that it felt 'unsettling' to tell a child not to touch an artwork as this restricted their explorations. From one perspective, these institutional rules and regulations limited what children could and could not do. At the same time, ensuring the conservation requirements were upheld was important in protecting the artworks.

During the session, Leila and Claire tried to pre-empt children's behaviours and re-direct their focus onto something more appealing than touching the artworks.

Research question (connecting content to concept):		

Artwork used as starting point for inquiry: David Bomberg's *'In the Hold'* (1913-4). Oil paint on canvas. 1962 x 2311 mm. Tate collection.

Ideas, points for experimentation, curiosities relating to the artwork:

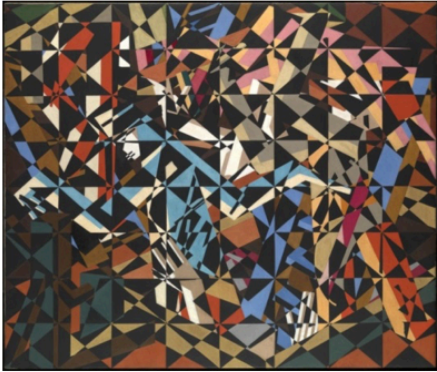| Pre-planning notes	Facilitating notes	Post-session notes
Conceptual: - Core concept: Color - Sub-concepts: N/A - Artistic techniques: Ripping, tearing, cutting - Non-artistic skills: Working together	- Lots of babies and 2 year olds in the session. Crawling and running towards the artworks - Session moved between three key areas: the Clore family meeting area, gallery space one and gallery space two. All of these spaces had different considerations for conservation requirements. Difficult for children to understand that the rules change between them. For example, they could touch things in the family meeting area but not in the gallery spaces.	**Discussion one** - A lot more chaotic due to the presence of artworks in the activity space. This created a strong emphasis on conservation requirements that needed to be maintained - Leila commented that it felt 'unsettling' to tell children not to touch something - Does it matter if a child does something completely different to what was planned for the activity? For example, one child spent an extended amount of time playing with the materials trolley instead of actually playing with the materials.
Material, tools and equipment: - Core material: Cellophane - Construction tools: Scissors, string, blutac - Construction equipment: N/A - Extension materials: More cellophane		
Spatial: - Layout: Cellophane pieces handed out to individual children -Introduced music to the space: N/A - Collaborative play area: - Artwork images: N/A as many artworks present in the gallery space		**Discussion two** - The assumptions of meanings in children's art museum learning practices - Different children 'engage' in learning in different ways - Deconstructing the meaning of engagement. What does engagement mean in relation to children's art museum learning practices? - Objects that are a different size to what a child regularly plays with (i.e. a roll of bubble wrap that is larger than a domestic size) - The need to share children's gallery education practices across the sector
Social: - Introducing research question : Experiments in colour - Open ended questions: What can we do with this? - Vocabulary words: N/A		

Table 31: The GPC from the Experiments in Colour activity

Image 78: Children and their families participate in the 'Experiments in Colour' activity

Image 79: A young boy and his mother play in the 'Experiments in Colour' activity

Finally, we discussed the significance of children's engagement in activities totally unrelated to art. For example, one boy – Sam [6]- spent 20 minutes emptying Leila's materials and tools trolley and then sat in it for the remainder of the session. We questioned whether or not this meant he had successful 'engagement' in the session. We decided to use Sam's encounter with the trolley as a point for further discussion in the second reflection session. Moving forward, I collated the video documentation of Sam's play. The link to the clip can be found here (video still of the footage can be seen in Image 80 below): *(Content removed to protect participant information).*

Image 80: A video still from the 'Experiments in Colour' documentation video

Leading into the second post-session discussion, I proposed we experiment with 'reading' the video through the word 'engagement.' This strategy applied Derrida's (1997) tactic of 'mapping meanings' as a practical strategy for deconstructing the meaning of language. It is based on the understanding that there is no singular or fixed meaning of language. Alternatively, these meanings are provisional, subjective and interconnected with a myriad of other meanings (MacNaughton, 2005). By mapping meanings, educators can make connections between language, meanings and how these shape a programme's practice. I constructed the following five questions as a starting point for deconstructing the world 'engagement' through the video documentation:

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[6] Not child's real name

1. What does it mean for children and families to 'engage' in the Under Fives explore the Galleries sessions?
2. How many meanings can we find for 'engagement?'
3. How are these meanings linked to other words such as 'interactions,' 'facilitation' and 'confidence?'
4. What are the assumptions, contradictions or irrationalities associated with our understandings of 'engagement?'
5. Are there any meanings/voices being silenced or marginalised by these?

These questions were adapted from MacNaughton's (2001) tactics of binary analysis, erasure and metaphor for mapping meanings in early childhood education.

Five days after the session, Leila and I met on Skype to discuss our reflections. The discussion touched on the following topics including the **assumptions of meanings in children's art museum learning practices.** Leila commented that she found it interesting to think about the different assumptions that underpin people's understandings of words as there is sometimes a hypothesis that everyone has the same understanding of a word however this may not be entirely true.

We talked about how **different children 'engage' in learning in different ways.** For example, when deconstructing the video footage of Sam through the term 'engagement' really helped me to reconsider what is engagement is. I commented that 'engagement' looks very different with different aged children. For example, Sam's behaviour in Activity Two could be interpreted as him not 'engaging' in the session. However, if we understand learning as an unpredictable and dynamic process, Sam's behaviours are acceptable and justified. It is **extremely difficult to evaluate children's learning with materials** as the outcomes are impossible to predict.

I commented that it was interesting to observe how 'engagement' was a common word used in the Tate Early Years and Family programme. For example, on learning programmes I had worked on in Australia, language such as 'learning' and 'pedagogy' were more common than 'engagement.' To map the meaning of engagement, I firstly looked up the definition of 'engage.' The Oxford dictionary articulated that 'to engage' meant to captivate, to focus, to interact and to hold someone's attention. Then I reflected on how 'engagement' has been used in the context of 'Under Fives explore the Gallery' sessions. I looked back over my field notes and found comments such as: *"the child forms relations between the artwork and material from the start of her engagement"* and *"the children seemed very engaged in the activity."* When engagement is used as a verb, it is describing a child showing focus on something. However, to me, learning is not just about paying attention to something. It is also about how knowledge is facilitated from unknown to known. This reflection made me see differences in my understanding of engagement with other team members.

I then reflected on the question 'what are the assumptions, contradictions or irrationalities associated with our understandings of 'engagement?' Returning to the dictionary definition, I considered how maybe someone external to the Early Years and Family team would have interpreted Sam's behaviour as not being 'engaged' in the activity. Then I was considering the question 'who benefits and who is silenced by these meanings of 'engagement?' Reflecting on the New Materialist literature examined in Reconnaissance One, I asked if engagement only involved people or if this is something that artworks and materials so as well? If it is only children that can be 'engaged' than this is a very anthropocentric way of looking at practice. Leila commented that the term 'engagement' has connotations to war and being in battle. Engagement is not necessarily a positive thing but something that has a double-edged meaning.

As 'Activity Four: Experiments in Shape' session was the last time I would work with Leila, I asked her about the overall experience of working on the research project. She gave two key reflections. The first was about **the use of Pedagogical Documentation in art museums** at a general level. Leila commented that the process was valuable to her artistic practice as it made things visible that were usually left invisible:

> *"…for example, with the planning, I usually make a document with my idea, but I keep it for myself and not share it with others. I have gained confidence in sharing these ideas and through thinking 'oh yes, this is part of a plan.' I normally do this, but it does not gain visibility. Very few sessions I have done in the past have had this level of reflection attached to them… It is very refreshing to have that time and opportunity to consider how this all has relevance to my practice and how I could explore things further… It made me aware of these choices and how different materials create very different sorts of engagement, thinking and that changes the dynamics of the situations. I think it will push me to think about how I facilitate engagement in these sessions… I would like to work more in this way, to support the child's position in those conversations and collaborations where the parents are more of an assistant in supporting that. Of course, they are exploring things together too. The idea of working with invitations and provocations is not new to me however this programme has changed the way that I am thinking about this."*

The second point Leila mentioned was about **the importance of sharing learning practices across the sector.** She commented that many artists and curators are exploring practices as individual teams. Over time, these teams may engage in reflections and come to the same realisation as other teams that are working independently of them. It is difficult to know what other artists and curators are doing without sharing practices across the sector. Leila commented that from her experience working across various art museums, a lot of children's practices are not very well documented.

Thinking through 'engagement'

Through reflecting upon everyday words we use, we can begin to consider the limitations and challenges of language, construct new meanings and different ways of thinking about practices. Through doing this, the goal is not necessarily to remove inequalities or social injustices connected to language but to attend to them. The following questions aimed to explore the multiples understandings, origins, limitations and power relations of meanings connected with 'engagement.' We asked:

What does it mean for children and families to 'engage' in the Under 5's in the Gallery sessions? How are these meanings linked to other words such as 'interactions,' 'facilitation' and 'confidence?' What are the assumptions, contradictions or irrationalities associated with our understandings of 'engaggement?' Who benefits from these meanings? Are there any meanings or voices being silenced or marginalised?

Photographs taken by the researcher during the session. *Left:* a baby explores the materials of cellophane, cardboard tubes and bulldog clips. *Right:* Two toddlers use the material trolley to pull one another around the gallery space.

"I found the process of questioning the word 'engagement' really interesting as there are so many words that I think we assume everyone understands their meaning but I would argue that these meaning are not fixed."*Artist*

"I started off from quite a traditional perspective. I looked up what the dictionary definition of 'engagement' meant. It stated that to engage was to captivate, to focus, to interact or to hold someone's attention. There was an example given of 'I was very engaged in the presentation.' This perhaps suggests that engagement is about one person focusing their attention and interest on whatever is happening." *Researcher*

"I find it exciting to reconsider what engagement is how this could form and open-up new, endless possibilities for children..." *Artist*

"The process of pedagogical documentation has made me aware of these choices and how different materials create very different sorts of engagement, thinking and that changes the dynamics of situations. In a huge way, I think it will also push me to think about how I facilitate engagement in these sessions." *Artist*

"The programme pre-planning is perhaps more about creating a starting point for explorations that children can use to create new relations in the session." *Researcher*

"In our reflections, I think we have been thinking about 'engagement' as not just holding attention but about how these activities are used as moments that new relations are shaped, negotiated and used to form new and networked thought processes. This is a dynamic, creative and emergent process that comes from a myriad of interactions. The focus isn't just on someone paying attention but on the network of relations that are being formed. What shapes these 'networks?' Is it only humans who participate in this? Or do artworks and materials also have agency, are active participants and "talk back" to children, families and artists in agentic ways? Who benefits from the term 'engagement' when we think of it in relation to "the child is engaged." This is a very anthropocentric way of looking at gallery learning practice, which is very ethically challenging." *Researcher*

"I have reached an understanding that in gallery education there is a whole spectrum of work that has been happening for a long time and not much of it is well documented. There are lots of duplicate projects in gallery education because of this. I feel like a lot of the time gallery education is not very aware of itself because of this. If we can work together more and strengthen collaborations and sharing more can happen, we can build off our history and experiences." *Artist*

"I am interested in this idea of how shared material encourages shared exploration and the difference this has with individual exploration." *Artist*

Image 81: The Experiments in Colour documentation poster

Sometimes this means that there are a lot of duplicate projects happening that explore the same thing but a few years apart. Leila commented that as a result:

> *"…gallery education is not very aware of itself because of this. If we can work together more and strengthen collaborations and sharing more can happen, we can build off our history and experiences."*

Moving forward from the second post-session reflection, I created an A1 poster (Image 81 on page 232) that shared the team's thinking before, during and after the session.

Steps five and six changes:

Steps five and six analysed the programme's context, overall dynamics and how these fit in the 'Tate-Research' activity system. Figure 18 (below) and Figure 19 (page 234) illustrate how these relate to the other components in the activity system:
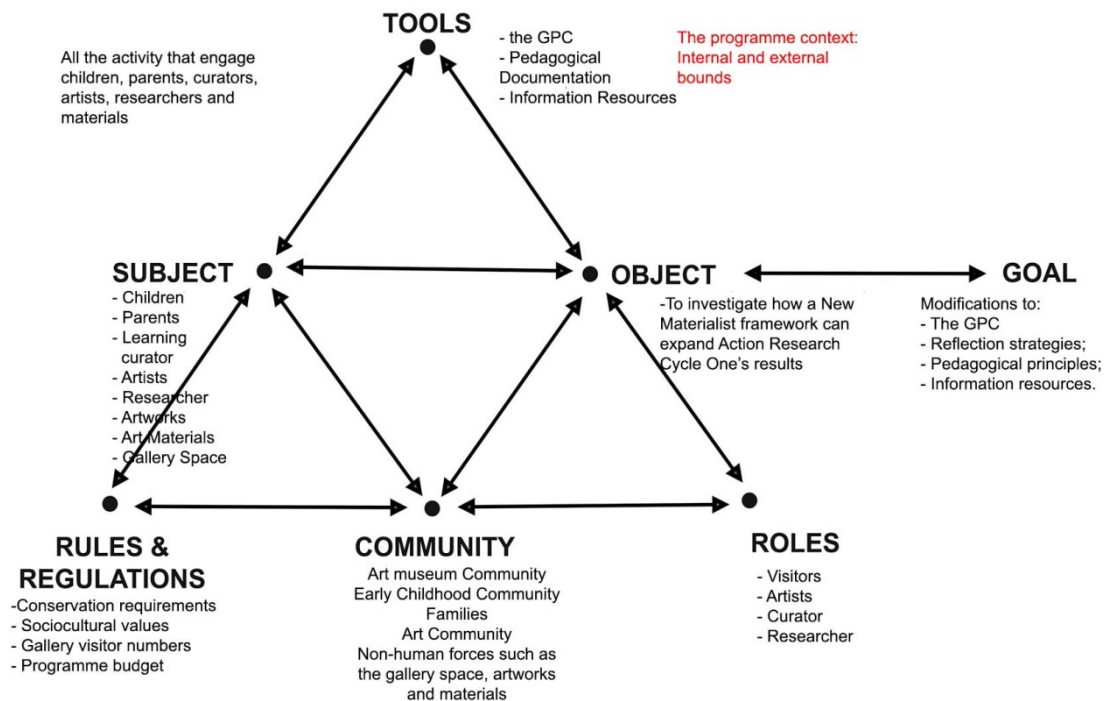
Figure 18: A model of the 'Tate-Research' activity system's context

Multiple changes were made to the GPC, Pedagogical Documentation process, practice principles and information resources leading on from steps five and six including:

1. **GPC:** No modifications made.
2. **Pedagogical Documentation:** Derrida's process of 'mapping meanings' produced a new strategy for connecting young children's learning with Tate's practices. In particular, this tactic opened up a new way of thinking about the language that is used in art museum learning practices. Moving forward, this strategy could be used to further explore how language shapes practices in different art museums. A significant part of step six was to consider how sustainable Pedagogical Documentation is as an ongoing curatorial process however this was difficult to assess in the timeframe of the fieldwork.
3. **Practice principles**: An artwork and material's properties are important components that shape what children can and cannot do with

them. **Acknowledging these physical properties** is therefore an important part of the coming together of New Materialism and constructivist learning theory.

4. **The information resources** were identified as needing development following the analysis of step five and six. The first was practical examples of Derrida's process of mapping meaning. The second was an industry-wide network for artists and art museum teams to share and reflect on children's learning and gallery practices.

TOOLS
- the GPC
- Pedagogical Documentation
- Information Resources

All the activity that engage children, parents, curators, artists, researchers and materials

The programme context: Internal and external bounds

The programme's overall dynamics

SUBJECT
- Children
- Parents
- Learning curator
- Artists
- Researcher
- Artworks
- Art Materials
- Gallery Space

OBJECT
-To investigate how a New Materialist framework can expand Action Research Cycle One's results

GOAL
Modifications to:
- The GPC
- Reflection strategies;
- Pedagogical principles;
- Information resources.

RULES & REGULATIONS
-Conservation requirements
- Sociocultural values
- Gallery visitor numbers
- Programme budget

COMMUNITY
Art museum Community
Early Childhood Community
Families
Art Community
Non-human forces such as the gallery space, artworks and materials

ROLES
- Visitors
- Artists
- Curator
- Researcher

Figure 19: A model of the 'Tate-Research' activity system's overall dynamics

Reflecting

Action Research Cycle Two explored the research question, 'how can children's learning intra-act with Tate's curatorial practices?' Under the umbrella of this focus, the enquiry also asked:

- What are the mediators that facilitate children's learning at Tate from a New Materialist perspective?
- How can Collaborative Participatory Action Research and Pedagogical Documentation be used to connect Tate's practices with children's learning from a New Materialist perspective?
- How can I further develop the resources (practice principles, reflection strategies and the planning tool) for reflecting on children's learning and art museum practices from a New Materialist perspective?

In this section, I engage in a second-order analysis of Action Research Cycle Two's activity to outline seven key outcomes from the enquiry.

Children's learning environments can be curated to support dynamic learning

Allowing for flexibility was an integral part in curating each 'Under Fives explore the Galleries' activity. For example, Leila and the Early Years and Family team emphasised the importance of planning for the 'unexpected' by carefully selecting different materials, art tools and ideas for each session. This planning allowed the team to be prepared to respond to unanticipated events that arose while the activity was being facilitated. These planned, yet also spontaneous responses can be understood as a 'pedagogy of improvisation' in which Leila reacted to unexpected events that occurred (Lines, 2018). The children and their families also participated in the pedagogy of improvisation by making use of the creative opportunities that were available to them to create new connections between artworks, materials, concepts, the gallery space and mediating tools.

Such events included children's social interactions with others, parent's questions and material transformations. For example in the 'Experiments in Line' activity, Leila watched and responded to children's experimentation with the string as it changed form from being in a ball, to rolled out in the Duveen Gallery and finally heaped into a large pile. Leila also introduced new tools and materials, such as scissors and pipe cleaners, to participants throughout the session. She also relocated the group from the gallery space to the Clore Learning Studio when she felt the play had organically come to an end. By carefully curating the components of the learning environment in advance, Leila and the Early Years and Family team were able to have the appropriate resources on hand to respond to children's and family's experimentation in the session. This receptive state can be understood as a learning curator or artist's willingness to respond to dynamic intra-actions between people and things as they occur (Lenz Taguchi, 2009).

Reflecting on children's learning and art museum practices takes time

In this enquiry, learning was understood as a dynamic process produced over time (MacNaughton, 2003). Allowing the action research team to make intra-active connections between children's learning and the curatorial practices over multiple events was therefore important. For example, in Action Research Cycle One, the Atelier team collaboratively reflected on the session immediately following the gallery session. This meant that the team did not have time to individually reflect on the records of children's learning before discussing them as a group. As a result, a second 'post-session reflection' session was added to the Guide for Pedagogical Curation leading into Action Research Cycle Two. In the Tate research cycle, the first reflection occurred immediately following the

gallery sessions. The second reflection then occurred a few days after this via Skype. The latter allowed for deeper subjective and intersubjective reflections on children's learning to be formed over time.

Pedagogical Documentation makes invisible aspects of learning practices visible

While much has been written on Pedagogical Documentation's ability to make children's learning visible (Dahlberg, 2012; Fleet et al. 2017; Rinaldi, 2001), very little has been written on how this process can also give visibility to educator's practice. For example, Leila commented in Activity Three that the recording and reflection of children's learning had supported the development of her artistic practice. Previously to working on the 'Under Fives explore the Galleries' programme, Leila planned her art workshops by herself, usually in the form of individual note-taking or in her head. By writing down her planning notes, sharing these visible records with the action research team and discussing them with others, Leila believed that she was able to reflect on her practice in a much deeper way. Additionally, the documentation posters from each activity also gave visibility to Leila and Tate's practices, helping to make 'invisible' thinking processes visible and in a form that could be shared with others. By making both children's and the action research team's learning visible, Pedagogical Documentation was able to support new trajectories for the practice. This is in contrast to the records of the learning (i.e. the photos, videos and field notes) being used to make conclusive summaries of learning and practice.

Materials are active participants in gallery learning

Action Research Cycle One's reflections identified materials as an important part of children's learning in the early year's Atelier. Outcomes of the first stage of research also defined learning as a dynamic, unpredictable and creative process. Reconnaissance Two then built on these outcomes to explore a New Materialist framework for investigating learning and practices in art museums. In contrast to Action Research Cycle One's definition of learning, New Materialism conceptualised learning as a dynamic process produced across multiple events *as well as* across multiple components of a learning environment including non-human entities such as materials and gallery spaces.

For example, a New Materialist approach to the 'Under Fives explore the Galleries' encouraged Leila, the Early Year's and Family team and I to consider how different materials such as string, paper, bubble wrap and cellophane opened up children's divergent learning pathways in the sessions. In each session, the materials were not just passive substances for children's self-expression or manipulation but participatory forces that

actively worked in dialogue with people to produce unique learning pathways (Barad, 2007; Bennett, 2010). In contrast to Action Research Cycle One's focus on Constructivism, this New Materialist approach to curating learning environments recognised that artworks and materials also have agency. Educators can therefore pay attention to the intra-actions between human and non-human components of a learning environment (Garber, 2019). The New Materialist framework also shed light on how the materials and the artwork's meanings were not separate from children's thought processes but in a continuous state of transformation with them. From this perspective, learning was not just produced within the children but from mutually transformative intra-actions between human and non-human entities, including materials and the gallery space.

In the 'Under Fives explore the Gallery' sessions, materials were not the central subject matter but rather a mediating tool that opened up thought processes between artworks and children. For example, the Early Years & Family Convenor commented in Activity Two's reflection that the materials featured in the activities needed to be open-ended enough to allow for different links to be made but also conceptually structured enough to encourage children's thinking to become more complex over time:

> "*I think that it is a question of choosing materials that allow for enough connections that can be easily made yet still have that 'loose parts' element that allows for the emergence of connections that we have not thought of that are not too abstract.*"

Leila, the Tate team and I also discussed how the material's selection, layout and transformations can also influence the frequency and types of intra-active social interactions that occured in a gallery activity. For example, in Activity One: Experiments in Line, the string was initially presented in a way that children could play with individually. This meant that the social interactions between participants were restricted. As the children then started to bundle the string up together, multiple children were able to play with the material at the same time. The social interactions amongst the group therefore increased.

