Art and Design Learning Journey: Interactions Between Learners and Materials

N R Martins

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Nicola Ruth Martins

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Contents

Acknowledgments

A doctoral journey may at times feel like it's a solitary affair, in reality however, it can only be done with the kind and selfless support of others.

My guiding light in all that I have done throughout my life has been provided by my late mother, Ruth M^{c}Caul (1936- 2020), who herself was an art and design teacher helping the young people of N. Ireland make sense of their world during troubled times of the 1960-90's. It is with pride and honour that I dedicate this thesis to her.

I am also deeply grateful to the wonderfully inquisitive, enthusiastic, and engaged students that provided the impetus for this research project. It is my hope that this thesis manages to capture the vitality and drive that the students brought with them to all their lessons. The work that they created provided me with the opportunity to see art education in a fresh light and wonder at their innate potential to embrace each new challenge with interest.

To my husband, for his unwavering support for what has been a necessary but challenging doctoral journey. To my two children, for whom I am incredibly proud. I am greatly indebted to all three of them for the patience and tolerance that they have shown towards their distracted partner and mother over an extended period of time. This journey would not have been possible without them.

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Abstract

This thesis is an empirical explorative and new materialist qualitative research journey representing a secondary school art and design teacher's awakening to the importance and vitality of art education to young learners with regards to their own intrinsic learning journey and their subsequent wider outlook on life. Secondary education and specifically art education is vulnerable and prone to political whims, lack of interest and shifts of policy since 1768 and the founding of the Royal Academy. The historical and political lineage of art and design education is outlined along with the lasting impact of language used within more recent statutory documentation. Little research currently exists that specifically looks at what is generated within the processes of making and doing that are intrinsic to creative activity and are lived out in every art and design classroom environment. Within this thesis I will explore the rich potential for haptic and tacit knowledge to be generated within the creative process, driven by heuristic experiences. I will also highlight the generation of powerful emotional relationships generated between human and non-human actants which occur as students engage with making and doing within the art classroom. Through working directly with different creative processes and materials, including research, poetry, design, and ceramics, two classes of year 9 students explored both collaboratively and individually the value of making and responding to both their own learning experience and that of working with others. The physicist and academic Karen Barad offers a novel platform of diffractive analysis with which to interpret the research project data in order to challenge the accepted positionality of merely working through a creative process in a procedural way. Diffractive analysis is also central in the analysis of the intra-actions between human and nonhuman actants opening up further discussions challenging established hierarchy and status quo presently found in secondary education. The genesis of the creative process is explored through the material discursive phenomena created through the intra-actions between human and nonhuman matter.

Abbreviations

ABR	Arts-Based Research
BA(Hons)	Bachelor of Arts (with honours)
Dip AD	Diploma in Art and Design
EBacc	English Baccalaureate
EdD	Doctor of Education
GCSE	General Certificate of Secondary Education
LEA	Local Education Authority
NACAE	National Advisory Council for Art and Design
NACCCE	The National Advisory Committee for Creative and Cultural Education
NC	National Curriculum
NDD	National Diploma in Design
OCR	Oxford, Cambridge and RSA Examinations *(RSA= The Royal Society for Arts, Manufacturers and Commerce.)*
PaR	Practice as Research
PGCE	Postgraduate Certificate in Education
SATs	Statutory Assessment Tests

Chapter 1 - Introduction

1.0- Positionality

As both a ceramicist and an art and design teacher, I toyed with undertaking a PhD exploring some aspect of my own creative practice that I had reignited during my MA (Maker/Teacher) in which my own ceramic work was once again brought to the forefront in order to inform and enrich my pedagogical practice. Upon further enquiries into whether I should embark on a PhD or an EdD, I came to the conclusion at that moment in time that undertaking a professional doctorate as offered by the EdD programme suited my direction of thought better. I am a teacher and understand that I teach others to make and do, more than I have time to make and do myself.

Throughout the thesis there is an inclination towards being autobiographical and reflexive in nature. As my writing developed throughout the doctoral journey, this became unavoidable and, in some ways needed directly addressing. At times, my own practice helped me to visualise the rather complex concepts shared by others that I explored through my research. John Mason sees this as being 'research from the inside' (Mason, 2002:xii) and I feel that this encapsulates the doctoral experience that I have enveloped myself in, in order to help uncover what art education offers young learners. To help internalise the theories of others and our relationship with the nonhuman, I instinctively turned to the ceramic work that I created during my degree studies on several occasions to help me clarify and illustrate my thinking and understanding. For me, my formative learning experiences were my foundation and degree education focusing on ceramics, where practice and theory informed one another. In hindsight this was my rich 'playground' where I learned through experiencing and was able to explore ideas as the work developed. This practice has become integral to my approach to teaching and now my research.

Throughout this thesis rather than restricting 'analysis' to the confines of the Data Analysis chapter, I have felt moved to entwine, challenge and integrate the data produced by the students with theory throughout the thesis. This has helped me to validate and explore my thinking throughout this doctoral process ensuring continuity of my understanding. I have analysed and written about the data throughout this thesis as I have felt it has been a natural way for me to make sense of the practice with the theory as Hickey-Moody and Page comment '…on this ethos of practice as thought [is] already in the act,…' (Hickey-Moody and Page, 2016:1). The practice and theory have a continual relationship and it would for me be inappropriate to isolate them from one another.

Being a secondary art and design teacher, you inhabit a niche corner of the school's curriculum. You are valued for your displays around school and for publicity purposes such as providing images of artwork for the school website, but along with some other subjects you are given a smaller allocation of the timetable compared to what are termed as 'core subjects' and even some of the other 'foundation subjects'. Each year, the student's art and design GCSE results are not necessarily included in the school's reported results. However, far from being cynical about my position as an art and design teacher, I feel honoured and motivated to share my unconditional commitment to the subject with young learners.

When choosing the project for my EdD I was interested in investigating in depth what the fundamental human experience of working with a range of materials and equipment could offer young learners during their Key Stage Three statutory experience.

This research was carried out within the art classrooms of an all-girls selective school of over 1,000 students. In my role as an art educator, I have been refining my pedagogical practice over many years. I willingly engage with and celebrate the learning processes that happen in the classroom but, not until now, have I taken the opportunity to really analyse and review the reflexive

practice that unfolds each day in the two adjoining art rooms and the role that this plays for each learner who enters the department as part of their timetabled learning experience. I was also motivated to further my understanding of what art and design means to students, as I am always moved by how students engage and respond with interest when learning new skills and techniques. Students are motivated to solve challenges and make aesthetic connections with the work and thinking of others. As the research for the project progressed it became apparent that the aims of the project would be to understand the entwined relationship between the making process in art and design with that of the embodied learning experience. Central to art and design is the connection between the artist with their materials. This occurs not only by means of a visual connection but also through a haptic exploration that imparts information on weight, texture, and the density of matter. The sense of touch 'triggers' our minds as to how we connect and react to the material world. This is our haptic awareness. A useful definition that links haptic growth with making is offered by Emily W. Bushell and J. Paul Bourdreau with,

> Haptic perception refers to the ability to acquire information about objects with the hands, to discriminate and recognize objects from handling them as opposed to looking at them (Bushnell and Boudreau, 1993:1008).

Our haptic awareness is developed through our tacit knowledge (O'Connor, 2017:228): knowledge which is understood by each of us without being explicit. We build on our tacit knowledge through time and experience rich in stimuli. Over time the individual learns to discover and understand for themselves with a 'hands-on' experience developing their understanding, heuristically. The aim of the project was not to contrive some sort of new learning paradigm but rather to unravel the relationship between makers and materials. The following holistic research aim became the overarching intention of the research project. It is intended that the two research questions will hopefully be addressed by meeting the following three research objectives.

Research Aim:

- To explore the richness of the making process within a year 9 art and design classroom.

Research Questions:

- What are the unique affordances of art and design education for year 9 learners?
- What new insights might be gained about the benefits of art and design education by diffracting students' experiences of the making process through a new materialist lens?

Research Objectives:

- Put the art and design learning experience into a historical and political context in order to understand the positionality and use of language in relation to the national curriculum.
- Explore both the making process and the emotive embodied learning that is generated when a group of year 9 students engage with a range of different media to create original pieces of artwork.
- Consider the merits of haptic, tacit knowledge and heuristic learning for the individual within the art and design curriculum and its wider implications for society.

1.1- Thesis Overview

In Chapter 2, the Literature Review opens by documenting how art education has always been entwined with the politics and compelling issues of the day. The history of education is explored with a particular focus on how art education has been perceived and extrinsically shaped within political realms. World War II provided the seismic shift needed to make government, academics and the educational establishment think differently both about what education was for, and what people in general needed in order to be able to access their learning. How this impacted on the delivery of art education is examined. Interestingly, the ray of hope was driven by a group of practicing artists that lectured in higher education rather than them being from within government or the school establishments themselves.

The review then moves on to explore how in the late eighties, the language of hierarchy was initially introduced and then subsequently embedded in the language deployed in the development and publication of the national curriculum that controlled, challenged and undermined the status of art and design. This use of language was first witnessed in the statutory documentation in the early days of the national curriculum, and I argue persists today (Ball, 2003). The term 'language of hierarchy' refers to the way that hierarchies (in this case in relation to the relative status of subjects within the curriculum) become established through language and discourse. I debate and highlight how several missed opportunities in both how the national curriculum was conceived and the links to art education within the curriculum could have been improved during the formative stages of designing the national curriculum. I also draw attention to the advocates of art education that were not heard and how unfortunately this created a set of missed opportunities that have been detrimental to the art and design curriculum. The historicity of education and particularly art and design education in this research project have a direct impact on the face-to-face teaching in the classroom and how the subject is perceived. Gaining an oversight of the positionality of the subject within the curriculum provides a starting point from which to gain an understanding of what the subject can offer both the young learners and beyond.

In Chapter 3, there is an exploration of the conceptual foundations that underpin and inform the thesis starting with the understated importance of hands in making and doing. The writings of Michael Polanyi (Polanyi, 1983; Polanyi, 1998) and Tim Ingold (Ingold, 2013) help inform my understanding of tacit knowing built up through experience. I also draw upon the work of the writer, Richard Sennett, (Sennett, 2009) who has explored the relationship between hands and craftspeople highlighting the importance of creating environments that are rich in affordances for learned experiences to freely occur. This discussion then leads very naturally to consideration of the relationship between hands, the maker, their equipment, and the materials used. Chapter 3 then analyses various pedagogical processes and the desired

components that are needed to optimise opportunities for creativity and learning that are well documented in academic writing. Two such theories explored in the literature review are, 'Flow' as written by Mihalyi Csikszentmihalyi (Csikszentmihalyi, 1997) and the four stages of the creative process as outlined by Graham Wallas (Wallas, 2014). These theories offer an insight into the conditions that need to be met or experienced before the creative practice becomes autotelic (or satisfying in itself). In the case of Csikszentmihalyi there are nine steps that he identifies as needing satisfying before a process can become autotelic and Wallas writes there are four stages that need to be experienced before a piece of work comes to a successful conclusion. However, none of the pedagogical structures explored provide focus for any embodied agency within the learning experience between human and nonhuman matter. New materialism however offers this thesis the theoretical framework to engage with the material world that surrounds us in a novel way and the extensive writing by Karen Barad (Barad, 2007) on material discursive intra-activity provides the analysis of the research with a viable lens with which to explore the data. Her challenging and groundbreaking writing offers an original insight into our relationship with matter and how we are all in a constant state of intra-acting with our ongoing world. Barad's writing is harnessed by Hillevi Lenz Taguchi in her writing on how Swedish pre-school students intra-act and connect with their material worlds (Lenz Taguchi, 2010). Taguchi is an exponent of Barad's work highlighting the connection between learners and their direct connection with materials in the classroom environment in order to make immediate and ongoing sense of their worlds. In this chapter both the writing of Lenz Taguchi and Barad offer insights for an alternative narrative to understand, and challenge established procedural ways of engaging in art and design.

The writing of Gilles Deleuze and Felix Guattari offer insights on how creatives can experience the world around them and how they can operate within a hierarchical system such as educational establishments. Throughout the thesis there is also reference made to both extrinsic and intrinsic forces that came to the fore of my thinking as I read Deleuze's 'Francis Bacon-Logic of Sensation'. I

will explore the notion that there are actants outside the creative process and there are actants that are inside the creative process. Both the extrinsic and the intrinsic entities impact on the creative journey to varying degrees. This is a theme throughout my writing that is negotiated, theorised and becomes crucial to my final thinking.

In the Methodology Chapter, I provide the rationale for my choice of research methodology. As my research was specifically looking at how a cohort of year 9 students engaged with their art education at the end of their Key Stage Three provision, it seemed appropriate to use a research method that was centred around Arts-Based Research (ABR). As a qualitative methodology, ABR allows for data to be gathered in a way that is conducive and indeed integral to the creative process in the classroom. It provides a flexible and naturalistic structure and framework with which to both create and gather the ongoing data that was in keeping with the usual flow of lesson sequencing and other art projects that had been experienced by the students. This minimised the disruption to the student's own learning experience and aimed to generate data that would be authentic to the students' usual learning experience in the department. A general flow chart of the Year 9 research project is outlined in Chapter 4 in order to help give an overview of the intricacies of the structuring of the research design and data gathering opportunities. The selected methodological approach and subsequent design of the research project was also informed by Guattari's writings concerning his fears for humanity which offered me focus with regards to the rationale of my research. Uncertain of what the data gathered might reveal, I wanted the research project in its design to be rich in artistic experiences. This I hoped would mean that the data gathered would be varied and diverse in nature and could then be analysed diffractively in accordance with the ideas and theories explored by Barad.

In the fast-moving world of teaching, the data analysis chapter provided one of the first opportunities I had had for many years to stop and analyse the embodied learning experience encountered by the students. It wasn't long

into the project that I realised how my input and perceptions impacted upon the learning experience as did the student's own agency and their own emotive responses to the experience of making and doing. The use of different materials and their relationship with their environment and tools all had the potential to impact on their learning journey, as did their perceptions of what learning meant to them. Diffractively analysing the work, in a systematic and successional way offered me space and distancing to be receptive to how different components mattered and responded to one other and how they impacted and shaped the students' ensuing journey throughout the research project. It was through this analysis that the human and nonhuman relationships started to make themselves known to me and the novel thinking as to the importance and significance of art and design education started to become apparent.

As a fledgling researcher the Discussion Chapter provided a meaningful platform for me to further expand my thinking. The Discussion Chapter helped me to initiate, identify and theorise different strands of data and thinking that were generated by the diffractive analysis. I started to develop my understanding of how the overall learning journey for a young person is impacted upon by both extrinsic and intrinsic forces. The extrinsic forces come from outside the relationship between the individual and the material. Intrinsic forces, on the other hand, are innate and are contained within the human and nonhuman relationship. I argue within this chapter that the intrinsic relationship between human and nonhuman is at the centre of the art and design learning journey for each young person and is an important component of who they become and how they engage with their material world.

At the start of my research journey, I was unclear as to what conclusions I might draw as to the importance of the art and design learning journey for young learners coming to the end of their Key Stage Three experience. There is however an ongoing tension between the intrinsic and extrinsic that is continually being mediated by both the teacher and the students. The

conclusion explores my responses to the research project's initial aim, but also draws attention to other extrinsic pressures that impact on the perception of the subject within the curriculum in England.

Chapter 2 - Literature Review- Historical

2.0- Introduction to the Literature Review- Historical

The following chapter looks at both the general political history of education and how its timeline has been punctuated with pivotal policy documents that are pertinent to art and design education. It draws the reader's attention to the few pieces of key documentation that have enabled haptic, tacit knowing

and heuristic learning to become central to an art and design student's learning experience.

To understand what role and purpose art and design has in the curriculum for learners, it is appropriate to have an overview of how both education for young people aged from 11-16 years and art and design education specifically came into being both historically and politically. Education in England will be specifically explored, as the development of education has evolved differently across the four nations. The analysis of appropriate government reports and educational acts gives an insight into the evolving role of art education in society and its perceived importance in the eyes of politicians. The use of language to construct a hierarchical structuring of subjects will be highlighted and questioned. A light will also be shone on both those who have explicitly supported the importance of an art and design education and those who have done it unintentionally. Finally, the agency of art and design educators will be explored within an educational system that appears to have an unforthcoming attitude towards art and design education.

2.1- The Origins of Art Education

The early history of art education was not rooted in the classroom, but more in the craft training of the master/ apprentice model in the workplace established in the thirteenth and fourteenth centuries relating to the construction of churches and cathedrals. In trades such as stained glass, stone carving and metalwork young apprentices aged around 13-14 years of age would embark on lengthy apprenticeships of 5-7 years (Souleles, 2013). At its core, it was a system linked with commerce and the respective trade guilds. The indentured apprentice's success would have been at the whim of the individual's trained master craftsperson. At the end of their training the apprentices would submit a test piece that showcased their abilities. The outcome of this would determine if they could be released from their bond and become a journeyman (Kneebone, 2020). This model of working in the workplace and then producing a final specified outcome to be assessed is still a model that exists in some trades today, albeit adapted and modified. The

master/apprentice model, although it had a severe hierarchy that was dependent upon the impulses of the master (Souleles, 2013:244), was about the apprentice actively engaging with the materials that they worked with and building up their knowledge of working with the material as they progressed.

2.2- Founding of the First School of Design at the Royal Academy

Moving forward in time to 1768, King George III agreed that a founding member of the Royal College of Arts, Sir William Chambers along with a group of others should establish a society to '…more effectually promote the arts of design than any yet established.' (Royal Academy of Arts, 1768). On the opening of the first school of design at the Royal Academy of Arts in England following on from the precedent set by France (Walsh, 2016), the students laboriously and repetitively drew casts of sculptures of the human form (see Figure 1) until it was felt that the students would be able to draw a life model. The Royal Academy also developed its own annual summer art exhibition, which is still a well-supported event to this day. Attendance to the academy was almost exclusively male (Walsh, 2016) and elitist and students learning experiences were narrow.

Figure 1
Edward Francis Burney
The Antique School at New Somerset House, ca. 1780.
Pen and ink with watercolour wash on laid paper.
335 mm x 485 mm.

Then in 1835, following a report by the Select Committee on Arts and Manufacturing, the government supported the first publicly funded art and design education system of Schools of Design across the country sited in industrial centres such as Manchester, Glasgow and Birmingham (McLoughlin, 2019). The original aim of the Schools of Design was to support the design process of the manufacturing industry and that of the applied arts (Souleles, 2013:245). Unfortunately, any progress in training individuals with practical and applied skills was thwarted by the employment of past royal academicians to administer and set up the schools. These individuals believed in the elitist system and had confidence in their field of knowledge in their specialisms of drawing and painting and considered them to be of a higher order than that of design or crafts (Stephens et al., 2008:167). Subsequently, the hierarchical divide of art from design was born (Walsh, 2016). Those students who attended the newly formed Schools of Design were required to declare that they had no intentions of becoming either painters or sculptors and experienced a very tight and controlled drawing and recording experience that was broken into seven different stages of progression (Stephens et al., 2008:166; Souleles, 2013:246). The committee also recommended refining and extending the access to objects and images of beauty that would hopefully develop the aspirational desires and aesthetic refinement of the masses and provide beautiful objects and images to uplift the population's spirits and evoke awe and wonder. The endorsement entailed that public galleries and museums should be opened across the country in large manufacturing cities (Souleles, 2013). The traditional model of apprentice/master was eroding and being replaced by a government led system that worked towards delivering a form of art education that had limited parameters and was delivered through repetitive rote learning. This heavily prescriptive system was overseen predominantly by men as women at that time were seen as having limited capabilities for either independent thought or creativity (Walsh, 2016:38). However, this system of schools of design ultimately became the precursor for tertiary art and design education that we recognise today.

2.3- Henry Cole (1808-32) and the Embedding of Rote Learning

Henry Cole was an extremely important and influential individual in relation to cultural development and how art was to be delivered in education. Cole was a high ranking and highly successful civil servant and confidant of Prince Albert, the consort of Queen Victoria (Stephens et al., 2008:170). His impact on art education has proved to have a lasting impact. He achieved much in his life, such as helping to set up the Royal Mail, and conception and organisational input into the Great Exhibition of 1851 under the patronage of Prince Albert, the contents of which when finished became the basis of contents for the Victoria and Albert Museum in London. Cole also had a strong influence in the organisation and structuring of Schools of Design throughout the country. All of the schools adhered to a very prescriptive and organised curriculum that included a series of rigid and staged steps in drawing that needed mastering before any student could progress further. Once again there was a complete neglect of the intentions of the curriculum linking up in any way to industry (Souleles, 2013:245). Unfortunately, what his instruction did was to embed the practice of repetitive drawing, as being seen as normal practice. Those that attended the schools of design became teachers and their experience became what their students experienced (see Figure 2) (Stephens et al., 2008:168). As an art teacher gaining an insight to the art education in the late 19th century- early 20th century, I would conjecture that these studies of leaf like-structures would have been most likely judged by their teachers on the accuracy of the mimicry rather than either the individual's interpretation or their handling of the media.

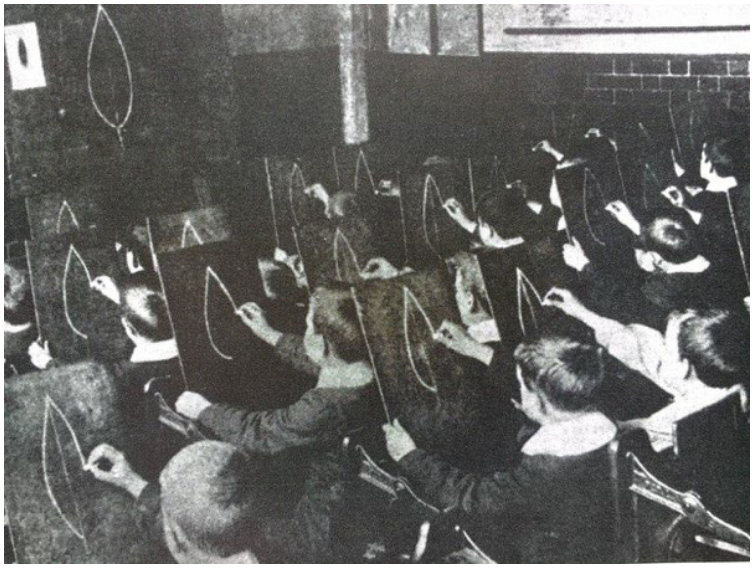

Figure 2
Anon
Freehand drawing 1901

The education of children in the nineteenth century was completely determined by the wealth and income of their parents. The Elementary Education Act 1876 made it law that children should attend school up until the age of 11 years old. However, the payment for their education was to be met by their parents. Most of the schools at the time had links with churches and were supported in their role of educating the young learners. Other schools such as Ragged Schools were funded by voluntary contributions and were for destitute children. Education for children in the nineteenth century was not seen as a priority unless the child's family had money to support it. Art education for young learners was not the norm and if there was any, it was used as a tool to control and aid compliance rather than a means for the individual to express themselves (Stephens et al., 2008:169). As Figure 1 and 2 both illustrate early art and design education emphasised the accuracy of duplication as the main objective of the task rather than encouraging the individual to express themselves by building up an understanding of the media that they were using. This form of repetitive rote learning did indeed allow the individuals to draw leaf like shapes or plaster cast forms in a competent way, but they were left unsure of what they could do with that experience and how it could link with other learning events. Therefore, each

learning experience was left in isolation with no real idea of the direction that it could be taken.

2.4- Shaping Education for the Masses- The Balfour Act 1902 and the Butler Act 1944

As the nineteenth century progressed, the leaving school age rose, and the education of the nation started to gain the government's attention. Then early in the twentieth century, the 1902 Education Act (also known as the Balfour Act) (Education Act 1902,) was passed into law and Local Educational Authorities (LEAs) were given the power to set up and to consider the education of children and that the education committees must also include women. As a result of the Balfour Act, the framework for secondary education for students started to take shape with there being two types of schools, one being state-funded secondary schools and the other being grammar schools. The Balfour Act was seen as the beginnings of a nationally funded educational system with the main rationale of mass education to educate the next workforce.

Just over one year before World War 2 came to an end, the 1944 Education Act (also known as the Butler Act) (Education Act, 1944) paved the way for the tripartite secondary education of grammar schools, secondary technical and secondary modern for students aged from 11-15 years. Also within the legislation of the act were specific points of attention targeting the wellbeing and accessibility of education to individuals for the first time in England, such as the provision of school meals, milk (point 49), help with the cost of school uniforms (point 51) and the provision of suitable '…facilities for recreation and social and physical training' (Education Act, 1944:point 53). The Act did not as such provide guidance on the structuring and delivery of the curriculum and there is no mention of specific areas within it. However, it did set out basic entitlements for students: for all learners to be fed, dressed in a school uniform, with opportunities to play during break time, and with access to learning throughout the school say. These provisions were to be made for all

learners regardless of economics or perceived social status unlike the inequality of the previous decades. This would suggest that the attention of education was turning from being the privilege of the wealthy to being a right for all and with the student being key in that process in the recovery from a devastating war. Ultimately this could mean that the curriculum in due course might diversify to meet the needs of the young learners at the start of the post war era that they were living through.