Additionally, the physical properties of materials and the gallery space were also perceived as important components in shaping learning. For example, in 'Activity Two: Experiments in Shape,' the tissue's properties allowed Tom to lift, scrunch and throw the material in different ways. As he did this, the material allowed him to explore the concepts of weight, height, measurement and texture. The paper's properties transformed as Tom crawled and played with it, creating new starting points for further experimentation. These reflections were then built on in 'Activity Three: Experiments in Texture' where the action research team decided to follow the bubble wrap's transformation over a 30-minute timeframe in the post-session reflection. In this discussion, Leila talked about the significance of children's physical and sensory encounters with the bubble wrap and the

marble of the Duveen Gallery floor, emphasising the active force of materials and space in the activity.

Art museums are distinct spaces for children's learning

The New Materialist literature review undertaken in Reconnaissance Two highlighted the significance of embodied learning in education settings. From this perspective, children's physical and embodied museum experiences are intertwined with their mental processes, and together form an art museum's sensory landscape (Hale, 2012). While the notion of embodiment was flagged as an important learning process in Reconnaissance One, Action Research Cycle Two examined this process in further detail and specifically in relation to New Materialist critical theory.

For example, in the reflections of Activity Two and Three, the significance of children's embodied, physical and multi-sensory encounters with the paper, bubble wrap and Duveen Gallery's marble floor surface were highlighted in the group reflections. Curating the activities so that children could experience the gallery spaces in multimodal ways, such as through movement, actions, sound and touch became an important consideration in each activity.

Furthermore, Tate's curatorial display of artworks also influenced children's and family's learning in the 'Under Fives explore the Galleries' activities. Pringle (2009a, p.179) argues that the *"juxtaposition of works can encourage questioning by viewers, allowing for more open and plural pedagogic processes."* This was evident in 'Activity Four: Experiments in Colour' when Leila sat the group in front of David Bomberg's painting '*In the Hold'* (1913-4). Leila then handed out numerous pieces of cellophane to participants to let them play with it. The position of the group in relation to the artwork and the materials allowed children to make unique connections between the cellophane, the painting and the space around them. The Gallery therefore provided a distinct setting for learning by bringing together a unique combination of mediators.

Children's interactions with physical artworks provide unique aesthetic experiences

Action Research Cycle Two illustrated how artworks can construct unique aesthetic experiences for children's learning (Eisner 1972). These face-to-face encounters with artworks provide distinct sensory experiences that cannot be re-created with an image of an artwork. Examples of a children's sensory engagement with an artwork may include interacting with it visually, aurally and physically, if touching is permitted. These sensory experiences can also be shaped by the artwork's physical properties and how these interact with other components in the gallery space, such as

lighting, the height of the artwork and its positioning in relation to other artworks.

For example, in 'Activity One: Experiments in Line,' Imogen observed and interacted with the aesthetic qualities of Cerith Wyn Evans' *'Forms in Space… by Light (in Time)'* (2017) in the Duveen Gallery space. Such qualities included the artwork's luminous glow, shape, curve, size and form. Her interaction with the installation provided a unique experience to what she would have had if viewing an image of the artwork at home or at school. However, while children may encounter an artwork's unique aesthetic qualities, there is no guarantee that this experience will produce learning (Greene, 2000). As a result, learning curators and artists need to actively plan, facilitate and reflect on children's sensory learning with art to assist these encounters in becoming pedagogical experiences.

Rhizoanalysis and mapping meanings are viable strategies for reflecting on the assumptions, ethics and language that shape learning practices

Action Research Cycle One investigated research questions as a strategy for critically reflecting on children's learning and art museum practices. Action Research Two then builds on this tactic to investigate the use of rhizoanalysis and mapping meanings as two new strategies for exploring the research focus. For example, in Activities Two and Three of Action Research Cycle Two, rhizoanalysis was used to connect the records of children's learning with the action research team's practice from a New Materialist perspective. In Activity Four, mapping meanings were then used to interrogate the term 'engagement' in the 'Under Fives explore the Galleries' programme. These two strategies produced dynamic connections between the team's planning, the children's experiences, the learning environment's components and the team's use of language to describe the practice. While both rhizoanalysis and mapping meanings have been used previously in early childhood education contexts (MacNaughton, 2005 & Pacini-Ketachabaw et al, 2014), this research has demonstrated the viability of using these strategies to encourage the intra-action between children's learning and curatorial practices in art museums.

Changes

This section shares the final iteration of the critical framework for supporting the intra-action between children's learning and art museum curatorial practices. The framework consists of:

- A planning tool for curating children's art museum learning environments. This is referred to throughout this thesis as the Guide for Pedagogical Curation (GPC);

- Reflection strategies for supporting the intra-action between children's learning and art museum practices;
- Information Resources;
- A final set of Practice Principles outlined in Chapter Seven of this thesis.

The Guide for Pedagogical Curation

In this research, the Guide for Pedagogical Curation has provided an architecture that aims to:

- Support art museum teams in constructing pedagogical intention in children's learning environments;
- Curating children's learning environments in a way that brings together Constructivist and New Materialist learning theories;
- Draw on artist's and designer's material practices as a starting point for curating children's learning environments in art museums;
- Visualise art museum team's practices and the language that shapes practices.

This enquiry has developed the following five steps that can be used to link artworks, artist's material practices and children's learning in the design of a learning environment. These steps should not be a definitive methodology but rather a *guide* for curating children's learning environments. A template of the final iteration of the Guide for Pedagogical Curation is presented in Table 33 on page 242.

Step one: **Artwork selection:** An artwork or artist's process could be used as a starting point for curating a children's material-based learning environment. The artwork may come from an art museum's collection or temporary display. Art museum collections are rich archives of the different ways that artists' and designers' have explored materials over time.

Step two: **Material selection:** An artist's material practice – that is embodied in an artwork - may produce a dynamic starting point for the curation of a material-based learning environment. Examples of materials may include clay, paint, natural materials, recycled plastic, cardboard, sound or the human body. Consideration may also be given towards the health and safety requirements of the material in relation to baby and toddler's use. For example, transparent plastic may provide an adequate substitute for glass.

Step three: **Art concept selection:** The material can then be connected to a formal art concept. For example, balance, construction, line, space or coverage. The link between the material content and art concepts may then provide the constructivist learning environment's 'problem-space' that participants explore. Material content and art concept can also be used to produce a research question for a gallery activity. For example, 'how can children explore coverage (art concept) through paint (material content)?'

Step four: **Mediating tools selection** can scaffold intra-active connections between the material content and the art concept. These mediating tools can aim to produce new social, emotional, cognitive and embodied learning pathways. Examples of mediating tools could be:

- Material mediating tools: Art tools, extension materials and information resources
- Social mediating tools: Collaborative challenges, questions, vocabulary and greetings to participants, non-artistic social skills such as working with others.
- Spatial mediating tools: Arrangement of materials and equipment, positioning of artwork images and videos.
- Conceptual mediating tools: Sub-art concepts
- Tools and information resource mediating tools: Art tools, equipment and information resources (e.g. artwork images or video imagery).

Table 32 (page 242) features suggested questions to help learning curators and artists select mediating tools for a learning environment.

Step five: **Learning environment facilitation.** The material content, art concept and mediating tools can interconnect to construct the initial material-based learning environment. As children play and experiment with the learning environment's components, they may transform in different ways. Artists and educators may then respond to children's experimentation by introducing new tools, rearranging materials, asking open-ended questions or demonstrating a new artistic skill. The learning environment's focus may remain on the children's experimentation with materials and concepts, as opposed to developing one final art product.

Step six: **Generating records on children's learning:** If a research question has been produced in the planning phase, this may then be used to guide the generation of children's learning records during the activity's facilitation. For example, if the research question is 'how can children explore coverage (art concept) through paint (material content)?' then art museum staff may then produce records of children's learning relating to this question. Visual methods such as video and photography can be useful in producing records of children's learning. These could then be accompanied by written accounts of children's conversations or actions.

Tools and Information Resources	• What tools could children use to explore the connection between the material content and art concept? *E.g. paint rollers, masking tape, string, pegs* • What equipment could children use to explore the relationships between the material content and art concept? *E.g. over-head projector, climbing frame, table* • What information resources could assist children in scaffolding links between the material content and art concept? *E.g. artwork imagery, video imagery of an artist performing a technique, instructions on how to perform artistic techniques* • How have artists explored the material and concept? Use images and videos to illustrate examples
Material	• What extension materials could be introduced to children at a later time if and when appropriate? *E.g. Torches, plastic pots and pans, fabric, crayons, pencils and scissors* • How could the materials be transformed, remixed or appropriated over time? *E.g. Through the use of an art tool or technique.*
Social	• What artistic techniques could be demonstrated to children? *E.g. Ripping, scrunching, stacking, balancing, folding, sticking and draping. Demonstrating how to use tools including how to clip and peg, how to rip tape and how to tie string* • What challenges could children be set to explore the material content and art concept? *For example, if the material is cardboard and the art concept in construction, a challenge could be 'how can you make a… house, pyramid, tent, tower or building?'* • What open-ended questions could you ask children? *For example, 'can you tell me about this? How can I help you? What else does a house have? I don't know what this looks like, what do you think it looks like?'*
Spatial	• How can the materials be laid out to support social interactions between children? • How can the materials be laid out to support children's movement and physical development? • How can you present the material in an unfamiliar way that ignites imagination?
Conceptual	• What additional concept could children explore in the space? *For example, height, dimension, open/closed spaces. Measurement, gravity and texture.*

Table 32: A list of the GPC's mediating tools and associated questions for practitioners

Artwork or artist's material process:				
Material:			Art Concept:	
Research question (if used):				
Learning Environment Component		**Session facilitation**	**Post-session reflection one**	**Post-session reflection two**
Material	• Core art material • Extension materials	**Responding to the interactions that occur between children, artworks, materials and the learning environment's components** **Recording of children's learning**	• **What are the team's initial reflections from the activity?** • What aspects of children's interactions with the learning environment surprised the group? • **Could the records be used as a point for further reflection in the post-session reflection?** • **What strategies could be used to reflect on the records of learning further?**	• **Group reflection** • **Use strategies for linking children's learning with art museum practices including:** • **Research questions** • **Rhizoanalysis** • **Mapping meanings** **Construct plans for future children's learning practices based on these critical reflections.**
Conceptual	• Sub art concepts			
Social	• Collaborative challenges • Questions • Vocabulary • Greetings to participants			
Spatial	• Spatial arrangement • Artworks • Artwork images • Video projections • Music			
Tools and Information Resources	• Art tools • Equipment • Information resources (e.g. artwork and video imagery, diagrams of how to perform artistic techniques etc.).			

Table 33: The final iteration of the GPC

Step Seven: Strategies for reflecting on children's learning and art museum practices

Three different strategies for critically and collaboratively reflecting on children's learning and art museum practices have been explored in this enquiry. These being:

- Reflection questions,
- Rhizoanalysis and;
- Mapping meanings.

Details of these strategies, including practical examples, are outlined in this section.

Strategy One: Research questions

In Action Research Cycle One, research questions were drawn on as a strategy for joining young children's learning with the Early Years and Family team's practice. These research questions also produced pedagogical intentions for gallery activities that aimed to facilitate learning and enquiry amongst the learning curators and artists. The following steps can be used as a guide for using research questions to plan, facilitate and reflect on children's learning and art museum practices:

Image 82: An example of using research questions as a reflection strategy

Step 1 (planning stage): Art museum teams can construct a research question in the planning stage of a learning activity. This question can then be shared amongst an art museum team

Step 2 (facilitation stage): This question can then be used to guide the facilitation of the session. It can also be used to generate the records of children's learning while the activity is being facilitated.

Step 3 (post-session stage): Following the session, the question can then be used as a starting point for the art museum team's reflection on children's learning during the activity's facilitation. For example, image 82 (above) shares a poster that was produced using the research question 'how can children explore coverage through paint?'

Strategy Two: Reading texts through one another (Rhizoanalysis)

An additional strategy drawn on in Action Research Cycle Two was to read texts through one another. Such texts may be language-based texts such as field notes, meeting transcripts or visual texts such as photo, video or objects. This reflection strategy is termed 'rhizoanalysis' as it is based on Deleuze & Guattari's (1987) concept of the rhizome, a metaphor for how meanings and knowledge are produced through non-hierarchical offshoots, expansions and pathways. In post-critical theory, rhizoanalysis can occur when different texts are 'read' through one another. By doing so, different discourses, meanings and material artefacts can be connected in new ways to produce alternate understandings (Pacini-Ketchabaw et al., 2014). Rhizoanalysis in early childhood education can be used to explore the 'politics' of a text in a way that also creates new texts (MacNaughton, 2005).

This strategy may encourage art museum teams to reflect on learning and practices in different ways through making links between children's learning in an activity and how this relates to external entities. Image 83 on page 246, illustrates an example of rhizoanalysis from the fieldwork undertaken in Tate's 'Under Fives explore the Galleries' programme. In this, a one-minute video observation of a boy crawling through the Duveen Gallery space is 'read' through a Tim Ingold quote. In art museums, rhizoanalysis might take the form of the following steps:

Step 1 (facilitation): Generate records and observations of children's learning process while the activity is being facilitated.

Step 2 (post-session) select your text of the child: Rhizoanalysis can start with any text however it may be useful to generate a 'text' that explores children's learning, such as a photo or video of a child's play in an art museum activity. The following questions can then be used to reflect on the observation:

- What is happening in this observation?
- What are the texts I would normally refer to in a search for an answer?
- Which children's voices are present in my observation?
- What are the consequences of this child being present in the observation?
- How does my observation privilege one child's voice over other children's voices?
- How will I use my observation to honour those children whose voices struggle to be heard?

<div align="right">(MacNaughton, 2005).</div>

"In the art of inquiry, the conduct of thought goes along with, and continually answers to, the fluxes and flows of the materials with which we work. These materials think in us, as we think through them... To practice this method is not to describe the world, or to represent it, but to open up our perceptions to what is going on there so that we, in turn, can respond to it." Tim Ingold (2013)

Image 83: An example of rhizoanalysis as a reflection strategy

Step 3 (post-session) select a second text that is different from the first: To support the production of rhizomatic thinking, the observation of children's learning can be read through a text that would not normally be connected with it (MacNaughton, 2005). For example, such a text could include a quote from a critical feminist book, a policy document or a popular culture book. These texts then produce multiple entry points into deconstructing the observation of children's learning and disrupt how an individual or group may normally interpret it.

Step 4 (reflection stage) reading the texts through one another: The texts can now be read through one another. The following questions can be used as a starting point for such critical reflection:

- What do the texts do to one another?
- Do they rupture one another?
- Do they connect with one another?

(MacNaughton, 2005)

Step 5 (reflection stage) looking for new connections: New ways of thinking about practices can be produced by 'reading' texts through one another. Art museum teams may look for new connections between their practice and issues surrounding race, class and gender. By doing so, they may consider any assumptions that underpin their work with children. By looking for new connections, art museum teams may produce new creative practices with children.

Strategy Three: Mapping meanings

Mapping meanings was drawn on as a reflective strategy to explore how the language used to describe the curatorial practice in art museums also shapes the practice itself (Derrida, 1997). The purpose of mapping meanings is to explore the beliefs, assumptions and meanings that shape language. This strategy supported the art museum team's understanding that language does not have a singular, fixed meaning but rather these meanings are provisional, subjective, contextualised and related to other meanings. By mapping possible meanings, art museum teams can explore and question the discourses that produce power structures in children's learning practices. This is important as when educators act from one set of meanings, it can empower some people and things while silencing others. When and if necessary, art museum teams can debate different meanings of language and make modifications to their practices. Like the use of research questions and rhizoanalysis, mapping meanings supports art museum teams in making choices about the language they use and the meanings behind these.

MacNaughton (2005)'s framework for using mapping meanings offers a useful heuristic for critically reflecting on the language that shapes children's learning and art museum practices. In my adaptation of her strategy, the following steps can be used as a guide for implementing this tactic in curatorial practices:

Step one – facilitation of activity: Generate records of children's learning while the learning activity is being facilitated. All participants can partake in this, including children and their families.

Step two – seeking multiple meanings: by asking, 'how many meanings can you find for this word?' For example, what are the different meanings of the word 'curriculum?'

Step three – seeking meaning traces: by asking, 'how the meanings we give are linked to other words?' and 'where can we trace the origins of these meanings?'

Step four – seeking meaning limits: by asking, 'what are the assumptions, contradictions and irrationalities within your understandings and/or practices?' 'How do meanings limit what you consider possible for yourself and others?'

Step five – seeking the power effects of meanings: by asking, 'who benefits from the meaning,' and 'what meanings and voices are silenced, suppressed or marginalised?'

An example of how these five steps were used to map the meaning of 'engagement' in the 'Under Fives explore the Galleries' programme at Tate is illustrated in Image 84 (page 248).

What does it mean for children and families to 'engage' in the Under 5's Explore the Galleries sessions at Tate?

- How many meanings are there for 'engagement?'
- How are these meanings linked to other words like 'interactions,' 'facilitation' and 'confidence?'
- What are the assumptions, contradictions or irrationalities associated with our understandings of 'engaging' children?
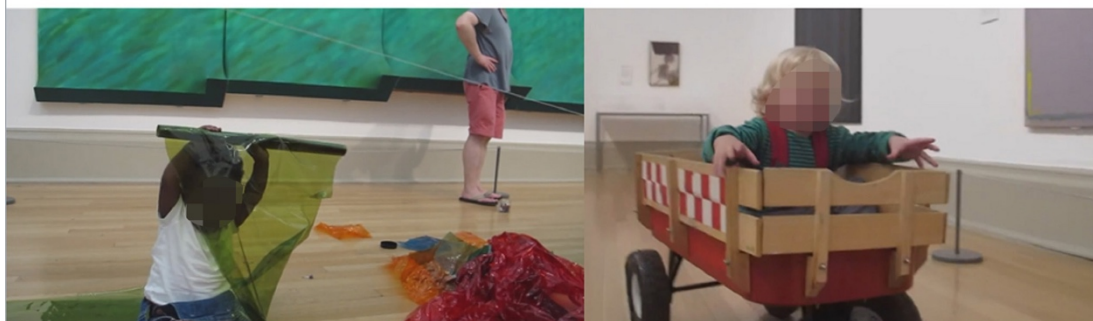- Are there any meanings or voices being silenced or marginalised by these assumptions?

Image 84: An example of 'mapping meanings' as a reflection strategy

Information resource one: List of example art concepts

The following concepts can be used as a starting point for connecting art concepts to material content:

Line	Texture	Arrangement
Space	Colour	Composition
Shape	Construction	Space
Form	Coverage	Colour-layering
Transparency	Opacity	Weight
Assemblage	Pattern	Perspective

Information resource two: Education terms

The red text indicates a definition that was added to the information resource following Action Research Cycle Two.

Apprenticeship in learning: Communities can play an important role in facilitating children's cognitive development (Rogoff, 1990, 1995 & 2003). Children act as 'apprentices' in communities in which they actively learn from observing and participating in activities with more skilled and varied community members.

Cognitive tools: Cognitive tools scaffold a learner's current level of

understanding to a more advanced one (Jonassen and Roher-Murphy, 1999). Cognitive skills are important as they may open up new opportunities for children's experimentation and learning with materials, concepts and mediating tools in art museums. Examples of cognitive tools include vocabulary, the modelling of an art technique or an image of an artwork.

Collaborative tools: Collaborative tools can play an important role in facilitating learning through social interactions between people. As social interactions play a crucial role in constructing intersubjective understandings, opportunities can be made for learners to come together to construct and reflect on knowledge as a group.

A community of learners: A group of individuals who share common values, beliefs and goals (Lave & Wenger, 1991). In this process, social relationships can play an important part in catalysing learning. All participants in a community of learners actively and collaboratively contribute to one another's learning. Differences in skills and abilities can facilitate learning in a community of learners.

Deconstructing meanings: Deconstruction disrupts questions and challenges taken-for-granted values and assumptions (Derrida, 1997). By deconstructing meanings can support educators in questioning the assumptions and power structures that shape the meaning of language.

Guided participation: The development of children's understandings, skills and cognitive abilities are produced from their active and participatory engagement in shared activities with individuals of higher skills (Rogoff, 1990, 1995). Guided participation involves multiple people participating in a structured activity at one time, allowing for the construction and distribution of knowledge in various directions including from children to adults.

Information resources: Information resources provide a learner with information about a problem or phenomena that they are required to solve (Mallory & New, 1994). Information resources may include a journal article, a video or visual instruction. These information resources can scaffold a learner's knowledge from their current level of understanding to a more advanced one. These resources can also be used in collaboration with mediating tools and related case studies to assist children in exploring a 'problem space.'

Intersubjectivity: Social meanings, patterns and languages evolve through individual's negotiated meanings in a social group. Intersubjectivity is the shared interests, social meanings and understandings of a group of people.

Metacognition: an understanding of one's thought and learning (Bruner, 1973).

New Materialism: New Materialism can be understood as a critical theory

that attends to the relationships between all living things and the material environment (Barad 2003 & 2017; Bennett, 2010).

Participatory appropriation: Learners adopt new understandings of their role within a community, learning to changes in behaviour (Rogoff, 1990, 1995, 2003). The process is not a casual one but rather an individual's comprehension that their role within a social group is dynamic, changing and part of an open-ended process. Learners play an active role in facilitating their learning in participatory appropriation

Problem space: the enquiry space that learners explore to solve a particular problem. The problem space can provide learners with engaging, relevant, and real-world problems (Mallory & New, 1994).

Related case studies: Case studies of different learning environments built on the same practice principles can support practitioners in developing new trajectories for future practices. The aim of using case studies in the curation of activities is not to replicate them but to use them as scaffolds to reflect on how these could be adapted in new practice contexts.

Rhizoanalysis: Rhizoanalysis is drawn from Deleuze & Guattari's (1987) concept of the rhizome, a metaphor for how meanings and knowledge are produced through non-hierarchical offshoots, expansions and pathways. Rhizoanalysis occurs when different texts are read through one another. Texts may be language-based (field notes, meeting transcripts) or visual texts (photos, videos). The coming together of these texts may then produce new understandings and knowledge.

Scaffolding: A temporary framework that is introduced to facilitate a learner's current level of understanding to a more advanced one. Scaffolding allows learners to undertake tasks independently that are initially beyond their capacity

Social constructivism: A theory that human's cognitive, social and emotional growth is catalysed through social interactions with other people of varying skills and expertise (Vygotsky, 1978). Cognition cannot be separated from the social context that is was produced in.

Zone of proximal development (ZPD): Originally proposed by Vygotsky (1978), the ZPD is the difference between what a learner can and cannot do with assistance. Through guidance, a more knowledgeable person assists a learner to attain new skills and understandings needed to move their knowledge through the ZPD so that they can become independent in carrying out the task.

Information resource three: a case study of the 'Paint/Coverage Atelier'

This information resource is featured on page 284 of Appendix Five.

Chapter Seven: Pedagogical Curating - A New Direction for Gallery Education

This thesis has traced the development of an action research project that produced a critical framework for supporting art museum teams in curating practices with and for children and their families. Chapter One introduced the action research methodology, the enquiry's ontological and epistemological assumptions and discussed the importance of critical reflection in relation to the overarching research question, 'How can children's (0-5 years) learning be connected with art museum's curatorial practices?' After outlining the thesis road map, in Chapter Two I presented an analysis of the social, educational, historic and artistic content of the enquiry. Reconnaissance One (Chapter Three) then produced a conceptual framework for researching children's learning and art museum practices as well as outlining the research methods, ethical considerations and initial construction of the Guide for Pedagogical Curation. Action Research Cycle One then practically applied and refined the GPC in the early year's Atelier programme at the Whitworth Art Gallery. By collaboratively investigating the research focus within the Atelier team's practice, additional practical resources were developed including a set of practical principles, information resources and the use of research questions as a strategy for connecting children's learning with the learning practice. Results from Action Research Cycle One's activities then led into Reconnaissance Two in Chapter Five that analysed New Materialist critical theory in relation to the research focus. Further modifications were made to the critical framework in Action Research Cycle Two (Chapter Six) which was run in partnership with the Early Years and Family team at Tate Britain. This final section, Chapter Seven, discusses the enquiry's overall applications, implications and contribution to knowledge. I engage in a second-order action research analysis to outline the enquiry's results, including how these relate to pre-existing theories, research and practices. I construct a set of practice principles that can be used to produce a curatorial process that support the intra-action between children's learning and art museum practices.

Constructing art museum learning practices through Pedagogical Curation

Previous curatorial practices, for example, the Education Turn and New Institutionalism, have drawn new links between the purpose of museums, art, learning curators and audiences. This enquiry builds on these practices to develop an architecture that directly links children's learning with the curatorial practices of art museum teams. Pedagogical Curation also builds on previous literature that has conceptualised curating as the process of mediating relationships between artists, artworks and audiences (O'Neil,

2011) to demonstrate that the components and mediating tools of an art museum environment can be specifically selected to support learning.

Curating children's learning environments in art museums is often understood as the process of constructing a creative activity based around a contemporary art idea or artwork. This programming approach is assumed to produce learning; however, learning is often hard to 'see' and evaluate (Rinaldi, 2001). The research shows that, for children's learning to be better connected with art museum practices, gallery education teams benefit from curatorial practices that have clear pedagogical foci. For example, when learning teams actively plan for, facilitate and reflect on children's learning and their practice, learning and pedagogy become concrete and visible processes. This research has constructed a set of practical resources that can support art museum teams to align their practice with children's learning. The resources consist of:

- A guide for curating children's learning environments referred to throughout the thesis as the Guide for Pedagogical Curation (GPC). The GPC operationalises both Constructivist and New Materialist theories to highlight the significance of the material, conceptual, spatial and social components in scaffolding children's learning in art museums.
- A set of reflection strategies and methods for supporting the intra-action between children's learning and art museum's curatorial practices;
- A set of practice principles that underpin the practice;
- Information resources' including a vocabulary list and related case studies of children's learning environments.

These resources work together to actively support art museum learning teams in planning for, facilitating and evaluating learning in their practice.

I have called the critical framework produced by the research 'Pedagogical Curation' as a result of its development of curatorial practices that supports the intra-action between pedagogy, art and learning. This focus on pedagogy is significant as curating in itself is not necessarily inherently pedagogical. To make it so, I further argue that the practice needs to actively facilitate the learning of both audiences and art museum practitioners. Drawing on Critical Participatory Action Research, Constructivism, New Materialism and activity theory, the enactment of Pedagogical Curating is supported by a planning guide, a set of practice principles, reflection strategies and information resources. These mechanisms allow learning to move from being an abstract concept to becoming an active and visible process.

Practice principles of Pedagogical Curation

The following practice principles have been developed from the outcomes of the enquiry. These principles could be used as the basis for producing the practice of Pedagogical Curation. The principles directly relate to three key areas: art museum staff, spaces and processes, as outlined in detailed below:

Art museum staff

- **Learning curators, artists, children and parents can all be co-constructors of art museum learning practices.** Children can participate in the co-construction of learning practices alongside their parents and art museums teams. Key to this principle is a shared belief that all participants have something to learn from one another. For this co-constructive process to occur, learning curators can lead the facilitation of individual and collaborative enquiry amongst people.
- **Learning curators can play a critical role in bringing knowledge of Constructivist and New Materialist theories to art museum practices.** Learning curators may benefit from an understanding of both Constructivist and New Materialist theories. More specifically, the following aspects of the education theories may by useful:
    - Constructivism's definition of learning as a subjective, dynamic and negotiated process (Dewey, 1938) as well its emphasis on socially-mediated learning (Vygotsky, 1978) and the ability to breakdown the specific components and mediators of a learning environment in order to support learning (Jonassen & Rohrer-Murphy, 1999);
    - New Materialism's positioning of materials and space as active participants in the production of knowledge (Barad 2003 & 2007; Bennett, 2010). This focus can then be used to connect artist's experimental practices with materials and concepts with children's learning.

Learning curators may then apply these theories to the practical design of children's learning environments. Simultaneously, by applying Constructivist and New Materialist theories in practice, art museum learning teams may also extend them in unexpected ways.

- **Artist's material practices offer rich possibilities for supporting children's material-based learning.** Building on the work of Eisner (1972, 1985 & 2002) and Greene (1995) who argued that the arts produce unique aesthetic experiences for learning, artists can play an important role in bringing knowledge of contemporary art and material practices to gallery learning. This knowledge can then be brought together with Constructivism and New Materialism to curate children's learning environments that incorporate creative art techniques, art tools and the fabrication of new materials. Artist's may also bring a pedagogical practice to help facilitate children's learning in art museums

alongside learning curators (Pringle 2009a & 2009b). Pedagogical Curation brings together learning curator's and artist's knowledge of artworks and art practices with the pedagogical practice of Constructivism and New Materialism. A learning curator's role is therefore not only about the 'teaching' of art museum collections displays but to bring specialised skills in both art and pedagogy to art museum learning.

- **Parents play an important role in supporting children's learning.** Parents can collaborate with learning curators and artists to support children's learning with art in art museums and at home. By developing reflection strategies that involve parents, art museums may form ongoing relationships with families based around supporting children's learning. These strategies help to generate new partnerships between children, their parents and art museums. Furthermore, by working with parents, art museums can also assist in growing public awareness around the importance of children's learning with art in the wider community.

Art museum spaces

- **Learning is facilitated by social, conceptual, material and spatial mediating tools.** This research has applied Vygotsky's (1978) notion of scaffolding to the selection of mediating tools in children's learning environments. These mediating tools include art tools, vocabulary, artistic techniques and reflective questions that encourage children to connect their prior knowledge with their experimentation of material content and art concepts in art museums. These mediating tools intra-act with one another in unexpected ways, supporting the dynamic growth of learning over time.

- **Materials and spaces are active teachers in children's learning.** This research has explored how the built environment, including space and materials are important components in art museum's learning practices (Blackmore et al., 2011 & Dudek, 1996, 2005, 2013). For example, 'loose parts' materials provide flexible components in a learning environment that children can use to manipulate, construct and move around (Nicholson, 1971). Material and spaces, are therefore not passive substances for children's self-expression but active participants in the production of knowledge (Barad 2003 & 2007; Bennett, 2010; Braidotti, 2013). The physical properties of a material and space, and their ability to transform over time, are also important considerations in designing children's learning environments.

- **Art museum teams can actively plan for the scaffolding of children's learning.** Learning curators' and artists' may select components and mediating tools for a learning environment that have the ability to scaffold children's learning over time. For example, a child's learning may be socially scaffolded by a more knowledgeable individual, including a peer, parent or educator (Vygotsky, 1978). This research has

additionally indicated that scaffolding can be facilitated by materials, gallery spaces and their physical arrangement.

- **Contemporary and modern artworks provide unique aesthetic experiences for children.** Art museums are rich archives of the different ways that artists have explored materials and concepts over time. By facilitating relations between children and artworks, Pedagogical Curation constructs distinct aesthetic experiences that link children's cognitive, social, emotional and embodied learning with artist's aesthetic, conceptual and technical processes. This connection is significant as much of children's art education in schools is not based around contemporary art practice (Sunday, 2015).
- **Art museums are unique spaces for children's learning.** This research has investigated the unique aesthetic and sensory experiences of art museums as spaces for children's learning. The learning activities at both the Whitworth Art Gallery and Tate provided distinct encounters between children, artworks and the physical gallery spaces. For example, in Action Research Cycle Two the *'Forms in Space… by Light (in Time)'* installation in Tate Britain's Duveen Galleries allowed Imogen to interact with the artworks and the space in different ways to what she would have experienced if viewing the artwork as an image.

Art museum processes

- **Children's voices can be integrated into the recording and reflection of art museum learning practices.** This research has developed practical strategies for integrating children's voices into the planning, facilitation and reflection of art museum practices. Visual methods such as photography and video are useful in generating insights on children's social, emotional, cognitive and embodied learning processes. However, if gallery teams are to document children's learning, they additionally need to spend time afterwards reflecting on the records. While art museums have long been positioned as a site for the debate and production of culture (Tallant, 2009), these methods allow young children to also participate in this. Encouraging different people to reflect on children's can also be important in generating multiple perspectives on learning. The reflection on these records may then become a pedagogical process when it facilitates learning and change amongst people (Dahlberg, 2012).
- **Curating children's learning environments is an enquiry-driven process.** While some galleries, such as Tate, have already developed enquiry-driven and co-constructive approaches to art museum learning programme (Pringle & DeWitt, 2014), Pedagogical Curation strengthens the viability of this approach as well as expanding it to include young children and their families.
- **Pedagogical Curating relies on an ontology of both knowing and unknowing.** By curating pedagogically, artists and learning curators can produce learning environments that have a clear agenda that

supports learning. Aspects of the practice are therefore planned and organized. Simultaneously, these learning environments allow children to creatively experiment with the materials, concepts and mediating tools in unexpected and unpredictable ways. This means that other aspects of the practice are unknown and emerge from unanticipated events.

- **Learning can be made visible.** While much has been written on the use of Pedagogical Documentation in early childhood contexts (Rinaldi, 2001; Pacini-Ketchabaw et al. 2014), this research has demonstrated the viability of using documentation as a strategy for visualising learning in art museums. Pedagogical Curation also provides the opportunity for the learning to be made visible and in a form that can be shared with other people (Dahlberg, 2012). By materialising learning, children and learning curators may then gain more visibility in art museums.

- **Learning can be considered a social, emotional, cognitive and embodied learning process.** To focus on one only aspect of learning, for example, cognition is to construct an incomplete perspective of how knowledge is produced. Alternatively, learning can be defined as an interconnected social (Hein, 1988; Rogoff, 1990, 1995 & 2003), embodied (Hackett et al. 2018), emotional and cognitive process (DfE, 2018). This understanding may then be used to guide the recording and reflection of children's learning in art museums.

- **Reflective strategies enable the investigation of the assumptions and power structures that shape art museums curatorial practices'** including the language used to describe and produce practice. The critically reflective strategies of research questions, rhizoanalysis and mapping meanings produced by this research have developed mechanisms that visualise the learning and practice of art museum teams and how these intra-acts with children's learning. The research has also demonstrated how Pedagogical Curation gives visibility to the structures, assumptions and thinking that shape art museum practices. By making these 'invisible' aspects of curatorial practice visible, these reflection strategies can then be shared and further reflected on with other people including parents and interdepartmental staff.

Pedagogical Curation's implications

Implications for art museum learning teams

At the beginning of this discussion, I argued that art museums need to move towards curatorial practices that have clear pedagogical foci based around learning. However, to apply the practice principles of Pedagogical Curation in art museums, learning curators would benefits from an understanding of:

- Constructivist and New Materialist education theories and their applications in curatorial practices;
- Participatory research methods, especially visually-based methods including photography and video. These methods that can then be used to record and critically reflect on young children's learning;
- Critical reflection strategies such as research questions, rhizoanalysis and mapping meanings that encourage the intra-action of children's learning and curatorial practices;
- Ethically responsive evaluation that takes into account the social, emotional, cognitive and embodied process of learning;
- Art practice and artist's experimental processes with materials and concepts. Artworks from gallery collections and displays may provide an archive of how materials and concepts have been explored over time;
- Methods used to produce case studies of learning practices, including photos, videos and written descriptions of pedagogical processes. These case studies can then be shared with other people and used to produce new trajectories for practice.

In order to further develop Pedagogical Curation in new art museum contexts, an 'immersive' approach to practitioner professional development may be adopted. Building on Dewey's (1938) notion of learning through lived experience, the implementation of Pedagogical Curation by learning curators and artists could occur in their physical art museum setting. The immersive nature of Continuous Professional Development run by the Royal Shakespeare Company and Tate was identified as being a key successful characteristic in the training activities (Thomson et al., 2019). In these CPD sessions, teachers were able to explore problems and ideas in the physical location of the theatre company and art museum:

> "*Teachers are encouraged to experience, as learners, the pedagogical principles of open-ended, critical aesthetic inquiry. They are supported to consider how they might curate learning in which pupils' question, explore, challenge, play and interpret... Teachers are encouraged, as learners; to get out of their seats and use their bodies, minds and emotions…*" (Thomson et al. 2019, p.3).

Drawing on the results of this study, further application of Pedagogical Curation in art museums, would require learning teams to modify the approach to their specific programmes, institutions and audiences. Such tailoring would involve further investigation of the Guide for Pedagogical Curation, reflection strategies, practice principles and resources to consider how these could be modified within their context. Critical Participatory Action Research may offer a fitting methodology for investigating this application. To produce an 'immersive' and embedded approach to professional development, art museum teams may partner with a critical friend with whom to work in conjunction to adapt and extend the critical

framework through facilitated discussions and practical suggestions. A critical friend can be understood as a trusted person who asks provocative questions, produces data to be examined through a new lens and offers helpful critiques of other's work. They also take the time to understand the context and desired outcomes of other's work and advocate for its success (Swaffield & MacBeath, 2010). This application of Pedagogical Curation may allow the framework to be adapted in a way that is useful and meaningful to the practitioners in a specific cultural institution. For example, in this research I worked as a critical friend alongside the learning curators and artists at Tate and the Whitworth Art Gallery. This position allowed me to participate in the practice while also being able to develop and modify the critical framework independently. By working with a critical friend, art museum teams may also be able to explore Constructivist and New Materialist theories in relation to their pre-existing practices with children and families. This immersive approach to the application of Pedagogical Curation would allow art museum teams to explore the critical framework in relation to their physical setting, institution and audiences.

Implications for cultural funding bodies

Pedagogical Curation constructs a new way for art museums to meet funding body objectives that go beyond basic indicators of success. For example, in the Arts Council of England's 10-year strategic framework for 2010-2020, one of the five core goals for cultural activity funding was that 'every child and young person has the opportunity to experience the richness of the arts, museums and libraries.' Whilst no specific guidelines are given for how cultural institutions may evaluate the success of an activity, this goal provides an objective that art museum teams can strive to achieve. Pedagogical Curation, and its ability to make learning visible may support art museum teams in evaluating this by providing rich qualitative accounts of children's learning experiences that can then be passed on to funding bodies. These records of children's learning may be used alongside quantitative methods that assess the demographics of children and young people who have the opportunity to access art museums. Furthermore, case studies produced by Pedagogical Curation share art museum team's artistic, curatorial and pedagogical thinking that shapes practice. These case studies can then be shared with wider stakeholders, including funding bodies.

Additionally, Hooper-Greenhill's (2007) Generic Learning Outcomes lists five categories that can be used to evaluate the success of a museum education programme. These categories include 1) skills, 2) knowledge and understanding, 3) enjoyment, inspiration and creativity, 4) attitudes and values, 5) action, behaviour and progression. These categories were created to support museum educators reporting on learning outcomes to funding bodies. Pedagogical Curation offers an additional evaluative framework that reflects on both the pedagogical practice of art muesums

in addition to children's learning. This dual emphasis on practice and learning means that an education programme's success is not solely weighted on participant learning outcomes.

Building on the Meaning Making in the Gallery framework discussed in Chapter Two (Pringle, 2009a), this research has looked at the role of materials and space as mediators of learning in art museums. This is in contrast to the focus on verbal dialogue as the primary mediator of learning in the MMG. This research therefore proposes that New Materialism's focus on materials and space can be brought together with Constructivism's focus on social interactions to create an expanded framework for evaluating learning in art museums. This new framework recognises that the social, material, spatial and conceptual mediators are all integral to facilitating learning between artists, art and audiences.

Furthermore, Pedagogical Curation can also be used to produce rich qualitative data on learning that can then be shared with funders. When art museums make learning visible, these qualitative records of learning can be used to supplement funding body's request for quantitative statistics of audiences, such as visitor numbers and the postcodes of participants.

Implications for my practice as a learning curator

Finally, this research has greatly benefited my practice as a learning curator. By undertaking this study, I have had the opportunity to reflect on and expand my understandings of curatorial practices with and for children. I have also gained new knowledge of education theories and practices, especially in relation to New Materialism and activity theory. Prior to commencing my PhD, both of these theories were unknown to me. Furthermore, the reflection strategies produced from this research are resources that I wish had been available to me when I first started working with children in Australian art museums. For example, the use of the Guide for Pedagogical Curation, research questions, rhizoanalysis and mapping meanings would have been extremely useful in supporting the development of my curatorial practice. By exploring and developing the Pedagogical Curation critical framework, I have significantly improved my critical engagement and pedagogical thinking around my practice with children in art museums. Moving forward, I intend to explore the development of the Guide for Pedagogical Curation, reflection strategies, practice principles and information resources with children and families in future professional contexts.

Contribution to knowledge

The cumulative results of this thesis have made contributions to the fields of museum education, early childhood education, visual art and action research. These outcomes are discussed in detail below.

Museum Education

A new framework for supporting the intra-actions between children's learning and art museum curatorial practices

This research has constructed a pedagogical architecture for curating learning environments for young children and their families in art museums. The enquiry has demonstrated how gallery education's existing commitment and scholarly support of Constructivism (Hooper-Greenhill, 1999, 2000, 2007; Pringle, 2009a; Shaffer, 2015) can be brought together with New Materialism (Barad 2003 & 2007; Bennett, 2010). As opposed to situating these theories as ontologically opposed, the research demonstrates how they can be combined to produce an expanded and hybrid architecture for connecting learning and practices.

From the Constructivist literatures, the work of Jonassen and Rohrer-Murphy's (1999), Vygotsky's (1932) and Rogoff (1990, 1993, 1995) were used to investigate the individual components that mediate children's learning in art museums, in particular socially-based mediators. This research therefore adds to previous Constructivist literatures by operationalising 'Scaffolding' and the 'Zone of Proximal Development' to emphasise the importance of social interactions in learning. These components were subsequently used to create the initial Guide for Pedagogical Curation. After modifying the Guide for Pedagogical Curation in Action Research Cycle One, I then drew on New Materialism to expand the critical framework in the 'Under Fives Explore the Galleries' programme at Tate in Action Research Cycle Two. This stage of the enquiry drew attention to the role of materials and the physical gallery space in learning, adding strength to the recent movement towards New Materialism in early childhood research (Blaise et al., 2013; Hackett, 2015; Hackett et al., 2018; Hackett & Somerville, 2017; Lenz-Taguchi, 2009 & 2011b; Macrae, 2007; Malone & Tranter, 2003; Malone, 2017; Ritchie, 2013; Somerville, 2015; Taylor, 2013; Taylor & Giugni, 2012).

The enquiry has produced a researched example that evidences how curatorial practices with young children can be systematically realised. While previous contemporary art and curatorial literatures have stressed the importance of experimentation, criticality and creativity in art museums (Bourriaud, 2002; Graham, 2007; Rogoff, 2010; Tallant, 2009), this research extends on these to include young children under the age of

five. While curating activities for children in art museums is not new, especially at the Whitworth Art Gallery and Tate, this research has applied a novel combination of education theories that broadens what 'curating' in an art museum is and how it can be done with young children.

A new planning resource for curating children's learning environments

The Guide for Pedagogical Curation offers a practical resource for practitioners to operationalise the Constructivist- New Materialist architecture in their everyday practices with young children. The guide connects Constructivism's focus on social interactions and New Materialism's focus on materials and spatiality to support the selection of material, concept, conceptual and spatial components in a learning environment. Mediating tools are then used to 'scaffold;' children's learning between material content and art concepts. The material practices of artists, including the techniques, tools, processes and the new materials they produce, can all provide unique starting points for designing learning environments using the Guide for Pedagogical Curation. The guide also supports art museum teams in setting pedagogical intentions for the planning, facilitation and reflection of learning activities. This research therefore makes a direct contribution towards museum education by producing a new planning resource that operationalises Constructivism and New Materialism in curatorial practice.

Materialising art museum curatorial practices

This enquiry has produced a pedagogical approach that helps to give visibility to the implicit thinking, structures and assumptions that shape learning curators and artists curatorial practices. By making this thinking material, the practice can then be shared with others and used to produce new trajectories for enquiry. By materialising art museum learning practices, this research has also emphasised the important role learning curators play in facilitating individual and collective learning in art museums.

While the vast majority of previous museum education research has focused on audiences (Borun et al., 1995; Borun et al. 1996; Borun et al. 1997; Ellenbogen, 2002; Hackett et al., 2018; Knutson & Crowley, 2010; MacRae et al., 2017; Piscitelli, 1997, 2001), this enquiry has given equal focus to the practices of learning teams, making an important contribution to the emerging interest in art museums as sites for practitioner research. For example, the final iteration of the critical framework on page 240, outlines three reflection strategies: research questions, rhizoanalysis and mapping meanings as possible tactics for helping to make learning and practice visible. This materialisation of practices was approach as an ethical

process that gives visibility to the assumption that shapes curatorial decision making with children. The research therefore makes a direct contribution towards practitioner research in art museums. In particular, it has demonstrated the viability of using research questions, rhizoanalysis and mapping meanings as strategies for supporting the intra-action between learning and curatorial practice.

Early Childhood Education

Integrating children's voices into curatorial processes

This research adds to early childhood literatures on Pedagogical Documentation (MacNaughton, 2005; Pacini-Ketchabaw et al., 2014; Rinaldi, 2001) to demonstrate the viability of applying the critically reflective process in art museums. Whilst artists, curators and conservators are well accustomed to documenting their explorations of ideas, techniques and material processes, the critical reflection strategies developed in this enquiry differ to these by situating children's learning as central to curatorial decision-making. By doing so, Pedagogical Curation builds on the United Nations Convention on the Rights of the Child (1989) that positions children as capable beings who are competent in participating in the production of the beliefs and spaces that shape their lives. The enquiry therefore demonstrates the significance of incorporating children's voices into curatorial processes.