2.5- Finding 'Common Sense'-The Crowther Report 1959

A report written by the Central Advisory Council for Education (England) for the government in 1959 chaired by Sir Geoffrey Crowther, (who was deputy chairman of The Economist) is the first piece of governmental documentation that provides an insightful understanding of the pedagogical challenges facing education rather than the managerial structuring of educational establishments as seen to date (Central Advisory Council for England, 1959). The report also became known as the Crowther Report. The main remit of the report was surrounding issues of extending the leaving age from 15 to 18. Within the document, genuine concerns were raised as to the purpose of education in general and its meaningful contribution to the young of the day. The country was recovering from the end of the World War 2 in 1945, rationing of food had continued until 1954. The rate of the technological developments driven by the war in science, medicine, transport and communication was unprecedented and the thrust to progress and move forward in a new post-war world was insatiable. Following on from these technological leaps initiated by the World War 2, Crowther acknowledges the truism that the country was living through a scientific revolution and the report documents that the education of the younger workforce needed training to respond. The report records,

> It is not necessary to know how to make a motor car, or even to be able to repair it, in order to drive it; but to use a machine with intelligence and economy, it is desirable to have some conception of the principles on which it is designed and the limits of its capacities.

> Just as it is necessary for a craftsman to understand his materials, so it is necessary for everyone in the second half of the twentieth century to have a modicum of mechanical common sense. (Central Advisory Council for England, 1959:52)

This report written in 1959 is the first official commentary on education (that I found) that makes a reference to skills being applied, adaptable and holistic rather than being too subject specific. The author is referring to an aspect of education that equips a participant with tacit knowing (Polanyi, 1983:10). The report concludes this point by suggesting that the application of such tacit knowing could be a course in itself or implicit in all,

> For some, this can be made the foundation on which a sound course can be built; but for all, it needs to be part of the background to their education. (Central Advisory Council for England, 1959:52)

This report published in 1959 acknowledges the fast-changing world of technology and how that will impact on the world of work and the technological changes that might occur. The report acknowledges the possible impacts that technological developments will have on industries such as chemicals and technology but also printing, transport, retail distributive trades. In hindsight, these couple of sentences embedded in a document that proposes the raising of the school leaving age in 1959 of some 514 pages accurately prognosticate the future. The ability to respond to the future should not just be located in one area of the curriculum but in what underpins it and the need for adaptability, which the document reports '…exposes an ambiguity in the word "skill," which could otherwise be used to sum up the whole argument' (Central Advisory Council for England, 1959:52). Instead of traditionally focusing on one specific area of knowledge at a time, (as illustrated in Figure 2) as demonstrated at the start of the twentieth century by using copying and repetition in the acquisition of perfection. The insinuation is those skills that are related to being adaptable and transferrable would have a greater currency as the workforce changes and responds to technological developments. The report acknowledges that alongside the acquisition of learned skills is the heuristic experience that helps the learner to gain an understanding of their situatedness within their ongoing experience

and this in turn helps to form who they are as an individual and member of society.

> …there is, also a duty to remember those other objectives of any education, which have little or nothing to do with vocation, but are concerned with the development of human personality and with teaching the individual to see himself in due proportion to the world in which he has been set. (Central Advisory Council for England, 1959:52)

This implies that the student is a valued member of the future workforce, rather than merely a component that supports the very framework of industry, as seen in the nineteenth and early twentieth century.

It wasn't until the publication of the 1944 Education Act and then the Crowther Report of 1959 that students themselves appeared to become seen and valued as participants in their own right. Up until that point, unless you were born into an economically privileged family, young people were seen as a basic resource for industry. Education and its origins was focused on compliance that was borne out of unchallenged economic desire and was the antithesis of pluralism and inclusivity. It was the ultimate human binary division of 'us and them' (Roline et al., 2018) and not the emancipatory experience with the learning experience central that I seek to understand.

2.6- Coldstream Report 1960 and the Impact on Art Education

As I embarked on this aspect of my research, I had assumed that I would premise my research on governmental documents that targeted education for 11-16-year-olds. However, innovative thought and breakthroughs regarding the teaching in art and design education came from changes to higher education proposed within the first report of the National Advisory Council on Art Education (NACAE) which became known as the Coldstream Report in October 1960, and which has helped me to review the stimulus for radical change in the teaching of the subject across all ages. I will argue that this report had a profound impact not only for those that took the courses as outlined, but that their learned experience then informed their teaching practice should they have decided to have gone into teaching art and design.

Chairman of the report, Sir William Coldstream was an accomplished practising painter in his own right affording him inherent insights into the creative process (Stephens et al., 2008; Souleles, 2013). Coldstream's terms of reference were, 'To advise the Minister of Education on all aspects of art education in establishments of further education' (Ashwin, 1975:93). The outcome of the report laid the foundations for a new three-year Diploma in Art and Design (Dip AD), which was to replace the National Diploma in Design (NDD). Previously the four year-long education programme integrated a two-year Ministry's Intermediate Exam followed by the two-year National Diploma in Design (NDD) (Vernon Lord:online). The NDD had been a vocationally structured course whereas the Dip AD was to offer the participants 'grouped activities' (Ashwin, 1975:93). In grouped activities, peers would be given the opportunity to share learning experiences both informally and in more formal conversations while engaging with materials and activities rather than being more formally led by an instructor. The new qualification was intended to match university-level academic and technical education at degree level. The content of the course had already been explored and developed with practising artists-teachers including, Richard Hamilton, Tom Hudson and Harry Thubron in art departments across the country. One of the contributors, Richard Hamilton knew that art and design education had to change commenting that '…design education has changed with a changing world…but fine art education has stuck in a deeply worn groove' (Stephens et al., 2008:177). With the acknowledgement of the societal changes in post-war Britain and across the world, art education had to evolve. These changes took the format of being based in the individual being creative in the exploration of materials and processes and not instructional as it had been in the preceding centuries. Whereas the previous NDD courses had been centred on the acquisition of teacher-led craft skills, the Dip AD focused more on '…the acquisition of skills for the emancipation of creative individuals' (Souleles, 2013:249), where individuals were empowered to build up their own skills while engaging and working with matter in a learner-centred fashion. Such learning encounters opened possibilities for the entanglements with the new materialist, nonhuman world within the art and design educational context

that hadn't previously existed in art education. In 1964, the recommendations made by the Coldstream Report were formulated into a three-year degree art course which was usually preceded by a one-year Pre-Diploma Course which later became known as a Foundation course (Stephens et al., 2008:179). Following on from a successful completion of the Foundation course and after passing an interview, students commenced onto a Dip AD in one of specialisms or areas recommended by the Coldstream Report.

Two overarching components were at the core of this new course which any art teacher who has completed a Dip AD or the subsequent degree equivalents since will recognise as:

1. The experimentation and development of fundamental skills and processes of working with different materials within their selected designated areas.
2. The inclusion of history of art or complementary studies as part of the course. (Ashwin, 1975:98)

The experimental and heuristic art and design experience that I personally embraced during both my Foundation course and at degree level (specialising in 3D Design /ceramics) will have been strongly informed by the recommendations made in the Coldstream Report of 1960 and the subsequent reviews. The encouragement to work and explore the materials within my selected specialism and to take ownership in both what I created but also in the way that I worked with my materials, was pivotal to the whole learning experience.

As for the structuring of the Dip AD, the Coldstream Report advocated the creation of an executive body that was independent of both the government and the NACAE. This meant the structuring, delivery and examination of the courses was set by the schools of art and design delivering the courses. These courses were taught mainly by those who were practitioners themselves. This was indeed a radical departure from the centrally examined NDD course (Ashwin, 1975:94-95). The art educationalists in the art colleges were given the freedom to design and deliver their courses for Dip AD. As for the

structuring of the one-year Pre-Diploma course. The Coldstream Report outlined that each art school should be free to design their own course without reference to any national body (Ashwin, 1975:96). There were modifications and adaptations to the Coldstream Report in 1965, 1969 and in 1970. Days before the 1970's report was published, there was a change in Government with Margaret Thatcher being posted as the new Minister for Education. Mrs Thatcher didn't see the report as being a high priority as she entered office (McLoughlin, 2019). However, for students studying art and design during these times, they found that at the core of both the Foundation and Dip AD the foci of working on material exploration within their selected discipline along with complementary studies remained unchanged. Many contemporary secondary art and design teachers like me, will have experienced the BA(Hons) route followed by a one-year postgraduate course to gain their teaching certificate (PGCE). They will have done either a Foundation and a degree course or just the degree course and will have experienced to some level the '…'liberal education in art'…' (Ashwin, 1975:93) in which they will have been encouraged to explore their area of specialism and become proficient in the range of media and materials. This learning experience and knowledge is what they will have then taken as their core knowing into their classrooms as art teachers (Graham and Goetz Zwirn, 2010).

From this enriching pedagogical experience that was implemented by the lecturers and their first cohort of students in 1963, it is now time to take a leap forward in time to the educational policy development of art education for secondary schools in the late 1970's and 1980's and the birth of the national curriculum. The dawning of the 1980's started to see a shift in the power of decision making in education go from LEAs to central government as educationalist, Ken Jones writes, 'The power to make system-shaping educational decisions has moved upwards, as in the case of the National Curriculum…'(Jones, 2012:210)

2.7- The Inception of the National Curriculum and the Power of Language

Up until this point the politicians had been more involved with the organisation of schools and the management structures rather than the curricula being delivered. A shift started to happen in the 1970-80's. Once again, industrialists and politicians started to air their concerns that education was not preparing young people for business and industry (Graham and Tytler, 1993:2). The then Labour Prime Minister, James Callaghan gave a speech in 1976 at Ruskin College, Oxford. He made two points about education that later formed the origins and drive behind education in the future as cited in, The National Curriculum Consultation Document 5-16 July 1987 (Science, 1987)

1. The first was a new demand for efficiency and value for money.
2. The second was for a relevant curriculum. (Graham and Tytler, 1993:3)

The speech given at Ruskin College was the initial inception for educational change and Callaghan in his speech made a call for a '…core national curriculum' (Graham and Tytler, 1993:3). This was one of the earliest uses of the word, 'core' when referring to education and the phrase 'national curriculum'. On becoming prime minister in 1979, Margaret Thatcher started to lead changes towards a new curriculum in education. In 1981 a government Circular 6/81 was communicated to all LEAs requiring them to submit an outline of the curricula delivered in schools within their remit (Department of Education and Science, 1981). This was the first time that the LEAs were made accountable to central government for the education in their areas and would form the basis of the evidence with which to work towards conceiving the contents of the new national curriculum. Margaret Thatcher was recorded as being in favour of a three-subject curriculum of mathematics, English and science being delivered in schools (Graham and Tytler, 1993:6). The secretary of State for Education, Kenneth Baker (1986-89) wanted a broader curriculum of ten subjects (Graham and Tytler, 1993:6) and started to set up a working party for each of the subjects to be delivered in the national curriculum (Graham and Tytler, 1993:7). In 1985 his predecessor and Secretary of State

for Education, Sir Keith Joseph presented the white paper: Better Schools (1985) in which their principles for the Conservative government were laid out with regards to a reshaping of both primary and secondary education to be what they felt had 'breadth and balance' (Secretary of State for Education and Science, 1985). With respect to art education, the paper states that within the secondary education experience students should experience a largely common curriculum for all. All pupils should study, music, art and drama on a worthwhile scale over the three-year period (Secretary of State for Education and Science, 1985).

The consultation document published in July 1987 titled, 'The National Curriculum 5-16' (Science, 1987) started to firm up the intentions of the Conservative government in creating a statutory curriculum to be delivered in schools. The intention for a curriculum for all came with the introduction of a bipartite division of knowledge into core and (secondary) foundation subjects. This positioning of subjects was reflected through a language of dominance and hierarchy in relation to the relative status of subjects within the curriculum, including statements such as, 'Maths, English and science will form the core of the curriculum, and first priority will be given to these subjects.' (Science, 1987:6). The use of language such as 'core' to refer solely to maths, English and science suggests that these subjects are the only subjects to make up the central learning experience of each individual is ill-informed and provides an institutionally unacceptable platform for bias. For all other subjects to be referred to as 'foundation' implies that a basis can be created for which something can then be built upon. A 'sound foundation' may indeed be important to any structure but it is the core that has the dynamic power. In point 18 of the consultation document, it refers to some subjects or themes such as health education being delivered through the foundation subjects with the following validation.

> It is proposed that such subjects or themes should be taught through the foundation subjects, so that they can be accommodated within the curriculum but without crowding out the essential subjects.
> (Science, 1987:8)

In this way, the proposed national curriculum for England and Wales used a language of separation and difference to create a culture of hierarchy within education between 'essential' and other (presumably non-essential) subjects. Australian educationalist, Jennifer Bleazby presents a coherent argument as to why a dominant hierarchy in western education persists which can be mapped back to Plato (380BC) in which the abstract and theoretical have a higher status than that of the physical and practical world, which are in a constant state of unpredictable flux. She writes, 'I argue that the traditional hierarchy is embedded in a dubious epistemological framework that equates knowledge with certainty' (Bleazby, 2015:672). The points of reference and positionality that appear to be used in education are fixed historically rather than being continually adaptive. The notion of prioritising certain subjects above others has indeed been a hindrance as to how art and design has been valued within the curriculum and this has been reflected in a constant underlying battle for validity borne out of language and the history of educational policies. The writing of Barad (Barad, 2007) offers helpful insights on internalising such an apparent binary division in the structuring and language associated with the national curriculum. Barad sets the scene and case for us to rethink how we question accepted norms. She challenges any set of binaries but not in the more obvious way of '…*how* they matter…' (Barad, 2007:23) rather seeing them in a much more subtle way of '…*how* they stand in relationship to one another.' (Barad, 2007:23). This will be explored later in the chapter.

2.8- Education Reform Act 1988- The National Curriculum Becomes Mandatory

The basic template for the curriculum that is delivered in schools today was made statutory in 1988 with the 1988 Education Reform Act. The act provided the statutory list of subjects that were to be taught in primary and secondary schools in England and Wales for students aged between 5-16 years old. The experience through the years was divided into key stages as follows:

- Key stage 1= 5-7 years old
- Key stage 2=8-11 years old

- Key stage 3=12-14 years old
- Key stage 4= 15-16 years old

The curriculum was separated into subject areas with mathematics, English and science forming what was termed as the 'core' subjects, and technology, history, geography, a modern foreign language, art and design, music and physical education being the other subjects termed as the 'foundation' subjects. Each subject had the contents of their curriculum (or 'Programmes of Study') designed by working parties that were held accountable to the Secretary of State for Education at that moment in time, Kenneth Baker (1986-1989) (Ball and Bowe, 1992). The implementation of the national curriculum into schools was staged over the next five years, with art Programme of Study for art and design being first delivered in 1993 (, the year I trained) (Colwill, 1996:57). My research cohort were coming to the end of their Key Stage Three experience. The structural aspect of the curriculum incites a tension that will be later explored in the Discussion Chapter.

2.9- Who is Speaking up for Art and Design Education and Why are Emotions Relevant?

Sitting quietly on a shelf in a library is a book titled, 'The Art in Schools, Principles, Practice and Provisions,' published in 1982 which explores the principles behind what an art and design education can be. This inquiry makes a strong case for art and design education within the school setting during a time of major educational upheaval. It draws attention to the lack of ministerial focus on the creative subjects as follows,

> The major reports and statements from Secretaries of State, from HMI and from the Schools Council, for one reason or another, have included only brief references to them. We consider any neglect of the arts in education to be a serious matter. The arts have an essential place in the balanced education of our children and young people. (Brinson, 1982:3)

Quite early in the book, the importance of art education is understood not just to create images and artefacts but to contribute to long-term changes in

employment patterns, the changing relationship between society and education and to reflect the growing cultural diversity of Britain (Brinson, 1982:3). With the striving of the government to champion a curriculum that would purely be academically centred, the authors implore that this would only serve a certain aspect of an individual's intellect and ignore the emotive. As Casian et al. argue, emotion is intrinsic to art activities and they acknowledge that it plays an important role in creativity (Casian et al., 2018). The arts are disciplined forms of inquiry that help students to explore and express their feelings and situatedness within society and can thus give them clarity of purpose (Brinson, 1982:11). This is supported by the neuroscientist, Antonio Damasio (Damasio, 2019:46), who writes about the vital role that emotions and feelings play in all that we do and how they tell us what we need to know about any given situation. As Damasio points out, if they weren't relevant to us and had no practical reason for being, then they would have been removed through the process of evolution (Damasio, 2019). It might, therefore, be reasonable to surmise that emotions and feeling are an integral part of who we are both as individuals and culturally. Emotions help us to regulate what Damasio refers to as our internal homeostasis; our ability to self-regulate how we interact with our culture and our given environments. Feelings guide us in how we respond. As Damasio writes, '…feelings are the judges of the cultural creative process.' (Damasio, 2019:171). So, we need to appreciate and understand the role that they play in our being and how they might be channelled and explored through art and design and hence our cultural identity. The ability to be creative is not an ability that a particular type of person has, but rather something that we all have and that just needs nurturing and is developed through given experiences '…that requires discipline and a firm ground in knowledge' (Brinson, 1982:29). Arts education is also a way to develop a language other than the written word (English) or through numeracy (maths) but through visual expression by using materials, as in art and design (Brinson, 1982:18). Visual expression is a language (like most) that is built up over a period of time and if desired can develop over the span of a lifetime. 'Creative work has to stand on the shoulders of previous work and understanding in the discipline in question.' (Brinson, 1982:33). It is

a continual and evolving process. The powerful affective nature of the creative process will be dealt with more in the Data Analysis Chapter.

The transformations that occurred in the higher education sector in response to the Coldstream Report regarding the design and delivery of the art and design education were implemented by the practicing artists and lecturers delivering the courses. The national curriculum by contrast was developed by government and then implemented by the educators. However, as Ball and Bowe and also Maw (Maw, 1993) comment there were opportunities for schools and art departments to interpret and adapt their curriculums to reflect their own school's needs. This opportunity to create a meaningful experience for art and design education was made once again by Ken Robinson through the 'Arts in School Project' launched in 1985 and completed with the support of the National Curriculum Council in 1989, with the findings being published in 1990. Robinson collaborated with eighteen LEAs and had input from over two hundred schools. The aim was to provide guidance and share good practice in ways to help deliver the newly implemented national curriculum that had been informed by practitioners. Robinson was a champion of creative education with a clear vision that all stake holders needed to share ownership and have a clear understanding of the role of the subject within each centre,

> Inside schools, where the curriculum has to be planned and agreed, definition of the arts and their roles in education is essential. (Arts in Schools and National Curriculum, 1990:5)

In many ways the book provides a non-prescriptive interpretation of what the new national curriculum was outlining for art and design and exemplar materials shared within it showcase examples of good practice that already existed in schools. Robinson talks about the role of arts education being '…learning *in* and *through* the arts.' (Arts in Schools and National Curriculum, 1990:7). He explores learning through the arts, as using the subject to explore a theme or to gain further knowledge through topic work or research. As for learning in the arts, well that is much more in the moment, from experiencing the learning in the process of making and doing. Robinson sees these two

aspects as being complementary and that striking the balance is important for the individual to gain a fuller experience. Robinson's 'learning in the process' resonates with Barad's exploration of '…being-of-the-world…' (Barad, 2007:160) and of how the actant is part of the world rather in the world and those never-ending entanglements matter and in fact help to make sense of the ongoing process.

The next and final sizeable report commissioned on behalf of the then Labour led government was, 'All Our Futures: Creativity, Culture and Education' (NACCCE, 1999), published in 1999 and chaired by Ken Robinson. The remit set for the report was to document the current position of cultural and creative development available to young people both in and out of formal education and then to make proposals for improvements for the future through outlining principles, policies, and practice for an improved creative and cultural entitlement for all (NACCCE, 1999). Towards the start of the 242-page long report, it directly tackles the unhelpful language of imposed binaries,

> '…for example, as a choice between the arts or the sciences; the core curriculum or the broad curriculum; between academic standards or creativity…' (NACCCE, 1999:9).

From the outset, the authors acknowledge that realising the potential and raising standards for all students includes all of the elements of their education and not prioritising one over another (NACCCE, 1999:9). The report then goes on later to say that within,

> …the existing National Curriculum there is an explicit hierarchy of subjects. From the outset, the foundation subjects were by definition of lower status than the core subjects. (NACCCE, 1999:85)

The report outlines the importance of creative development as an experience for all being able to develop through rich and varied learning experiences. 'Developing these capacities involves a balance between teaching skills and understanding, and promoting the freedom to innovate, and take risks' (NACCCE, 1999:10). This echoes with the sentiment from the Crowther report from 1959 in which it was hoped that tacit and heuristic knowledge would be

developed and underpinned through all the courses delivered (Central Advisory Council for England, 1959:52). Whereas, in previous government funded documents, the authors have talked about teaching students in order to meet the needs of industry and commerce, 'All Our Futures' acknowledges that changes are happening so fast now, that education's role needs to modify to '…have meaning and purpose in a future we can scarcely predict.' (NACCCE, 1999:18). So, if the world of work is continually evolving, then so must education, but in what way?

2.10- A Missed Opportunity

The report, 'All Our Futures' argues that in the development of the national curriculum as laid out in the 1988 Education Reform Act, ten working parties were set up to consider the specific aims and objectives for each subject. However, these working parties were not given the remit to consider the rationale that united all the subjects and they worked unilaterally rather than multilaterally. In response to this, 'All Our Futures' recommended that the national curriculum's core aims, and objectives be re-examined to determine what unifies the curriculum rather than creating a hierarchy (NACCCE, 1999). This echoes the writing of Barad earlier in the chapter of '…*how* they stand in relationship to one another' rather than (Barad, 2007:23) '…*how* they matter…' (Barad, 2007:23). There could have planning and development opportunities built into the formative stages of the development of the national curriculum in 1988 to have viewed the subject areas holistically rather than individually. To have planned how they sat alongside each other rather than defining their validity against one another. The NACCCE was fully funded by the government, yet it was set up as an independent advisory body and therefore the Labour government was not obliged to act on the findings (Craft et al., 2001). The report also states that the existing distinction between core and foundation, should be removed (NACCCE, 1999:85) as it states, 'One of the purposes of the National Curriculum is to identify core values and priorities in state education.' (NACCCE, 1999:87) and yet 'Implicitly and explicitly, the message of the current national curriculum is that arts and

humanities are lower priority' (NACCCE, 1999:87). The report suggests a re-evaluation of the national curriculum, yet such a big shift as suggested needed would require both the political will and innovation, which just wasn't there (Craft et al., 2001).

2.11- Where Are We Now?

The latest incarnation of the national curriculum for England was published in 2013 under a Conservative and Liberal Democratic coalition government. In relation specifically to Key Stage 3 art and design education in England (See Appendix 1) providing a statutory overview to the following,

- Purpose of study
- Aims
- Attainment Targets
- Key Stage 3 outline

The document represents the entitlement of art and design using only 350 words in a document that is 264 pages long. This minimal viewpoint of the subject area in which it appears to have little worth within a statutory document is where this research project works out from.