Visual and participatory research methods were predominantly drawn on to record and reflect on children's voices in the early year's programmes at the Whitworth Art Gallery and Tate (Alderson and Morrow, 2004; Clark, 2017; Clark & Moss, 2011). These methods were important in giving visibility to children's learning and putting the learning into a form that the action research cycle teams could respond to. Results from this enquiry have also given a concrete example of how physical recording tools, such as the cameras, pens, notebooks, iPads play an active and participatory role in generating insights on children's multi-modal learning (Lenz-Taguchi, 2009). For example, field notes gave rich descriptions of feelings, smells, and physical sensations in the gallery activities. Other recording devices such as cameras gave insights into children's embodied interactions with materials and the physical gallery space. This research therefore raises significant questions regarding the extent that children's learning can and cannot be recorded by different methods.

However, whilst these methods were useful in generating records of children's learning, how and when they were used in curatorial practices raised numerous ethical questions. For example, Grieshaber & Hatch (2003) caution that Pedagogical Documentation could be used as a form of surveillance and control of learning and practice. This research therefore

supports claims made by Chesworth (2018) that the application of participatory research methods with young children needs to be continuously critically reflected on.

Art Education

Connecting children's learning with modern and contemporary art

The research gives a concrete example of how Constructivism and New Materialism can be brought together with artworks and art practice to design children's learning environments in art museums (Penfold, 2019). Building on the work of Eisner (1972, 1985, 2002) and Greene (1995) who argued that the aesthetic experiences produced through art have unique possibilities for children's learning, this research demonstrated how children's learning can be supported by contemporary and modern art.

For example, in Action Research Cycle One, 'Activity Nine: the Natural Materials/Construction Atelier,' Anya Gallaccio's *'Untitled'* (2016) was used by the action research team to consider how children could explore natural materials and construction. The GPC was used to select the Atelier's components including the materials of logs, sticks and clay, the concept of constructing and mediating tools such as artistic techniques (i.e. stacking, binding, balancing and stacking natural materials) and open-ended questions (i.e. can you arrange these branches in this way?). The artwork itself was perceived to embody many of these art concepts, artistic techniques and artistic skills. The artworks also set the action research team's creative thinking in motion. This research has therefore constructed a new framework for connecting children's learning with modern and contemporary art.

Action research and academic writing

By writing the thesis, I have also been able to materialise my learning processes and explore the assumptions and 'truths' relating to my work as a learning curator. The thesis brings together a body of reflective, creative and analytical text on children's learning and curatorial practices. The writing of the thesis itself produced a space for me to create new connections between curating, art and pedagogy. As these new connections were put together and pulled apart, they in turn produced new trajectories for further enquiry- a form of academic writing that can be understood as a 'textual assemblage' that combines creative, generative and analytical thought (Hanley, 2018). The writing of each action research cycle activity helped to materialise and extend my analysis of the practice. This research has demonstrated the mutual benefit of Critical Participatory Action Research and academic writing.

Where to next?

Whilst this research has investigated the learning of children under the age of five, Pedagogical Curation also has the ability to be further researched, and practically applied, with primary and secondary-aged students. However, modifications may need to be made to the types of mediating tools and intensity of scaffolding required to support the learning of different aged children. For example, if a paint and coverage learning environment was being curated for children aged 10-12 years, more complex mediating tools such as fine-tip paintbrushes or complex artistic techniques such as blending could be introduced to scaffold learning. These mediating tools contrast to those that could be selected for a toddler learning environment which may include easy-to-hold paint rollers or the body as an art tool for exploring paint and coverage. If Pedagogical Curation was also being implemented in a school with older students, teachers may need to allow further consideration of how the components of the learning environment could connect to different aspects of the curriculum. There may also be aspects of Pedagogical Curation learning environments that could be intertwined with formal and explicit school assessment. For example, if a school's art curriculum requires students to be tested for a particular set of artistic skills, these skills may be curated as a mediating tool of the learning environment. The assessment could then occur alongside children's opportunities to experiment and play with materials and concepts.

The results of this research were shaped by the children and families who participated in the Whitworth Art Gallery and Tate's gallery activities. As the majority of these children and families came from upper and middle-class backgrounds, the participants did not necessarily represent a broad spectrum of the United Kingdom's socio-economic, class or ethnic groups. As the participant recruitment was entirely dependent on the visitors attending the art museum's programmes, this was an unchangeable factor in the research. Looking forward, future research could be undertaken in different art museums that engage with different demographics across varied communities.

Pedagogical Curation also has possible benefits for practitioners working with young children in education settings outside of art museums. Such settings could include tinkering studios, maker spaces, libraries, museums as well as schools and kindergartens. Further research could, therefore, examine the application of Pedagogical Curation across different learning settings. Pedagogical Curation could additionally provide a new approach to the design and evaluation of children's learning environments in early childhood education settings. For example, in the United Kingdom's Statutory Framework for the Early Years Foundation Stage (DfE, 2017) there is a strong emphasis on constructing children's 'enabling

environments' that respond to individual needs and curiosities. However, the framework does not specify detail on how these enabling environments can be curated and facilitated. The Guide for Pedagogical Curation produced in this research may provide a useful resource for kindergarten teachers in the United Kingdom designing 'enabling environments' (DfE, 2017). More specifically, the GPC would support educators in bringing together contemporary art practice to support children's learning with materials in their classrooms. However, for this to happen, further modifications may need to be made that allow educators to adapt the guide to different curricula such as the International Early Years Curriculum or the Early Years Learning Framework in Australia. Further research could therefore examine the application of Pedagogical Curation in new formal and informal learning beyond art museums.

Appendix

Appendix One: Consent form for art museum teams

Investigating children's experiences of creative environments in art galleries

Artists, Curators and Art Gallery Staff

Participant information sheet for artists & curators

You or willing members of the learning team at The Whitworth Art Gallery are being invited to be involved in this research study. Before you decide whether you want to take part, it is important for you to understand why the research is being conducted and what your participation will involve. Please take time to read the following information carefully and discuss it with other members of staff and myself if you wish. Please contact me if anything is unclear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this!

Aims: This research aims to generate data on the construction of child-centered practice in early year's learning environments in art galleries. It aims to gain a deeper understanding of how children experience these learning environments and how this can be used to feed into the future artistic and curatorial discussions around the design of children's programming. The study will contribute towards a deeper understanding of the qualities that lead to meaningful experiences for children in art galleries, an aspect of practice which is currently under researched and theorized. The findings from the research will generate a reflective framework to help support conversations between artists, curators and children and their parents to reflect upon the effectiveness of early year's environments in art galleries.

Requirements: Observation of the Early Years & Family programme will be carried out between September to November 2016. Data will be collected through video recording, photography and note taking of group development discussions, programme facilitation and post-session reflection sessions. These sessions will be recorded, and later transcribed into text form. Recordings of the sessions will be deleted upon transcription.

Anonymity/Participation: As part of the presentation of results, your own words may be used in text form. This will be anonymized, so that you cannot be identified. All of the research data will be stored in a secure place in a separate, password-protected file. Please note that: 1) you can decide to withdraw your participation at any point until two weeks after the data has been collected. If you withdraw from the study all data will be withdrawn and destroyed. 2) you do not need to answer questions that you do not wish 3) your name will be removed from the information and anonymized.

Findings arising from this research will be discussed with the early year's team at the art gallery as it emerges from the data collection. This will be an ongoing process in which artists, curators and gallery staff will be given to opportunity to respond to. Once the thesis arising from this research has been completed, a brief summary of the findings will be made available to all gallery staff involved in the research. The data will be kept securely for seven years from the date of publication, before being destroyed. This research has received ethical approval from the University of Nottingham ethics committee.

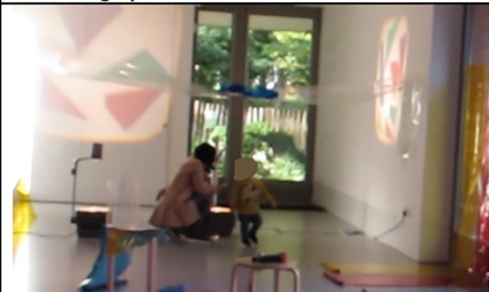If you would like further information please e-mail me: louisa.penfold@nottingham.ac.uk

You can also contact my supervisor, Professor Pat Thomson on:
patricia.thomson@nottingham.ac.uk.

To ask anything about the ethics of the research, you can contact:
educationresearchethics@nottingham.ac.uk.

Thank you very much for your time!

Artist, Curator & Gallery Staff Consent Form

- I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.

- I understand the purpose of the research project and my involvement in it.

- I understand that I may withdraw from the research project at any stage.

- I understand that data will be stored electronically on a password protected hard-drive that only myself and my supervisors will have access to. This data will be stored for a total of 7 years. All data collected on audio, camera and camcorder will be transferred to the hard-drive on the day it is collected.

- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.

- I understand that I will be audio/video recorded.

- I understand that I may contact the researcher or supervisor if I require further information about the research, and that I may contact the Research Ethics Coordinator of the School of Education, University of Nottingham, if I wish to make a complaint relating to my involvement in the research.

I give permission for my photographic, audio or video recordings may be used for the following purposes (please tick which boxes apply):

□ **Education purposes for the research only**
□ **Conferences and publications**

Signed …………………………………………………………………………………. (research participant)

Print Name …………………………………………………………………………

Position ………………………………………………………………………… **Date** …………………………

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Appendix Two: Consent form for children and their families

Participant Information Sheet for Children & Adults

Research into children, play and art galleries

I'm **Louisa Penfold** and I am studying for a PhD at the University of Nottingham. I will be spending time in the early years Atelier program today and would be grateful if you and your child would be interested in participating in this research. **Your participation is completely voluntary.**

Project name: Child-centred practice and play in art galleries

This research aims to investigate children's experiences in the early year's programme at Tate. The sort of 'experiences' I am interested in researching involve children playing with the materials, interacting with other children, the artists and their parents within the space. The research will involve me observing the children including taking videos, photos and notes. This data will be used for research associated with my PhD.

All personal details will be confidential. Names of children, adults and family members will be anonymised. The information collected will be held securely by the University of Nottingham and will not be shared. Your child will be asked for their own consent to be involved. Your child, or yourself, can request withdrawal from the research at any time and if so, all your data will be withdrawn and destroyed. Participation in this research will involve no physical or mental discomfort to those involved.

The research will contribute towards a body of research and practice which helps us to understand how child experience early year's play environments. This will be used to help inform the future design of children's spaces in art galleries.

This research has received ethical approval from the University of Nottingham.

Consent Form for Children & Adults

- I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.
- I understand the purpose of the research project and my involvement in it.
- I understand that I may withdraw from the research project at any stage.
- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
- I understand that I will be audio/video recorded.
- I understand that data will be stored electronically on a password protected hard-drive that only myself and my supervisors will have access to. This data will be stored for a total of 7 years. All data collected on audio, camera and camcorder will be transferred to the hard-drive on the day it is collected.
- I understand that I may contact the researcher or supervisor if I require further information about the research, and that I may contact the Research Ethics Coordinator of the School of Education, University of Nottingham, if I wish to make a complaint relating to my involvement in the research.
- I give permission for my and my child's photographic, audio or video recordings may be used for the following purposes (please tick which boxes apply):

☐ **Education purposes for this research only**
☐ **Conferences and publications related to this research**

Parent's Name _____
How many times have you visited the gallery before? _____

1. **Child's Name** _____
2. **Child's Name** _____
3. **Child's Name** _____

Signature _____ **Date** _____

If you would like further information please e-mail me: louisa.penfold@nottingham.ac.uk You can also contact my supervisor, Pat Thomson, on: patricia.thomson@nottingham.ac.uk. To ask anything about the ethics of the research, you can contact: educationresearchethics@nottingham.ac.uk.

Cellophane & Colour Layering Atelier:
Recording of children's learning processes

Child J (1 year 4 months)
See background description from previous weeks. English second language (very limited vocabulary, mother speaks to him in Mandarin). They visit the atelier every Monday to practice their English, "Child J likes to play here."

Visual imagery	Descriptive Notes	Interpretation (Louisa)
	10.10am. Child J is the first to enter the atelier. He is immediately drawn to the OHP's. After moving some of the cellophane pieces on the OHP he notices the blue cellophane on the roof	
	He reaches his hands towards it… it is too high to touch	Exploring the size of his body in relation to the space.
	The volunteer introduces the torch via demonstrating turning it on and shining it through the blue cellophane onto the roof. Child J watches closely	Guided participation + participatory appropriation?
	Child J's mother takes the torch and shines it through the blue cellophane. "Waa, look, the light." J watches and takes hold of the torch.	

		10.15am. J moves away from the roof and notices the yellow cellophane on the floor. He shines the light through, watching it move across the wall	Re-applies or continues to explore 'transparency' in a new area of the space. Does the same technique work in a different area?

Further notes: Mother commented to Alice that she has seen her son become more confident in the space over the past few months. She mentioned that in China, where Child J was born, children are taught to be quiet and observe. The mother commented that it is very different culturally for children in England to participate in activities because of this. She feels that J is becoming more confident as a result of being around other child in the atelier space.
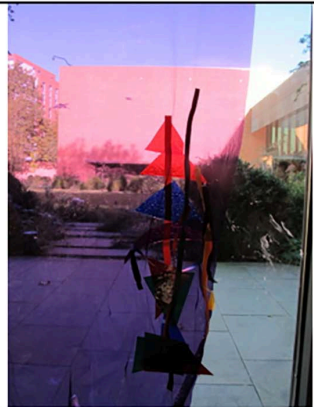
Interpretation: Child J's initial interest in the blue cellophane possibly has a limited amount to do with colour-layering. Through introducing the torch (and therefore light as a construction tool) it allowed him a new way to experiment with the materials. J, like many 1-3 year olds, has limited vocabulary, therefore non-language based demonstration is crucial in acquiring new techniques that they can use to explore the materials with. Alice made the comment that in the Atelier, "no play should be heavily language based."

Child Y (2 years 11 months)

English first language. Mother on arrival commented: *"we have been before to the booked session but she seems to engage better with the more open-ended materials in the atelier."* Child Y is visiting the atelier with her mother and mother's friend. I start observing her 15 minutes after she has entered the atelier space.

Visual documentation		Description	Interpretation
		11.05am Child Y is constructing an arrangement on the window. She carefully selects triangular shaped pieces of pre-cut cellophane from the floor and sticks them to the window using the water spray.	Incredible detail and decision-making in her experimentation
		11.10am Child Y finds a torch and shines it through her creation. She peers through the window to see if she can see the torchlight anywhere outside… it does not seem to be there!	Researching concept of light – the light needs to come from a particular direction to be able to make the cellophane colours mix

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		Y creation – she leaves the arrangement at this and does not return to it.	Specific selection in materials, arrangement and form of her creation
		11.15am Mum: "what colour have we got here?" Y: "Blue" Mum: "and here?" Y: "Red"	Mother very active in Child Y's atelier experience. She questions but does not dictate. Identifying and naming colours,
		11.25am Child Y moves to a new window, picks up the water spray bottle and starts squirting the window	
		She finds a piece of black cardboard (Alice had put out so children could make silhouettes). Y tries to stick it on, it falls off. She sprays more water and tries to stick it again. It falls again. She then finds some cellophane pieces and starts sticks them on	Limitations of the connection between the materials and tools

	11.35am
	Y's Mum asks me if it is possible to take a photo of her from outside. I take this photo while Y is shining the torch though, she is peering outside trying to see the torchlight in the garden.
	11.40am.
	Y, her mother and her mother's friend leave the atelier. They are going to have lunch.
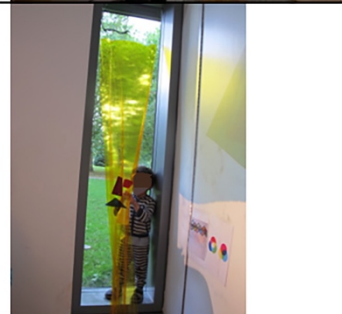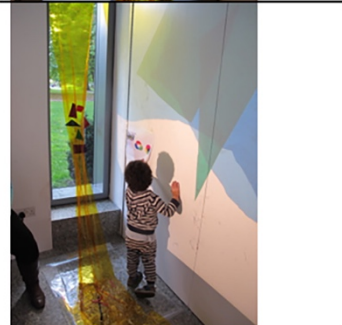
Further notes: Not applicable

Interpretation: Y demonstrated particularly high attention to detail creating her arrangement on the window. Exploring the limitations of the materials and tools (e.g. black cardboard and water and also how far the torch light goes).

Child K (2 years 0 months)

English first language. Kemi and his Mum come to the atelier every week. They do a daytrip from Wakefield and spend the entire day at the Whitworth Art Gallery. "I like the combination of both indoor and outdoor spaces here. It is free play and I like seeing him explore the space. We also go to the toddler class and usually play in the park if it is not raining."

Visual documentation	Description	Interpretation
	1.15pm	Interest in the technique of spraying the water precedes material exploration
	Mum (to Louisa): "This is the first time he has used the water spray bottle… as you can see he is loving it and squirting everyone and everything."	
	K sprays and sprays the water over the window, floor, other kids – everywhere!	
	K sprays the window… not sticking cellophane.	Alice: "the construction tool of the water also become the material, the two are interchangeable in many ways."
	Mum: "I think he likes the look of the water falling"	

	1.25pm K moves to the corner. He finds some cellophane pieces on the floor and starts spraying the yellow roll of cellophane and sticking the pieces on. K: "I am making colours"	Using the spray to connect pieces of cellophane Making own little spaces and hide-away area
	K: "the yellow is leaking!" The dye in the cellophane starts to drip down as a result of all of the water being put onto it. K: "it is a yellow waterfall!"	The material and K's cognitive processes are transforming together in unexpected ways!
	1.40pm Louisa: "K, what are you creating here?" K: I stuck on all of these colours." L: "How are you doing that?" K: "with the sprayer." L: were there any tricky bits? K: (looks at cellophane and moves it with his hand) L: and what is it? K: it's perfect!	Perfect – a great verbal indicator of a meaningful experience
	1.45pm K stands back and looks at the waterfall from further away. He notices the artwork printout on the wall K (to Louisa): 'Can I take it?" Louisa: Yes, you and have it	

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	Places it inside his waterfall on the window	Created his own little world – asking 'can I take it' is

Further notes: Small video interview done with K (uploaded to Vimeo). Total time in atelier: 1.5 hours

Summary: K obviously feels comfortable exploring the space in his own time, there is no rush. His experimentation within the space is centered on the use of the water spray that takes him in different directions including transforming the materials in unexpected ways. A trend we have noticed with the children is the creation of stories, narratives and imaginary worlds using open-ended materials. K's creation of the 'yellow waterfall' is a fantastic example of this.
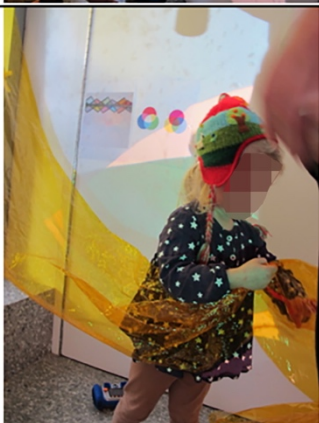
Child H (2 years 9 months)

English first language. Second time visiting the art gallery. Is here today with her Mum, Dad and baby brother. *"We came here because it is something to do for everyone."* Alice has given Child H the child's camera. I start observing her 30 minutes after her arrival in the atelier.
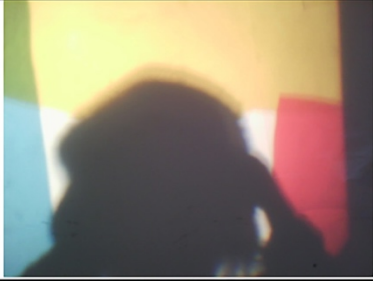
Visual documentation	Description	Interpretation
	H: "We are making it darker... I better take a photo."	Experimenting with colour depth
	"I better take a photo of it!"	
	M: "What colour is that?" H: "yellow"	
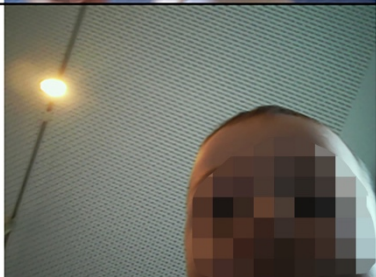
	Mum: "what colour have we made now?" H: "Look it's my hand!!!"	Connection with her own body
	Searches and finds a torch, shines on OHP	
	H gets her father to come over and put his hand on the OHP while she takes a photo	
	Taking a photo of the artwork printout	
	Image taken by H	

	Moves over to the windows -	
	Moves back into the OHP area, watching Kemi play with his 'yellow waterfall.'	
	H: "I can see my hand through this"	Experimenting with transparency. Her hand was solid the OHP projection (opacity). Experimentation between her body, the materials and the construction tools

Photos taken by Child H

Visual documentation	Description	Interpretation
	H experimented with the blue and yellow cellophane on the OHP Noticed that if she stood in front of the light she could also include her shadow in the picture	

		H, her artwork and silhouette of her taking the photo	
		Dad, H took nearly 15 photos of him	
		Red cellophane on the ground	
		Red cellophane over the camera lens (held in place by Louisa)	
		Alice holding the big blue piece of cellophane, "What could we do with this H?"	

Visual documentation	Description	Interpretation
		"Over the camera!!"	
		Mum and baby brother (many photos of Mum were taken, around 20)	
		Close-up of little brother (H lying on the ground).	
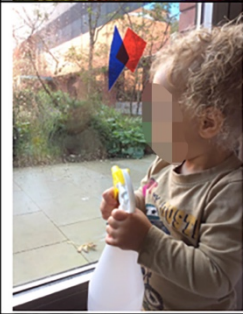
Further notes: 287 photos taken by H in 40 minutes!

Interpretation: H did not stay in one area for a long period of time but moved across the OHP's and windows. She took many photos on the kid's camera, many of which came out blurred. H uses her body (in particular her hands) to experiment with its connection with the materials and the tools.

Child T (1 year 1 month)

Comes every week with Mum. See previous weeks for detailed description. Mum takes photos on her iPad of Child T's play and emails me to them after with a description of what he did.

Visual documentation	Description	Interpretation
	Pointing to the torches and naming the different colours	Colour naming – a concept/technique we did not originally consider

	"T noticed the different colours in the room and would point colours out to me such as red, blue, yellow. T would hold the coloured film up to his face look at me then tell me I was a different colour by saying it's blue or yellow etc."	
	"The highlight of T's day was learning to use the water sprayer. He called it rain he kept spraying the window then saying it's raining. So this week we did indoor rain. However this did move onto spraying people."	
	Photo taken of T and his Mum by Louisa.	

Appendix Four: Parent resource for developing Atelier activities

Create your own Atelier
Tips & Inspiration

A note on the philosophy:

The 'atelier' is an idea taken from the Reggio Emilia education philosophy. Within a nursery, the atelier is a space where children can work with artists to creatively experiment with materials and ideas through play. This quote by Loris Malaguzzi, the founder of the Reggio Emilia approach, summarises the atelier philosophy perfectly: "children learn most readily and easily in a laboratory-type environment where they can experiment, enjoy and find out things for themselves."

Choosing materials

Children's experience within the atelier always starts with exploration of materials. We often select materials that are simple and familiar but presented in an unfamiliar way (see cardboard & natural materials atelier ideas on the following pages) and have high creative potential.

Laying out the space:

When we are designing the atelier space there are many things we keep in mind. We always try to position materials so they are always easily accessible for young children, this may mean using the floor as a 'canvas' instead of a table. We often try to create a large, communal area for the children to play in alongside adults. This encourages collaboration and discussion between children, their parents, artists and everyone else in the space. We also try to setup the materials and equipment in unusual ways to help inspire and encourage children's experimentation.

The role of artists/parent in the atelier

The things artists say and do in the atelier always aim to support children's own experimentation, questioning and play. As facilitators we watch what children's creative play and wait until the right moment to ask a question or introduce a new material. We believe it is important for children to sometimes feel frustration in their experimentation of materials as it encourages them to creatively problem solve and find real world solutions to these problems.

Natural Materials Atelier

Materials: branches, sticks, leaves, bark, charcoal, soil, moss, flowers and any other materials you can find in your garden or park.

Construction tools: string, clay and soft wire

Some extra materials to take it further: plastic containers, pots, acrylic mirrors, wooden baskets & masking tape.

Art concepts: construction, arrangement, balance, texture, form and shape.

Cardboard & Paper Atelier

Materials: Different size cardboard boxes (you can collect these at home or ask at the supermarket for some ones from the recycle bin), tubes (recycled paper towel and toilet rolls are perfect) and different textured paper.

Construction tools: masking tape & pegs

Some extra materials to take it further: fabric (to use decorate the interiors of dens), paper clips, wall hooks and string.

Art concepts: space, balance, construction, form and linkage

Appendix Five: Action Research Cycle One's Outcomes

Practice Principles

The following practice principles are built on the understanding that learning is a social, emotional, cognitive and embodied process. Learning is also a process that is produced from within a specific social, cultural and historical context. This understanding moves away from a universal set of guidelines for children's art museum learning.

This document shares a set of practice principles that can be used to connect children's learning processes with art museum practices. These principles should not be seen as all-conclusive but rather as a starting point for exploring the application of Pedagogical Curation in the Early Years and Family programme at Tate.

Principle 1: Art museums function as a community of learners

Children, parents, artists, learning curators and inter-departmental staff can all play an active role in facilitating learning in art museums. A gallery that functions as a 'community of learners' (Lave & Wenger, 1991) suggests that everyone is capable and motivated to learn when given a meaningful and supportive environment to do so. New visitors to art museums may become part of a community of learning by participating in shared pedagogical activities, such as supporting and reflecting on children's learning together. Learning curators can play an active role in supporting individual and collective learning in an art museum's community of learners. For example, a curatorial process that is driven by enquiry may encourage art museum learning teams to negotiate, debate and produce new knowledge in an institution. Young children can also participate in art museum's community of learners. However, for this to happen, strategies must be put in place for art museum staff to observe and reflect on children's learning processes. This reflection can then be integrated into the institution's wider learning process.

Principle 2: Pedagogical documentation facilitates learning and change in art museums

Curating can be approached as an enquiry-driven and pedagogical process. Diversity, uncertainty and different perspectives may all help to drive change and learning in a pedagogical curatorial process. Pedagogical documentation gives visibility to children's and art museum team's learning processes. Learning is supported by the diversity in perspectives on what is happening in relation to children's learning in educational activities (Dahlberg, 2012). Research questions can be used as a practical strategy to facilitate learning and change in a pedagogical approach to curation. Such research questions can help to identify an area of practice or a problem-space that can facilitate subsequent lines of enquiry. Research questions can also be drawn on to plan, facilitate and reflect on the design of children's learning environments. By using pedagogical documentation to facilitate learning and change in art museums, learning curators and artists can plan and reflect on their rational and consequences of learning.

Principle 3: Social interactions are an important catalyst for learning

Learning can be supported by social interactions amongst groups of people (Vygotsky, 1978). These interactions can facilitate the production of new subjective and interactive understandings. Children who are participating in children's art museum activities for the first time may explore situations and ideas through the social process of 'apprenticeship' (Rogoff, 1990). Over time, children's participation in activities with other people of diverse abilities and skill may facilitate learning in new ways (Rogoff et al., 1993). Creating opportunities for children and adults of varying skills to engage in activities together may therefore help to catalyse learning. Artists and learning curators can also scaffold children's learning through the social process of 'guided participation' (Ibid). These interactions may encourage children to extend, modify and make their thinking more complex over time. An artist, learning curator or parent may need to first assess a child's current Zone of Proximal Development (Vygotsky, 1978) before scaffolding it to a more advanced level. Scaffolding may be done by modelling how to use an art tool, demonstrating a new artistic technique, explaining a vocabulary word or asking a reflective question.

Principle 4: Materials and concepts are also an important catalyst for children's learning

Children's experimentation with materials may also catalyse learning. Materials have been an important part of early childhood education ever since Froebel invited the kindergarten (Pacini-Ketchabaw et al. 2017). In this research, materials can be used as a dynamic starting point for curating children's learning environments in art museums. The curation of materials can also be inspired by artist and designer's exploration of materials, as materialised in the creation of an artwork. As artists are continuously exploring materials in new ways, this experimentation may then provide a rich springboard for children's learning with materials. Artists can also bring specialised knowledge relating to materials, such as the use of artistic techniques, art tools and vocabulary that can be used to manipulate materials. This expert material knowledge can then be used as a mediating tool for supporting children's learning in art museum learning environments. Materials may also be arranged to support social interactions between groups of people. For example, presenting the material content in a learning environment as one large communal area further may also encourage children and adults to observe, interact and play with others.

Connecting material content with art concepts may produce a problem-space for children's experimentation. Such concepts include line, balance, coverage, assemblage and shape. Concepts are not static procedures but active and continuously changing forces that draw attention to materials in new ways. Concepts therefore have the ability to transform people's thinking and engagement with a material. A child's exploration of a concept may also become more complex over time.

Principle 5: Mediating tools scaffold connections between materials and concepts

Mediating tools, such as artistic techniques, art tools, vocabulary, artwork imagery and spatial arrangement of materials can scaffold children's learning between material content

and art concepts. These mediating tools may produce dynamic learning pathways for children by encouraging learning to become more complex over time. While an artist or learning curator may select the initial material content or art concept of a learning environment, consideration can also be given towards how children may take up and explore these independently in their play.

Principle 6: Art museum institutional goals should ideally be consistent with principles 1 to 5

An art museum's over-arching institutional structure can significantly restrict or support the development of Pedagogical Curation. These structures may also directly shape what can and cannot happen in a learning environment or activity. Art museum's may institutionally support the relationship between children's learning and art museum practices by strategically investing in financial and human resources investments that build and sustain pedagogical practices with children and families over time.

Questions for Tate team:
- How could these practice principles fit in the Tate Early Years & Family programme?
- What principles could be left out?
- What new principles could be developed?

A Guide for Pedagogical Curation (GPC)

A planning guide for designing children's constructivist learning environments in art museums
The GPC acts as a framework for art museum teams to plan, facilitate and reflect on the curation of children's learning environments by:
- Interconnecting the components of the children's constructivist learning environment;
- Making artist's and learning curator's lines of inquiry visible,
- Encouraging the exchange of ideas between artists, learning curators, children, parents and broader communities;
- Generating a visual archive of practitioner's and artist's thinking connected to the design of children's constructivist learning environments in art museums.

The CPG functions interdependently with the practice principles, pedagogical documentation and information resources to construct a widespread approach to children's learning in art museums.

Curating a children's learning environment:
The following section outlines the practical steps that can be taken to design a children's material-based constructivist learning environment that uses artworks as the starting point

for design. These steps should not be a definitive methodology but rather a guide for curating children's learning activities

Step one: **Artwork selection:** An artwork or art's process may begin a team's inquiry around material content and art concepts. Art museums are rich archives of the different ways that artists and designers have explored materials over time.

Step two: **Material selection:** An artist' experimentation with materials in an artwork may then produce a dynamic starting point for the design of a children's material-based constructivist learning environment. The material selection could come from multiple sources including an artwork or artistic process. Consideration may also be given towards baby and toddler health and safety requirements about the material. Modifications may need to be made to the material based on this. For example, transparent plastic may provide an adequate substitute for glass.

Step three: **Art concept selection:** The material can then be connected to a formal art concept such as balance, construction, line, space and coverage. The link between the material content and concept provides the constructivist learning environment's problem-space. The material content and art concept can then be used to produce the learning environment's research question, for example, 'How can we explore coverage (concept) through paint (material).'

Step four: **Mediating tools selection:** Mediating tools scaffold connections between the material concept and art concept. These mediating tools can aim to produce new social, emotional, cognitive and aesthetic learning pathways in children. Examples of mediating tools can be seen in table* below:

Material	Conceptual	Social	Spatial
• Core material • Construction tools • Construction equipment	• Sub artistic concepts (introduced via language) • Artistic techniques (introduced via demonstration and modelling) • Non-artistic skills	• Collaborative challenges • Questions asked by artists to extend children's exploration • Vocabulary • Greeting and introduction • Non-artistic skills to encourage	• Spatial arrangement of materials • Spatial arrangement of equipment • Art tools • Information resources (artwork imagery) • Information resources (video imagery)

Table#: Mediating tools

Step five: **Learning environment facilitation.** The material content, art concept and mediating tools interconnect together to construct the design of the initial learning environment. As children play and experiment with the learning environment's components, they may transform in different ways. Artists and educators can then respond

to children's experimentation through techniques such as introducing new tools, rearranging the material arrangement, asking an open-ended question or demonstrating a new artistic skill to a child.

Pedagogical documentation as a mode of curatorial inquiry

What is pedagogical documentation? Alongside the practice principles, CPG and information resources, pedagogical documentation can be used as a mode of curatorial inquiry that seeks to make children's learning process visible (Rinaldi, 2001). Documenting can be generated through methods such as photos, videos, audio recordings and fieldnotes. These records can then be used by artists, educators, parents and children to discuss and reflect on learning from multiple viewpoints. Decisions as to how best proceed can then occur, believing that rather than there being a singular way of doing things, there are many. Pedagogical documentation can also be used to debate the assumptions, ethics and politics that shape education practices with children (Pacini-Ketchabaw et al., 2014) in art museums.

Documentation becomes pedagogical when it is used to deepen learning to 'see and understand what is going on in the pedagogical work and what the child is capable of without any predetermined framework of expectations and norms' (Dahlberg, Moss, & Pence, 2007, p. 146). Pedagogical documentation is a process that can be used to facilitate learning and change amongst groups of people through critically reflecting on children's actions (Lenz-Taguchi, 2009). This learning can then be shared and critically reflected on by the broader communities, allowing education practices to be considered from multiple perspectives. Pedagogical documentation also supports the construction of subjective and intersubjective understandings between people. Learning emerges from multiple focal points such as children, artists, parents, the physical gallery environment, materials and culture. Through making children's and practitioner's learning visible and open to interpretation, assumptions and practices may be contested and new understandings co-constructed. This iterative process works to build a rigorous, responsive and contextualised curatorial process that is in a continuous state of development.

Who does it? Pedagogical documentation can be generated by everyone including artists, curators, researchers, volunteers, children and parents. While everyone in a community of learners can generate documentation, the focus can aim to remain on the transformation that occurs between children and the learning environment. Where possible, broader communities can also be involved in the sharing and critically reflecting on documentation. Such communities may include interdepartmental staff such as visitor services, front-of-house, catering, curatorial and development. Feedback from parents and families may give further insights into children's learning in art museums.

When and how is it done?

Documentation is generated before, during and after a learning activity. The intent, such as the research question or concept to be explored, can guide the documentation generation during the activity's facilitation. Following an activity, two collaborative reflection sessions may occur (Rinaldi, 2001). The first can be held immediately following the activity, allowing for the team to record their initial impressions of the session. During this time, particular encounter/s of children's learning may be selected for further investigation by the team. Following this, the selected encounters can then be shared amongst the team. Team members can then have time to individually consider children's learning in the documentation before meeting again to critically reflect as a group. When interpreting the documentation, practitioners can consider questions such as:

- How do children take up and explore the materials and concepts?
- What invitations do the materials make to children?
- How are children investigating the material properties?
- How do children interact with others?
- How do children's cognitive, emotional, social and aesthetic learning processes interconnect? To focus solely on one of these elements, for example, cognition is to paint an incomplete perspective of human knowledge.

Posters or videos sharing children's learning alongside adult's critical reflection may then be displayed in future children's activities. This poster may include information such as the documenter's background information, the research question, transcriptions of children's conversations, practitioner's interpretation, children's artworks and video footage (Rinaldi, 2001). Documentation may be generated to share with different audiences including parents, children, art museum teams and broader communities.

Questions for the Tate team:

The following questions are a starting point for discussion to consider how pedagogical documentation could be used as a curatorial process in the Early Years and Family programme at Tate:

- How can we create time for post-session reflection of children's learning?
- What additional information resources may we need to give artists to assist them in understanding the pedagogical documentation process?
- How could pedagogical documentation be shared with staff from different departments to support the development of intersubjective understandings around children's learning?
- How could pedagogical documentation be used to collaborate with parents and broader communities?

Information Resource two: Education terms

Apprenticeship in learning: Communities can play an important role in facilitating children's cognitive development (Rogoff, 1990, 1995 & 2003). Children act as 'apprentices' in communities in which they actively learn from observing and participating in activities with more skilled and varied community members.

Cognitive tools: Cognitive tools scaffold a learner's current level of understanding to a more advanced one (Jonassen and Roher-Murphy, 1999). Cognitive skills are important as they may open up new opportunities for children's experimentation and learning with materials, concepts and mediating tools in art museums. Examples of cognitive tools include vocabulary, the modelling of an art technique or an image of an artwork.

Collaborative tools: Collaborative tools can play an important role in facilitating learning through social interactions between people. As social interactions play a crucial role in constructing intersubjective understandings, opportunities can be made for learners to come together to construct and reflect on knowledge as a group.

A community of learners: A group of individuals who share common values, beliefs and goals (Lave & Wenger, 1991). In this process, social relationships can play an important part in catalysing learning. All participants in a community of learners actively and collaboratively contribute to one another's learning. Differences in skills and abilities can facilitate learning in a community of learners.

Guided participation: The development of children's understandings, skills and cognitive abilities are produced from their active and participatory engagement in shared activities with individuals of higher skills (Rogoff, 1990, 1995). Guided participation involves multiple people participating in a structured activity at one time, allowing for the construction and distribution of knowledge in various directions including from children to adults.

Information resources: Information resources provide a learner with information about a problem or phenomena that they are required to solve (Mallory & New, 1994). Information resources may include a journal article, a video or visual instruction. These information resources can scaffold a learner's knowledge from their current level of understanding to a more advanced one. These resources can also be used in collaboration with mediating tools and related case studies to assist children in exploring a 'problem space.'

Intersubjectivity: Social meanings, patterns and languages evolve through individual's negotiated meanings in a social group. Intersubjectivity is the shared interests, social meanings and understandings of a group of people.

Metacognition: an understanding of one's thought and learning (Bruner, 1973).

Participatory appropriation: Learners adopt new understandings of their role within a community, learning to changes in behaviour (Rogoff, 1990, 1995, 2003). The process is not a casual one but rather an individual's comprehension that their role within a social group is dynamic, changing and part of an open-ended process. Learners play an active role in facilitating their learning in participatory appropriation

Problem space: the enquiry space that learners explore to solve a particular problem. The problem space can provide learners with engaging, relevant, and real-world problems (Mallory & New, 1994).

Related case studies: Case studies of different learning environments built on the same practice principles can support practitioners in developing new trajectories for future practices. The aim of using case studies in the curation of activities is not to replicate them but to use them as scaffolds to reflect on how these could be adapted in new practice contexts.

Scaffolding: A temporary framework that is introduced to facilitate a learner's current level of understanding to a more advanced one. Scaffolding allows learners to undertake tasks independently that are initially beyond their capacity

Social constructivism: A theory that human's cognitive, social and emotional growth is catalysed through social interactions with other people of varying skills and expertise (Vygotsky, 1978). Cognition cannot be separated from the social context that is was produced in.

Zone of proximal development (ZPD): Originally proposed by Vygotsky (1978), the ZPD is the difference between what a learner can and cannot do with assistance. Through guidance, a more knowledgeable person assists a learner to attain new skills and understandings needed to move their knowledge through the ZPD so that they can become independent in carrying out the task.

Information resource three: Case study of the Paint/Coverage Atelier

Research question (connecting content to concept): Exploring coverage through paint.
Artwork used as starting point for inquiry: Peter Lanyon, 'Glide Path' 1964. The Whitworth Colleciton

Ideas, points for experimentation, curiosities relating to the artwork:

The following text has been taken from the Reggio Emilia Australia Information Exchange Journal, 'The Challenge.' The article was a conversation between myself and Chris Celada, an Australian arts educator. I talk about the production, facilitation and post-session discussion of the paint/coverage atelier.

"'*Glide Path*' captures a sensation of flow, freedom and elevated movement over surfaces, space and earth. For me, this painting cannot be reduced to a bird's-eye representation of the English countryside. It is a feeling of turbulence, rushing motion and emotion, things colliding and intersecting in chaotic ways in a changing moment. A sense of soaring and drifting in unrestricted ways but always with the possibility of falling from a great height. This complexity of thought and affect offered a rich starting point for deeper collective inquiry amongst the team.

Lanyon's use of paint made it a natural fit to bring into the Atelier. The artists of the Whitworth's learning team were very interested in encouraging hands-on 'messy' play throughout the sessions. Paint presented possibilities of very tactile and sensory experiences for young children. As a team were not solely interested in teaching children about the techniques and properties of paint, such as how to roll it or how to use a paint brush, although these are very important, but to also consider the thought process that this material might provoke, how it might challenge children and their families to think differently through the process of playing and experimenting with it.

The intricacy of '*Glide Path*' offered many possibilities to connect and explore an array of concepts such as line, form and shape. These all had strong potentials however there was something in the combination of 'coverage' and 'flying' that made a particularly strong pairing worthy of deeper investigation. The action of 'covering' seemed intricately connected to a feeling of gliding. Just like the wind changes a glider's speed from rapid to slow, thought patterns and making in the Atelier continuously flux through different rhythms too - from grand outbursts of paint pouring to gentle drips, quiet consideration and stillness. Like the creative process, the act of gliding is unpredictable – plunging into the unknown, an awareness of freedom, movement but also the possibility of stagnation, disappointment and falling.

The concept of 'coverage' was approached as an invitation for children and their families to think with, through and about the concept. Evidencing a linear relationship between introducing the concept and a child 'learning what this is' was never the goal. Instead we began to consider the possibilities for research – social, emotional, aesthetic and intellectual research – with and through the concept and paint.
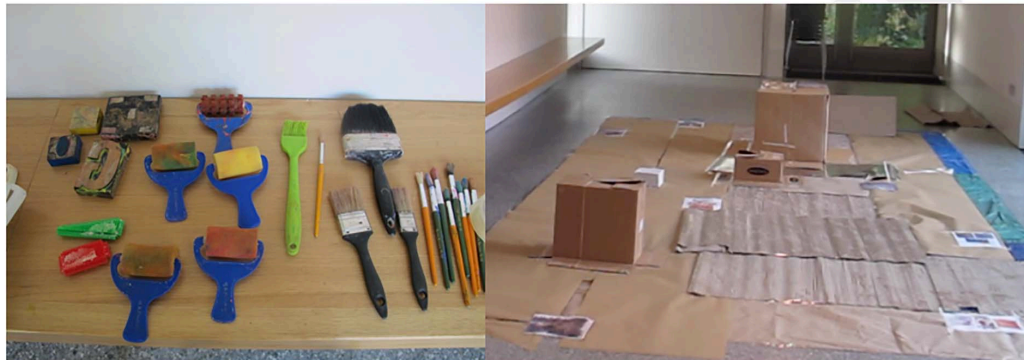
Such explorations of 'coverage' are also philosophical ones. What is presented? What is concealed and protected? What is revealed? How does someone or something transform through different layers being taken away or others being positioned on top? What new relations can be construction between coverage, paint and other complexities of the world?

The Atelier's 'reconnaissance' stage allowed the gallery team to debate our subjective ideas into the beginning of a pedagogical inquiry of the artwork. Looking at how other artists, such as Dale Frank, Jackson Pollock and Cy Twomby, had used paint to explore the concept of coverage expanded our thinking of what could be done with the material."