2.12- Finding Wriggle Room to Manoeuvre

Since art education's elitist origins of the Instrument of Foundation in 1768 for the inception of the School of Design at the Royal Academy up until the emancipatory Coldstream Report of the 1960's, art education has had a chequered and insecure political history. As identified above, the language used within the 1988 national curriculum and subsequent reforms haven't challenged this but rather have continued to subvert and undermine the potential of the subject (NACCCE, 1999). The statutory performative measures (called Statutory Assessment Tests (SATs)) that were used to initially determine the perceived validity of education in schools from Key Stages 1-3 have all been removed apart from the End of Key Stage 2 SATs which only test English and maths, however, the language of 'core' still persists. So other ways are needed to permeate art through education. In an article by Stephen Ball

and Richard Bowe, they suggest how this can be achieved by the adaptation of statutory documentation and its contents to the given context of the educational environment that it is delivered within. The authors of the article breakdown any statutory documentation into three categories thus putting them into context for both school and educators (Ball and Bowe, 1992). Firstly the 'Intended Policy' is disseminated and delivered by politicians, government related departments along with educational bodies. In such cases the boundaries for variation within the documentation is inelastic, generic, and limited. The Art and Design Programmes for Study: Key Stage 3, (see Appendix 1) is such a document. The second category outlined by the authors is the 'Actual Policy' and how it can be read and interpreted to unlock their '…'spaces', 'silences'…' (Ball and Bowe, 1992:100) as determined by schools and departments. Through interpretation of the document both the school and practitioners can find that all important 'wriggle room' to negotiate how the policy will be implemented within their setting. 'Policy-in-use' is the final category and how departments deliver the policy responding to their situations, resources, capabilities, and budget. In the case of this research project the project delivered for the students works within the boundaries of the national curriculum but at the same time is responsive to the knowledge of both students and teachers, the equipment, and materials to be accessed throughout and the vitality of the students maximising their interest and engagement in the subject. So, this movement away and metaphorical distancing from central government allows each school and each department to be able to navigate their way through it and find their own interpretation that is appropriate for them (Maw, 1993). Educationalist, Anna Craft wrote that any action to be taken, will be executed by the teachers. It will be '…done by the teachers rather than the government. It will be bottom up rather than top down' (Craft et al., 2001). Educationalist, Jeff Adams comments that it is the necessary to protect these metaphorical spaces so that students are provided with the opportunity to create freely and in turn '…conjure new ways of making, and with it better ways of living and being together' (Adams, 2018). In my teaching role, I have been a head of department since 1997 and I can relate to the notion of distancing myself and internalising any statutory

order with reference in art and design education within my remit to a way that fitted us rather than us fitting it. Ball and Bowe comment,

> Policy texts are not closed, their meanings are neither fixed nor clear, and the carryover of meanings from one policy arena and one educational site to another is subject to interpretational slippage and contestation. (Ball and Bowe, 1992:98)

This gives art teachers 'wriggle room' to construct their own art curriculum for their centre. As the art and design programmes of study for Key Stage 3 is only approximately 350 words of fairly open-ended generalised blanket statements (see Appendix 1), it provides the opportunity for art educators to set their own agendas within their own school contexts. This as Ball and Rowe point out could lead to '…producing very different outcomes that may actually work against a *National* Curriculum.' (Ball and Bowe, 1992:98). The lack of centralised instruction within the national curriculum for art and design offers openings for any art and design teacher that has previously experienced a foundation diploma and degree experience in an art related degree. The courses that were developed following the Coldstream Report of 1960 onwards, put the individual's experience, gathering of knowledge related to a discipline and working with different materials at the centre. Unlike the teachers who followed the limited instruction on how to carry out repetitive drawings as advocated by Henry Cole in the nineteenth century, the trained graduate artists and designers that graduated from art colleges from the 1960's onwards had a much broader heuristic knowledge to disseminate and share with their students should they enter the teaching profession.

Throughout the political history of secondary education and with specific relation to art education, there is relatively little direct connection with the subject apart from the intentions of linking education to the world of work and the direct comparison made by Sir Geoffrey Crowther (1959) (see page 23) to the tacit knowing of a craftsperson. The thinking and restructuring of art within higher education by Sir William Coldstream and his peers in the years leading up to 1970 would I believe go on to have a huge impact on secondary art and design education by filtering into secondary education by

means of art graduates deciding to become art educators and disseminating an interpretation of their experience with their students (McLoughlin, 2019). The discursive power of curriculum and policy documentation since the inception of the national curriculum in the late eighties has been codified through language descriptors to insidiously diminish the role of art and design within the curriculum and this has never been challenged.
This power of language that appears to direct the focus away from the importance of art and design education does impact on student's learning experience and this will be further analysed in the in the Analysis Chapter.

The aim now is to move from the political and historical factors to start to analyse concerns that are more theoretical. Chapter 3 will explore intra-active pedagogy and new materialism as informed by the theorist Karen Barad on agential realism and the writings by Hillevi Lenz Taguchi in relation to her research into early childhood education and the pivotal relationship between human and nonhuman and their resulting intra-actions. The importance of directly connecting with matter is explored as being central to an individual's richer learning experience as opposed to having an understanding of procedural conditions needed to learn and be creative. The agency of art educators within the educational system is considered through the writings of Félix Guattari and Gilles Deleuze. Then finally in the chapter, the work on understanding tacit knowing as proposed by Michael Polanyi is assessed along with the Branka Marinkovic, Erin O'Connor and Richard Sennett.

Chapter 3 - Conceptual Foundations

3.0- Introduction to Conceptual Foundations

For many years I had unquestioningly accepted that teaching art and design was the process of passing on knowledge to others. I had grown used to understating my own personal love and commitment to the subject, and for everything related to the process of making and doing. Through my writing, I embark on righting this wrong, and dive into a subject that offers such a wealth of possibilities for young and inquiring minds during their statutory art and design education at Key Stage Three. This chapter represents an epistemological and reflexive recalibration of an art educator to the vitality and innate validity of art and design education. Exploring the process of making in a secondary school art and design context through the writings of Wallas and Csikszentmihalyi as to their understanding of the processes that can link to creative processes. The lens of new materialism and writing by Karen Barad and Hillevi Lenz Taguchi amongst others will be analysed to provide a fresh epistemological approach in order to release our relationship with matter away from the procedural pedagogical frameworks and statutory conditioning. I will now explore how our relationship with matter is crucial, but also the key role that hands and tools play in responding to the world around us in the acquisition and accumulation of long-term tacit knowing. The writing and thinking of Michael Polanyi inform my outlook with regards to tacit knowing.

The agency of art educators within the educational system is explored through the writings of Guattari, Deleuze and more recently Dennis Atkinson. Firstly, I will review literature that focus on the understated role that our hands play in all that we do.

3.1- The Role of Hands in the Creative Process

Within this section I intend to focus on how hands are a constituent and vital component in the production of knowledge making. Within the remit of my research, I will specifically explore the importance of the hands in the creative process within art education and the use of clay. Although the students worked with a range of media throughout the project, working with clay was exclusive to being experienced during their art lessons (see Appendix 3). The heterogeneous nature of hands play a pivotal role in the practical acquiring of tacit knowledge through the haptic experience of making and learning. I will explore evidence that hands are highly refined physical connectors between material and mind. They physically link us to our world and therefore link us to what we experience and how we learn.

In our modern and fast-moving post-industrial world, we appear to take steps to actively distance ourselves from physically connecting directly with matter. Thus, inhibiting our haptic growth and physical relationship with the world surrounding us, both within school and our everyday lives (Rowntree et al., 2018). On an anecdotal level, the boom in nail parlours and the application of false nails illustrate the extent to which we are prepared to take to construct physical barriers to remove ourselves from our immediate and real tactile world. Our language has phrases that we commonly use that hint at tactile origins but that have been reassigned to have more of an emotive meaning such as ‘To get a grip’, ‘Coming to grips with’ (Sennett, 2009:151) or ‘To get a grasp of something’. These phrases all refer to holding something, but we have been linguistically conditioned to construe that it refers to cognitively understanding a situation and emotionally overcoming certain trials and challenges. But what if these phrases originated in making sense of a

situation, an event, or a challenge through our sense of touch? The founders of Clayground Collective, Julia Rowntree and Duncan Hooson organise and run workshops and events to encourage people to reconnect working with clay and experiencing it as a medium. They have been motivated by their shared concern about the decline of both ceramic studies and the neglect of nurturing of hand skills in the current education system and the possible impediment of individual's development commenting that,

> Our hands and skin provide the interface between interior and exterior worlds. The basic building blocks of perception are the neurons. (Rowntree et al., 2018:38)

So, it is our touch that offers us a possible window to make sense of our world, to collate a tactile dictionary of our experiences that are continually evolving. A key aspect however of working with our hands and the tactile world is not just to grasp or grip but also to know when intuitively to let go, touch lightly or gently cup in our hands. To simply grasp and grip something physically suggests that it's an involuntary action such as blinking, when holding is a voluntary action that we control and manage. Touch adds nuances of information to the brain that the other senses can't (Sennett, 2009). Our opposing fingers and thumbs and our rotating thumbs and wrists allow us to experience our physical world in an explorative way. We can easily grip, pinch, cup objects or just touch them. These actions can happen with just one hand or a combination or an interaction between the two.

Anthropologist, Tim Ingold, selects another word in our vocabulary that has two very different meanings that highlight the power and dominance that language can have over the act of doing and connecting through touch. The verb, 'to tell' (Ingold, 2013:109) from its Germanic origin can mean to recount or relate. The Old English origin of 'to tell' also refers to relating, but more importantly in relation to our use of hands, the verb, 'to estimate'. Ingold talks about the recognition that an individual might be able to make if they are in tune with the subtleties of their immediate environment. Knowledge, he suggests is gained through an active embodied experience either gained by oneself and interaction with others (Ingold, 2013:110). This view is also shared

by Rowntree and Hooson who note that in the context of clay, that knowledge is passed between teacher and student through shared tactile experiences writing,

> Together with the tacit or unspoken dimensions of craft practice, these skills can only be passed from expert to novice and learned through apprenticeship and working with the materials themselves. (Rowntree et al., 2018:37)

This haptic and tacit experience of gaining knowledge can be greatly informed by the hand. An experienced potter will be able to tell when a pot has been thrown too thinly on the wheel by simply gauging how thick the wall of the vessel is with their hands and how the spinning clay is responding to the touch of their fingers and thumbs. In short, hands can tell or help make a judgement; they can respond to the situation as it unfolds. Hands create a visual language. Hands execute a passage of handwritten text; an onlooker can tell the author's mood in that moment of what has been written. This could be easily likened to the emotional state of Vincent Van Gogh in his intense and heartfelt application of paint. How the individual responds to the materials through their sense of touch and familiarity but also mixed in with how they feel; how they can 'tell'.

Such dexterity and tactile development interested the neurologist, Frank Wilson, who used characteristics of evolutionary human development to map changes in the skeletal structure with reference to changing embodied behaviour and environments. In particular, Wilson noted that early hominids between 3-4 million years ago started to transition from being arboreal dwelling creatures to foraging hunting bipedal apes living on the forest floor. This discovery was made when a nearly perfect fossil was discovered in Ethiopia in 1974 of a female family member of the hominid species known as Australopithecus afarensis (Wilson, 2000:15). This fossil was later nicknamed, Lucy. The anthropologist, Mary Marzke (Marzke, 1997:108) through her research discovered that Lucy had evolved anatomically so that her thumbs were longer in relation to her fingers and that her index fingers could rotate at the knuckle joint (Wilson, 2000:26). This gave her the

anatomical structure and dexterity needed to be able to throw stones as missiles, to hunt for food and survive. This evolving and adapting is what we have been doing ever since. It is how we develop and how we learn. However, it is the raw data that we gather through our senses that feeds this development and it is not solely instigated by our brains. Wilson argues that the correlation between the increasing brain size of early hominids and their improved dexterity from the missile throwing potential of Lucy (Australopithecus afarensis) to the tool making potential of the Homo habilis a million years later and concedes that '…there was *nothing* this hand could not do if it could learn how to do it' (Wilson, 2000:30-32). Wilson confirms the intimate relationship between the hands and the brain in the acquisition of knowledge. In a short interview in 1998, Wilson considers the limitations in education of not considering both in the learning experience with,

> You can't really separate what's in the mind from what's in the body. Knowledge really is the whole behaviour of the whole organism. The mistake that we've made, I think isn't focusing on education, it's thinking that you can educate the mind by itself. So, we are coming to the edge of I think of a discovery about education, which is that you can't really skip this experience, it's important for children to have a 'hands on' experience when they are young. (YouTube, 2010:3mins 30)

In support of this, professor of surgical education, Roger Kneebone writes, 'School curricula have been hollowed out in the belief that doing and making are subordinate to thinking' (Kneebone, 2017:294), ignoring the fact that any learning experience that feeds the hands in turn feeds the brain and the haptic experience informs our development.

3.2- Creative Procedural Notions

What tentatively started to interest me at degree level but then much more so at MA level, was gaining an insight into what drives a creative to make and respond. What factors initiate and are conducive to the creative process? At MA level, temporary solace was found in the writings of Graham Wallas, in The Art of Thought (Wallas, 2014) and gaining an understanding of the four

stages of the creative process: preparation, incubation, illumination and verification. This offered a procedural way to gain an appreciation for the different sequential stages needed for the creative process to occur. Together the four stages provided a holistic and generic overview of creative processes. Preparation was linked to identifying and isolating the problem that needed resolving. Incubation was the passive thinking of possible solutions and during the illumination stage possible solution/s became apparent. Finally, during verification stage, the solution was carried out and reviewed. However, this doesn't offer any insights about what internal intrinsic forces needed to be creative or what the genesis of creativity is. Nor did it offer any substantial insights into the physicality and connection with materials through the sustained process. The work of Wallas is further discussed in the Discussion Chapter in relation to the student's work (see page 145).

In my search for understanding what was central to art pedagogy, I was also drawn to the writing of the American-Hungarian psychologist, Mihaly Csikszentmihalyi (Csikszentmihalyi, 1997). Csikszentmihalyi has written about both creativity and flow theory. In his work regarding flow theory, he outlined what he saw as the nine main elements that need to be satisfied before any suitable challenge is realised and that the ninth element of the task: that of it being autotelic (i.e., the engagement in a skilled creative process being the satisfaction in itself) is realised and an individual experiences the state of being 'in flow'. The nine steps to be fulfilled before experiencing flow are:

- There are clear goals every step of the way.
- There is immediate feedback to one's actions.
- There is a balance between challenge and skills.
- Action and awareness are merged.
- Distractions are excluded from consciousness.
- There is no worry of failure.
- Self-consciousness disappears
- Sense of time is distorted.
- The activity becomes autotelic.

Experiencing flow can instigate a sense of satisfaction, however, it does not relate directly to individuals working with materials and the relationships that are generated. It appears to be more short term rather than acquired over a sustained period of time and it maps a predictable journey to success that might not necessarily reflect the learning journey experienced.

Csikszentmihalyi also compiled a list of seven conditions that individuals need to be exposed to, in order to optimise their creativity and succeed within their chosen domain.

They are:

1. Training
2. Expectations
3. Resources
4. Recognition
5. Hope
6. Opportunity
7. Reward.

However, Csikszentmihalyi considers that only those that have success in permanently changing the domain that they are working within can be considered as being 'Creative' with a capital 'C' writing,

> '…creativity is any act, idea, or product that changes an existing domain, or that transforms an existing domain into a new one.' (Csikszentmihalyi, 1997:28)

Anna Craft supports this thinking in her own writing referring to 'Little c creativity…' (Craft et al., 2001:46) when referring to children's education. I would strongly contest Csikszentmihalyi's definition about creativity in terms of only being used for those who are domain changers. Rather, I would argue that we all change the domain by being active participants within it, and I would prefer the definition offered by Ken Robinson as, 'Imaginative activity fashioned so as to produce outcomes that are both original and of value' (NACCCE, 1999:30). However, I do not disagree with his sentiments about being creative, when he wrote,

> The process of discovery involved in creating something new appears to be one of the most enjoyable activities that any human can be involved in. (Csikszentmihalyi, 1997:113)

Csikszentmihalyi's writing still has its onus on outlining the conditions that are needed to be creative, rather than how creativity is generated. It became apparent that the pedagogical thinking that I was encountering didn't theorise the embodied experience of working with materials to express ideas and thinking.

3.3- What is the Value of an Intra-Active Pedagogy in Art Education?

As a ceramicist, I trained at degree level to understand and work with the medium of clay; to understand its properties and how to work with it. This approach appears to have been in keeping with the aims of the Coldstream Reports (as discussed earlier on page 26), in which the experimentation and developmental of skills related to the chosen field of study were central to the degree courses. By engaging with the material on a daily basis I was able to build up my tacit knowledge and refine my practice over the duration of the course. For my final show, I included some large sculptural pieces in porcelain. Porcelain is known to have a 'memory' and reacts to being worked with in certain ways. If, for example, it was worked with too quickly, it would 'remember', and cracks would appear in certain stress points as it dried out. As one of the more expensive clays to use, this could prove costly and time-wasting. It was therefore prudent to be responsive and aware of the material being used. As an undergraduate, I also quickly learned that there would be so many external factors that would have an effect on working with the clay, such as temperature, humidity and clay quality etc. This heuristic process of learning gave me the basis of my haptic awareness that I have since continued to develop and be in-tune with. My daily practice simply oscillated between sketchbook work and the making. I was fully embedded in my practice and my practice ever since has been about the making and making connections.

As I moved through phase A of my doctoral journey into phase B, I became aware of new materialism and felt that it offered a vital and appropriate way

to access my data and comment on Key Stage Three art and design education from a perspective that comes from within the generative aspect of the creative process in which the maker works directly with matter to generate continuing states of learning rather than wanting to solely gain an autotelic state of creative satisfaction. Importantly, I was drawn to the work by the American feminist theorist, Karen Barad, as she is wary of carrying out a straightforward critique of another's work by going through a process of comparing and contrasting as she argues she sees it as '… a practice of negativity that I think is about subtraction, distancing and othering.' (Dolphijn and Tuin, 2012:49). By using new materialism as the theoretical framework to access the data, the researcher is encouraged to look for the entanglements and nuances that arise from the data and from the making and doing experience. The convergence between thinking and making becomes important (Hickey-Moody and Page, 2016:1) and this I felt was key. Our relationship with the nonhuman world is more integral to our understanding of our place, identity and very being than perhaps we had considered.

> 'Bodies and things are not as separate as we were once taught, and their interrelationship is vital to how we come to know ourselves as human and interact with our environments.' (Hickey-Moody and Page, 2016:2)

New materialism challenges the researcher to see data in different ways (MacLure, 2013). In her book, 'Meeting the Universe Halfway- Quantum Physics and the Entanglement of Matter and Meaning' (Barad, 2007) Barad writes about how matter really does matter and how the human and nonhuman intra-act. As a physicist, she largely draws upon the historicity, life works, experimentations and writings of the Danish physicist, Niels Bohr (1855-1962) to shape her own thinking. Barad extends this thinking into her conviction to move away from binary divides such as theory/ practice. She sees the engagement with research activities as being much more pluralistic and undefined. Both human and nonhuman inputs are read through one another as entanglements. This is the essence of diffractive methodology. Barad uses diffraction as a metaphor linking water, light and sound waves which when in movement all form patterns of waves that will link, move,

rebound, and change direction providing infinitely more possibilities in their readings than a simple reflection (reflexive) that will simply rebound in a more limited way. So, from the outset, reading the data collected diffractively, without the obligation to set aside the materiality of the data, and exploring the ensuing entanglements is an exciting and open prospect that felt it was in keeping the research aims related to the student's learning journey and their relationship with matter.

Interestingly, at several points in her book she discusses various examples of Gedanken or thought experiments (please also see page 60). Gedanken are experiments that are devised and composed on paper without being conducted in reality. What is interesting and struck a chord with me at this juncture was that the matter and materiality within such experiments are offered no voice. The impact of any actual intra-action was removed, and the theory of the potential became more important rather than the possibility for any entanglements that might inform or contribute to the field of knowledge. Barad discusses a posthumanist performative approach that '…acknowledges and takes account of matter's dynamism.' (Barad, 2007:134). In this approach she challenges the straightforward reflective testing of hypotheses in favour of

> …matters of approaches, doing, and action. Such an approach also brings to the forefront important questions of ontology, materiality, and agency… (Barad, 2007:135)

When considering the creative process of making we might also consider the dynamic role that apparatuses play. We might ask if apparatuses are just the tools to carry out a particular task or experiment? Or, as Barad suggests, might apparatuses play a key constitutive role in the production of knowledge? She writes that they are not neutral instruments without agency (Barad, 2007:142), strongly arguing that they are not just human or nonhuman but,

> …are specific material reconfigurings of the world that do not just merely emerge in time but iteratively reconfigure spacetimematter as part of the ongoing dynamism of becoming. (Barad, 2007:142)

She sees both the human and nonhuman in an ongoing entanglement with all the separate components being needed to generate and create continuing possibilities. Therefore, mind and matter need to work in unison to have a creative output so there needs to be an equality of human and nonhuman interaction for there to be any meaningful output to be created. The academic, Michael Polanyi also wrote about the role that tools play in building up knowledge and he saw them as being entangled with the user and rather beautifully wrote that they were '…a sentient extension of our body…' (Polanyi, 1983:16)

In the process of making in art and design, and specifically in the classroom, I find it challenging to think of any creative process that doesn't include some sort of apparatus in order to carry it out. All techniques and practices within the classroom work from a stock of base tools that are used in different ways for different processes. All these tools are kept in specific locations and assembled in readiness for each class that needs them as and when. The ensuing entanglements with tools (or apparatuses) and materials are a very basic constituent of human activity and a vital component to art education, so to engage with my data without considering the tools, matter, and materials etc seems inappropriate. Our entanglement with apparatuses around us is acknowledged by Barad in an example where she queries the boundaries of when an apparatus, whether it be human or nonhuman, starts and stops engaging with the collection of data (Barad, 2007:142-143). Is it the wireless connection that helps transmit the data, the computer, the individual that has compiled the data on the computer terminal, or maybe the printer that prints out the research (Barad, 2007:142)? Barad writes that apparatuses and processes are inextricably linked to matter, materiality, and agency to create what she terms as material-discursive intra-activity. This is when one body, whether human and/or nonhuman makes itself intelligible to another. The point where material-discursive intra-action is synthesised appears to be at the core of the creative process. The notion of human and nonhuman meeting to respond and engage at a basic yet dynamic level appeals to my personal

insight into what the creative process instinctively feels like. Barad uses the term, agential-realism to propose a,

> …framework that provides an understanding of the role of human and nonhuman, material and discursive, and natural and cultural factors in scientific and social-material practices… (Barad, 2007:26).

Barad offers us this framework to gain access and entangle ourselves in a meaningful and co-constitutive way with, the genesis of the creative process.

The process of agential realism occurs through intra-action. Throughout her writing about diffractive analysis, Barad employs a range of vocabulary that are subject specific including neologisms such as 'intra-action' and 'agential realism' (Barad, 1998:4). Intra-action is used in opposition to interaction. The prefixes, intra- meaning within and inter- meaning among or in the midst of, gives us a clue as to where the action will be taking place. Barad very deliberately uses the term intra-action to highlight the mutual constitution of integral agencies emerging from within the relationship rather than from outside of them. Another distinction between the terms is that interaction might presuppose that there are different or opposing agencies that are a prerequisite for an interaction to occur. This implies that there is a cause and an effect at play. Barad states instead that '…cause and effect emerge through intra-actions' (Barad,2007:176). Agential cuts both instigate the separation and entanglement of matter instantaneously. It happens within the actants and therefore, '… *the notion of intra-action constitutes a reworking of the traditional notion of causality*' (Barad, 2007:140). As she states,

> The notion of intra-actions reformulates the traditional notions of causality and agency in an ongoing reconfiguring of both the real and the possible. (Barad, 2007: 177)

What resonated with me was that Barad writes that what's important about intra-actions is that ' …"mark are left on bodies"…'(Barad, 2007:176). This fits well with the art and design creative process.

3.4- How Does the New Materialist Lens Help Me to Explain the Art and Design Learning Experience?

'Practices, teaching and art production are modes of thought already in the act' (Hickey-Moody and Page, 2016:1). Both the making and the mind are entwined and embroiled in an ongoing process which is continual. New materialism provides a vehicle for both to have equal status in how we come to view ourselves and not to be seen as different and unrelated entities (Hickey-Moody and Page, 2016:2). However, as an art and design teacher, for art to be created and for the enactment of material knowledge to be created, a site for inclusion and equity of access is needed i.e., the art and design classroom. The sites for making and doing and their make-up of material entities have an impact in the ensuing intra-actions (Barad, 2007:203-204).

The underlying entanglement between the human and nonhuman is of great interest to Barad. Barad explores power and dominance and how the body can be the transmitter of power but also the receiver of power. Barad brings our attention to the material world and the relevance that this has with our relationship with our surrounding and everchanging reality. In a powerful example documented by Barad (Barad, 1998), she explains in great depth how ultrasonic waves are converted to ultrasound using an ultrasonographic imaging machine, thus visually giving form to internal organs and foetuses. These apparatuses are used externally on the womb of a pregnant mother to ascertain different kinds of data about the unborn foetus. The data gathered from the ultrasound is used to gender the unborn baby; determine its health and in extreme cases decide on its future economic, political, or cultural feasibility. This exertion of power on the body is not merely by language and observation but by the intra-action between the human with the non-human matter and how each other are read together. As she states, 'Learning and knowing takes place in the interconnections in-between different matter making themselves intelligible to each other.' (Barad, 2007:140). The potency that such a non-human device can have on the life chances of both a mother and unborn child does not escape me. It sharply brings into focus the

importance of understanding the potentially powerful intra-actions and entanglements between human and nonhuman apparatuses, not only in such a scientific field but also in the everydayness of an art and design classroom in a secondary school. However, like the physical environment of the art rooms, Barad acknowledges that the scientific apparatuses of the ultrasound are not fixed structures and that they can vary depending on their maintenance, age, usage and how they react to other devices in the process (Barad, 2007:203). The agency of both human and non-human is constantly in flux and what emerges comes from within the relationship which is key. The reading and interpretation of this intra-action between different agents is done with diffractive analysis. In the case of this research, the intra-action of the student's relationship with the subject matter, the materials, the environment, their teacher, the political educational environment will all be analysed diffractively.

3.5- Art Pedagogy in Practice

The early childhood professor, Lenz Taguchi explores the experience of young learners in the Swedish education system based on the Italian, Emilio Reggio approach. Following Barad, she brings our attention to what she terms as 'intra-active pedagogy' (Lenz Taguchi, 2010:21) which she acknowledges is influenced and informed by the work of Barad. Like Barad, in her work Lenz Taguchi challenges the fundamental structuring of education historically along the binary divisions of theory/ practice, mind/body, or organic/ inorganic. She sees these divides as pedagogical barriers prioritising one over the other and implanting a power play within any possible ensuing relationship. One such pedagogical prioritising could be seen in the national curriculum with the use of binary language such as Foundation and Core as first discussed on page 31.

Through her research into Swedish preschools Lenz Taguchi discusses how in practice, theory is being lived out and tested in the 'here and now', rather than being sanitised neatly in an orderly cohesive way on paper, making both practice and material visible. This intra-active relationship is nurtured

between both living organisms and the material environment such as objects, spaces, and matter that we come into contact with each day. Lenz Taguchi sees these relationships as being as fundamentally important to our learning experiences and just as interconnected as our life affirming breathing of air (Lenz Taguchi, 2010:41). The writing by Lenz Taguchi offers valuable insights into accessing my data with reference to new materialism through a Baradian lens.

Within the art remit of the year 9 research project the students were challenged specifically to respond to their encounters within art and design, as a subject within the national curriculum and their subsequent art and design learning journey. This final project of their Key Stage 3 provision for art and design education, encouraged the students to explore the value of their learning experience. The work produced by all the students was in the form of mind maps, poetry (that they composed themselves), research into both my own ceramic work and that of other practitioners and the production of two different pieces of collaborative ceramic work. As a teacher, in the past I would have seen this project as developmental work leading to a variety of outcomes; however, as a researcher looking through the lens of diffractive analysis, the artefacts are now examples of what Lenz Taguchi would describe as, pedagogical documentation (Lenz Taguchi, 2010:63) or Barad would describe as apparatuses. Barad offers, 'Apparatuses are material (re)configurings or discursive practices that produce (and are part of) material phenomena in their becoming.' (Barad, 2007:184) Lenz Taguchi adopts Barad's epistemological approach that there are intra-actions between all matter, and these are in a constant flux creating new meaning. Therefore, the work produced by the students is itself not only part of the pedagogical documentation but also an active agent in the meaning making along with the photographs that I took documenting them working. The agency of both human and non-human intra-actions are everchanging and what emerges comes from within that relationship. No outcome is final, rather it is always open to change and uncertainty (Roline et al., 2018). The new materialist lens helps me to see the abstract notions and ideas that rebound continually and in an ongoing way intra-actively amongst the learner, the materials, my

pedagogy, and the environment. It also provides a fresh perspective on duality that has historically been a hindrance and has been recognised by others (Smelik, 2018:38).

3.6- Exploring Agential Realism in Relation to the Creative Process

In this next section I intend to explore Karen Barad's agential realism and compare it with the work on immanence by Gilles Deleuze. I aim to consider the potential insight that either offer into the genesis of the creative process in art practice and how they could manifest themselves in art and design pedagogy. Central to the research with the year 9 students is gaining an understanding of what happens when they create and synthesise ideas using a range of materials and processes.

Through my reading of agential realism, I was moved to remember a ceramic piece that I made for part of my BA(Hons) 3D design (ceramics) degree show (see Figure 3). The structure of a ceramic sculpture that I designed and made helped me to internalise and illustrate my understanding of material-discursive intra-activity. As I am developing my growing understanding of the writing by Karen Barad related to intra-action, I have been struck by the energy of her ideas underpinning agential realism. Within agential realism, mind and matter combine, they entangle themselves, and they react:

> Meaning is not the property of individual words or groups of words but an ongoing performance of the world in its differential dance of intelligibility and unintelligibility. (Barad, 2007:149)

To Barad, meaning is ever-evolving and in a constant state of flux, it is a great leveller as both mind and matter combine and intra-act on an equal platform. The above quote for me releases the burden of duty of classroom assessment from a focus on more conventional textbook based learning experiences and reconceptualises it as a more divergent and ongoing affair where the making within the classroom makes itself known to us more spontaneously. This seems to me to align itself with the creative making and doing process with ease.

The ceramic piece for the degree shows that I refer to was a ceramic pendulum which was suspended just above its ceramic base (See Figure 3). The base offered a counterpoint for the pendulum as it gently oscillated above it. This illustration of two points in constant interaction offered me a diagrammatic understanding of agential realism (see Figure 4) that I hadn't been aware of when I created the piece but that has great resonance now. In my third-year ceramic piece, I was toying with, and exploring the tension that can be created between gravity and ceramic forms. Usually, ceramics pieces are created to comply with gravity and thus sit on a table or plinth seemingly without motion. The goal I set myself during my degree was to play with this accepted status quo and use clay to challenge preconceived notions of the medium and its potential.

Figure 3
Nicky Martins
1991
Pendulum
Ceramic
(Own image)

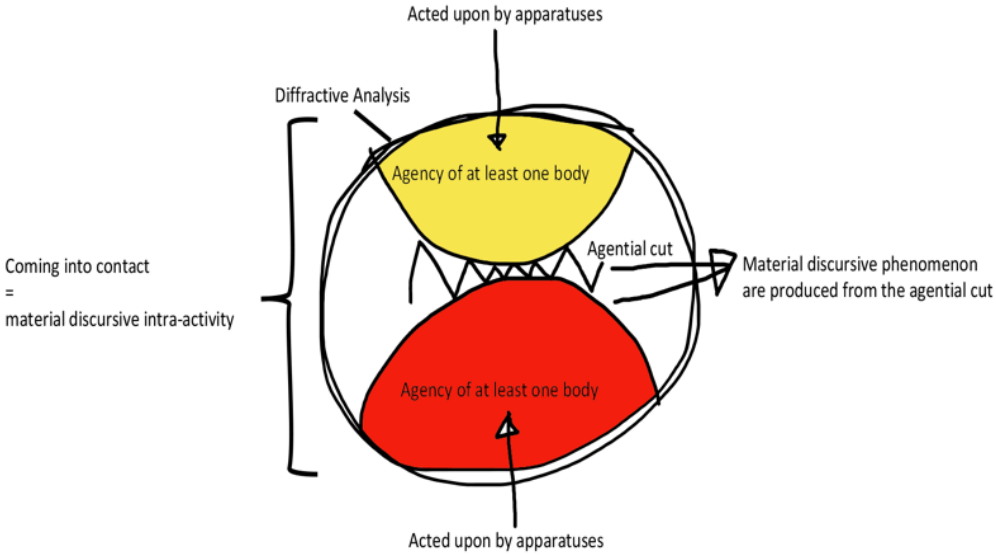

Figure 4
Diagrammatic illustration of agential realism inspired by my ceramic pendulum. (Own image)

Using a simplified motif of both the pendulum and base to represent two bodies, I wanted to explore agential realism using my simple hand-drawn illustration, to help tease apart the different components that constitute diffractive methodology. As a qualitative method, diffractive analysis can be used to compare and contrast how different components in data become entangled with one another to generate different outcomes (Lenz Taguchi, 2012:265). When more than one body, whether human or nonhuman acts upon another, and they come in contact their inherent agency causes a force of engagement. The ensuing activity of one body making itself intelligible to another is what Barad terms as being the agential cut and this produces the material-discursive intra-activity. The overarching theory is agential realism. What happens within agential realism is central to Barad's book, Meeting the Universe Halfway. She sees agential realism as,

> … an understanding of the role of human and nonhuman, material and discursive, and natural and cultural factors in scientific and other social-material practices... (Barad, 2007:26)

By conceptualising agential realism in this way Barad comments that she is challenging some of the historical binaries of academia relating to '…constructivism against realism, agency against structure, and idealism against materialism' (Barad, 2007:26). Indeed, Barad's framework reconceptualises the basic building blocks '…of matter, discourse, causality,

agency, power, identity, embodiment, objectivity, space, and time.' (Barad, 2007:26). In essence this captures all the components that come together in the creative process; where the practitioner works with and responds to the material/ matter within the world and environment around them at that time and in that place.

Barad reformulates both agency and realism, providing an insight into the role of human and nonhuman factors in the production of knowledge (Barad, 1998:1). When more than one body comes into contact, a material-discursive intra-action is instigated. Barad sees the agency of the matter as intra-acting and impacted upon by apparatuses.

3.7- The Role of Apparatuses in Material Discursive Intra-Activity

Apparatuses play a key role in the process and how they are used is a vital constituent of the process. The etymological roots of the word apparatus are from its Latin origin, 'ad parare' which literally means, 'towards making ready'. Interestingly, my understanding of any form of apparatuses (or tools) would be that of active and participatory agents in a creative process and not passive as 'towards making ready' suggests. In her writing Barad explores the importance of apparatuses using the detailed drawings by Niels Bohr which he shared with his contemporary, Albert Einstein in the early twentieth century regarding Gedanken two-slit experiments and the behaviour of particles, waves, and electrons. A Gedanken experiment is simply an experiment carried out on paper using thought; it's a theoretical experiment. They are not seen as experiments that will actually be carried out, perhaps because at the time of the design of the Gedanken or the appropriate technology might not exist. The actual devices or apparatuses featured in the drawings were only that, they were drawings. The drawings, however, were detailed with attention given by Bohr and Einstein to every aspect of the physical structure and planning of the experiments. Barad recounts that it wasn't until the mid-1990's that it became technologically possible to carry out the two-slit Gedanken experiments that both Bohr and Einstein had debated for years.

With my non-scientific mind, it appears that the experiment could only happen when the specific technology became ready and was applied in such a way for the experiment to be executed. The input of the desired apparatuses or tools enabled the experiment to become a reality and a material enactment rather than remaining a Gedanken. The apparatuses used played a co-constitutive role in the scientific process and help to create the desired outcome. Barad shares with us that apparatuses play a key constitutive role in the production of knowledge. She argues that they are not neutral instruments without agency (Barad, 2007:140). She goes on to state, 'The crucial point is that the apparatus enacts an agential cut…' (Barad, 2007:175). Although, the design and completion of the ceramic sculpture discussed earlier (see Figure 3) wasn't a Gedanken experiment it would not have been possible without the numerous apparatuses and tools. In the making of the pendulum and its base, I haven't included the potter's wheel, the bats and all the tools that were used to make it, nor the samplers and test tiles fired in the kiln to secure the desired final outcome. What is interesting to me as a practitioner and teacher is the acknowledgement of the importance that the apparatuses play. In her writing, Barad understands that apparatuses are not fixed or predetermined, they are in a continual state of being re-appropriated, reconstituted, and repurposed. In the creative process, the maker grows to understand the relationship between tools and medium through their haptic awareness and tacit knowledge, and this is manifested by using apparatuses in ever refining ways. Apparatuses are entangled through the act of intra-action as Barad comments, '*Apparatuses are themselves material-discursive phenomena, materializing in intra-action with other material-discursive apparatuses'* (Barad, 2007:203). However, what is not included in the photograph is the wire rope and fixings that were attached to the form so that the top could act as a pendulum from the ceiling. Being apparatuses themselves after the production of the piece they still are part of the piece's intra-action with its environment.

The key role of the apparatuses is that they enact an agential cut. As Barad writes, 'Apparatuses are not bounded objects or structures; they are open-

ended practices' (Barad, 2007:170). Once again, as a maker and teacher this really speaks to me and suggests that apparatuses can be both human and nonhuman but that they are an intrinsic part of the process. The agential cut appears to me to be an enactment of all the components coming together. When the ceramic pendulum was created and assembled in situ, the intention was to hang the pendulum as closely as possible to its base but without any collision. In doing this a tension and energy could almost be felt as the pendulum regularly and rhythmically moved over the base. As I read the writing of Barad, the pendulum that I created so long ago appeared to be an ongoing manifestation of an agential cut being enacted. However, illustrated by the continual yet tantalising near misses of the pendulum, the material-discursive intra-activity of the bodies creates phenomena in which new materialisations are created that can in turn intra-act. This, I believe encapsulates the act of the creative process as symbolised by the motif of the ceramic pendulum created in 1991 and demonstrated by the year 9 students (as will be discussed further in the Data Analysis and the Discussion Chapters) throughout their Art and Design Learning Journey and their intra-action with matter. As Barad writes,

> Phenomena are produced through specific causal interactions involving multiple apparatuses of bodily production. Intra-actions are causal (but nondeterministic) enactments through which matter-in-the process-of-becoming is sedimented out and enfolded in future materializations. (Barad, 2007:170)

Through working with the materials, apparatuses and, the environment along with the teacher input and their own agency the students were able to make matter, matter and create original pieces of artwork. They were able to generate original phenomena. They engaged and intra-acted with the physical and conceptual world. Within the context of their year 9 project my students immersed themselves in their ongoing intra-activity of making what they conceived intelligible to others: they were, as described by the author Lenz Taguchi 'being-of-the-world' (2010:58) where they were working in a way that everything was in an entangled state of continual intra-action. There was an ongoing intra-action of human and nonhuman entangling with one another

without any duality or without hierarchy as Lenz Taguchi states, 'We are nothing until we connect to something else, even if it is simply the breathing of oxygen.' (2010:41)

3.8- Collaboration in the Art and Design Classroom

An important component of the classroom environment that my attention was drawn to was that of collaboration and the opportunities that occur permitting learners to work with each other as well as with me as their teacher. The national curriculum documentation for art and design at Key Stage Three makes no reference to students working collaboratively, hence there is no statutory need for students to create and share their learning through actively engaging in teamwork. Even at GCSE and at A level there is no requirement for teamwork in art and design. Robinson offers an insight into the fact that more conventional educational structures prefer more '…solo research…' as it is easier to measure success (Robinson, 2001:69). Working collaboratively, however, is an important tenet of the art and design experience at undergraduate level (Rousell and Fell, 2018).

To guide my thinking about collaboration I refer to the writing of Ingold - his explanation of hylomorphism and his subsequent rejection of it. Hylomorphism is the shaping of matter into a form through intervention by a human (Ingold, 2013:20). Hylomorphism offers the matter no agency while the maker imposes their will on the matter. Ingold writes that rather than using the term hylomorphism he prefers to,

> …think of making, instead, as a process of growth. This is to place the maker from the outset as a participant in amongst a world of active materials. (Ingold, 2013:21)

By extending this application of thinking to a collaborative scenario in the classroom, we can consider what happens as students engage with the materials collectively. In a collaborative context, the students also have the potential to relate to one another while entangling with the matter in a knowledge-sharing experience in a united space (Newman, 2020:791). Rousell

and Fell further this thinking by breaking with the concept of hylomorphism and offering a vision of art education as being a process of working collaboratively with the '…potentials and variations of living matter through experimental modes of practice.' (Rousell and Fell, 2018:2). Bolt further expresses that collaboration between the human and nonhuman offers matter the equal responsibility in the creating of art:

> In sum, art is a co-collaboration, not a form-matter synthesis and matter as much as the human has the responsibility for the emergence of art. (Barrett and Bolt, 2013: 6)

The work that the students engaged in, both individually and collaboratively, while actively engaging in the process of making with matter generated material discursive intra-activity and thus material discursive phenomena, as visually expressed in Figure 4. Working collaboratively generated further knowing in the making through shared expertise (Robinson, 2001: 236) that supported and informed the ongoing learning journey in conjunction with more individual tasks carried out the students in the research group.

3.9- Exploring Immanence in Relation to the Creative Process

Throughout the duration of my research, I have found myself being drawn to Deleuze's concept of immanence and how it might link to the creative process. Atkinson (Atkinson, 2017:163) explores how immanence is something that emerges from within a learner's learning journey and is of relevance and importance to that given situation. It is my intuition that the creative process involves a connection between the internal self and an external manifestation which is original to the maker and their positionality. So, it is my intention to analyse the work of Gilles Deleuze and others to further investigate if their writings help me to explicate the connection between immanence and the creative process. Deleuze writes,

> The immanent event is actualized in a state of things and of the lived that make it happen. The plane of immanence is itself actualized in an object and a subject to which it attributes itself. (Deleuze, 2005:31)

The manifestation of immanence is neither in the subject nor the object, but in its poiesis. It is in the act of the synthesis and creation of something that was not in existence before. It is generated in the making and what Deleuze termed as the forces in which intensities and sensations are evoked (Deleuze, 2005:xxii).

Deleuze was a contemporary of the critically acclaimed Irish-born British figurative painter, Francis Bacon. Deleuze wrote, 'Francis Bacon, The Logic of Sensation' having only met with the artist once but he was intrigued by his work. Bacon's oil paintings are predominately figurative. The figures (see Figure 5) are often distorted, energised by a sense of sexualised violence and/or underlying menace (Bacon, 1962). Bacon was a regular drinker at the infamous Colony Room Club in Soho, London where he socialised and drew many of his subjects from for his paintings. Deleuze wrote about what he referred to as the three trajectories that underpinned his writing on Bacon (Deleuze, 2005):

1. Aspects of Bacon's painting – isolation, deformation, coupling.
2. The non-rational logic of sensation- rhythm, chaos, and force.
3. The act of painting itself- clichés, the diagram and modulation.

Figure 5
Francis Bacon
Three Studies for a Crucifixion
1962
Oil with sand on canvas, three panels
198.1x144.8cm (each)

The aspect that I want to explore further is how Deleuze comments on force and how it is constituted into the creative process which I feel could be attributed to immanence (Deleuze, 2005:xxii) and how it might connect to the student's relationship with their work. Deleuze writes about how all creative

practices are not about trying to capture a likeness or inventing, but of capturing forces. He makes reference to a quote by the Swiss-born painter Paul Klee regarding his approach to painting 'Not to render the visible, but to render visible' (Deleuze, 2005:48). Using this quotation pinpoints Deleuze's understanding that artists capture the energy of what they are experiencing in the moment of the production of the work. Deleuze further explains that a painter such as Bacon is creating something that has no precedent, it is only in the act of doing it that it is created, and the outcome compiled by the maker. The role of the artist is to make visible that which wasn't there before. Hence a sensation is created, and the onlooker can view this. However, as pointed out by Deleuze, for a sensation to have agency, it must be created by an instigating force (Deleuze, 2005:48). This force, I posit is immanence.

The educationist Dennis Atkinson writes about immanence in art education. He writes that art enacts a physical impetus that forces us to think (Atkinson, 2017). He perceives immanence as '…internal relations and values of modes of existence that facilitate capacities to act' (Atkinson, 2017:142). The internal making itself known to the external. In terms of a creative learning experience, this is when the learner is moved to respond, and they are not necessarily conforming to a predetermined performative agenda, or as Atkinson sees it, learning is being narrated through a transcendent lens that frames the learning experience. Atkinson comments that the art curriculum has traditionally come from a position of guidance as seen in Figures 1 and 2 that is offered about what to learn and that historically art and design's inclusion within the broader curriculum was constructed to feed the development of industry, commerce and the ideology of the time as explored earlier in Chapter 2 through various Acts of Parliament and official government reports. This he suggests could be reversed and that instead, the immanent practice of the learner could be central to the act of learning and at the heart of art pedagogy. As Atkinson writes 'The ontological emphasis is placed upon 'an intrinsic genesis in contrast to an extrinsic conditioning' (Atkinson, 2017:142; Deleuze, 1984). This suggested epistemological shift would disrupt conditioned pathways in learning and challenge established modes of learning to promote new ways of seeing and understanding. Hickey-

Moody agrees that intra-activity has stemmed from the thinking of immanence arguing,

> Intra-activity is a concept grounded in immanence. There is no 'beyond' the body; rather, the focus shifts to a 'between' located *in, with,* and *through* the body. (Hickey- Moody et al., 2016:216)

There have been moments that I have experienced in my own practice as a maker and have also observed the actions and engagement of my students which resonate with Atkinson's vision for art education. Those moments when an individual is moved to create what is inexplicably within themselves. In these moments it is easy to see that the maker is in-tune and fluid with what they are doing. You know instinctively that there is a lot of 'inner dialogue' happening in the maker's head. During the Year 9 'Art and Design Learning Journey' project while the students were making the clay wreaths composed of art and design tools (see Figure 6), one student just stood up during the class and without hesitation asked if she could go and get the tool that she was making.

Figure 6
Year 9 Unfired Clay Wreath. Each student in the form created a tool used in art. These were then assembled in a wreath shape. The process was inspired by the British ceramicist, Phoebe Cummings.
(Own image)

This question could not be challenged, the student felt an over-riding impetus to do it and it was right for her…and it was. It was the student responding to her internal force. This action was that of immanence making itself known. The internal making itself known to the

external. Atkinson sees such spontaneous and free-spirited events as described of the year 9 student as the very immanence of learning and resulting in a,

> …potentialising force of real learning. That is to say, it is through the force of art, how this matters for a learner, that a learner is enabled to move into a new, expended, ontological and epistemological space. (Atkinson, 2017:145)

It is liberating and energising when these events happen, but they do happen within a learning framework that Atkinson currently feels isn't conducive structurally or politically in the context of education. He feels that the force of immanence may become suppressed within the art and design learning experience that has a transcendent framing. The risk that is associated with a pedagogy rooted in immanence is that it is rooted in the unknown and any controlling of this can be perceived as prescriptive or as Atkinson uses, transcendent.

3.10- Agency of Art and Design Educators

Turning to the collaborative writings of the two Frenchmen, philosopher Gilles Deleuze and the psychotherapist and philosopher Félix Guattari, I will explore the agency of art and design educators within the educational system.

Educational institutions including schools are based around a hierarchical system with ranking of its members being relative to their perceived status within the structure; with the headteacher and chair of governors ranking towards the top and everyone else below to create a tree like structure and root system developing out from a main tap root. Working within an educational establishment with a hierarchical structuring can have its benefits. The rigid framework offered within the hierarchy and the establishment can offer space between the arboreal framework to both move and disrupt from within. One such system that Deleuze and Guattari described as being one that could work within the arboreal system is the rhizome. As they described,

> A new rhizome may form in the heart of a tree, the hollow of a root, the crook of a branch. (Deleuze and Guattari, 2016:15)

A rhizomatic structure is one that is self-contained, such as a bulb or tuber. A structure that can survive by itself or pieces can break off and become self-reliant. Deleuze and Guattari documented this term as being, n-1 (Deleuze and Guattari, 2016:5). Where 'n' denotes the whole entity and the '-1' is the subtracted party. The tree provides the hierarchical structure which is more fixed yet interdependent within its own structure than the rhizome format. All the separate components of the tree, such as the tap root with its lateral and tertiary roots are all situated in a single space with the same objective of working towards creating security for the one whole interdependent super structure. This can provide an apparently strong structure which can be identified within large institutions such as the armed forces, the police, health care and education. The tree system as described by Deleuze and Guattari can however perish if a part of it is removed or fatally damaged. Unlike the rhizome, which if split or damaged has the capacity for both pieces to simply thrive and grow independently of one another. Deleuze and Guattari explicate how the nature of the rhizome is successful and provides a multiplicity (Deleuze and Guattari, 2016:7) so that the n-1 formula can provide a faster growth rate than the arboreal system. So not only can the rhizome work within the hierarchical system with the possibility of autonomy, but it can also make connections both within and outside of the arboreal structure. They wrote,

> A rhizome ceaselessly establishes connections between semiotic chains, organisations of power, and circumstances relative to the arts, sciences and social struggles. (Deleuze and Guattari, 2016:6)

An interesting concept that they impart is that the tree system is central and stable if all is working well but the rhizome by its nature is 'decentering' (Deleuze and Guattari, 2016:7). The rhizome doesn't need the main structure to work within, it can work outside of it equally as well as inside and consequently giving the rhizome adaptability. As an artist, I was principally trained at degree level to work with my selected medium and to develop my own thinking and ideas. As an art and design teacher I was trained to work

within the hierarchy and apply the Programme of Study for art and design as provided by the national curriculum and its following reviewed formats since its inception. The vast majority of my art knowledge and heuristic awareness was brought with me from my art foundation, degree level and masters experience. The structuring of what I deliver as an art teacher is not determined by the national curriculum but rather my own agency as an art and design teacher with specific art training.

A point of interest for me as an art and design trained new researcher, is that my approach to learning is encapsulated by the process of making and doing while applying information. This is carried out in order to test and verify the outcomes in order to understand the principles for me to successfully internalise. When I first looked at the idea of the rhizome as outlined by Deleuze and Guattari, I bought some ginger and broke off ten pieces and planted them all individually. Rather than dying, all ten pieces grew new buds and established themselves in the soil. This application of the theory of others into my own research is accessed through my own making and doing such as my degree pendulum as explored in page 58 and my internalisation of the theorising by Barad on agential realism.

Regardless of the language of dominance and bias used in the national curriculum along with the indifference of consecutive statutory education acts to the role that art and design can play, I would argue that art and design educators have learned through their own lived experiences to act in a rhizomatic way and to apply their knowledge successfully within the hierarchical structuring of educational institutions.