Pre-planning notes	Facilitating notes	Post-session notes
Conceptual: - Core concept: Coverage - Sub-concepts: Mark-making, consistency (think/thin), surface, texture - Artistic techniques: Spreading, rolling, dripping, mixing, brushing - Non-artistic skills we want to encourage: Decision making, transformation of materials, collaboration, problem solving	- "Starting off the atelier content simply then gradually adding to it allows children to enter (on a cognitive, social, emotional and aesthetic level) at different points and then take their experimentation in whatever direction they like." Artist - "The initial content is like a starting point for inquiry; children enter and take the materials and concepts to a much higher creative potential through experimentation." Researcher	- The materials, tools, concepts and spatial arrangement came together immediately. This was in contrast to previous weeks, such as the dens and colour ateliers, where the initial atelier content selection went through rapid change once the children entered the space. - We observed children exploring the materials and tools in both familiar and unfamiliar ways. For example, Child K and Child J. Children did mostly explore the concept of 'coverage' as opposed to mark-making or colour mixing.
Material, tools and equipment: - Core material: Paint (2 colours, limited palette) - Construction tools: bodies (hands, feet), rollers, sponge, paint brushes - Construction equipment: different cardboard surfaces (corrugated card, cardboard boxes, acetate, and mirror card) provided a large floor 'canvas.' - Extension materials: Easel & additional cardboard surfaces including additional paper, boxes (large and small), printing blocks. - Artwork images (creative resources):	- We began the atelier with minimal construction tools and material selection - Like previous weeks, the paint was simple but had high creative potential. Children were able explore the creative possibilities of the material through their play.	- Child K used different surfaces (the window, cardboard, studio floor) to experiment with the transformation of paint's consistency. - Limited colour palette seemed to work well for children to explore coverage as opposed to shifting too much into the concept of colour-mixing. - Multiple children used their bodies as a tool for material exploration, including babies. A volunteer commented that paint has a strong sensual quality.
Spatial: - Layout: One large area (cardboard covering the surface of the studio space), large 3D cardboard boxes selected that encouraged children to work together and interact with one another - Introduced music to the space: - Artwork image printouts: Peter Lanyon, Idris Khan, Cy Twomby & Jackson Pollock.	- Parent's interest in documentation posters increased. They seemed to have become a pedagogical tool in their own right. The learning curator commented that for her it is immensely beneficial to use pedagogical documentation as it encourages rigorously thinking around materials, tools, concepts and how this these interconnect with artworks.	- Artwork images assisted artists, curators and children to make connections and open possibilities for deeper material and conceptual experimentation.
Social: - Introduced research question (materials and concept) on arrival. - Artistic techniques: Rolling, brushing,	- The same artistic techniques can be explored on multiple surfaces - what different do the two surfaces make? - Many of the parents seemed active	- We also observed children producing imaginative stories through material play. The children were not just having an automated

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pouring, smudging, drying, holding brushes. - Challenges: Introduced a new piece of 'construction equipment', like a cardboard box. The artist did not need to say anything, just placed it next to a group of children. - Open ended questions: where/if appropriate - Vocabulary words: As outline in 'sub-concepts' above.	in the atelier today. We discussed what it was about the materials, spatial design, tools and concepts that may have encouraged this.	response to the materials. - Cardboard boxes & windows provided opportunities for collaborative experimentation. - Planting opportunities for social interaction in the design of the space was important, individual play can happen in a collaborative activity but collaboration cannot occur in an individual learning activity.

Image#: Documentation poster produced from the Paint/Coverage's Atelier

Left: The tools selected for the Atelier. *Right:* The Atelier's initial spatial arrangement
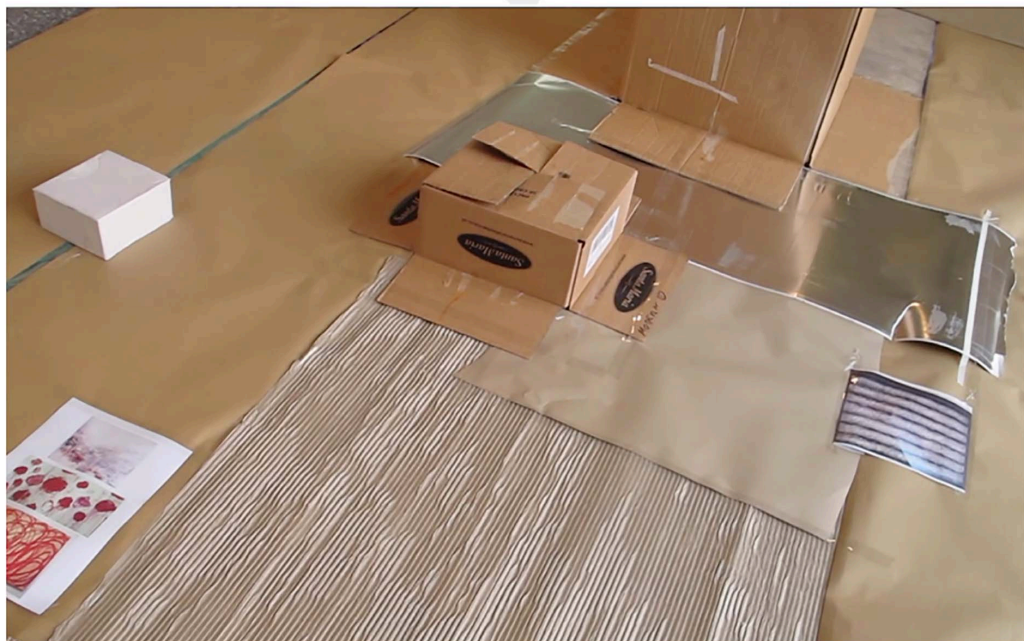
Above: The Atelier's material content featured a cardboard canvas laid out across the floor as well as a handful of large cardboard boxes. The boxes were selected to encourage collaborative group play. Artwork imagery by Idris Khan and Cy Twomby were incorporated

into the spatial arrangement as possible mediating tools to open new thought process between the material and concept.

Above: The Atelier two hours into the session. New cardboard boxes and fresh cardboard paper were intermittently put out throughout the activities as new families arrived.

Above left: Children aged 1,3 and 4 paint a large cardboard box. *Above right:* Using the body as a tool for material exploration.
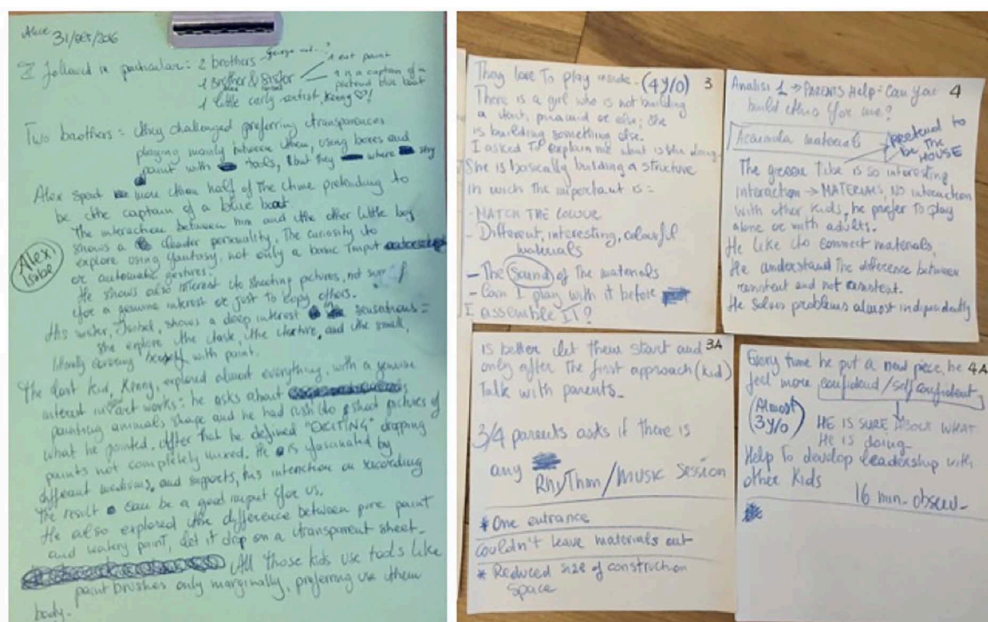
Above: Observation notes collected by an artist

Documentation of the Paint/Coverage Atelier:

PAINT ATELIER

Exploring <u>coverage</u> through <u>paint</u>
Oct 31, 2016

Exploring how **paint** can be used to **cover** different cardboard **surface textures**

Construction tools: paint rollers, stamps & brushes

Combining resources such as materials (**paint, card**), tools (**paint rollers, paintbrush, hands**) and techniques (**spreading, rolling, brushing**) in creative ways to cover the **surface** of the box. After one hour *'the brother trap'* is complete... a great display of **sustained concentration**!

The large boxes became a site for **collaborative exploration** between groups of children. How can we **cover** the box using the rollers?

"I made a rainy day." The paint changed consistency and texture on the new surface of the window. **Self documenting** the research process using the camera.

Experimenting with the paint's ability to **transform consistency** from thick to thin via adding water. *"It is sliding."*

© Louisa Penfold

Using the **body as a tool** for **spreading, stamping and mixing** the paint. The body also became a **surface** for material experimentation.

Exploring the **taste** of paint.

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Appendix Six: Group reflection except from Activity Two (Action Research Cycle Two)

Date: June 30, 2017 (10.00am-11.00am)

Location: Skype call featuring Louisa Penfold, Leila (the artist), Lauren (the Early Years and Family convener) and Claire (the Early Years and Family Learning Assistant)

Focus: Reflect on the documentation from the 'Under 5's in the Gallery' session run as part of the *Queer & Now* festival at Tate Britain on June 24, 2017.

Lauren: Louisa it would be great if you could talk a little bit about these reflection discussions and your thinking behind this process.

Louisa: Yes of course. Firstly, I just wanted to say congratulations to Leila and Claire on designing and facilitating such a great session. There are a couple of key ideas connected to the process of reflection. I think I mentioned these in the email. In particular, the idea of collaborative critical reflection and how this can be understood as a 'diffractive process.' I also wanted to talk quickly about this idea of 'reading' the visual documentation of children's play in the session through another text, such as the Tim Ingold quote. So, in our discussion today, we can reflect on the documentation of Tom (the child featured in the documentation) in two ways:

1. Firstly, we can discuss his learning against Leila's initial ideas for the session
2. Secondly, we can discuss his learning against the Ingold's quote. The intention in introducing the Ingold quote was to encourage a new perspective to think about Tom's learning.

Following this, we may then be able to think about future practices with children and families in art museums can be developed. Something that I am interested in exploring in this research is how we – as a team- can further develop critically reflective processes that continuously challenge discourses and practices towards children and families in art museums. I wanted to clarify that this term 'collaborative critical reflection' does not mean to find fault but to discuss and debate the power structures and discourse that shape gallery education practice. So, the way I am thinking about these group reflection sessions as philosophical ones but at the same they are political and ethical discussions about children, families, art museums and learning. This is an experimentation process that supports the continuous process of enquiry amongst art museum teams.

I am really interested to hear your ideas on the documentation, the quote

and the relationships between the two. I am also really interested to hear your thoughts on this reflective approach as a whole – for example, is it useful to reflect on gallery and artistic practice in this way? And, how does this way of reflecting open up new spaces for dialogue, interpretation and the negotiation of ideas?

Claire, Leila and I talked briefly about Tim Ingold work in Saturday's reflection and when I went home I was looking through his book titled *'Making'* by Tim Ingold. I thought there was interesting possibilities for discussion in this paragraph in relation to some of the content we had discussed in the reflection on children's and family's 'conversations' that happen through actions and not with words where bodies and materials are used as 'languages' for creating dialogue. Any text could be put alongside the documentation to 'deconstruct' it in an unusual way. Different texts may produce completely different trajectories for future practices with children.

Lauren: Okay, I just wanted to check that the idea was that we could read the text before interpreting the documentation. Is that the idea of bringing the two texts together? That is a really interesting idea.

Louisa: Yes, that's it. I think that a lot of the ideas that Tim Ingold looks at in his book 'Making' overlap with the philosophies of Reggio Emilia, which I know you guys have been inspired by. Both Ingold and Reggio talk about knowledge emerging from a relational and dynamic process. I guess what we are doing here is approach the interpreting of Tom's learning alongside Ingold's ideas.

Lauren: I find that super interesting. I would find it really helpful to hear your thoughts on this first. I know you mentioned that you don't have anything pinned down but it would be great to hear some of your thoughts of putting that text alongside the documentation of Tom.

Louisa: Ok great, I can absolutely do that. I have some notes here that I can throw out there to start. For me, this week's reflection is quite different to last week's in that in the first week we used research questions and this week we are deconstructing the 'text's through one another. I can see that in contrast to me notes from last week, my interpretation from this week has become quite philosophical. So, after I got the video of Tom and the Ingold text, I started off doing a bit of research on the Jessica Dismorr (the artist who created the Related Forms painting) and this artistic period as I did not know much about the artwork. So, I went onto the Tate online database and looked at her larger body of work. I learnt about who she had collaborated with and how her paintings had explored concepts such as shape, form and composition. I explored her exploration of these concepts not just at a technical level but how they had connected to ideas and philosophies. Then I went back and re-read the Jessica Dismorr quote Leila selected in the planning of the gallery activity:

"The shapes laid out on the canvas can't be pinned down to any real-world

reference – object, body, emotional state – but all those possibilities are in play. They don't touch, but their 'related' forms allow us to imagine infinite different ways they could be combined or adjoined."

Jessica Dismorr, Related Forms (1937)

I then looked quickly at the video of Tom and re-read the Ingold quote again. My initial reaction to these three separate texts was that there was a common thread between them in that they are all exploring this idea of there being dynamic, relational and emergent processes between people and things. The video of Tom, the Ingold quote and the Jessica Disorr artwork really talked to one another!

My first interpretation of Tom's "correspondences" –as Ingold would put it - was through his crawling across the paper and floor. This activity seems to take Tom by surprise in what appears to be a particularly delightful series of encounters. To me, he uses his body as a tool for exploring the diversity of surfaces, textures and space in the Duveen Galleries. His experience in that moment is very embodied, tactile, sensory and physical. His father then confirms this with his comment. The paper additionally transforms as Tom crawls, rolls and pulls himself across it. He repeats this movement of plonking his tummy down and pushing himself back. There is continuous movement in his actions and continuous change in the materials. These material transformations are both physically (changing shape, changing form) and aurally (crinkly and swooshing sounds). These transformations work together to with the physical sensation of the surface textures (such as the smoothness of the floor and the roughness of the foil) to create this embodied experience.

In relation to his learning, he seemed to be investigating the weight of the material. So I interpret this as him exploring measurement, gravity and height. It's impossible to know exactly as it is interpretation. I am not sure if it is quite so much an exploration of shape happening here, I am curious to hear what others think of that and whether it is important. To me, it seems that there is very broad experimentation going on with the materials and other people. The people around him simultaneously interact with him, these social interactions then lead to new behaviors and activities in his play. These transformations are all happening at one with no clear beginning or end to each one. Then I started to think specifically about Ingold's concept of 'correspondence' and how this related to Tom's experimentation. In this documentation, the materials are setting up manipulable parts of Tom's gallery experience that allow for the construction of new relations between the artworks, the gallery space, other people and himself. What relations these are exactly is difficult to say but perhaps the materials increase his and his family's capacity "to act" in the gallery. The materials are not just an invitation to explore the artwork but an invitation or a mediator or an agent for individuals to explore and construct Tate's gallery culture.

Tom's learning is being mediated by the materials. The materials are an agent for these 'correspondences" to occur. For me, this is how I conceptualise the material's role – I was also thinking that these correspondences are facilitated or extended on through more than just materials. So, I started to think - is it just about materials? Because space is highly curated. I started to think that these 'correspondences' are setup by:

- The spatial arrangement of materials (aesthetics, a specific selection of materials, placement of materials) in the activity and the tools and equipment around those materials.

- Social interactions (artist, family volunteers, other visitors, invigilators) that occur around them

- The gallery as a whole and at a larger institutional level (marketing, how they arrive at the gallery as well as the kids who do not make it into the gallery at all). So, thinking about the larger system at play around the families and the materials and;

- Tom's previous experiences and knowledge.

The materials are opening new thought processes and new relations for Tom. Then I was thinking about if more literal possibilities were 'planted' in the design of the activity, such as more tools for cutting shapes or different pieces of furniture that children could wrap the papers around to construct more complex shapes or clips so that they could attach the paper to their bodies in more complex ways, whether this would then encourage even deeper and more complex cognitive, emotional and aesthetic thought processes in him.

Lauren: It is interesting you say that. I wonder how relevant it is to factor in the age of different children in the documentation. For example, Tom is 16 months old so I wasn't surprised that he had this whole-body experience with the materials. My first understanding of the documentation is that the materials were opening up new experiences in the space rather than being about the materials themselves. It appeared to me at first look that he was enjoying the different resistance and give of each material and surface. As all of the materials were kind of in a circle around the adults and he was moving over materials in that space that had a lot of give and then he moved over to the open floor outside of that - and that is almost out of the game - and then he enters back into it again. So, from that it is interesting to consider what Louisa mentioned in relation to the different factors that could have been brought in to encourage him to consider the materials in a different, cognitive or emotional way rather than the material as a substance on the floor. As far as he was concerned, and we may never know, the adults were sitting around a different surface, like a pool and he was going in and out of the pool.

I do think you are right, if there were different things out so that he could

attach the materials to himself or even if they were a different size. I am curious about what the change in engagement would be if it had shifted from something that he was experiencing in a full-body way to something that he holds in his hands because that feels like a completely different sort of engagement. There was so much delight on his face and it felt like there was so much discovery happening. I wonder if it would have been a more or less of a cognitive, emotional and aesthetic engagement if he was cutting up the material with scissors or is it an equally full experience without that, for example with the full-body physical exploration of the materials that we can see Tom acting out in the documentation. I was surprised at how much recognition he showed of the different surfaces and how he repeated the process like he had discovered different things on different surfaces. It was almost for him like inside the circle of adults was different to outside the circle of adults and maybe he didn't register it as "this is where the paper is" it was more "this is different environment."

I am really interested in this idea of thinking about the documentation alongside the text and I apologise that I did not get a chance to read that. I really enjoy the way that you are talking about that and I do think that the practice on this programme and the way that Leila is definitely working with us is - I just wrote down these words that you mentioned Louisa - dynamic, emergent and relational process between people and things. The materials have been carefully curated for that purpose.

Louisa: I think that's really interesting, I had not thought about it in that particular way. That the presentation of materials invites quite varied cognitive, social, emotional and aesthetic engagement. So, for example, if the materials had been placed on a table than that bodily experience would have been limited.

Lauren: Yes, because you were right to point out about Tom being in a massive huge space on a marble floor -it's shiny and smooth and part of his material exploration is the marble floor, is the space, the difference between the small flat and all the adults around him giving him attention.

Leila: It is fascinating to pull it apart in this way and what is coming up for me is this idea of material changing scale. In this session, we did not have scissors but in the previous one we did have them and we saw that the string started in a very large form and through introducing the scissors changed to a much smaller form. So, this idea of working with materials on an expanded scale then shifted to very individual work. This time around that shift did happen to a degree. I wanted to steer away from scissors partly because of Dismorr's idea of oblong shapes that do not have straight corners. We did introduce masking tape at a later point throughout the day, I guess it was after Tom left, but at that the point the behaviour became much more individual and very small-scale. I think what is quite interesting to me is that Tom has navigated his way through the entire space. I kind of see his movement like a sewing machine 'stitching' his body across the floor, stitching the materials on the floor.

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Lauren: Yes, I think it is great Leila that you didn't have scissors this time as there is a compulsion in these programmes for people to reduce it down to an individual activity. It is almost a safety thing like "we need to reduce it to what we know." So, I think it is really exciting that you didn't do that. I have a question - and when I ask this question it is like what Louisa said in that it is not a criticism but it is unpicking ideas, because it is all beautiful - so my question is around why we would want to reduce the scale of the material with a child who is at a certain age and development where they are learning through their senses (they are feeling the surface by lying onto of them, they are tasting things through putting them in their mouths). I am asking that as a genuine question, not as a criticism, why would we move a child to that? I don't expect you to answer that. Without having the scissors, you allowed him to stay where he instinctually was. I am interested in this compulsion to move children on to handling materials and ideas in a less physical way.

I really enjoyed seeing this moment where all of these beautiful materials had been laid out and everyone is sitting around watching the child with great interest but without much intervention. No-one had placed any expectation of what should happen onto Tom. In a way, none was trying to manage his process so his process emerges. This is my interest in considering the different ages because if you are looking at 16-month-old toddler, they are more inclined to roll around on things and put them in their mouth - and there is a lot of incredible and very fast learning happening in their exploration. However, what a 3 or 4-year-old might do is completely different stage of development.

Leila: Yes, I chose not to use the scissors for many reasons including not allowing children to cut straight corners and to also invite different ways of engaging with the material.

Lauren: I did see Claire laying out the materials. I am such a believer in aesthetics, even if a child does not have the same understanding of aesthetics that I do. I believe that they connect with the level of attention and care artist's put into the environment. That then connects to their quality of engagement. So, the attentiveness to the environment conveys a care towards anyone who becomes engaged in it. This has sparked another idea relating to how the materials open up new thought processes and experiences rather than being about the material itself. If we consider that what was happening with Tom and we consider the approach of wanting very young children to follow their own creative inquiry in the space, maybe we should be considering the floor as part of the material planning of the space. With Tom, it was not just about the material, it was about the gallery space too.

Louisa: Actually, that will be an interesting point to consider in the following session as we will use bubble wrap. We have 27 people booked in and hopefully more babies again so perhaps we could look at how different children explore this in the documentation this weekend.

Leila: Yes, absolutely. An interesting thing that has come out for me in first session is the idea of working with one shared material whereas in this session it was lots of separate materials. So, I am interested in this idea of how shared material encourages shared exploration and the difference with individual exploration.

Lauren: I think that's fascinating and it is a lot more interesting for me than individual exploration. A big reason why I work on a family programme is because of the possibilities of intergenerational engagement that can happen.

References

Adams, M., Luke, J., & Ancelet, J. (2010). Family learning in art museum interactive spaces: A literature review. *Engage 25: Family Learning, Spring*, 19-30.

Adams, M., Moreno, C., Polk, M., & Buck, L. (2003). The dilemma of interactive art museum spaces. *Art Education, 56*(5), 42-52.

Alaimo, S., & Hekman, S. (2008). Introduction: Emerging models of materiality in feminist theory. In S. Alaimo & S. Hekman (Eds.), *Material feminism* (pp. 1-20). Bloomington, IN: Indiana University Press.

Alderson, P., & Morrow, V. (2004). *Ethics, social research and consulting with children and young people*. Ilford: Barnardo's.

Alderson, P., & Morrow, V. (2011). *The ethics of research with children and young people: A practical handbook* (Second ed.). London: SAGE.

Allen, F. (2008). 'Situating gallery education' in Dibosa, D. (ed), *Tate Encounters (E)dition 2: Spectatorship, Subjectivity and the National Collection of British Art.* Availabel at: http://www2.tate.org.uk/tate-encounters/edition-2/tateencounters2_felicity_allen.pdf

Ampartzaki, M., Kypriotaki, M., Voreadou, C., Dardioti, A., & Stathi, I. (2013). Communities of practice and participatory action research: The formation of a synergy for the development of museum programmes for early childhood. *Educational Action Research, 21*(1), 4-27.

Anderson, D., Piscitelli, B., Weier, K., Everett, M., & Tayler, C. (2002). Children's museum experiences: Identifying powerful mediators of learning. *Curator: The Museum Journal, 45*(3), 213-231.

Andreasen, S & Bang Larson, L (2007). 'The middleman: Beginning to think about mediation,' in Paul O'Neill (ed)., *Curating Subjects.* London: Open Editions, p. 20-30.

Ash, D. (2003). Dialogic inquiry in life science conversations of family groups in a museum. *Journal of Research in Science Teaching, 40*(2), 138-162.

Association, B. E. R. (2018). Ethical guidelines for educational research (Fourth ed.). London: British Educational Research Association

Bakhtin, M. (1981). *The dialogic imagination: Four essays*. Austin: University of Texas Press.