3.11- Tacit Knowledge/Knowing

When compiling a series of lectures for the Terry Lectures in 1962 at Yale University, Michael Polanyi explored the subject of tacit knowing. Although a trained scientist, his outlook was challenged and shaped as a young scientist by encounters and experiences of both Soviet Communism and Nazism during the second world war. His academic post at Manchester University allowed

him to explore more philosophical and psychological ideas related to what and how our minds come to understand. In keeping with the outlook offered by Tim Ingold (Ingold, 2013:109) he wrote, 'I shall reconsider human knowledge by starting from the fact that we can know more than we can tell' (Polanyi, 1983:4). In his book, 'The Tacit Dimension', Polanyi explores tacit knowledge or 'knowing' (Polanyi, 1983:7) as he would refer to it. In his book Polanyi makes a point of dealing with academic knowledge of 'knowing what' (Polanyi, 1983:7) in exactly the same thing as being more practical and hands orientated knowledge as 'knowing how' (Polanyi, 1983:7). So, Polanyi addressed this by putting the duality aside and referring to it simply as, 'tacit knowing' (Polanyi, 1983:7). Branka Marinkovic writes in support of this writing that '…that knowledge necessarily implies actions and individuals thereby bridging the artificial gap between the knower and the known (Marinkovic, 2021:390). Polanyi was interested in Gestalt psychology and visual perception; the way in which we can connect seemingly disassociated shapes and patterns and internalise them into an ordered sequence that can be 'read'. Polanyi explored how this tacit knowing couldn't be easily formalised but acknowledged that it has a massive impact in our world and our understanding. Polanyi made the sweeping statement,

> This shaping or integrating I hold to be the great and indispensable tacit power by which all knowledge is discovered and, once discovered, is held to be true. (Polanyi, 1983:6)

In his writing he summarises tacit knowing as being broken down into two parts, which he refers to as 'terms'. In the first term the individual understands that if the circumstances are right and certain action takes place then the second term will happen (Polanyi, 1983:9). Polanyi understood that tacit knowing was about securely building knowledge through the process of making connections between two terms. This he then refined into different types of tacit knowing.

- **Functional structure of tacit knowing-** When an individual knows that the second term will be met by attending to the first. An example of this might be wrapping up clay securely so that the clay is kept damp, so that it can be worked with the next time.

- **Phenomenal structure of tacit knowing-** This is when an individual can anticipate what might happen if the first term isn't met and the second term might happen. An example might be accidentally opening a kiln up too soon when it's still too hot and then quickly shutting it to prevent thermal shock from cracking the ceramic ware.
- **Semantic aspect of tacit knowing-** This is when all meaning is sensed away from our body and where a tool might be used to sense and read a sensation or spatial identity. Such an example would be using tools to make marks in clay but knowing when to stop from cutting through to the other side.
- **Ontological aspect of tacit knowing-** This is when the two terms still have an impact on one another. However, it identifies more with comprehension and understanding of sentient connections between the interior self and the exterior.

Through this tacit knowing, Polanyi understood that our bodies are '…instruments of all or external knowledge, whether intellectual or practical' (Polanyi, 1983:15-16). Through our everyday routines these evolving experiences are in constant intra-action. Polanyi felt that tacit knowing provided the building blocks for all personal elements of knowledge.
In some earlier writing Polanyi referred to the action of carrying out a task with an accuracy and awareness as 'focal awareness' (Polanyi, 1998:55). Focal awareness can be likened to hammering a nail. The point of the focal awareness is not centred on the hand holding the hammer as it strikes the nail but rather how the head of the hammer strikes the nail. By way of our hand working with the tool, Sennett writes, 'We have become the thing on which we are working' (Sennett, 2009:174). This, I feel has strong links back to Barad's notions of intra-action, agential realism and use of apparatuses. There is a unity of the hand with the apparatus (tool or hammer) that has been co-ordinated with the mind and eye. It reminds me of the way in which the students' tacit knowing intra-acted with the material culminated in the production of their successful pinch pots (see page 130). Sennett recounts the enacted ethnographic experience of an academic, Erin O'Connor, as she enveloped herself in a four-year learning journey to become a glassblower.

O'Connor documented in detail the experience of her learning the repetitive nature of glass blowing. This repetition of the skill using the triad of her hands, eyes and mind were required to ultimately develop the sophistication of the glass blown outcomes. Sennett describes this repetition as rhythm (Sennett, 2009; O'Connor, 2017). As she worked, her hands constantly responded to what her eyes saw. This prehension was constantly being refined and adjusted. It was her adjusting to her growing haptic and tacit knowing. As she grew in confidence, she focused less on her hands and more on the evolving judgment that her eyes were making. This resonates with the students making the pinched pots without looking at them (see Figures 27 and 28). The building up and use of this ongoing knowledge is tacit knowing, which through repetition, evaluation and modification becomes more refined when reapplied. By means of this heuristic experience the individual actively participates and responds to the tacit knowing gained and it's a deeply personal and individual experience that only the individual is subject too.

However, this knowledge becomes so immersed in the individual's historicity that its origins become untraceable. This accumulative experience determines how we react to situations. This embodied cognition is what Julian Kiverstein and Mark Miller analyse in their article, The embodied brain: towards a radical embodied cognitive neuroscience (Kiverstein and Miller, 2015). They observe that the mind and the body work together and that it's not just the mind ruling the body but also the body informing the mind. Classically, it was thought that the brain worked with its environment simply to input and output data. However embodied approaches stress the many and varied ways in which an organism's environmental niche can impact, offering resources and challenges to act upon. The individual has bodily skills that have been perfected through practice. This embodied cognition allows for an individual to change and adapt to each new environment that they find themselves in. Kiverstein and Miller (Kiverstein and Miller, 2015) also argue that cognition and emotion are inseparable processes in the brain. They observe that the areas of the brain that neuroimaging studies identify as being active when an individual is performing tasks that engage them both cognitively and

emotionally are in constant interaction. They conclude that an environment rich in affordances make for richer cognitive and emotional experiences. This notion of the hand and mind engaged in a rich and embedded cognitive process is further supported by Timothy Curby and Abby Carlson who make the direct correlation between fine motor skills and academic achievement (Carlson and Curby, 2014). The article states that the earlier young people learn to develop and refine their physical actions and manual manipulations, then the more they are prepared cognitively for their developing academic lives. So, exposing learners to new and reoccurring tacit experiences through their use of their hands helps to broaden their both their cognitive ability and emotional experiences while also connecting them with their material world. Polanyi comments that '… the ideal of eliminating all personal elements of knowledge would, in effect, aim at the destruction of all knowledge' (Polanyi, 1983:20). The correlation between making, learning and emotions will be further analysed in the Data Analysis chapter.

Chapter 4 - Methodology

4.0- Introduction to the Methodology Chapter

In this chapter I will attempt to explicate the epistemological reasoning for selecting Arts-Based Research as an appropriate methodology to explore the intra-actions between the year 9 research cohort and the materials that they used during their art and design project, 'Art and Design Learning Journey'. I will then present the rationale behind the design of the research project and the methods used to collect the data.

As both a long-established educator within the school environment and as a fledgling researcher, I was aware that how I designed and implemented the research project would determine the accessibility of the project to the students. It was therefore important that the delivery of the project was in keeping with the students' previous experiences at the school. It was a primary consideration that the artwork created for the research project would provide data to inform the research which in turn would hopefully address the aims of the research rather than any performance related assessment. Throughout the student's Key Stage Three participation in art and design, the intent of all the projects for all year groups taught in the school is to offer a broad and varied experience that includes opportunities to research, draw and record, develop artistic skills and work towards completing the final outcome/s. This is all carried out throughout a sustained design process. The content, structuring and application of prior experiences were adaptable and appropriate to this project, yet the design of this project would also provide the students with new experiences that they could take forward themselves such as problem-solving skills, making maquettes (or initial models), and writing poetry to explore their emotions. These new experiences could also hopefully generate new thinking. The schema for this research project is presented in this chapter (from page 83). This approach is one that over the years I have continually refined and adapted.

As a maker and doer, myself, I thrive on continually adapting and responding to materials and other stimuli as I work my way through my own creative process. Within this creative premise the projects delivered in the art classroom are nearly always new, only the overall template used (see Appendix 2) to document the projects (which is designed by the art and design department) remains the same for any length of time before being periodically reviewed itself. The projects carried out by the students in this research cohort previously (when they were in years 7-9) were all new and hadn't been delivered before (see Appendix 3). Over my career I have acknowledged that the Art and Design Programme of Study for Key Stage 3 (see Appendix 1) is not prescriptive and can be interpreted in a way that works within my own classroom context (Ball and Bowe, 1992). This flexibility, along with the 'making knowledge' of the team within the department gives us the space and permission to explore and carry out work that aims to be broad, vibrant, engaging and challenging. However, it needs to be acknowledged that this approach comes from within the department and has been engendered by both our own historicity and the mutually conducive relationship that we have built up with the student body over the years.

This research project has come from within the art and design department at the school and this has meant that I had authorship over what boundaries could be pushed and challenged. Moreover, my own artistic practice is embedded in the project. As a trained ceramicist who took an unpaid one-year sabbatical to set up my own business (Martins, 2017) creating hand built ceramic forms decorated with majolica glazes and then finished with bespoke ceramic decals, I had a clear understanding of what the students would be doing. Indeed, through the research and development of my own products, I embarked on a creative research and development journey that would be similar to the year 9 research project. Designing the research project for the targeted year 9 cohort was largely informed by my professional knowledge of the students, what I knew they were capable of and what I could design and deliver over the set period in which the research project would run.

4.1- Arts-Based Research

As a secondary teacher and researcher my data and inquiry come from within the field of study i.e., my classroom. The research design aimed to provide opportunities to explore the students' intra-actions with materials while also remaining in tune with their accumulative Key Stage Three learning experience in art and design (see Appendix 3). The methodology that seemed most fitting and appropriate to acquire the data in the context of this research project was Arts-Based Research (ABR). ABR is a collective term that lies within qualitative research methodology and is rooted in studio-based inquiry that directly connects both practice and theory with the intention of creating new lines of inquiry and outcomes. Within the field of ABR there are about twenty-nine subtly different terms that all have a transdisciplinary approach to creative knowledge making at their core (Leavy, 2018:5). The emerging names for ABR are under continual change as they are emergent research tools (Barrett and Bolt, 2010:147). Epistemologically, ABR is a tool to help make sense of our world and for knowledge to become known to us through the creative process. ABR as a methodology has the openness to draw attention to complex and perhaps subtle occurrences that can then become noticeable and analysed.

ABR is heuristic in the sense that by discovering for ourselves we deepen and make more complex our understanding of some aspect of the world (Barone and Eisner, 2012:3). Estelle Barrett, scholar in the field of new materialism, champions Practice as Research (PaR), as a possible ground-breaking methodology arguing that, '…[it] has the capacity to promote a more profound understanding of how knowledge is revealed, acquired and expressed.' (Barrett and Bolt, 2010:Foreword). PaR is subsumed into ABR and has the adaptability to expand and/or contract to fit the research question, problem or query being addressed. This flexible research methodology provided a suitable framework for this project that was creative and responsive. Barrett continues to add that the interchange between studio practice and research helps bring forth the possibility of new thought and

celebrates the egalitarian nature of the creative subjects (Barrett and Bolt, 2010: Foreword). The current project favours an ABR approach because there was a range of both creative tasks and data gathering opportunities. These were designed to be both verbal and non-verbal. Within this context, ABR is conducive and favourable, as the varied range of data gatherings were supportive of how the students worked normally in lessons, and if needed it had the flexibility to be adapted or tailored as the project progressed. ABR puts the creative process and the making of art as the central mode of inquiry (Leavy, 2018:259). The analysis and theory that emerges from it informs the direction of the thesis rather than the creative process being subordinated to a more quantitative methodology. This was a very important reason for selecting ABR as the methodology, as it meant that my students could work through a school art project in a way that was completely natural to them and that the design and execution of the research project didn't feel contrived in favour of the data collection but more of a continuing active learning experience for all the students in the year 9 cohort. ABR is also a suitable methodology for a research project within the field of art education, because by the very nature of an artistic inquiry, what might be designed and planned, might not necessarily be what occurs in the outcome (Leavy, 2018:32).

My research was rooted in myself as author, teacher and practitioner, the students as active co-participants and co-learners, and the environment of the school art room as site of their creative learning throughout their Key Stage Three. The art room also housed most of the tools and equipment that the students would engage with throughout the project. These ever-changeable and intra-acting factors would provide a rich source of data from which to rethink my own practice and understanding of the value of art education for young learners (Barrett and Bolt, 2010:3).

The research project was designed with a professional awareness of the student's previous art and design experience in school (see Appendix 3). The student's involvement, engagement and ownership of the project was vital to both the success of the project and their developing self-efficacy. It was my

considered professional opinion that the project fitted with the student's own lived experience and their own growing knowledge of their worlds (Pahl and Pool, 2011:17; Leavy, 2018:10).

The exploration, understanding and relevance of artistic practice is analysed by the academic and artist, Barbara Bolt. Bolt writes about how early on in her painting career as a painter of Australian landscapes, she found that internalising her experiences by writing about them helped her to unpick and analyse her creative process so that she could then move forward in her own practice, 'In other words, through the vehicle of the exegesis, practice becomes theory generating' (Barrett and Bolt, 2010:33). However, as a teacher there is often little time given to the analysis of pedagogy as it unfolds in the moment and absolutely no time is afforded to reflecting on work once it has been completed; yet this is exactly what could happen throughout this research project. Doing so, would hopefully offer me the opportunity to envelop myself in the data generated from the embodied learning experience of my year 9 students. This has the potential to open realisations that occur in the practice that could contribute to new knowledge of learning for the students and inform pedagogical practices within art and design education.

As an illustration of how practice and research can effectively merge and how an individual's prior experience and knowledge can give research a new perspective, Bolt draws on the example of the British artist David Hockney (Barrett and Bolt, 2010:27). Hockney was awestruck by the details shown in the work by the French Neoclassical painter Jean-Auguste-Dominique Ingres on seeing it in the National Gallery in London. Hockney, who is a critically acclaimed and accomplished artist himself, found the scale of the images discombobulating; he felt that the compositions were unnaturally too small for the amount of detail that they contained. This was a critical query that he felt that he could make as an accomplished practitioner himself, a maker and doer that had the inside knowledge to pose such questions. It then became his mission to understand the drawing and recording techniques used by such accomplished artists as Raphael, Dürer, Vermeer, Holbein and Ingres in the

production of their exquisite masterpieces. Hockney started to explore drawing and recording with a range of apparatuses such as an early visualiser, known as the camera lucida. These devices use prisms to capture images onto a drawing surface so that they can be traced. Hockney also used camera obscura, which are devices that consist of a single darken box with a convex lens that inverts the selected image onto a surface so that it can be traced. Both these apparatuses could technically and structurally aid the initial composition and structuring of an artist's composition. He was able to work through this research practically and visually as he had used drawing aids in his own work and so he felt that he had insights as both a practitioner and as an artist who has employed aids in the production of his own work. Bolt sees this as the blurring of the practice/theory binary divide.

> …Hockney's visual argument demonstrates the double articulation between theory and practice, whereby theory emerges from a reflexive practice at the same time that practice is informed by theory. (Barrett and Bolt, 2010:29)

Hockney was able to instigate the questions that he did because of his tacit knowledge within the field of painting portraits that he had built up throughout his career. Through the practice came the knowledge and acumen to conduct research with purpose by using and engaging with materials. In my role as a teacher, a trained ceramicist, and an emerging researcher, I felt that I had an ever-growing insight to be able to draw together the various strands of an art project that would hopefully help me to address the aims of the research project. My tacit knowledge related to art and design in general and more specifically ceramics which gave me the confidence to build a project that all the students would be able to access themselves taking into account their own acquisition of their tacit knowledge over their Key Stage Three experience while still addressing the aims behind the research project and providing the students with what I felt would be a meaningful learning experience in its own right for them.

4.2- Research Design

The year 9 project was designed to generate a rich range of data that would be analysed to hopefully meet the overall aim of the research project that was underpinned by my two research questions and the three objectives:

Research Aim:

- To explore the richness of the making process within a year 9 art and design classroom.

Research Questions:

- What are the unique affordances of art and design education for year 9 learners?
- What new insights might be gained about the benefits of art and design education by diffracting students' experiences of the making process through a new materialist lens?

Research Objectives:

- Put the art and design learning experience into a historical and political context in order to understand the positionality and use of language in relation to the national curriculum.
- Explore both the making process and the emotive embodied learning that is generated when a group of year 9 students engage with a range of different media to create original pieces of artwork.
- Consider the merits of haptic, tacit knowledge and heuristic learning for the individual within the art and design curriculum and its wider implications for society.

The design of the project, 'The Art and Design Learning Journey' (see Appendix 2) was not only specifically designed to deliver the research project's aims, but it was also designed to be integrated within the art and design curriculum. Importantly the project had a similar and recognisable format to that of other projects that the students had participated in during their Key Stage 3 journey to date at the school. This meant that they could access their learning with ease and that there would be a continuum in their learning from their previous projects. However, there were two differences from their previous experience in that they would be required to carry out

less direct observational work and there would be more opportunities for collaboration. As discussed earlier on page 63, the art and design programmes of study: key stage 3, (see Appendix 1) makes no statutory requirement for students to work collaboratively in art but the students are required to 'become proficient in drawing…' (Department for Education,2013). Collaborative opportunities were built into the research design, and I have acknowledged throughout my writing that my input as a teacher, maker and researcher would form an integral part of the whole research journey. At points during the research design students would work alone and during other times it was intended that they would work collaboratively. This mixture was designed to hopefully provide a broad and diverse range of data gathering opportunities, evidencing the ongoing intra-actions between human and nonhuman during the learning journey in the classroom environment that would later be diffractively analysed. Opportunities for collaboration to occur were woven into the research design. Just before setting the homework for the mind map for homework number 1, students would be offered the opportunity to share their thinking. When creating the one-off clay wreaths and then later exploring the work of the artists related to the project, the students would have the opportunity to work collaboratively. I anticipated that a key area for shared opportunities to work would be both the maquette making and the clay construction of the final pieces. Finally, it was intended that the glazing and decoration of the ceramic forms would be a shared experience as well.

Of course, by the very nature of the creative process in a classroom environment, there would always be additional discussion, comparisons, and ideas generated that I wouldn't be able to monitor or hadn't planned in the research design. The generation of such creativity as Robinson writes is all about making connections during collaborative activity (Robinson, 2001: 212).

As for the observational drawing aspect of the research design, there were many opportunities within the design of the project to draw for purpose. The students were wholly accustomed to working in different ways through their

art and design projects to date, because as a department it is our unwritten policy and practice to author the projects to suit the students and to compose two projects for each year group per year. This we do as a department. Ethically, it was important to me, as both the researcher and teacher that the students received a well-considered learning opportunity that was broad in terms of promoting their development and structurally in keeping with prior experience while also providing them with their national curriculum entitlement for art and design. However, the project needed to support the additional purpose of providing data that would resonate with the aims of the research project.

4.3- Structuring of the Year 9 Art and Design Project- 'Art Learning Journey'

The overall structure of the project is presented below, followed by the rationale for its design. Both the project and the supporting PowerPoint used when teaching can be seen in Appendix 2.

Students were introduced to a general overview of the project.

|

1-Mind Maps-Students created a mind map: Is art and design different to other subjects? Yes/No

This was set as a homework task. (Work evidenced in their sketchbooks.)

|

2-Clay Wreaths-The students responded to the work of the contemporary ceramicist, Phoebe Cummings.

They created clay wreaths with each member of the class creating a tool from the art department out of clay. The wreaths were then reclaimed following the same approach as the artist. (Work evidenced in their sketchbooks.)

|

3-Poems-Each student composed a concrete poem. Students were asked to compose a poem that documented their relationship to their learning journey with regards to art and design. (Work evidenced in their sketchbooks.)

|

Exploring the work of artists-Students were introduced to a range of artists that compose pieces that are either constructed of multiple individual pieces or that create site-specific work (i.e., pieces created to be presented in a specific place). The students in both the research classes were introduced to both my ceramic practice and that of one other contemporary ceramicist of their choice. One class chose Grayson Perry and the other selected Sandy Brown. (Work evidenced in their sketchbooks and on their group design sheets.)

I

4a-Initial 3D responses (maquettes)- In groups the students carried out design work collaboratively. The students initially designed and made ceramic and/or paper maquette forms that responded to their selected artists utilising the skills that they had developed during their Key Stage Three art and design experience. (Work evidenced on A2 design sheets.)

I

4b- Construction of the final ceramic outcome-The groups then created their final outcomes in clay and designed ceramic decals. Surface designs by the two research classes were arranged onto an A3 sheet of ceramic decals. (Group ceramic forms$^{1st\ *}$)

I

Fire. (950^{o}C-Bisque)

I

Glaze. The students used Majolica glaze which is a similar glaze used by the ceramicists that they researched. (Group ceramic forms$^{2nd\ *}$)

I

Fire. (Glaze-1100^{o}C)

I

Add ceramic decals. (Group ceramic forms^{3rd*})

I

Fire. (Decal-780^{o}C) (Figures 11-12)

I

5-One-off task- Making pinch pots without looking.

I

6-Display and self-assess- Completing the 'And to conclude…' document.

(*= Denotes the number of firings that each ceramic piece had.)

As an experienced teacher, I wanted to holistically provide my students with an engaging final year 9 project that allowed them to actively participate and enjoy the art and design process while sharing both their acquired knowledge and refining it at the same time. As a researcher, I wanted to design a project that might go some way to generating data that could offer insights into the richness of the making process within a year 9 cohort. When constructing and designing the project, the above activities were designed for students to have the opportunities to express their possible relationships with their learning experience in art, both through language (such as their poetry) and nonverbal means (such as working with clay). Such methods embraced ABR methodology by including '…multiple ways of knowing, such as sensory, kinaesthetic and imaginary knowing' (Leavy, 2018:15). The students would work collaboratively on their A2 design sheets, and these were to act as a site to evidence practical design work, annotate their thinking in progress and display photographs of their clay work as it progressed throughout the project (see Appendix 5). I also intended to keep field notes for both research classes. It was felt that a varied methods approach would be conducive to generating rich and compelling data, while also reflecting the very real generative creative process which is inherent to art and design practice. M^{c}Niff makes the point that a '… fundamental premise of artistic inquiry is that the end cannot be known at the beginning' (Leavy, 2018:32). This is not disputed, but the methods used needed to pave the way for healthy knowledge creation for both the students and teacher/researcher. Therefore, I was keen for the student's work, to 'do the talking' and for the inquiry to be driven by their physical making and the original data that this would then generate. It was hoped that the data set would capture the richness of learning and intra-actions occurring within the art classroom documenting how the students actively engaged with the materials. The aim was to generate insights into what art and design provides young learners with as Bolt writes '…those shocking realisations that occur in practice.' (Barrett and Bolt, 2010:34) that could be focused on and be analysed. This is supported by Atkinson who wrote that located within the making process is where the beginning of something new is initiated,

> The ontology of this force is not located within art objects in whatever form but in the process of a relational ontogenesis, the process of becoming of art's event. (Atkinson, 2017:133)

Therefore, by using the ABR methodology and being aware of providing a rich and varied range of opportunities to create and make within a structure that is appropriate and challenging for the students would elicit an energy that could result in a diverse range of responses. All of which are unknown at the point of delivery.

4.4- Citizens of the World

Art and design relates to processes and the ongoing engagement with materials. As a teacher I embrace this and yet as a citizen living in a world facing global warming, and with a clear inequality of resources, it is imperative that as an educator I am aware of the responsibility of working with a diverse range of materials. In the early stages of my reading for my research I was drawn to Guattari's observations that he made in 1992, when perhaps concerns for the Anthropocene period and the global insecurity of both mankind and the planet were just starting to be aired. He wrote,

> The immense ordeals which the planet is going through-such as the suffocation of its atmosphere- involve changes in production, ways of living and axes of values. (Guattari, 1995:134)

He cited such disciplines as institutional analysis, poetry, and innovative pedagogy as ways, that if embraced could ward off what he called, '…the ordeals of barbarism' (Guattari, 1995:135). If innovative and explorative pedagogy that embraced poetry could be designed to engage and embrace the material world, then maybe we could reconnect with the nonhuman in a more considered way. Correspondingly, in the opening preface to her book 'Vibrant Matter; a political ecology of things' (Bennett, 2010), Jane Bennett discusses the joyful interactions between children and nonhuman matter. A relationship and connection is made between the child and the nonhuman. The child forms an attachment, and an active engagement ensues. She questions how once we become adults, somehow, we manage to see matter as something that is commoditised, something to be either possessed or

distanced from. It appears that this relationship is purely one directional and the human is the active controller. This she sees as a duality of human/animal or life/matter; set in opposition with one another. Bennett questions her positionality with the following musing,

> Why advocate the vitality of matter? Because my hunch is that the human image of dead and thoroughly instrumentalized matter feed human hubris and our earth-destroying fantasies of conquest and consumption. (Bennett, 2010:ix)

She sees that distancing ourselves from interacting positively with matter is a shortcoming and something that, as a society, we will come to regret. Hence learners actively and continually interacting with materials by means of pedagogy might appear to be central to art and design education. An important aspect of a learner's experience is that they engage, relate and build up a positive experience with their material world so that they can respect and work with it in their future lives. In the design of this research project, it was the intention that all the students would become active participants at each stage of the inquiry by engaging directly with their materials rather than being distant consumers carrying out the needs of merely satisfying a research design brief in a tokenistic way.

It was important that running through the design of the project were a rich array of affordances for the students to actively engage with materials and stimulate positive cognitive processes. The intention being that this would produce richer data. The students had the opportunity to work with clay on four separate occasions: to make their class clay wreaths, to make a clay prototype of their group's possible design before making their outcomes and finally making a pinch pot in a one-off lesson. These physical engagements with material and the related documentation that the students created, alongside the photographs that I took as the project progressed weekly, constituted a rich data set which would document the making, the processes, the collaborations, and the intra-actions with the materials that the aims for this research project wished to explore and analyse. For three out of the four occasions working with clay, the clay would be recycled.

4.5- Rationale for Each Stage of the Project Design

- The first practical task of creating two mind maps at the start of the project was to focus the students on the idea and theme of this project, which was the subject and their experience of it to date. The aim of this task was to gain an insight into what the students perceived as the subject's positive and negative attributes. It was designed to focus the students at the start of the project and to help them explore what they felt studying art had offered them. It was also set in the month of March, when the year 9 students were in the process of considering what GCSE options to pursue in year 10. Art is an optional subject and therefore students can opt to do it as a GCSE or decide to stop their statutory art education at the end of Key Stage 3.
- The creating of a clay wreath for each class that was composed of art tools created with unfired clay work was inspired by the contemporary ceramic artist, Phoebe Cummings. The students were encouraged to draw by responding directly with clay to the world around them in an immediate yet temporary way as the clay was ultimately left unfired and then recycled. The students witnessed the clay being recycled as it slumped and lost its form gradually once submerged in water. This one-off task also acted as a reintroduction to working with clay for the students and to also help explore the learning that is experienced from working directly with matter.
- By composing their poems, the students were encouraged to use abstract and descriptive language as another conduit to express their feeling towards art. It was hoped that the poems would generate data to help explore the richness of their making journey throughout their Key Stage three.
- Each class in the year 9 cohort were asked to select one artist or culture along with examples of my own practice. Grayson Perry was selected by one of the classes and Sandy Brown was selected by the other. The artists and cultures were originally selected not only for reasons of cultural and gender equality but also for aesthetic reasons of construction, glazing and layering techniques used that linked with both my work and the student's own prior construction knowledge. So, the artist's work would be accessible and relatable. I also knew as their teacher that the students would be able to access the

construction techniques and handling of clay with minimal hesitation and I anticipated that their level of engagement would be high.

- The students then worked collaboratively in groups of 4-6 creating a joint piece of work that combined their selected artist's work but also encompassed their learning journey to date (expressed through their technical acumen). Their designs were also to have enough space to include a ceramic decal of one student's poem per group. The decal was a very direct way of adding the student's written word directly onto the surface of the ceramic forms. Once fired, the decal would fuse permanently onto the ceramic surface. This would make their relationship to the subject explicit through text that could be analysed alongside the forms themselves. This stage took about three lessons to complete. Students made their initial maquettes out of either clay and/or card at the start. This helped them to visualise and share the process with each other. Neither the clay nor card maquettes were kept, with both being recycled.
- All ongoing class design work and photography related to the production of the final outcomes for the project was evidenced on A2 design sheets. Other related project work such as the mind maps, wreaths, and research work were carried out in their sketchbooks. All the data was collated for analysis, and the student's data was compiled in the same way across both groups in the research cohort for parity.
- In between the lessons the work was fired in the departmental electrical kiln three times. Once for the initial bisque firing of up to 950^{o}C which changes the state of the material from clay to ceramic ware using heat in readiness for it to be glazed. Then the glaze firings of up to 1100^{o}C and finally the decal firings on top of the glaze firings of about 780^{o}C. All the year 9 classes had their work fired. The students both glazed and applied the decals themselves in readiness for their firings. I attempted to offer the students ownership both in their classwork and in the technical side of the whole ceramic process that they were engaged in.
- The one-off task of making the pinch pots was an ad hoc lesson/ experimentation delivered to both of the research groups in response to my

background reading about sensory re-afference (see pages 131-32) and my developing understanding of haptics (Rowntree et al., 2018:40).

4.6- Ceramic Decals

Ceramic decals are prepared images or text that have been put onto a transfer system that allows the image or text to slide with the help of water from a flat printed surface onto a ceramic form and then be fired so that the decal is permanent onto a flat glazed surface. In my own ceramic practice, I find that using ceramic decals can add a wonderful realistic pictorial definition against the fluid, alchemy of the glaze. I was drawn to use ceramic decals in the research project as it is a reliable way to add legible text onto a ceramic surface using a ceramic process, thus there was the aesthetic potential of layering their poetry on top of their ceramic forms (Figure 7 and 8). One of the classes researched the artist, Grayson Perry, who regularly uses decals in his ceramic work (Figure 9). He employs ceramic decals alongside a plethora of other layering techniques to show depth of narrative in his critically acclaimed pieces. I considered that using poetry would be a suitable vehicle for the students to both express their ideas creatively but also to create a physical surface for their ceramic outcomes. So, this was one of four components of the project that involved text that I later found to be rich sources of data that I could draw upon.

Figure 7
Student collaborative ceramic piece with Majolica glaze and ceramic decal of spiral poem.
(Own image)

Figure 8
Student collaborative ceramic piece with Majolica glaze and ceramic decal of poems and hearts.
(Own image)

Figure 9
Grayson Perry
Over the Rainbow
2001
Earthenware
53 x 41cm

4.7- Tools for Analysis- Diffractive Analysis

Within this study the data collected from the student's learning journey will be analysed using diffractive analysis. Throughout her writing Barad prefers to use diffractive analysis as her preferred mode of analysis of data. With diffractive analysis, Barad encourages difference in patterns making themselves known through the extrapolation of the data (Barad, 2007:71). Diffraction like reflection both have their roots in science and light patterns. Barad writes that reflection refers to '…themes of mirroring and sameness' (Barad, 2007:71) whereas diffraction is marked by noticing changes and variances. Diffraction can relate to different wave patterns such as water, light and sound. Put in layman terms, diffraction is about how the wave patterns change shape when they are pushed through gaps or come up against obstructions. They curve and bend concentrically outwards and spread out. Barad explains that these waves act in a very different way to that of particles and that waves can overlay at regular intervals as they act as disturbances. These can overlay to form composite waves and the ensuing patterns are called 'diffraction patterns' (Barad, 2007:76). A representation of this can be seen in Figure 10 (Norton, 2001). Importantly, the diffraction patterns happen

within the ongoing process as they are entangled rather than being an outwardly and fixed occurrence such as reflection. As Smartt Gullion writes, both reflection and diffraction are both optical occurrences (Smartt Gullion, 2018). However importantly the patterns created within diffraction offer new sites of entanglement, and those intra-actions generate new meaning rather than a sameness of reflection. Diffractive analysis is accountable for how practices matter and understanding how the ongoing intra-actions are ever-evolving. Lenz Taguchi (Lenz Taguchi, 2012:267) writes that there is a confidence that the researcher will be responsive and know when the data is making itself explicit in new ways.

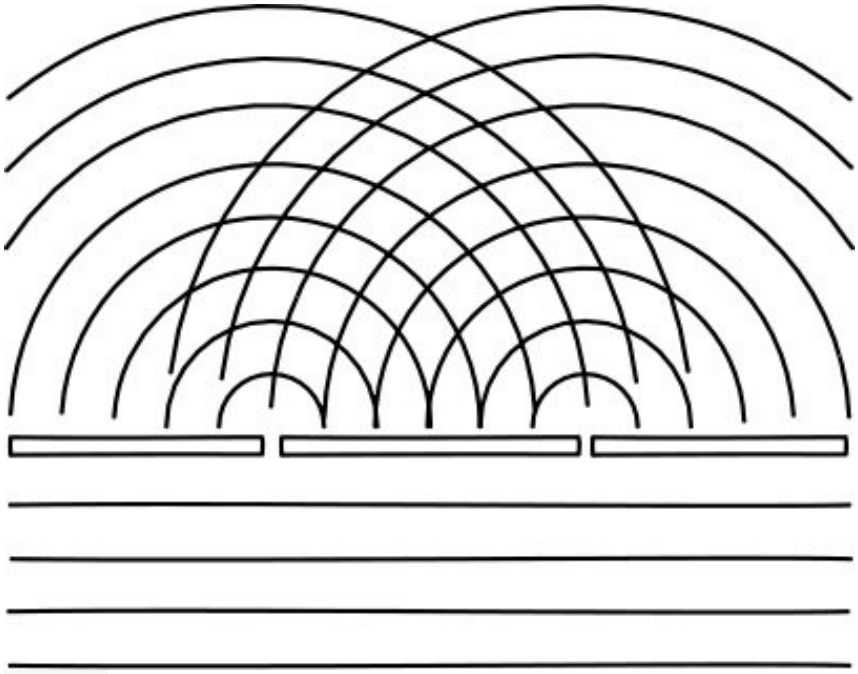

Figure 10
John D. Norton
Diffraction Diagram

She explains,

> …the researcher is attentive to those body mind faculties that register smell, touch, level, temperature, pressure, tension and force in the interconnections emerging in between different matter, matter and discourse in the event of engagement with data. (Lenz Taguchi, 2012:267)

This will be me, as the researcher being attuned to the diffractive patterns being created within the work and internalising what happens. Being a

practitioner/ researcher/ teacher suits this mode of action well as Barad writes, 'We do not obtain knowledge by standing outside of the world; we know because "we" are *of* the world (Barad, 2003:829). So, as Hockney was able to make inquiries about the practice of past masters due to his questioning mind and painting awareness, I will hopefully be able to see the emerging data in a new light using diffractive analysis.

4.8- The Ethics of the Research

The data were generated by two year 9 classes coming to the end of their Key Stage Three statutory entitlement in art and design. The students therefore had experienced a range of art inquiries (as evidenced in Appendix 3). The year 9 art classes were taught in their form groups and as such the classes were not streamed by ability. The two classes were selected for the research project simply because I had been timetabled to teach them from the start of the academic year in which the research project was to be delivered. However, all five forms within the year 9 cohort carried out the project. I had previously taught one of the classes in the research cohort in year 8 and the other, I hadn't taught in either year 7 or 8. In terms of the procedural side in gaining written assent from all the participants in the research cohort and parental /carer forms, this was fully progressed and achieved before the project started in the school's summer term of 2019. Assent was also given by the students for photographs of both their work and of their hands to be taken and used in the research while engaged in making. Students were able to withdraw their participation in the research project at any point, as it was voluntary, and this was written into both the participant and parent/ carer assent/consent forms. The design of the student's project was specifically targeted at supplying data to address the research project's aim, yet it was simultaneously designed to support them in meeting their Key Stage Three learning outcomes. I was acutely aware of my connection with the students, being an employee of the school in which the data was being gathered and my continuing involvement with the research cohort as their class teacher and researcher. The role of teacher/student altered throughout the project as we

were experiencing it together and responding to differing experiences as and when they occurred and with that brought an honesty and transparency to the lessons. We were collaborators throughout the learning journey responding to the stimuli provided (Knowles and Cole, 2008). How this was mediated will be discussed more in both the Data Analysis Chapter and the Discussion Chapter.

Chapter 5 - Data Analysis

5.0- Introduction to the Data Analysis Chapter

The intention of this chapter is to analyse the data gathered during the Arts-Based Research (ABR) project carried out by two classes of year 9 students titled, 'Art and Design Learning Journey'. The data will be explored using diffractive analysis prompted by my own intra-actions with the students' work, my own reading, and my growing understanding of the writing by Karen Barad. I aim to gain and share a deeper understanding and insight as to what lies within the creative making process and the embodied learning that takes place within a year 9 art and design classroom.

5.1- Sequence of the Analysis

The data analysis will be structured around the tasks that students completed during their year 9 project. The overview of the tasks is repeated below as a convenience to the reader, as this analysis chapter will be structured according to these tasks.

Stages of the Year 9 Art and Design Project- 'Art Learning Journey'

Students were introduced to a general overview of the project.

I

1-Mind Maps- Students created a mind map: Is art and design different to other subjects? Yes/No (Figure 13)

This was set as a homework task. (Work evidenced in their sketchbooks.)

I

2-Clay Wreaths- The students responded to the work of the contemporary ceramicist, Phoebe Cummings. They created clay wreaths with each member of the class creating a tool from the art department out of clay. The wreaths were then reclaimed following the same approach as the artist.

(Work evidenced in their sketchbooks.) (Figures 15, 16 & 17)

I

3-Poems- Each student composed a concrete poem. Students were asked to compose a poem that documented their relationship and connection to their

learning journey with regards to art and design. (Work evidenced in their sketchbooks.) (See poems by Students 2, 3 & 4)

I

Exploring the work of artists- Students were introduced to a range of artists that compose pieces that are either constructed of multiple individual pieces or that create site-specific work (i.e., pieces created to be presented in a specific place). The students in both research classes were introduced to both my ceramic practice and that of one other contemporary ceramicist of their choice. One class chose Grayson Perry and the other selected Sandy Brown. (Work evidenced in their sketchbooks and on their group design sheets.) (Figure 18)

I

4a-Initial 3D responses (maquettes)- In groups the students carried out design work collaboratively. The students initially designed and made ceramic and/or paper maquette forms that responded to their selected artists utilising the skills that they had developed during their Key Stage Three art and design experience. (Work evidenced on A2 design sheets.)
(Figures 19, 20, 31 & 32)

I

4b- Construction of the final ceramic outcome-The groups then created their final outcomes in clay and designed ceramic decals. Surface designs by the two research classes were arranged onto an A3 sheet of ceramic decals. (Group ceramic forms$^{1st\ *}$) (Figures 21 & 22)

I

Fire. (950^{o}C-Bisque)

I

Glaze. The students used Majolica glaze which is a similar glaze used by the ceramicists that they researched. (Group ceramic forms$^{2nd\ *}$)

I

Fire. (Glaze-1100^{o}C)

I

Add ceramic decals. (Group ceramic forms^{3rd*})

I

Fire. (Decal-780^{o}C) (Figures 23 & 24)

I

5-One-off task- Making pinch pots without looking. (Figures 27 and 28)

I

6-Display and self-assess- Completing the 'And to conclude…' document. (Appendix 2)

(= Denotes the number of firings that each ceramic piece had.)*

5.2- (Stage 1)- Mind Maps

The aim of the mind map was to focus the student's attention on the positionality of art and design within their whole educational learning experience and to help them illustrate what they perceived as the benefits and drawbacks of studying it and how their art learning differed to their other subjects delivered as part of the curriculum. The students were initially introduced to two artists that have both created illustrative map-like structures within their work: Nigel Peake (Peake, 2011:online) (Figure 11) and Antoine Corbineau (Corbineau:online) (Figure 12). This task was introduced by me and then set as a two-week homework. I felt that by gaining an understanding of the students' perception towards the subject it might offer an insight into how they value the subject within the curriculum and gauge the level of commitment that the students might invest in the research project. How the students completed the task could also offer insights to their perceived connections to working with materials and the value that they placed on it within their learning experience to date. The completion of this task was the entry point to accessing and acquiring data for the research project.

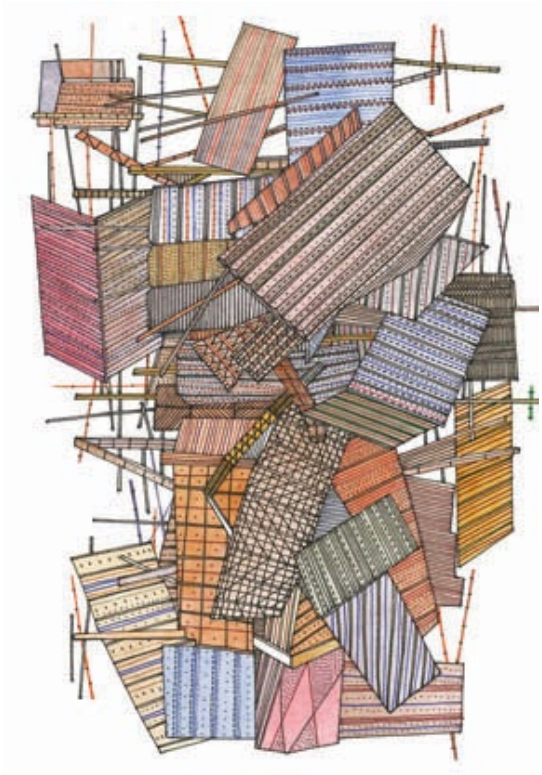

Figure 11
Nigel Peake
Fallen Shed
23cm x 28cm
Ink and watercolour

Figure 12
Antoine Corbineau
Detail of a map of Paris

The homework submission completed by Student 1 (Figure 13) is both beautifully composed and constructed and was representative of both her classwork and homework in general. The student shares many insights into

how she regards the subject. She annotated her mind map with six key ideas as to how she understands art and design as being different to other subjects:

- Learn new cultures.
- More creative than academic.
- We use different materials and techniques.
- More practical work than theory.
- Bigger equipment list.
- More freedom with homework.

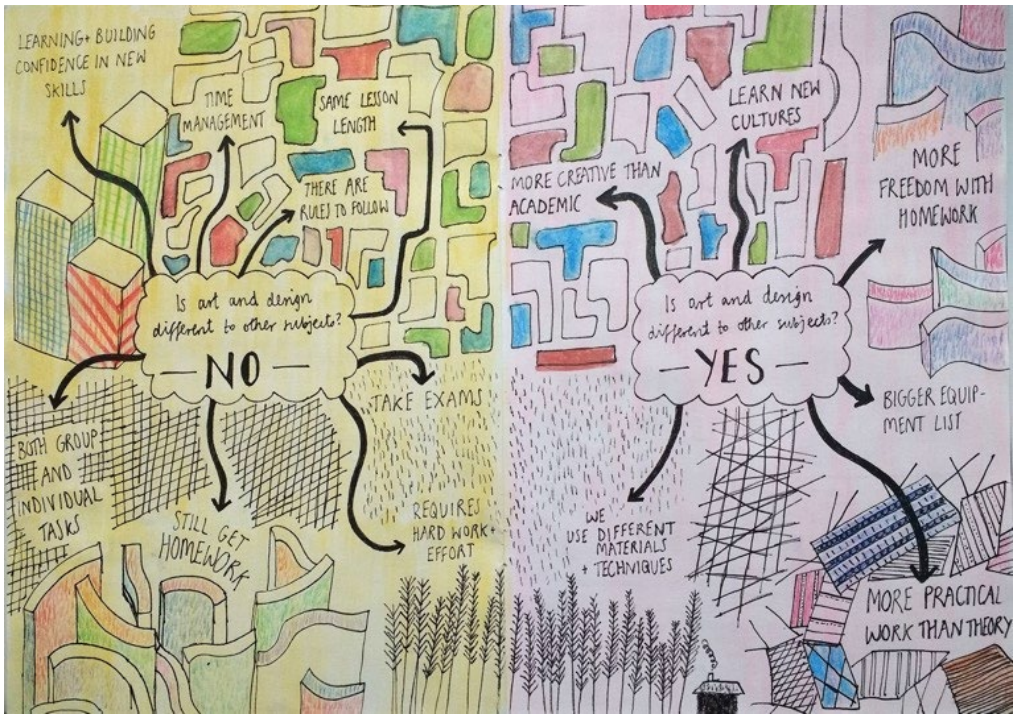

Figure 13
Student 1
Completed outcome for Homework Task N°1.
Student's own sketchbook.
(Own image)

On my initial viewing of this homework, as her teacher I was thoroughly impressed by the student's almost effortless planning and execution of the composition. The reason for my selection of this piece of work was not because of the calibre of the presentation, as there was a rich and diverse range of responses by the individual students in both classes. I selected Student 1's work for analysis because she highlighted the following two points that many of her peers had also alluded to.

Art is:

- More creative than academic.
- More practical work than theory.

My initial response to this data was a feeling of despondency that the student saw a clear binary divide between what she perceived as practical and what she perceived as academic and that she felt that it was necessary to include this in her list. She saw it as a difference. She also felt the need to clarify the separation as she saw it, that art is more about being practical than theoretical, more creative than academic. This is proving to be a thread of thought that has been coming to the fore as I have worked my way through my doctorate. The student appears to have a perception that there is a complete division between practice and theory. This viewpoint could however also be my own historical perception, insidiously instilled in me throughout my career that practical work is defined as being fundamentally different and of a lower order in the educational process to that of more booked-based subjects. This I think will have its roots historically in the separation of the two. On the other hand, Barrett sees art practices contradicting and challenging the accepted norms of what is usually expected from more established modes of theory and research and within this lies its strength and points of interest:

> The innovative and critical potential of practice-based research lies in its capacity to generate personally situated knowledge and new ways of modelling and externalising such knowledge while at the same time, revealing philosophical, social and cultural contexts for the critical intervention and application of knowledge outcomes. (Barrett and Bolt, 2010:2)

Therefore, maybe at the very core of all art practice is a direct engagement with the material world in order to develop theory generated only from within practice and therefore the practical forms are the genesis of the theory. I would argue that this should not only be at practice-based research level but at every level where art practice is generating thought through practice including what happens in the art classroom. Similarly, Erin Manning sees research-creation as a key mode to generate new thought and to,

> …find new ways of activating thought that is experienced rather than known, that is material and affective, and where experience accounts for "more than human" encounters. (Springgay and Rotas, 2015:553)

The student's two points act as a fitting starting point in the research project to prompt questions about the relevance of the art learning journey that can be explored throughout this chapter not only for my students but also for me. The data will be analysed diffractively in order to engage with its materiality. As Barad writes '…knowing is a matter of part of the world making itself intelligible to another part' (Barad, 2007:185) and this will need me to be attuned with the data from the outset. I became aware when reflecting on the data from the task, that I might have influenced the students' perception of art and design through my own attitude towards the subject and my own perceptions of art's position within the curriculum. In response to this reflection about my own positionality within the study, I committed to actively challenging my own perceptions and maybe isolating viewpoints that need stretching and challenging as I worked through the analytic process. By assimilating the viewpoint shared by Manning that as a researcher I can activate new thought that has been instigated by work and experience rather than just accepted historical constructs. This approach has the potential to be liberating and insightful. My strong initial response to this data alerted me to the need to be reflexive and challenging of my own positionality throughout the process.

5.3- (Stage 2)- Creating Clay Wreaths Inspired by Phoebe Cummings

Creating art room clay wreaths of tools (Figures 15 and 16) was the first opportunity that the students had to reacquaint themselves with working with clay since their previous experience in year 8. The students had been introduced to the work of Phoebe Cummings during their previous lessons. Cummings is a British artist that works with clay but does not fire her work, preferring instead to leave it in its unfired, vulnerable, and fragile state (see Figure 14). In doing this she creates an immediacy and direct connection with

responding to her world around with clay using only a limited range of tools. This very direct connection with clay had the potential to diffractively elicit analysis relating to the students' experience of working directly with nonhuman matter.

Each student was provided with a piece of clay and asked to create a replica of an art room tool that they had used in the process of making their work. Each group of students (working on the same table) was asked not to make duplicates of any one tool. The students were tasked with the challenge of creating these wreaths like Cummings by only using a limited range of basic ceramic tools that they had around them and to transform their clay into individual pieces of art equipment.

Figure 14
Cummings, P
Nocturne
2016
Hand built, unfired clay.

Figure 15
Year 9 Clay wreath of art room equipment created in clay by one class.
Each student made one tool.
Unfired clay.
Approximately 30cm diameter.
(Own image)

Figure 16
Year 9 Clay wreath of art room equipment created in clay by one class.
Each student made one tool.
Unfired clay.
Approximately 30cm diameter.
(Own image)

Both classes embraced this one-off task and seemed engaged by the concept of creating something in the moment that they knew wouldn't be kept but that would be recycled and therefore the clay would not be wasted. This task would I hope provide rich data to meet the research objectives concerning the merits of haptic awareness, gaining tacit knowledge and working through a heuristic learning experience. In a reflective task at the end of this session the students were asked to complete the sentence, 'Responding in clay is…

One student completed this with,

> Responding in clay is… fun and creative because you can make all sorts of things and use different textures to sculpture an idea and express your art in a 3D way.

Another student from the other class wrote,

> Responding with clay is… looking at an object and then making it into the clay and working off the object. Looking at a 3-D object and drawing with clay a 3-D object.