Barad, K. (2001). Re(con)figuring space, time, and matter. In M. DeKoven (Ed.), *Feminist locations: Global and local, theory and practice* (pp. 75-109). New Brunswick: Rutgers University Press.

Barad, K. (2003). Posthumanist performativity: Toward an understanding of how matter comes to matter. *Signs, 28*(3), 801-831.

Barad, K. (2007). Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning. *Signs, 28*(3), 801-831.

Barad, K. (2014). Diffracting diffraction: Cutting together-apart. *Parallax, 20*(3), 168-187.

Barrett, E., & Bolt, B. (2013). *Carnal knowledge: Towards a 'New Materialism' through the Arts*. New York: I. B. Tauris & Co Ltd.

Bedford, L. (2015). The Art of Museum Exhibitions. London: Routledge.

Bennett, J. (2010). *Vibrant matter: A political ecology of things*. Durham, NC: Duke University Press.

Bennett, T. (1995). *The birth of the museum: History, theory, politics*. London: Routledge.

Biesta, G (2017). What if? Art education beyond expression and creativity. In C. Naughton, G. Biesta and D. Coles (Eds). *Art, artists and pedagogy. Philosophy and the arts in education.* London: Routledge. p. 11-20.

Bishop, C. (2012). *Artificial hells: Participatory art and the politics of spectatorship*. London: Verso.

Blackmore, J and The Victorian Department of Education and Early Childhood Development (2011). *Research into the connection between built learning spaces and student outcomes.* Education Policy and Research Division, Department of Education and Early Childhood Development, Melbourne.

Blaise, M., Banjeree, B., Pacini-Ketchabaw, V., & Taylor, A. (2013). Researching the naturecultures of postcolonial childhood. *Global Studies of Childhood, 3*(4), 350–354.

Bloch, M. (1992). Critical perspectives on the historical relationship between child development and early childhood education research. In S. Kessler & B. Blue-Swadner (Eds.), *Reconceptualizing the early childhood curriculum: Beginning the dialogue* (pp. 3-20). New York: Teachers College Press.

Blud, L. M. (1990). Social interaction and learning among family groups visiting a museum. *Museum Management and Curatorship, 9*(1), 43-51.

Boivin, N. (2010). *Material cultures, material minds: The impact of things on human thought, society and education*. Cambridge: Cambridge Press.

Bolin, D. & Blandy,P. (2003). *Learning things: Material culture in art education.* New York, NY: Teachers College Press.

Borun, M. (2002). Object-based learning and family groups. In S. Paris (Ed.), *Perspectives on object-centered learning in museums* (pp. 245-260). Mahwah: Lawrence Erlbaum Associate Publishers.

Borun, M., Chambers, M., & Cleghorn, A. (1996). Families are learning in science museums. *Curator: The Museum Journal, 39*(2), 123-138.

Borun, M., Chambers, M. B., Dritsas, J., & Johnson, J. I. (1997). Enhancing family learning through exhibits. *Curator: The Museum Journal, 40*(4), 279-295.

Borun, M., Cleghom, A., & Garfield, C. (1995). Family learning in museums: A bibliographic review. *Curator: The Museum Journal, 38*(4), 262-270.

Bourriaud, N. (2002). *Relational aesthetics* (S. Pleasance, F. Woods, & M. Copeland, Trans.). Dijon: Les Presses du Reel.

Boutet, D. (2013). Metaphors of the mind: Art forms as modes of thinking and ways of being. In E. Barrett (Ed.), *Carnal knowledge: Towards a 'New Materialism' through the arts*. New York: I.B.Tauris.

Bowers, B. (2012). A look at early childhood programming in museums. *Journal of Museum Education, 37*(1), 39-48.

Braidotti, R. (1994). *Nomadic subjects*. Chichester: Columbia University Press.

Braidotti, R. (2013). *The posthuman*. Cambridge: Polity Press.

Bruce, T. (2012). *Early childhood practice: Froebel today*. London: SAGE Publications Ltd.

Bruner, J. (1973). *The relevance of education*. New York: W. W. Norton.

Bruner, J. (1985). *Models of the learner,* Educational Reseracher, 14(6). P.77-83.

Buck, L. (2005). *When artists make interactive works of art for children: The Contemporary Arts Center's UnMuseum*. Paper presented at the Content to play: Family-orientated interactive spaces in art and history museums, Los Angeles.

Burnham, S., & Elliott, K. (2011). *Teaching in the art museum: Interpretation as experience*. Los Angeles: Getty Publications.

Cairns, S., & Wolfe, G. (2015). *Spaces for learning: A new handbook for creating inspirational learning spaces*. Corsham: Clore Duffield Foundation.

Cannella, G. (1997). *Deconstructing early childhood education: Social justice and revolution* (Vol. 2). New York: Peter Lang Publishing Inc.

Ceppi, G., & Zini, M. (1998). *Children, spaces, relations: Metaproject for environment for young children*. Reggio Emilia Reggio Children.

Chesworth, L. (2018). Embracing uncertainty in research with young children. *International Journal of Qualitative Studies in Education*, 1-12.

Choi, S. (2013). Relational aesthetics in art museum education: Engendering visitors' narratives through participatory acts for interpretive experience. *Studies in Art Education, 55*(1), 51-63.

Clark, A. (2010a). *Transforming children's spaces: Childrens and adults participation in designing learning environments* Abingdon: Routledge.

Clark, A. (2010b). "Young Children as Protagonists and the Role of Participatory, Visual Methods in Engaging Multiple Perspectives." American Journal of Community Psychology 46: 115–123.

Clark, A. (2017). *Listening to young children: A guide to understanding and using the mosaic approach* (3rd Ed.). London: Jessica Kingsley.

Clark, A., & Moss, P. (2011). *Listening to young children: The mosaic approach* (2nd ed.). London: National Children's Bureau for the Joseph Rowntree Foundation.

Claxton, G. (1997). *Hare brain, tortoise mind: Why intelligence increases when you think less*. London: Fourth Estate.

Claxton, G., & Lucas, B. (2004). *Be creative: Essential steps to revitalise your work and life*. London: BBC Active.

Coady, M. (2001). Ethics in early childhood research. In G. MacNaughton, I. Siraj-Blatchford, & S. Rolfe (Eds.), *Doing early childhood research: International perspectives on theory and research* (pp. 64-74). Sydney: Allen and Unwin.

Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education*. London: Routledge.

Comber, B. (2001). Critical literacy: What is it, and what does it look like in elementary classrooms? *National council of teachers of English, 6*(3), 1-7.

Committee, H. o. C. E. a. S. (2007). *Creative partnerships and the curriculum: Eleventh report of session (2006-2007)*. Retrieved from London: https://publications.parliament.uk/pa/cm200607/cmselect/cmeduski/1034/1034.pdf

Coole, D., & Frost, S. (2010). *New Materialisms: ontology, agency, and politics*. Durham: Duke University Press Books.

Csikszentmihalyi, M. (1988). The flow experience and its significance for human psychology. In M. Csikszentmihalyi & I. Csikszentmihalyi-Selega (Eds.), *Optimal experience: Psychological studies of flow in consciousness*. Cambridge: Cambridge University Press.

Cutler, A (2019). *Tate learning today: Ten years in the making,* London: Tate.

Dahlberg, G. (2012). Pedagogical Documentation: A practice for negotiation and democracy. In C. Edwards, L. Gandini, & G. Forman (Eds.), *The Hundred Languages of Children*. Santa Barbara: Praeger.

Dahlberg, G., & Moss, P. (2009). Foreword. In G. Dahlberg & P. Moss (Eds.), *Movement and experimentation in young children's learning: Deleuze and Guattari in early childhood education*. Oxon: Routledge.

Dahlberg, G., & Moss, P. (2010). Introduction by the series editors. In H. Lenz-Taguchi (Ed.), *Going beyond the theory/practice divide in early childhood education*. Oxon: Routledge.

Dahlberg, G., Moss, P., & Pence, A. (2007). *Beyond quality in early childhood education and care: Postmodern perspectives*. Oxon: Routledge.

Davies, B. (2018). Ethics and the New Materialism: A brief genealogy of the 'post' philosophies in the social sciences. *Discourse: Studies in the Cultural Politics of Education, 39*(1), 113-127.

Deleuze, G., & Guattari, F. (1987). *A thousand plateaus: Capitalism and schizophrenia.* (B. Massumi, Trans. Second Edition ed.). Minneapolis.: University of Minnesota Press.

Department for Education (2018) Statuatory Framework for the Early Years Foundation Stage. Available at: https://www.gov.uk/government/publications/early-years-foundation-stage-framework--2 *Accessed: 11 March 2019*

Derrida, J. (1997). A conversation with Jacques Derrida. In J. D. Caputo (Ed.), *Deconstruction in a Nutshell*. New York: Fordham University Press.

Dewey, J. (1916). *Democracy and education*. New York: The Macmillan Company.

Dewey, J. (1929). *Experience and nature* London: Allen and Unwin.

Dewey, J. (1934). *Art as experience*. New York: Minton, Balch & Company.

Dewey, J. (1938). *Experience and education*. Indianapolis: Kappa Delta Pi.

Dewey, J. (1964). Experience, nature and art. In R. D. Archambault (Ed.), *John Dewey on education*: Random House.

Dewey, J. (2008). *The school and society*. New York: Cosimo Classics.

Dickens, L., & Watkins, K. (1999). Action research: Rethinking Lewin. *Management Learning, 30*(2), 127-140.

Doeser, J. (2014). Step by step: Arts policy and young people 1944-2014 *Culture at Kings*. London: Kings College London.

Doorley, S., & Witthoft, S. (2012). *Make space: How to set the stage for creative collaboration* Hoboken, N.J.: John Wiley Kamp & Sons.

Dudek, M. (1996). *Kindergarten architecture: Space for the imagination*. London: Taylor & Francis.

Dudek, M. (2005). *Children's spaces*. Oxford: Architectural Press.

Dudek, M. (2013). *Nurseries: A design guide*: Routledge.

Edwards, C., Gandini, L., & Forman, G. (1993). *The hundred languages of children: The Reggio Emilia approach to early childhood education* Norwood: Ablex Pub. Corp.

Eisner, E. (1972). *Educating artistic vision*. New York: Macmillan.

Eisner, E. (1982). *Cognition and curriculum: A basis for deciding what to teach*. New York: Longman Inc.

Eisner, E. (1985). Aesthetic modes of knowing. In E. Eisner (Ed.), *Learning and teaching: The ways of knowing* (pp. 22-36). Chicago: University of Chicago Press.

Eisner, E (1998), What do the Arts teach? *Improving Schools,* 1(3), p.32-26.

Eisner, E. (2002). *The arts and the creation of mind*. New Haven: Yale University Press.

Ellenbogen, K. (2002). Museums in family life: An ethnographic case study. In G. Leinhardt, K. Crowley, & K. Knutson (Eds.), *Learning conversations in museums* (pp. 81-101). Mahwah: Lawrence Erlbaum Associates, Inc.

Engeström, Y. (1987). *Learning by expanding. An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.

Engeström, Y. (1993). Developmental studies of work as a test bench of activity theory: The case of primary care medical practice. In S. Chaiklin & J. Lave (Eds.), *Understanding practice: Perspectives on activity and context*. Cambridge: Cambridge University Press.

Engeström, Y. (1996). Developmental work research as educational research. *Nordisk Pedagogik: Journal of Nordic Educational Research, 16*, 131-143.

Engeström, Y. (1999). Activity theory and individual and social transformation. In Y. Engeström, R. Miettinen, & R. Punamaki (Eds.), *Perspectives on activity theory*. Cambridge: Cambridge University Press.

Engeström, Y. (2001). Expansive learning: Toward an activity theoretical reconceptualization. *Journal of education and work, 14*(1), 133-156.

Fawcett, M. (2009). *Learning through child observations*. London: Jessica Kingsley Publishers.

Filippini, T. (2001). On the nature of organization. In P. Zero & R. Children (Eds.), *Making learning visible: Children as individual and group learners*. Reggio Emilia: Reggio Children.

Fleet, A., Patterson, A., & Robertson, J. (2017). *Pedagogical Documentation in early years practice: Seeing through multiple perspectives* London: SAGE Publications.

Flewitt, R. (2005). Conducting research with young children: some ethical considerations. *Early Child Development and Care, 175*(6), 553-565.

Foreman-Peck, L., & Travers, K. (2013). What is distinctive about museum pedagogy and how can museums best support learning in schools? An action research inquiry into the practice of three regional museums. *Educational Action Research, 21*(1), 28-41.

Foucault, M. (1970). *The order of things: An archeology of the human sciences*. New York: Random House.

Foucault, M. (1977). *Discipline and punish: The birth of the prison*. New York: Pantheon.

Foucault, M. (1980). Truth and power. In C. Gordon (Ed.), *Power/knowledge: Selected interviews and other writings, 1972-1977* (pp. 109-133). New York: Pantheon Books.

Foucault, M. (1984) *The ethics of the concern of the self as a practice of freedom*. (Vol 6), Concordia: Revisita internacional de filosophia.

Fox, N., & Alldred, P. (2015). New Materialist social inquiry: Designs, methods and the research-assemblage. *International Journal of Social Research Methodology, 18*(4), 399-414.

Gallacher, L.-A., & Gallagher, M. (2008). Methodological immaturity in childhood research? Thinking through 'participatory methods'. *Childhood, 15*(4), 499-516.

Gandini, L., Hill, L., Cadwell, L., & Schwall, C. (2015). *In the spirit of the studio: Learning from the atelier of Reggio Emilia* New York, NY: Teachers College Press.

Garber, E. (2019). Objects and New Materialism: A journal across making and living with objects, *Studies in Art Education. 60*(1)

Gardner, H. (1982). *Art, mind and brain: A cognitive approach to creativity*. New York: Basic Books.

Gillis, J. R. (2008). *The islanding of children—Reshaping the mythical landscapes of childhood*. New Jersey: Rutgers University Press.

Goodman, N. (1968). *Languages of art: An approach to a theory of symbols* (2nd Ed.). Indianapolis: Bobbs-Merrill.

Graham, J. (2017). The anatomy of an AND. In C. Mörsch, A. Sachs, & T. Sieber (Eds.), *Contemporary curating and museum education*. Bielefeld: Transcript Verlag.

Graham, J., Graziano, V., & Kelly, S. (2016). The educational turn in art. *Performance Research, 21*(6), 29-35.

Grainger, T., & Barnes, J. (2006). Creativity in the primary curriculum. In J. Arthur, T. Grainger, & D. Wray (Eds.), *Learning to teach in the primary school* (pp. 209-225). London: Routledge.

Gredler, M. (2010). Vygotsky, Lev (1896-1934). In T. Hunt, J. Carper, T. Lasley, & C. Raisch (Eds.), *Encyclopedia of education reform and dissent*. Thousand Oaks, California: SAGE.

Greene, M. (1995). Art and imagination: Reclaiming the sense of possibility. *The Phi Delta Kappan, 76*(5), 378-382.

Greene, M. (2000). *Releasing the imagination: Essays on education, the arts, and social change*. San Francisco: Jossey-Bass.

Greene, M. (2011). Foreword. In R. Burnham & E. Kai-Kee (Eds.), *Teaching in the art museum: Interpretation as experience* Los Angeles: J. Paul Getty Museum.

Grieshaber, S., & Hatch, A. J. (2003). Child observation and Pedagogical Documentation as effects of globalisation. *Journal of Curriculum Theorizing, 19*(1), 89-102.

Grieshaber, S., & McArdle, F. (2010). *The trouble with play*. Maidenhead: Open University Press.

Grosz, E. (1990). Contemporary theories of power and subjectivity. In S. Gunew (Ed.), *A reader in feminist knowledge: Critique and construct* (pp. 59-120). London: Routledge.

Hackett, A. (2015). Young children as wayfarers: Learning about place by moving through it. *Children & Society, 30*(3), 169-179.

Hackett, A., Holmes, R., MacRae, C., & Procter, L. (2018). Young children's museum geographies: spatial, material and bodily ways of knowing. *Children's Geographies*, 1-8.

Hackett, A., & Somerville, M. (2017). Posthuman literacies: Young children moving in time, place and more-than-human worlds. *Journal of Early Childhood Literacy, 17*(3), 374-391.

Hale, J. (Ed.) (2012). *Narrative environments and the paradigm of embodiment*. Abingdon: Routledge.

Hall, C and Thomson, P (2017). Creativity in teaching: what can teachers learn from artists? *Research Papers in Education. 32*(1), 106-120.

Hanley, C. (2018). Thinking with Deleuze and Guattari: An exploration of writing as assemblage. *Educational Philosophy and Theory*, 1-11.

Haw, K (2008). 'Voice' and video: Seen, heard and listened to? In P. Thomson (Ed). Doing visual research with children and young people. Oxon: Routledge.

Hein, G. (1998). *Learning in the Museum*. New York: Routledge.

Hein, G. (2004). John Dewey and museum education. *Curator: The Museum Journal, 47*(4), 413-427.

Heinich, N & Pollack, M (1996). 'From museum curator to exhibition auteur: Inventing a singular position.' Bruce Ferguson, Reesa Greenberg & Sandy Nairne, *Thinking about exhibitions.* London: Routledge. P.237

Hekman, S (2010). *The material of knowledge: Feminist disclosures.* Bloomington: Indiana University Press.

Herr, K., & Anderson, G. L. (2015). *The action research dissertation: A guide for students and faculty*. London: SAGE.

Hickey-Moody, A., & Page, T. (2016). *Arts, pedagogy and cultural resistance: New Materialisms*. New York: Rowman & Littlefield.

Hickey-Moody, A., Palmer, H., & Sayers, E. (2016). Diffractive pedagogies: dancing across New Materialist imaginaries. *Gender and Education, 28*(2), 213-229.

Higgins, S., Hall, E., Wall, K., Woolner, P., & McCaughey, C. (2005). *The impact of school environments: A literature review*. Retrieved from Newcastle, NSW:

Hooper-Greenhill, E. (1999). *The educational role of the museum*. London: Routledge.

Hooper-Greenhill, E. (2000). *Museums and the interpretation of visual culture*. Oxon: Routledge.

Hooper-Greenhill, E. (2007). *Museums and education: Purpose, pedagogy & performance*. Oxon: Routledge.

Hubard, O. (2007a). Complete engagement: Embodied response in art museum education. *Art Education, 60*(6), 46-56.

Hubard, O. (2007b). Productive information: Contextual knowledge in art museum education. *Art Education, 60*(4), 17-23.

Hubard, O. (2015). *Art museum education: Facilitating gallery experiences*. New York: Palgrave Macmillian.

Hughes, B. (1996). *Play environments: A question of quality*. London: PLAYLINK.

Hughes, B. (2013). *Evolutionary playwork* (2nd ed.). London: Routledge.

Hultman, K., & Lenz-Taguchi, H. (2010). Challenging anthropocentric analysis of visual data: A relational materialist methodological

approach to educational research. *International Journal of Qualitative Studies in Education, 23*, 525-542.

Il'enkov, E. (1977). *Dialectical logic: Essays in its history and theory*. Moscow: Progress.

Ipswich Art Gallery (2019). Ipswich Art Gallery website. *Children's Gallery* (Accessed March 26, 2019). Available from: https://www.ipswichartgallery.qld.gov.au/kids/childrens-gallery/

Ingold, T. (2011). *Being alive: Essays on movement, knowledge and description*. Abingdon: Routledge.

Ingold, T. (2013). *Making: Anthropology, archaeology, art and architecture*. Oxon: Routledge.

James, A., Jenks, C., & Prout, A. (1998). *Theorizing childhood*. Cambridge: Policy press.

Jonassen, D., & Land, S. (1999). *Theoretical foundations of learning envrionments*. Mahwah, NJ: Lawrence Erlbaum Associates.

Jonassen, D., & Rohrer-Murphy, L. (1999). Activity theory as a framework for designing constructivist learning environments. *Educational technology research and development, 47*(1), 61-79.

Kai-Kee, E. (2011). A brief history of teaching in the art museums. In R. Burnham & E. Kai-Kee (Eds.), *Teaching in the art museum: Interpretation as experience*. Los Angeles: Getty Publications.

Katz, L (1995), *Talks with teachers of young children: A collection*. Norwood: Praeger.

Kelly, L., Savage, G., Griffin, J., & Tonkin, S. (2004). *Knowledge Quest: Australian Families Visit Museums*. Sydney: Australian Museum

Kemmis, S., & McTaggart, R. (1988). *The action research planner*. Australia: Deakin University Press.

Kemmis, S., McTaggart, R., & Nixon, R. (2014). *The action research planner: Doing critical participatory action research*. London: Springer.

Klitmøller, J. (2016). Educational practice, student experience, and the purpose of education - a critique of 'Pedagogy in Practice'. *Oxford Review of Education, 42*, 646-660.

Knutson, K., & Crowley, K. (2010). Connecting with art: How families talk about art in a museum setting. In L. Kucan & M. Stein (Eds.), *Instructional Explanations in the Disciplines* (pp. 189-206). New York: Springer Science and Business media.

Koro-Ljungberg, M. (2013). "Data" as vital illusion. *Cultural Studies ↔ Critical Methodologies, 13*(4), 274-278.

Koro-Ljungberg, M. (2015). *Reconceptualizing qualitative research: Methodologies without methodology* Thousand Oaks: SAGE Publications.

Koro-Ljungberg, M., & MacLure, M. (2013). Provocations, re-un-visions, death, and other possibilities of "data". *Cultural Studies ↔ Critical Methodologies, 13*(4), 219-222.

Kuutti, K. (1996). Activity theory as a potiential framework for human-computer interaction research. In B. A. Nardi (Ed.), *Context and consciousness: Activity theory and human-computer interaction*. Cambridge, Mass: MIT Press.

Laevers, F. E., Daems, M., DeBruyckere, G., Declercq, B., Moons, J., Silkens, K., . . . VanKessel, M. (2005). Well-being and involvement in care settings. A process-orientated self-evaluation Instrument. Leuven: Kind & Gezin and Research Centre for Experiential Education.

Lankford, E. L. (2002). Aesthetic experience in constructivist museums. *Journal of Aesthetic Education, 36*(2), 145.

Lather, P. (1991). *Getting smart: Feminist research and pedagogy with/in the postmodern*. London: Routledge.

Latour, B. (2005). *Reassembling the social*. Oxford: Oxford University Press.

Leinhardt, G., Crowley, K., & Knutson, K. (2003). *Learning conversations in museums*: Taylor & Francis.

Leinhardt, G., Tittle, C., & Knutson, K. (2002). Talking to oneself: Diaries of museum visits. *Learning conversations in museums*, 103-133.