Both students focused on the immediacy of both the task and working with clay as a satisfying tactile experience. Being able to shape their immediate world around them with control and self-determination. From a pedagogical perspective there are very few occasions when a participant records 3D directly into another 3D form as the second student points out, '…drawing

with clay...'. The student's ability to access this task relies on their ongoing acquisition and refinement of fine motor skills connecting their hands and minds developed through their heuristic and haptic learning experience with clay. Carlson comments, that a strong indicator of academic achievement is having developed motor skills. Research has demonstrated that individuals who were offered opportunities to develop their visual-spatial integration skills (Carlson et al., 2013:515) by completing such tasks as copying an image rather than tracing one, achieved more with relation to their fine motor skills and consequently higher overall academic achievement. Although the task used in Carlson's study (Carlson et al., 2013) and the task used in my own inquiry differed in the sense that Carlson's participant copied of an image onto a 2D surface, whereas my students worked from 3D objects and replicated them into 3D using clay, both activities arguably provide opportunities for challenging and developing the individual's visual-spatial integration. A paper by Bushnell and Boudreau (Bushnell and Boudreau, 1993:1007) further supports the thinking that there is importance to interacting directly with matter. They explored the possible correlation between the quality and diversity of motor development in infants with developing cognitive ability. In their work they investigated the link between infants handling and interacting with objects, and the possible correlation with their cognitive development stating,

> … that if an infant is unable (for whatever developmental reason) to engage in a motor behavior that is requisite to the acquisition or practice of a certain perceptual or cognitive capacity, then the motor failing may block the emergence of the related perceptual or cognitive capacity. (Bushnell and Boudreau, 1993:1007)

In other words, being able to physically engage with materials develops the infant's cognitive capacity. I would like to go further and posit that this possibility of learning through handling matter never stops and indeed our understanding just continually refines. In fact, a recent study, suggests that children aged between three to six have improved mathematical knowledge by being able to develop their fine motor skills through '…finger-based number representations…' (i.e. counting on their fingers) (Fischer et al.,

2020:online) in order to develop knowledge. Entangling ourselves and engaging with matter does indeed matter, it helps us to understand more, and develops our cognitive capacity, but I acknowledge that there is much more scope for further research into the field that is needed.

The one-off clay experience involved the students making a wreath using their tools and hands within a set timeframe informed by Cumming's own practice (Figure 14). Bringing this into conversation with Barad, I suggest that the students brought to the fore their previous known clay experiences to create direct 'agential cuts' (Barad, 2007:175). These agential cuts were constituted by the direct impact of both hands and tools (apparatuses) on the matter (clay) to create other 3D forms by design by each student. The resulting clay wreath was a material-discursive phenomenon that was created within a specific time limit, with a set lump of matter, some simple apparatuses, and the students' hands. Into this learning situation the students brought their prior understanding and knowing with Barad stating, 'Existence is not an individual affair' (Barad, 2007:ix), rather we are absorbed by it and are entwined and informed by our previous intra-actions, those with others and those of engaging with the material in that moment. The students were working on their own forms that then came together to form a whole class wreath to honour the tools used in the creation of their work. So even though they were working at tables with others and their pieces ultimately came together in the end, the process of making with their tools was generated by themselves and how the relationship with the clay mattered in that moment. Barad writes about the importance of the immediacy of the relationship of materials and matter in the creation of material-discursive intra-activity as '…a strong commitment to accounting for the material nature of practices and how they come to matter' (Barad, 2007:45). Students were individually given the opportunity to entangle themselves in their creative process to help them make sense of their immediate worlds through an embodied learning experience. As the students engaged directly with the material they refined and built on prior haptic awareness and their tacit knowing.

Once the individual items were completed, they were assembled into a large clear lidless storage box: one per class. The purpose for this activity was so the students could witness their wreaths being reclaimed and recycled (see Figure 17). The following lesson once the clay had completely dried out water was poured over the wreaths, and they slowly disintegrated in the water in readiness to be reclaimed.

Figure 17
An image of the clay wreath of Figure 15 disintegrating into water as part of the process of recycling clay.
(Own image)

I was struck by the students' high level of interest in the process of the reclaiming of the clay related to this aspect of the project, but also their interest in the making and applying of glazes, and the loading of the kiln (used during later stages of the project). These ancillary aspects of the ceramic process proved to be an important aspect of the project that I hadn't considered at the time of designing the research project. Technically, I know that recycling, firing, and glazing are all essential components that make up the holistic ceramic process, but I hadn't anticipated that these aspects would yield data in relation to my research aims. Barad, however, writes that in gaining an understanding of our relationship with matter, we need to have an overview of the whole experience rather than just the end product, something which I then came to reflect upon when observing students' responses to these elements. Barad argues that

> …to figure matter as merely an end product rather than an active factor in further materializations is to cheat matter out of the fullness of its capacity. (Barad, 2007:66)

What I realise now, is that I exerted control over my students access to the holistic understanding of the full ceramic process. As their teacher, I was the one that had the power to allow them to access or not access the full ceramic experience from recycling to firing. Because of my pedagogical choices, they all observed the clay dissolving in the water (Figure 17). Some offered to make the glazes with me during a series of lunchtimes and those interested helped me to load the kiln during lesson times. However, all of these activities were restricted and structured within the limitations of the timetabled day. Such control of time impacts on the students' access to the room and their access to encountering the processes and materials.

Again, when reflecting on these constraints, I noted resonances with Barad's thinking. Barad writes about how traditional western thinking is very much tied up with thinking about time and space as being pre-determined by coordinates and mapped out on axes and tables and structures all restrained within an almost sealed conceptual spatial box that is finite (Barad, 2007:225). As a physicist, Barad has been motivated to explore the accepted understandings of space, time, and matter and as she puts it to '…dislocate the container model…' (Barad, 2007:225). She explores her thinking through the writings of the political theorist, Leela Fernandes related to her ethnographic study looking at the relationships between location, machines and the workforce in an Indian jute mill titled 'Producing Workers' (Fernandes, 1999). Barad uses Fernandes' study about what happens on the factory floor of the mill to explore the ongoing tensions that occurs within space, time, and movement in the everyday functioning of the factory. While Fernandes focused on the positioning of the machinery and factory workers within the factory space in relation to their gender and ranking within the workforce, I found resonances with the way that I was positioning students as passive recipients of the experiences that I had devised and planned them to have within the classroom. In her study Fernandes writes about the impact of

positioning of the workforce as determined by gender and social status. She documents the positioning of the various machines and the overall location of the sectors of the workforce within the internal environment that reflect a hierarchical structuring (Fernandes, 1999:59) such as the manager's office being in a space elevated above everyone else. Barad uses Fernandes' study to question the relationship between material and discursive dimensions within power relations and how apparatuses impact on this relationship (Barad, 2007:229). Barad then clarifies that the role of apparatuses as being,

> … not external forces that operate on bodies from the outside; rather, apparatuses are material-discursive practices that are inextricable from the bodies that are produced and through which power works its productive effects. (Barad, 2007:230)

In Barad's material-discursive intra-activity all components of time, space and matter intra-act and causal relations are reworked to imply that they are constantly in play with one another (Barad, 2007:230). By extending this thinking into the design and delivery of my own research project, I neglected the fact that such intra-actions were going to constantly happen, and I unwittingly applied a level of dominance to all that prevented some of the student's from experiencing and engaging with the material to its fullest potential. Diffractively, both I and the framework that the school infrastructure operates within exerted a degree of control in the process. In terms of the research project that I designed, the students access to the kiln, making of glazes and full engagement with the recycling of the clay wreaths was controlled by the environment, the functionality of the art rooms, the accessibility to the rooms due to timetabling and the physical numbers of the classes and their timetabling. In my defence, I limited the access of the recycling, glazing, and loading the kiln, as I was always working within a limited timeframe imposed on me due to the duration of the student's art lessons each week, the school's two-weekly curriculum timetable, the academic calendar and even my own data gathering during my own research degree timeframe. Barad would also see these as internal pseudo structures that impact and impose power within the relations that constitute a particular context. Barad writes

> Structures are apparatuses that contribute to the production of phenomena, but they must also be understood as thoroughly implicated in the dynamics of power… (Barad, 2007:237)

Through diffractive analysis, I internalise and acknowledge the level of power that was exerted within the delivery of the research project and this has prompted me to consider my role in delivering a meaningful learning art and design experience for all my students at Key Stage Three.

The art education that the students receive during Key Stage 3 is but only a drop in the ocean of their lifelong learning experience. However, because it engages the students with a wide range of tactile and heuristic learning experiences within quite a concentrated timeframe, it promotes learning encounters that provide a rich and fertile learning ground for their tacit knowing. These overall learning experiences and encounters are not fixed within a single classroom or 'container' as Barad puts it, but rather are ever ongoing and available for future configurations. The students are provided with a range of experiences that are rich in affordances that they can take with them on their continuing learning journey. In future situations the students will be able to re-engage with similar learning encounters and be able to engage heuristically to move their learning experience forward with a certain degree of confidence.

During the process of making and doing, we learn. Making and doing with nonhuman matter helps us all to broaden our comprehension and in ways that we may not know beforehand. In my field notes I recorded the experience of making the wreath with one of the classes noting that, 'The students knew implicitly/ tacitly what to do.' I then documented that the students enjoyed the fragility yet sustainable values within Phoebe Cumming's work. I was struck by how they worked with such care and thought with something that was 'so in the moment', yet for it only to be recycled. Through this making experience the students were able to successfully apply what Polanyi (Polanyi, 1983) describes as tacit knowing (discussed in further depth in Chapter 3):

- **Functional structure of tacit knowing**- They knew that their constructed clay structures would ultimately come together to create one form as a class, and they knew how to create their forms individually.
- **Phenomenal structure of tacit knowing**- They knew that by leaving their work to dry in the air and not covering it, the clay would dry out and then rather than being fired could be recycled instead in keeping with the work of Cummings.

There was one student who felt disgruntled, stating that she thought that the process was a waste of time. This was a valid reaction, as students were accustomed to making and then keeping their work. In my fieldnotes I connected this way of working to be similar to that of the poet reciting their poems, only to release the words into the air. Yet, the poem could be documented on paper or film, just like our work would be recorded by means of a photographic image. What we were doing was experiencing working with the matter in that moment which was of value in the acquisition of knowing through the engagement with nonhuman actants in order to further develop the students' heuristic learning. I also recorded a list of words in my fieldnotes that we used when making the clay wreath. These words were:

- Momentary
- Ephemeral
- Impermanent
- Transient

These words described the working practice of Cummings and her delicate one-off pieces, but they also described the students' engagement with matter during those single lessons when all of their work would be reclaimed. These four adjectives can also be used to capture the fragile temporality of the material discursive phenomena that were created within those single lessons. As Springgay and Rotas comment,

> Experience- as a co-composing act - is a different way of participating in the classroom and in schools; a way that potentializes the production of difference, the "event" of newness.

(Springgay and Rotas, 2015:556)

The working in clay at this point was a passing event that prompted thought and engagement with the material directly and could be argued was in opposition to any fixed thought. This immediate relationship with clay embraced what Barad comments on as,

> Discursive practices and material phenomena do not stand in a relationship of externality to each other; rather *the material and discursive are mutually implicated in the dynamics of intra-activity.*
> (Barad, 2007:152)

The clay wreath making was a one-lesson task where the pieces made were recycled once they had dried out. Yet I believe it contained the essence of Barad's, 'ethico-onto-epistem-ology' (Barad, 2007:185). It enriched the students knowing of working with clay through active entanglement with ongoing materialisations and knowing within their individual and joint worlds. By diffracting the students experience through a Baradian lens I am starting to isolate and gauge a new insight into the importance and validity of the art and design education within the curriculum for the Key Stage Three students. As I would interpret from the writings by Barad, that the matter (in this case clay) was an active factor in further materialisations (Barad, 2007:66). Through their previous experience with clay the students had prior knowing of what to do with the medium and the implied affordances that it offered them and this they accessed with ease and further built on their learning journey.

5.4- (Stage 3)- Poems

In the next phase of the project the year 9 students were asked to construct a concrete poem (see Appendix 2) exploring their connections with art and design and what it has meant to them in their overall learning journey to date. They were also asked to reflect on what they perceive to be the importance of the subject within the curriculum. This aspect of the project was broken down into steps that started with students being introduced to concrete poetry; students then created a working word bank to draw upon when composing their poems. They then proceeded to draft their poems (as exampled below).

Finally, if they had time, they crafted their compositions into a concrete shape. The intention of creating shapes from their poems became less important as the project developed and not every student was able to do it, partially due to time constraints and the challenge of creating meaningful shapes from their poems. As the activity developed, it became clear that the content of the poems was much more interesting than their form and thus became a key focus of the analysis. We carried out this task largely in a prebooked computer room. As the students constructed their poems, I circulated around overseeing their compositions. Every so often I would ask the occasional student to share their poem to date with the class. One student's work had a physical impact on me as she read it out by very nearly moving me to tears. This student didn't necessarily excel as a practitioner in the art classroom, but I felt that her insight into her connection to the creative process humbled me as an art teacher and thrilled me as a researcher.

Student 2

Year 9 Poem created in response to 'Art Learning Journey'

Written as composed by the student.

Line	
1	Art is like a river
2	You have different skills mixed into one
3	All heading the same way
4	Different materials are mixed in
5	Some carry on down the journey
6	Others are left behind and long forgotten
7	Then we get to a rocky path
8	We can't meet deadlines or things aren't going our way
9	The certain skills that are meant to be used are not familiar to us
10	We get caught in a storm, anger and frustration cloud our minds
11	But after passing, everything becomes well
12	The river has found its smooth course again
13	We finally mastered the skills we couldn't

14	We have met deadlines and kept to time
15	Everything is going calmly
16	Then we get to a place and see the end of the course
17	A mistake has occurred, and we feel like we have failed
18	However, when we get to that end line, it's a waterfall
19	It wasn't the end of the world like we thought
20	It was the opening to new ideas
21	Art isn't a subject like any, through your rushed and restless times
22	A beautiful thing is produced out of it.

In lines 2-4 the student acknowledges the interconnectedness between manipulative artistic skills (which are usually manual and require tools) and material/ matter. Then as the poem progresses to lines 7-20, the student writes about the continual entanglements between material and the emotions that the learner feels herself. This resonates with Lenz Taguchi's observation that

> Learning events are taking place just as much and simultaneously between your hands handling the material things as they do in your thinking body/mind, handlings concepts, notions and emotions. (Lenz Taguchi, 2010:40)

Student 2 uses the metaphor of the river to describe her creative art journey. As her creative path works its way towards the apparent troubling waterfall, all the ensuing intra-activity of the creative process ultimately work towards the creative energy and synthesis of new ideas.

An important precept underpinning new materialism and intra-action is that it challenges dualism. There are no clear boundaries between the material and the body between being and knowing. Being actively provided with the opportunities to intra-act with matter bridges the gaps between nonhuman and human. This has important implications for teaching and learning and the role that intra-action has in an individual's own learning experience. The year 9 student appears to recognise this essential and continual interplay in her

concluding lines 20-22, where the ongoing intra-action of the student, their material, their understanding, their location at that point in time and much more creates unique material-discursive intra-actions, where knowledge making is generated. Barad sees our presence as 'being-of-the-world' (Lenz Taguchi, 2010:51) (Barad, 2007:160). By hyphenating the phrase, she highlights the interconnectedness between human and nonhuman. This has implications for the study of art and design, a subject which depends on and harnessing the entanglements between human and nonhuman and provides unique opportunities within the curriculum for students to be-of-the-world.

When the students were initially composing the poems on the computer, and I had introduced the lesson with how they might go about it I asked them to write about what it feels like to create. However, shortly after I had finished, they almost instantly went onto checking websites for rhyming words or possible antonyms etc. This shocked me at first, as it wasn't something that I had encouraged them to do. As the lesson progressed, I understood that this 'go to' approach would have been what they would have done for other subjects. I also realised that they were using the facilities that the computers offered -apparatuses to help convey their meaning; they were quite simply as Barad suggested as, 'being-of the-world'. At least one student appeared not to be influenced by the endless websites offering alternative ways to construct her poem. Her poem was written with speed and captures the rawness and uncertainty of the creative process.

Student 3

Year 9 Poem created in response to 'Art Learning Journey'

Written as composed by the student.

Line	
1	**Intaglio, intensity, expression, research, detail**
2	I am a creator of ideas, a designer that is ready to work weekends.
3	Every journey has a beginnings an ends
4	I started mine nervous but used this as a fuel for my craft.

5	Each time getting it wrong.
6	Draft after draft.
7	**Specify, time management, abstract, creation**
8	Our thoughts direct ways in the journey
9	Sometimes I felt deflated
10	But I learnt, each creation showcases
11	When you glance at my work you catch part of me
12	My own personal journey, it was meant to be.
13	**satisfaction, stress, excitement, rush**
14	Both positive and negative is what it consists of
15	This unavoidable journey
16	Can make you pleased but also worry
17	That's fine

Line 8 is striking, as Student 3 suggests that her mind is the tool that solely offers direction to her work, yet this as she hints can lead to disappointment as outlined in line 9. Then in lines 10-11 it is acknowledged that each material creation evidences who she is becoming. Diffractively lines 10-12 acted as a prompt to remind me of the quotation that initially gave me an insight into the importance that new materialism has in relation to art education and the potential that it must enable us to challenge dualities,

> In shifting the prioritizing of mind over matter, human over thing, culture over nature, materialism with its attention to affect, movement, and agential matter develops theoretical possibilities where art is no longer understood as a reflection of reality, but as intensities and dynamic flows. (Springgay and Rotas, 2015:553)

In line with Springgay and Rotas' questioning of power and dominance of the duality that mind has had over matter historically, Student 3 suggests that her physical work in actual fact offers an insight into who she is. Lines 11 and 12 appear to acknowledge the outcome of the intra-action between being and matter; that of a physical representation of who she is entangled and expressed through the material used. Line 15 seems to make reference to the

student's own agency acted out through their own making which is referred to as, 'This unavoidable journey'. Deleuze notes that a painter standing in front of their white canvas will respond to so much more than just the canvas that they have in front of them. They will bring with them their life experience and knowledge.

> The painter has many things in his head, or around him, or in his studio. Now everything he has in his head or around him is already on the canvas, more or less virtually, more or less actually, before he begins his work. (Deleuze, 2005:71)

The student brings with her all that she has experienced both inside and outside their educational journey and by working through a creative process it helps her to draw on that agency of 'being-of-the-world' (Barad, 2007:160) (Lenz Taguchi, 2010:51) and in that moment.

On occasion, I ask the students to be present with me in the room. Initially, it baffles them as to what this means but I explain that what I want is for them to be engaged and focused in the here and now. To commit whole-heartedly and believe in what they are doing in that present time and space; to allow themselves to be absorbed. This is exactly what I felt Student 3 was doing while she composed her poem. She was articulating her thoughts at that moment within her own situatedness and energy. She recognised her own insecurities, her hesitancy, the emotional investment, and challenges that were faced in the creative process to create something that was a reflection and voice of herself. In his writing, Atkinson seems to address what he calls, 'the force of art' (Atkinson, 2017:133), as he sees this as the immanence of how something matters to both the individual engaged in the art experience, and consequently stretches the teacher (Atkinson, 2017). The honesty and immediacy of this poem hit home in how the student had felt safe in that moment to share her vulnerability. I was both humbled and felt respect for the student. Atkinson continues by making a clear connection between mattering and art education:

> This notion of 'mattering' in the context of art practice and learning cannot be separated from the *force of art* which is the motive force for

> learning and which expands our understanding of what learning and 'art' can become. (Atkinson, 2017:133)

Being entangled in the engagement of creating generates a force or energy that allows making to be enacted and become real.

The next poem is one that didn't resonate with me initially when the work was being created, it appears to have slipped by me. Not until I reintroduced myself to the data later did it begin to stand out. This poem provides a student's insightful and personal understanding of what the creative process means to the student, characterised by intra-actions between emotive agency and materiality. MacLure states that some pieces of data 'glow' and that this evokes meaning in the whole self by 'resonating in the body as well as the brain' (MacLure, 2013:661). When I read this poem again sometime after it had been initially written, I was struck by what I felt was this student's open display of quiet resolve and emotional intelligence. I found that the student was able to clearly encapsulate the connection for her between being a creative individual and what it means to engage and make.

Student 4

Year 9 Poem created in response to 'Art Learning Journey'

Written as composed by the student.

Line	
1	Through imagination
2	We have gained the capability
3	To create the impossible
4	To express feelings visually
5	It's to escape our world
6	Of fear and anxiety
7	By using a paintbrush
8	To paint another reality

9	Photoshop, charcoal
10	You can use whatever
11	It's therapeutic way
12	To make yourself feel better
13	An unforgettable experience
14	Or a place of uncertainty
15	Every day is a challenge
16	It's a place of diversity

The more that I read this poem the more in awe I am of the student for feeling both safe and secure enough to both write and share this well-constructed and considered poem. The poem shows a vulnerability to her environment (lines 5 and 6) that can be eased or partially met by being creative (lines 1-4) using an array of different media and tools (lines 7-9). The creative process though, she warns in lines 14-15 can lead to a sense of unease and challenge with maybe too much choice or possible unpredictability. This pedagogical document (Lenz Taguchi, 2010) captures the inter-connectedness of her imagined world with that of the material world that she illustrates. The subsequent intra-actions between her own agency and that of the creative process in which the tools used as she lists (paintbrush, Photoshop and charcoal) are used to intra-act to create new meaning for that student.

5.5- Emotions in Making

The emotional investment involved in the creative process itself is ever-present. I have never felt the need to question or query it, as I have always just accepted that art and design can involve a roller coaster of emotions. I have spent my whole creative career managing them, responding to them and where possible harnessing them. Kiverstein and Miler investigated the correlation between individuals who participate in activities that have clear

purpose with that of their emotional and cognitive engagement. They comment,

> The brain areas that neuroimaging studies identify as being active when people perform tasks that engage emotional and cognitive processes turn out to be in constant and continuous interaction. We've also argued that emotional processes take place in the living body of the organism in its interactions with an environment rich with affordances. Given that there is no separating emotion and cognition it follows that cognitive functions likewise deeply depend on the whole living body of the organism in its engagement with an environment rich with affordances. (Kiverstein and Miller, 2015:10)

I can probably say that I have underplayed their importance of emotions seeing them as a by-product of the creative process rather than being central and entangled with helping us all to regulate our ongoing affective positionality between our internal and external worlds (Damasio, 2019:102). The writing by Kiverstein and Miler help challenge deeply entrenched cultural thinking of 'mind over matter'.

In my teaching career and as a Head of Department, I have learned to try to contain my emotions, as I have considered them to be unconducive in professional situations. I also know that my students will at times be affected by what they do in art and design and that they will experience the same full scope of emotions that I assume any creative person can. I have never denied or removed myself from the emotive component of the creative process but have probably underplayed its presence, keen to keep things manageable and productive. Throughout my career I have considered the affective nature of the subject to be due to the fact that being visual, students lay themselves open to what their peers think, as an image can be visually read much quicker than any essay or mathematical equation. Art is also a subject that can be very easily used to create and elicit an emotion (Kaufman and Baer, 2005:225). In terms of well-being creating art can be cathartic as Student 3 in her poem comments 'It's therapeutic way'. Students can also express strong emotions in relation to art in connection with how successful and authentic

they perceive that they are being in that moment or with the subject as a whole (Kaufman and Baer, 2005:232). The quantity and powerfulness of the affective language used by all three students' partially 'washed over' me until my attention was drawn to it by others reading the poems by the students and then offering informal feedback on them.

The emotive language used by all three students is largely negative. Emotionally charged words such as: anger, frustration, nervous, deflated, stress, worry, fear and anxiety are used in comparison to only a few more positive emotions like excitement. The making process by its very nature evokes emotion. The origin of emotion has its origins in Latin, 'emovere' which when broken down means, out and move. This suggests an exchange because to have an emotion is prompted by a reaction from one body towards another. Lenz Taguchi writes

> …in terms of the discursive being immanent to the material and the material being immanent to the discursive. This means that they depend upon each other and are mutually constitutive. (Lenz Taguchi, 2010:29)

So being engaged in a making process elicits a relationship between human and nonhuman and this relationship matters because within it there is an unknown power dynamic at play and that they are in constant intra-action. Rather interestingly it then suggests that within this relationship the power-production of the material and the discursive meaning-making doesn't start or ends but rather is continuous while in production. They intra-act. Barad also lists performativity as being the intra-actions between subject and object that hadn't pre-existed beforehand (Barad, 2007:89). Within any relationship there will be a tension brought about by underlying issues around struggle and power. The emotive tension fuels the creative process. It is the roller coaster of emotions that is directly impacted by the engagement with the material and the connection between the students and their materials. Damasio asks 'Why is the world of affect so often neglected or taken for granted when normal life is inconceivable without it?' (Damasio, 2019:101). This echoes my initial dismissal and later recognition of the centrality of affect within the

students' experiences of art and design. The uncertainty that the students experience when being creative can induce feelings of insecurity and the unknown as acknowledged by all three students feeling towards the production of their art. Damasio supports this stating that sensory stimuli can initiate insecurity with:

> The emotive responses triggered by the properties of sensory stimuli- colour, textures, shapes, acoustic properties- tend to produce, more often than not, a quiet perturbation of the body state. (Damasio, 2019:108)

The emotive responses by the students documented in their poems authenticated their vulnerability throughout the creative processes that they experienced. The connection between themselves, materials, and creative processes in what Student 3 coined as 'This unavoidable journey'. Diffractively, the students, processes and matter converge, and an important product of their experiences are emotions. These are central to the learning process and intrinsic to each individual and offers a great richness and vulnerability to their whole learning process throughout their Key Stage Three with relation to human and nonhuman being entwined with one another both now and in future intra-actions.