Lemelin, N. (2002). *Participatory action research in a contemporary art museum: Findings from a researcher/practitioner partnership*. Paper presented at the American Educational Research Association, New Orleans.

Lenz-Taguchi, H. (2008). An "ethics" of resistance challenges taken-for-granted ideas in Swedish early childhood education. *International Journal of Education Research, 47*(5), 270-282.

Lenz-Taguchi, H. (2009). *Going beyond the theory/practice divide in early childhood education: Introducing an intra-active pedagogy* London: Routledge.

Lenz-Taguchi, H., & St.Pierre, E. (2017). Using concept as method in educational and social science inquiry. *Qualitative Inquiry, 23*(9), 643-648.

Lenz-Taguchi, H. (2011a). Investigating learning, participation and becoming in early childhood practices with a relational materialist approach. *Global Studies of Childhood, 1*(1), 36-50.

Lenz-Taguchi, H. (2011b). Investigating Learning, Participation and Becoming in Early Childhood Practices with a Relational Materialist Approach. *Global Studies of Childhood, 1*, 36.

Leont'ev, A. (1978). *Activity, consciousness, and personality*. USA: Prentice-Hall.

Leont'ev, A. (1981). *Problems of the development of the mind*. Moscow: Progress Publishers.

Lewin, K. (1946). Action research and minority problems. *Journal of Social Issues, 2*(4), 34-46.

Lewin, K. (1948). *Resolving social conflicts: Selected papers on group dynamics*. New York: Harper & Bros.

Lillian de Lissa. (2019). *Statement of values.* Lillian de Lissa website. Viewed July 1, 2019 at: http://lilliandelissa.org.uk/statement-of-values/

Lines, D (2018). Jazz departures: Sustaining a pedagogy of improvisation. In Naughton, C.; Biesta., G & Cole., D, '*Art, artists and pedagogy: Philosophy and the arts in education.'* London: Routledge.

Linnard, M. (1995). New debates on learning support. *Journal of Computer Assisted Learning, 11*, 239-253.

Lubeck, S., & Schaack, D. (2000). Beyond Quality in Early Childhood Education and Care: Postmodern Perspectives; by Gunilla Dahlberg, Peter Moss, and Alan Pence. *Early Childhood Research Quarterly, 15*(1), 139-143.

MacLure, M (2013). The Wonder of Data. *Cultural Studies – Critical Methodologies*, 13 (4) 228-232.

MacLure, M. (2015). The 'New Materialism:' A thorn in the flesh of critical qualitative inquiry. In G. Canella, M. Perez, & P. Pasque (Eds.), *Critical qualitative inquiry: Foundations and futures*. California: Left Coast Press.

MacNaughton, G. (2003), *Shaping Early Childhood: Learners, Curriculum and Contexts.* Milton Keynes: Open University Press.

MacNaughton, G. (2005). *Doing Foucault in early childhood studies: Applying poststructural ideas*. Oxon: Routledge.

MacNaughton, G., & Hughes, P. (2011). *Doing action research in early childhood studies: A step-by-step guide*. Milton Keynes: Open University Press.

MacNaughton, G., & Williams, G. (2009). *Teaching young children: Choices for theory and practice* (Second edition ed.). Melbourne: Pearson Education Australia.

MacRae, C. (2007). Using sense to make sense of art: young children in art galleries. *An International Journal of Research and Development, 27*(2), 159-170.

MacRae, C., Hackett, A., Holmes, R., & Jones, L. (2017). Vibrancy, repetition and movement: Posthuman theories for reconceptualising young children in museums. *Children's Geographies*, 1-13.

Mallory, B., & New, R. (1994). Social constructivist theory and principles of inclusion: Challenges of early childhood special education. *The Journal of Special Education, 28*(3), 322-337.

Malone, K. (2017). Reconsidering children's encounters with nature and place using posthumanism. *Australian Journal of Environmental Education, 32*(1), 42-56.

Malone, K., & Tranter, P. (2003). Children's environmental learning and the use, design and management of schoolgrounds. *Children, Youth and Environments, 13*(2).

Mangan, L. (2015, 29 December 2015). Why I'm going ape about the privatisation of children's play. *The Guardian*. Retrieved from http://www.theguardian.com/commentisfree/2015/dec/29/go-ape-privatisation-childrens-play-battersea?CMP=share_btn_tw

Marti, J., & Villasanta, T. (2009). Quality in action research: Reflections for second-order inquiry: *Systemic practice and action research, 22*(5), 383-396.

Massey, D. (1994). *Space, place and gender*. Cambridge: Polity.

May, H., O'Donoghue, D., & Irwin, R. L. (2014). Performing an intervention in the space between art and education. *International Journal of Education through Art, 10*(2).

McCutcheon, G., & Jung, B. (1990). Alternative perspectives on action research. *Theory into Practice, 29*(3), 144-151.

Merriam Webster dictionary (2019), 'Curation,' *Merriam-Webster.com,* Viewed June 24, 2019 at https://www.merriam-webster.com/dictionary/curator

Miettinen, R. (2000). The concept of experiential learning and John Dewey's theory of reflective thought and action. *International Journal of Lifelong Education, 19*(1), 54-72.

Mörsch, C., Sachs, A., & Sieber, T. (2017). Preface. In C. Mörsch, A. Sachs, & T. Sieber (Eds.), *Contemporary curating and museum education*. Bielefeld: Transcript Verlag.

Moss, P. (2007). 'Bringing politics into the nursery: Early childhood education as a democratic practice.' *European Early Childhood Education Research Journal.* 15(1). p.5-20.

Moss, P. (2012). Readiness, partnership, a meeting place? Some thoughts on the possible relationship between early childhood and compulsory school education. *Forum, 54*(3), 355-368.

Moss, P. (2013). *Early childhood and compulsory education: Reconceptualising the relationship*. Oxon: Routledge.

Moss, P. (2016). Early years PISA testing. *Early Years Educator, 18*(6).

Moyles, J., Payler, J. & Georgeson, J. (2014). *Early Years Foundations: Critical Issues.* 2nd. Berkshire: Open University Press.

Mullins, L. (2002). *Management and organisational behaviour* (6th ed.). Upper Saddle River: Prentice Hall.

Murris, K. (2016). *The posthuman child: Educational transformation through philosophy with picturebooks* Oxon: Routledge.

Murris, K. (2017). Reading two rhizomatic pedagogies diffractively through one another: a Reggio inspired philosophy with children for the postdevelopmental child. *Pedagogy, Culture and Society, 25*(1), 1-20.

NAEYC (2009), *Developmentally appropriate practice in early childhood programs serving children from birth through age 8,* National Association for the Education of Young Children.

NGV (2013). Media Release: $1.95m grant for children's programming announced. *National Gallery of Victoria website*. Retrieved from http://www.ngv.vic.gov.au/media_release/1-95m-grant-for-childrens-programming-announced/

Nicholson, S. (1971). How NOT to cheat children - The theory of loose parts. *Landscape Architecture, 62*, 30-34.

Nutbrown, C. (2006). *Threads of thinking: Young children learning and the role of early education*. London: Sage Publications.

Obrist, H. U. (2009). 'Foreword.' In Carolee Thea, *On curating: Interviews with ten international curators.* New York: Distributed Art Publishers.

Odegard, N. (2012). When matter comes to matter – working pedagogically with junk materials. *Education Inquiry, 3*(3), 387-400.

Olsson, L. M. (2009). *Movement and experimentation in young children's learning: Deleuze and a virtual child*. Oxon: Routledge.

O'Neill, P (2007). The curatorial turn: From practice to discouse. In Jidith Rugg and Michèle Sedgwick, *Issues in curating contemporary art and performance.* Bristol: Intellect Books.

O'Neill, P (2010). *Curating and the Educational Turn.* London: Open Editions.

O'Neill, P (2012). *The culture of curating and the curating of culture(s).* Cambridge, Mass: MIT Press.

Pacini-Ketchabaw, V., Kind, S., & Kocher, L. (2017). *Encounters with materials in early childhood education* New York, NY: Routledge.

Pacini-Ketchabaw, V., Nxumalo, F., Kocher, L., Elliot, E., & Sanchez, A. (2014). *Journeys: Reconceptualizing early childhood practices through pedagogical narration*. Toronto: Toronto University Press.

Palmquist, S., & Crowley, K. (2007). From teachers to testers: How parents talk to novice and expert children in a natural history museum. *Science Education, 91*, 783-804.

Pellegrini, A., & Galda, L. (1998). *The development of school-based literacy: A social ecological perspective*. London: Routledge.

Penfold, L. (2019). Material matters in children's creative learning. *Journal of Design and Science, 5* (Resisting Reduction).

Peters, M (2003). Foreword: What does it mean to be critical in arts education today? In E.M. Grierson & J.E. Mandfield (Eds) *The Arts in Education: Critical perspectives from Aotearoa New Zealand,* 9-26. Christchurch: Dunmore Press.

Piaget, J. (1952). *The origins of intelligence in children* (C. M, Trans.). New York: International Universities Press, Inc.

Piaget, J. (1964). Development and learning. In M. Gauvain & M. Cole (Eds.), *F. Reading in child behavior and development.* (Second ed.). New York: W. H Freeman & Company.

Piscitelli, B. (1997). A challenge to enjoy: Young children as audience in art galleries and museums. *The Journal of Museum Education, 22*(2&3), 20-21.

Piscitelli, B. (2001). Young children's interactive expereinces in museums: Engaged, embodied, and empowered learners. *Curator: The Museum Journal, 44*(3), 224-229.

Piscitelli, B. (2003). Fuelling innovation: Starting young. *Artlink, 23*(2), 65.

Piscitelli, B. (2006). Keeping Queensland museums and galleries on top and out-in-front with programs for children and young people. *Artery, 2*(1), 3-6.

Piscitelli, B. (2012). Young children, the arts and learning: Outside of school, at home and in the community. In S. Wright (Ed.), *Children, meaning-making and the arts* (pp. 158-175). Sydney: Pearson.

Piscitelli, B., & Anderson, D. (2000). Young children's learning in museum settings. *Visitor Studies Today, 3*(3), 3-10.

Piscitelli, B., Everett, M., & Weier, K. (2003). Enhancing young children's museum experiences: A manual for museum staff. In A. R. Council (Ed.). Brisbane: Queensland University of Technology.

Piscitelli, B., McArdle, F. A., & Weier, K. L. (1999). Beyond "look and learn:" Investigating, implementing and evaluating interactive learning strategies for young children in museums. Brisbane: Queensland University of Technology.

Piscitelli, B., & Penfold, L. (2015). Child-centered practice in museums: Experiential learning through creative play at the Ipswich Art Gallery. *Curator: The Museum Journal, 58*(3), 263-280.

Piscitelli, B., & Weier, K. (2002). Learning with, through, and about art: The role of social interactions. In S. Paris (Ed.), *Perspectives on object-centered learning in museums* (pp. 121-151). Mahwah, NY: Lawrence Erlbaum Associates.

Povis, K. T., & Crowley, K. (2015). Family learning in object-based museums: The role of joint attention. *Visitor Studies, 18*(2), 168-182.

Pringle, E. (2006). *Learning in the gallery: Context, process, outcomes*. Retrieved from London: https://www.engage.org/downloads/2B763080_Learning_in_the_Gallery.pdf

Pringle, E. (2009a). The artist-led pedagogic process in the contemporary art gallery: Developing a meaning-making framework. *International Journal of Art & Design Education, 28*(2), 174-182.

Pringle, E. (2009b). The artist as educator: Examining relationships between art practice and pedagogy in the gallery context. *Tate Papers, Spring*(11).

Pringle, E. (2011). The gallery as a site for creative learning. In J. Sefton-Green, P. Thomson, K. Jones, & L. Bresler (Eds.), *The Routledge International Handbook of Creative Learning*. Oxon: Routledge.

Pringle, E., & Anson, L. (2006). *Enquire: Inspiring learning in galleries*. London: Engage.

Pringle, E., & DeWitt, J. (2014). Perceptions, processes and practices around learning in an art gallery. *Tate Papers, 22*(Autumn).

Pringle, E (2018). Teaching and Learning in the Art Museum. Oxford Research Encylopedia of Education. Retrieved May 15, 2019 from: https://oxfordre.com/education/view/10.1093/acrefore/9780190264093.001.0001/acrefore-9780190264093-e-399.

Pringle, E (2019). *Rethinking Research in the Art Museum.* Oxon: Routledge

Prout, A. (2004). *The future of childhood*. Oxon: Routledge.

Prout, A., & James, A. (1990). A new paradigm for the sociology of childhood, provenance, prospect and problems. In A. James & A. Prout (Eds.), *Constructing and Reconstructing Childhood:*

Contemporary Issues in the Sociology of Childhood (pp. 7-33). London: Falmer Press.

Qvortrup, J., Bardy, M., Sgritta, G., & Wintersberger, H. (1994). *Childhood matters: Social theory, practice and politics*: Avebury Press.

Reason, P. (2006). Choice and quality in action research practice. *Journal of Management Inquiry, 15*(2), 187-203.

Reiss, V., & Pringle, E. (2003). The role of artists in sites for learning. *International Journal of Art & Design Education, 22*(2), 215-221.

Rinaldi, C. (1993). *The emergent curriculum and social constructivism*. Norwood: Ablex Publishing.

Rinaldi, C. (2001). *Making learning visible: Children as individual and group learners*. Reggio Emilia: Reggio Children & Harvard Project Zero

Rinaldi, C. (2006). In dialogue with Reggio Emilia: Listening, researching and learning. London: Routledge.

Ringel, G. (2005, June 4-5, 2005). *Designing exhibits for kids: What are we thinking?* Paper presented at the J. Paul Getty symposium, content to play: Family oriented interactive spaces in art and history museums, Los Angeles.

Ritchie, J. (2013). Sustainability and relationality within early childhood care and education settings in Aotearoa New Zealand. *International Journal of Early Childhood, 44*(3), 307-326.

Robertson, F., & Roy, E. (2017). Editorial: Multisensory materialities in the art school. *Studies in Material Thinking Journal, 17*(0), 2-11.

Robinson, K. (1989). *The arts in schools: Principles, practice and provision*. Lisbon: Calouste Gulbenkian Foundation.

Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.

Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J. V. Wertsch, P. d. Rio, & A. Alvarez (Eds.), *Sociocultural Studies of Mind* (pp. 139-164). Cambridge: Cambridge University Press.

Rogoff, B. (2003). *Cultural nature of human development*. Oxford: Oxford University Press.

Rogoff, B. (2008). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. *Pedagogy and practice: Culture and identities*, 58-74.

Rogoff, B., Mistry, J., Göncü, A., Mosier, C., Chavajay, P., & Heath, S. (1993). Guided participation in cultural activity by toddlers and

caregivers. *Monographs of the society for research in child development, 58*(8), I-179.

Rogoff, I. (2010). Turning. In P. O'Neil & M. Wilson (Eds.), *Curating and the educational turn* (pp. 32-46). London: Open Editions and de Appel Arts Centre.

Savva, A., & Trimis, E. (2005). Responses of young children to contemporary art exhibits: The role of artistic experiences. *International Journal of Education and the Arts, 6*(13), 1-22.

Seear, L., & Clark, A. (2010). *Contemporary art for contemporary kids*. Paddington, Queensland: Sherman Contemporary Art Foundation and Queensland Art Gallery.

Shaffer, S. (2011). Opening the doors: Engaging young children in the art museum. *Art Education, 64*(6), 41.

Shaffer, S. (2015). *Engaging young children in museums*. Walnut Creek, CA: Left Coast Press Inc.

Sicart, M. (2014). *Play matters*. Cambridge: MIT Press.

Simons, H., & Usher, R. (2000). *Situated ethics in educational research*. London: Routledge/Falmer.

Siraj-Blatchford, I., Sylva, K., Muttock, S., Gilden, R., & Bell, D. (2002). *Researching effective pedagogy in the early years* Retrieved from London: http://www.327matters.org/docs/rr356.pdf

Somerville, M. (2015). Emergent literacies in 'the land of do anything you want'. In M. Somerville & M. Green (Eds.), *Children, place and sustainability*. London, New York: Palgrave Macmillan.

Sousa, J. (2005). *Learning for the fun of it*. Paper presented at the Content to play: Family-orientated interactive spaces in art and history museums, J. Paul Getty Museum, Los Angeles.

Stacey, S. (2015). *Pedagogical Documentation in early childhood: Sharing children's learning and teachers' thinking*. St. Paul, MN: Redleaf Press.

Stenhouse, L. (1975). *An introduction to curriculum research and development*. London: Heinemann Educational Publishers.

Sterry, P., & Beaumont, E. (2006). Methods for studying family visitors in art museums: A cross-disciplinary review of current research. *Museum Management and Curatorship, 21*(3), 222-239.

Sunday, K (2015). Relational making: Re/imagining theories of child art. *Studies in Art Education: A Journal of Issues and Research.* 56 (3) p.228-240

Swaffield, S & MacBeath, J (2005). School self-evaluation and the role of a critical friend. Cambridge Journal of Education. *35*(2).

Tallant, S. (2009). Experiments in Integrated Programming. *Tate Papers, 11*(Spring).

Tate (2019a), *History of Tate,* Tate website. Viewed May 11, 2019 at https://www.tate.org.uk/about-us/history-tate

Tate (2019b), *Our Priorities,* Tate website. Viewed May 9, 2019 at https://www.tate.org.uk/about-us/our-priorities

Cutler, A (2019), *Tate Learning: Vision and Practice,* Tate website. Viewed May 9, 2019 at: https://www.tate.org.uk/research/research-centres/tate-research-centre-learning/working-papers/arts-learning-tate

Taylor, A. (2013). *Reconfiguring the natures of childhood*. London and New York: Routledge.

Taylor, A., & Giugni, M. (2012). Common worlds: Reconceptualising inclusion in early childhood communities. *Contemporary Issues in Early Childhood, 13*(2), 108-119.

Terreni, L. (2013). Children's rights as cultural citizens: Examining young children's access to art museums and galleries in Aotearoa New Zealand. *Australian Art Education, 35*(1), 93-107.

Thomson, P. (2008). *Doing visual research with children and young people*. London, New York: Routledge.

Thomson, P.; & Rose, L. (2012). 'Creative learning in an inner-city primary school.' In Terry Wrigley, Pat Thomson & Bob Lingard, *Changing Schools: Alternative ways to make a world of difference.* Oxon: Routledge. P.128-140.

Thomson, P., & Gunter, H. (2007). The methodology of students-as-researchers: Valuing and using experience and expertise to develop methods. *Discourse: Studies in the Cultural Politics of Education, 28*(3), 327-342.

Thomson, P., & Gunter, H. (2011). Inside, outside, upside down: The fluidity of academic researcher 'identity' in working with/in school. *International Journal of Research & Method in Education, 34*(1), 17-30.

Thomson, P., Hall, C., Jones, K., & Sefton-Green, J. (2012). The Signature Pedagogies project: Final report: Culture, Creativity and Education.

Thomson, P., Hall. C., Earl, L. & Geppert, C (2019). *Time to Listen. Evidence from the Tracking Arts Learning and Engagement [TALE] Project.* University of Nottingham. Viewed: https://researchtale.files.wordpress.com/2019/07/time-to-listen-tale-project-final-report.pdf

Turvey, A., Walton, A. & Daly, E (2017). *In site of conversation: On learning with art, audiences and artists.* London: Tate Publishing.

Ulmer, J. B., & Koro-Ljungberg, M. (2014). Writing visually through (methodological) events and cartography. *Qualitative Inquiry, 21*(2), 138-152.

UNCRC. (1989). *United Nations Convention on the Rights of the Child*. New York.

Vakhterov, V. (1913). *Principles of the New Pedagogy*. Moscow: I.D. Sytin.

Van der Tuin, I. (2011). A different starting point, a different metaphysics: Reading Bergson and Barad diffractively. *Hypatia, 26*, 22-42.

Vecchi, V., & Giudici, C. (2004). *Children, art, artists: The expressive languages of children, the artistic language of Alberto Burri*. Reggio Emilia: Reggio Children.

Vygotsky, L. (1962). *Thought and language*. Cambridge, Mass: MIT Press.

Vygotsky, L. (1978). *Mind in society*. Cambridge, Mass: Harvard University Press.

Vygotsky, L. (1997). *The collected works of L. S. Vygotsky: The history of the development of higher mental functions* (R. Rieber, Trans. Vol. 4). New York: Plenum Press.

Vygotsky, L. (2004). Imagination and creativity in childhood *Journal of Russian and East European Psychology, 42*(1), 7-97.

Warwicker, M. (2014). Should children run wild in art galleries and museums? *BBC Online*. Retrieved from http://www.bbc.com/culture/story/20140826-should-kids-run-wild-in-museums

Weier, K. (2004). Empowering young children in art museums: Letting them take the lead. *Contemporary Issues in Early Childhood, 5*(1), 106-116.

Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. Cambridge: Cambridge University Press.

Wertsch, J. (1979). From social interaction to higher psychological processes. *Human development, 22*, 1-22.

Wertsch, J. (1985). *Culture, communication, and cognition: Vygotskian perspectives*. New York: Cambridge University Press.

Wertsch, J. (1991). *Voices of the mind: A sociocultural approach to mediated action*. Cambridge, MA: Harvard University Press.

Whitebread, D., Bingham, S. (2014). 'School readiness: Starting age, cohorts and transitions in the early years.' In *Early years foundations: Critical Issues.* 2nd Ed. Edited by Janet Moyles, Jan

Georgeson and Jane Payler. Berkshire: Open University Press. P.179-191.

Whitworth Art Gallery (2012), *Strategic Plan 2012-2015,* Viewed May 9, 2019 at
http://documents.manchester.ac.uk/display.aspx?DocID=25526

Whitworth Art Gallery (2019), History, Whitworth Art Gallery website, Viewed May 9, 2019 at:
https://www.whitworth.manchester.ac.uk/visit/thenewgallery/history/

Williams, G & MacNaughton, G (1998). *Teaching Young Children: Choices in Theory and Practice.* Open University Press, Milton Keynes.

Wood, E. (2013). *Play, learning and the early childhood curriculum*. London: SAGE Publications.

Wood, E., & Bennett, N. (1999). Progression and continuity in early childhood education: Tensions and contradictions. *International Journal of Early Years Education, 7*(1), 5-16.

Wright, S. (2012). *Children, meaning-making and the arts* (2nd Ed.). Frenchs Forest, NSW: Pearson.

Wroe, A., & Halsall, R. (2001). School self-evaluation: measurement and reflection in the school improvement process. *Research in Education, 65* (May), 41-52.

Zuber-Skerritt, O. & Fletcher, M. (2007). The quality of an action research thesis in social sciences. *Qual. Assur. Educ.,* (15)4. 413-436.