5.6- (Stages 4a and 4b)- Designing and Making the Collaborative Ceramic Forms

When designing and making the ceramic forms, the students worked collaboratively in table groups for the first time in the project. While making their clay wreaths, the students made their own individual component for their class wreath and then came together and arranged all the individual pieces together as one. In this part of the project the individuals within each group needed to work collaboratively on all components of the work sharing their ongoing experiences and design work through discussions. Both classes sat in friendship groups. The students then carried out a homework activity (N^{o}3) (Appendix 2) which involved researching their selected artists (see Appendix 4). One group selected Sandy Brown and the other Grayson Perry.

This task then helped inform their knowledge of how to respond to both the work of their selected artist and that of their teacher's ceramic work to create a piece that typified their learning journey.

The photographs presented within Figures 18-24 are associated with one group made up of six year 9 individuals. This was a cohesive group who had a clear and shared consensus of what they wanted to achieve. The interest for me lay in what they wanted to construct, as it posed inherent challenges from the outset that I felt the students might not have been aware of. This research group opted to look at both the work of the British contemporary ceramicist, Sandy Brown, and my own work. Both examples of work are hand built and use Majolica glazes and my work also uses ceramic decals. As a group the students designed the structure that they would like to make. During the first lesson of working with clay the students were encouraged to make a maquette (or an initial model) of their design. Students could resolve the making problems in paper or clay or both. This group decided to work in clay, and they immediately set about considering ways to construct the dome of the structure that they wanted to make. They started by cutting a circular slab then cutting a single line to the centre and constructing a cone (Figure 19). In my fieldnotes, I noted that they allowed themselves to make mistakes at this stage and to experiment with the possibilities of what they were doing and what they wanted to achieve. They had much discussion about staying true to their design and the visual links to their selected artists. This desire to remain as true as possible to their original and jointly agreed design became a self-directed performative measure which they related to the success of their outcome.

The students' heuristic experience of working directly with the clay to solve a set of specific problems drew upon the tacit knowledge that they had built up since joining the school in year 7: since creating a ceramic tile and a Terracotta Toy (Appendix 3) in their year 8. Once they decided that the cone construction was not a possible route to success, then the next step was to create the dome with slab construction. As they progressed with this, they soon realised

that the dome did not have the strength to sit on top of the base as it buckled in and collapsed (Figure 20). The big leap forward was when the group realised from previous experience that when clay slightly dries it goes what is called 'leather hard' and in this state clay can hold its own shape with more reliability. With this application of knowledge, they constructed the base and the dome (Figure 21) separately to complete the construction that they had intended (Figure 22). To ensure success the students also inserted a thick coil of clay as a vertical support in the inside linking the dome with the base to counteract any caving in. Thankfully, the piece fired successfully, and was glazed with Majolica glazes applied and then refired. Finally, the poem by Student 4 was applied as a decal along with other motifs that picked up visual links with both my work and that of Brown's. The piece then had its last firing. The completed construction is shown in Figure 23 and Figure 24.

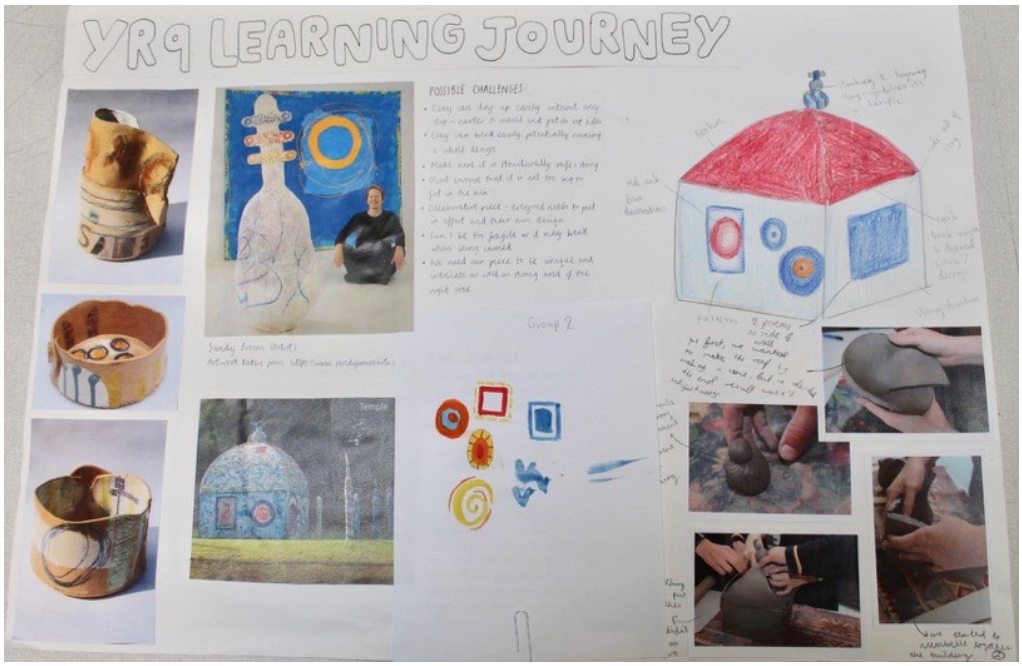

Figure 18
(Own image)

Figure 19
(Own image)

Figure 20
(Own image)

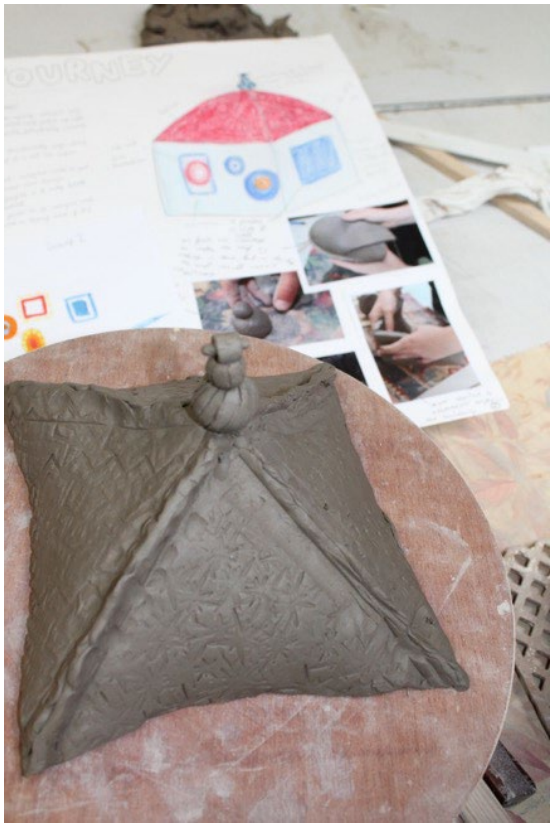

Figure 21
(Own image)

Figure 22
(Own image)

Figure 23
(Own image)

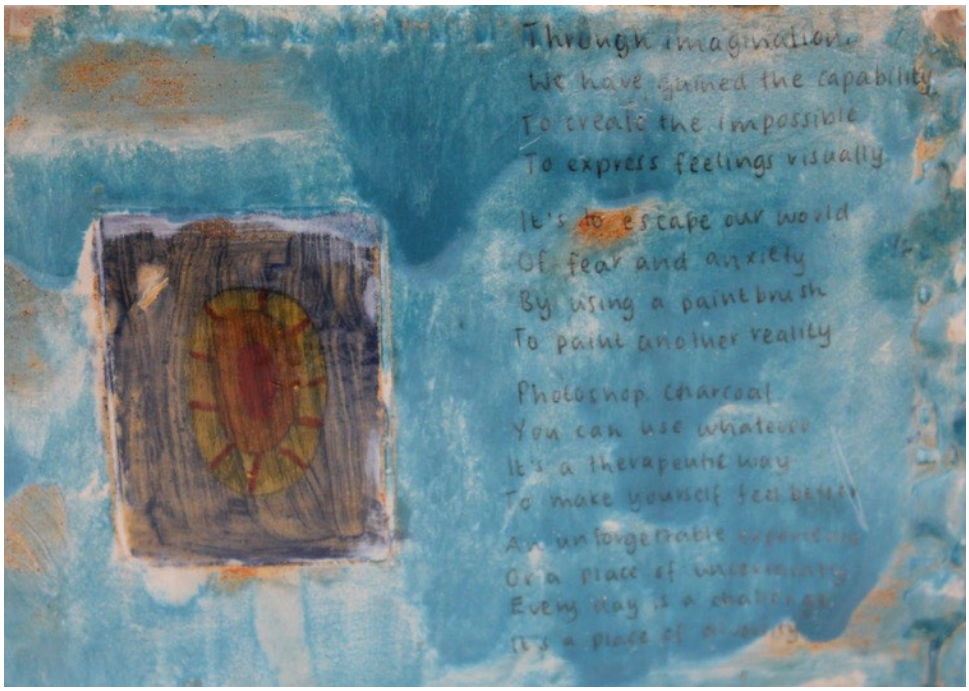

Figure 24
(Own image)

Through the student's shared experience, they were able to resolve challenges through their combined and ongoing adaptive heuristic knowledge of making created within material-discursive intra-activity. Barad writes,

> Making knowledge is not simply about making facts but about making worlds, or rather, it is about making specific worldly configurations- not in the sense of making them up ex nihilo, or out of language, beliefs or ideas, but in the sense of materiality engaging as part of the world in giving it specific material form. (Barad, 2007:91)

The students created their knowledge through the considered and ongoing intra-actions of actants both human and nonhuman to culminate in a body of work that responded to those entanglements at that time and in that moment of their learning journey.

5.7- (Stage 5)- One-Off Task- Making Pinch Pots Without Looking

While carrying out the research project with the year 9 students, I became aware of the writings and involvement of Roger Lemon with Clayground Collective. Lemon, a neurophysiologist, participated in a symposium to explore the role of hand skills' development in seeing, thinking, and learning. His words helped me to situate the importance of hands in the whole learning journey of the individual: not just to elevate the role of art and design as a subject to express our thoughts, create artefacts or to manage our wellbeing but more fundamentally to act as a vehicle to connect and engage with our material world. Lemon highlights the importance of how the flow of information passes through our bodies as we engage with the world physically with our hands.

> There are ten times as many channels of information feeding back from the hands to the brain as there are channels going out from your brain to your hands. Feedback or 'sensory re-afference' happens every time you move, handle a tool or explore a new surface. We move, not to move the world, but to generate sensory feedback, called haptics. (Rowntree et al., 2018:40)

This quote motivated me to try something out with my year 9 students. The students were at the point in their project, 'Art Learning Journey' where they had made a range of artefacts in clay. They had also all had a previous experience in year 8 of constructing a form using clay slab construction and

making two pinch pots. Motivated by the statement by Lemon, I set both classes the challenge of each student making a pinch pot. Each student was provided with a similar amount of clay that they initially shaped into a sphere. I then quickly demonstrated the pinch pot technique. To start the process, the clay sphere (Figure 25) is cupped in the holding hand. Initially the thumb of the other hand is pushed from the top through the centre of the clay and stops just short of piercing a hole through the whole piece. This action is guided by the index finger of the same hand and helps to judge the remaining depth that the thumb has still to go into the clay before piercing it. From this point the opposing finger and thumb inserted into the clay then methodically work in a spiral action up to the lip of the pot while all the time gently, evenly, and repeatedly pinching between the index finger and thumb. This repeated action creates a pinch pot (Figure 26).

Figure 25
Sphere of solid but soft clay.
(Own image)

Figure 26
Completed example of a pinch pot.
(Own image)

As this was a fun one-off task, I gave the students a fixed time to carry out the task but with great astonishment from the students, I then gave them the added challenge of making the pinch pot with their hands underneath their tables. This was so that they couldn't see what they were doing and that they would need to completely rely on the information being channelled between their hands and their brains. The students had a sense of urgency about what they were doing. Many of them exclaimed all sorts of disclaimers about what they were making and how it was all going terribly wrong, and it was a complete failure while forming the clay spheres out of their sight. When I

called time, they placed their small pinch pots on their tables. They realised that maybe they hadn't done so bad after all! They then all huddled around a table, and we took a photograph to evidence the experience (Figure 27 and 28). The orange arrows denote the flow of information from past experiences that have been relived and refined through haptic experience of working with a material that they have grown to understand and respond to with growing confidence. The simplicity of the act of students working clay with only their hands was generated an energy within the students. The connection between human and nonhuman felt like play but refined the sensory feedback between their hands and their brains. The students engaged with the clay without hesitation, they problem solved, and they were in tune with the act of making, doing and learning. Through carrying out such experiences, linguist and anthropologist, Shirley Brice Heath comments that children,

> …feel, see, and sense differences not only by visual discernment but also haptic exploration that conveys information on weight, texture, and density of objects. (Rowntree et al., 2018:40)

The inclusion of this one-off task in which the students engaged with so wholeheartedly, I feel supports Lemon's insight as to the importance of hands in making and the haptic awareness as espoused by Brice Heath.

Figure 27
One class of year 9 students with their pinch pots.
(Own image)

Figure 28
The other year 9 class with their pinch pots.
(Own image)

5.8- (Stage 6)- Completion of the 'And to Conclude…' Document

This final body of data (Appendix 2) was the completing of a reflective task. It enabled the students to directly capture their thoughts and insights about what they felt they had learned during their art and design learning journey as it was drawing to a close. This activity led to high levels of engagement from the students and became a rich source of data. Students were invited to respond to three questions within a 'Discuss and document' written piece. The students had a discussion with those on their table before they filled in their own sheet. The 3 questions were:

a. What did we learn?
b. Is the art and design learning journey important?
c. What do you want to tell those reading my research?

The students responded to these three questions and as I read them, I became aware that some might have been influenced by my insights and views as I presented the task verbally to them. I became aware of this as I later read some of the responses as some had used vocabulary that they may have heard me using such as 'heuristic', which the students would not have necessarily used themselves. Reflexivity is the practice in social sciences for

accounting for and acknowledging awareness in identifying the researcher's own personal impact and bias within the research project and the subsequent bias that this might impart on the research project (Smartt Gullion, 2018:85). Barad is critical of reflexivity instead preferring to acknowledge that it is impossible to mitigate against all examples of perceived bias by the researcher and in my case both teacher and researcher. However, Smartt Gullion writes that to truly practice reflexivity a distance needs to be maintained between the researcher and the researched (Smartt Gullion, 2018:89). As their teacher and researcher, this distance is not possible either physically or ideologically. I am wholeheartedly situated in the classroom with the students. Barad accepts this positionality, preferring to analyse the data through diffraction and the inevitable ensuing entanglements rather than denying their existence. Through diffraction, '…we learn about phenomena-about specific material configurations of the world's becoming.' (Barad, 2007:91). These are the ongoing entanglements that are both human and nonhuman. It is through this analysis that I hope that I am focusing on what matters and that is the ongoing human and nonhuman relationship in the creative process.

The responses that I have mainly selected are ones that offer some insights on behalf of the student body to the research aim and how the students perceived, valued and how they felt they benefited from studying art and design. However, I acknowledge that at the point of setting this task I wasn't sure of which way the data would be leading nor the important aspects that would be illuminated through the diffractive analysis such as the pivotal role that emotions play. The questions asked were also not making any attempt to provide a comprehensive account of all aspects of art and design education but rather provide snippets from the voices of the students in the research cohort.

a. What did we learn?

One student responded by writing,

> We learnt how to combine different elements to create our own pieces and then transfer ideas we have in our heads and make them

> reality. We also learnt to use logic to solve problems that are unexpected and to not overthink but instead let our hands tell our brain what to do rather than the other way around when we made pinch pots without looking. (Year 9 student, own sketchbook)

This student made a clear link between the cerebral processes and the haptic and tacit approach and having more faith in her own abilities and connecting with the immediate process and materials at hand, such as working with clay without looking at it, thus prioritising matter over mind.

b. Is the art and design learning journey important?

Another student responded to this second question with,

> I think it is because we learn how to think creatively and work practically with our hands, combining our brain with our hands is a big advantage to our future as we do this a lot with different jobs. Learning and adapting to different materials help us to face new problems with no experience. (Year 9 student, own sketchbook)

The student suggests that being adaptable and responsive to materials could empower her to respond with the growing tacit knowing to fresh challenges during her onward journey and that creative mindset is transferrable across many types of occupations. Ingold writes that the spirit of an inquiry is rooted in the very flow of working with materials (Ingold, 2013:6) and that, 'These materials think in us, as we think through them.' (Ingold, 2013:6). Ingold writes that he sees this ability to inquire as an ever-evolving experimental journey for each individual as they move forward and 'Far from answering to their plans and predictions, it joins with them in their hopes and dreams' (Ingold, 2013:7). The student senses that the adaptive material knowledge acquired will move forward with her as she moves on in her learning journey.

The following response from a student resonates with the origins of hope in order to meet challenges that we face as posed by Guattari, 'The immense ordeals which the planet is going through…' (Guattari, 1995:134) and how teaching differently can go some way to ward off an impending catastrophe. The student writes how the art and design journey is important because,

> It helps develop skills using different materials. It encourages us to be creative and think of solutions to fix problems that might occur. It encourages us to experiment and try different methods. (Year 9 student, own sketchbook)

The knowledge gained by this year 9 student has been gained within the act of making and not looking at it from the outside. Her knowledge of making isn't voyeuristic but heuristic. This approach is focused on by O'Connor in her enacted ethnographic study (O'Connor, 2017) of her learning to blow glass. She writes from within the process and not as an outsider and this like the year 9 student gives her the confidence to build up her knowledge and to be able to be adaptive and solve problems as they arise. Both of the above students comment on the synergy and the validity of what occurs within the creative process in relationship to working with materials that both instigates and empowers from within. Diffractive analysis draws our attention to these points of interest within the creative process.

c. What do you want to tell those reading my research?

With this last question, the students were given the opportunity to speak directly to those reading my research. Two comments jumped out of the page and left me feeling humbled by their enormity. One student linked the act of making with the history of mankind:

> Art is a universal language and is vital to human life and plays a great part in culture. It records what word-based history can't. It is a subject we can express ourselves without limits. (Year 9 student, own sketchbook)

This insightful comment points out that artistic creations are a mainstay of the human condition and help us to illustrate our thoughts, desires, and deeds. Guattari understands the importance of what he refers to as 'artistic cartographies' (Guattari, 1995:130) and comments on the importance of the cave paintings in Lascaux, the graffiti in Soho and the cathedrals of the world being testament to the human need to make and communicate visually.

Another student made a similar observation with the following comment that left me feeling awe at the student's depth of insight: 'Art is my third language at GCSE.' (Year 9 student, own sketchbook). The student acknowledges that as part of her English Baccalaureate (EBacc) where she would have to take English and a modern or ancient language, her third language that is the one that she opted for was going to be art and design. This implies that maybe this subject allows her to express herself visually and through working with materials. Both students linked what they felt about art with language: a way with which they were able to visually express themselves and physically carry out their work with their hands to create art and artefacts. Similarly, Ingold acknowledges how Heidegger values the role of hands in executing the essence of man with:

> 'Man does not "have" hands, but the hand holds the essence of man, because the word as the essential realm of the hand is the ground of the essence of man.' (Ingold, 2013:113)

Ingold then goes on to explain that language comes from the hand in that the hand is the conduit for language whether it be text or artefact (Ingold, 2013:113). Both students indeed celebrate art as a visual language that can give them a valid voice to express themselves.

At the start of this chapter the perception and validity of art and design as a subject area within the curriculum was questioned through the students' mind-map. Use of language and dominant historical thinking of mind over matter, theory over practice was diffractively analysed. The power of emotions generated through the engagement with matter proved to be an important theme for students and this was analysed in the production of their poems. The making processes that the students were directly entangled with such as making their ceramic wreaths and ceramic outcomes throughout the research project helped the students make sense of their immediate worlds. The importance of engaging with matter during their learning journey for their cognitive development was diffractively analysed and the intrinsic role that this plays for each student. Finally, the understated input that ancillary

processes and apparatuses enact throughout the learning process is diffractively brought to the fore.

Throughout this chapter the aim of the research was initiated through the research questions posed. The engagement with matter in the whole process of making and doing is important. Students valued input into the whole process, and this helped them engage with the whole process and they understood that this linked on many levels to their own learning journey. The working with matter, tools and the possibility of expressing their own ideas was intrinsic to each student and this was enabled through the practice. Emotions were instigated through the making and this is a vital outlet for the students to mediate and understand.

Chapter 6 - Discussion Chapter

6.0- Introduction to the Discussion Chapter

This chapter is a continuation and further refinement of the Data Analysis Chapter. It has proved to be a natural progression that has helped to further challenge and develop my ongoing research holistically towards addressing the research questions. Whereas in the Data Analysis Chapter I systematically analysed each of the tasks separately: in this chapter the analysis pulls away from the more linear exploration of the data as it was produced, instead it draws broader diffractive readings from the research project as a whole. Thus, pulling out themes in response to the initial research aims, questions and objectives. As the research project has progressed, my multiple identities as teacher, practitioner and researcher have been naturally entwining and entangling with one another. As I return to my initial aims, I acknowledge that the project has drawn my attention not only to the students' experience within the art and design classroom but also external factors that impact upon the learning journey. These ongoing intra-actions between what I will be referring to as the intrinsic and extrinsic forces, are themselves becoming an attribute in how I approach my research. Mason writes about research as being an extension of showing expertise. He writes that being a researcher is about being able to query and challenge that which you have become sensitised to (Mason, 2002:177). One such aspect that I was becoming sensitised to throughout the research project was the role that emotions played in the art and design learning journey for the year 9 cohort.

As a well-established teacher and head of department, I am in a constant active process of absorbing, fielding and shielding external factors in the delivery of the art and design curriculum. As an art and design specialist, I am in-tune with art practices and have a natural inclination towards them. Ultimately, all of these different components are brought with me into my practice and are in constant flux and now they are converging into my research practice. Mason (Mason, 2002:177-178) further explains that by becoming an experienced researcher you should be able to respond to what happens intuitively rather than just following fixed protocol. This educative

research process that I have subsumed myself into is allowing me to re-evaluate what I encounter in my classroom and to further diffractively analyse the data that have been gathered. This reflexive practice has provided me with the space to continue to consolidate new readings of my data. The data was gathered by means of Arts-based Research (ABR). As a methodology, ABR allows for both expansion and contraction of processes and collection of data. This in turn must allow for a more liberal diffractive analysis of the data and this has proved important to my extrapolation of my thinking towards considering the aims of the research project. As Leavy writes,

> ABR requires us to think in these different ways as we develop projects, make sense of what we have learned, and transform the essence of what we have learned into a coherent expression. (Leavy, 2018:11)

This Discussion Chapter is a further and extended explication from the Data Analysis chapter, and it is my intention to offer a further layer of interpretation of the data. It does not intend to provide a conflicting reading but rather to provide further depth and illustrate an extension of my understanding and insights.

The intention is to continue to pull together the main strands of thinking that have evolved throughout the research and analysis to date related to statutory Key Stage Three art and design education. Then to evaluate and consider the impact they have had on my research aims. The following are a summary of the main strands of my extended thinking:

- The use of specific wording in both statutory documentation and by educational bodies that could be perceived as being language of control.
- The emotive charged language that the students use in relationship to themselves and the creative processes that they take part in during their art and design lessons.
- The process of learning is analysed in terms of pedagogical procedures within the act of making and doing.

- Then some light is shed on the intrinsic force within each of us that moves us to make and do. This is counterbalanced by extrinsic forces that impact on us from the exterior.
- Finally, there is a section examining the moral principles of human and nonhuman intra-actions in knowledge making and the crucial role that apparatuses play.

6.1- The Use of Language- External

As discussed in earlier chapters, the use of language in statutory documentation and other policy texts relating to art and design education have played an insidiously dismissive and undermining role in art and design's position in education. The continuing use of hierarchical language of 'core' and 'foundation' since the inception of the national curriculum in 1988 creates a division between subjects which are positioned as more or less important. Another example of the destructive and undermining language used in education to promote a hierarchy of subjects was used by the examination board, Oxford, Cambridge and RSA Examinations (OCR). When reflecting on the insights, that the project has generated in relation to the distinctiveness of art and design as a subject, I considered that the following derogatory language, while not a policy text was relevant. The following is nonetheless a powerful example of the language used to dominate and control. In 2016 the coalition government of the Conservatives and the Liberal Democrats introduced a new structure that all GCSE students needed to comply with, which was called the English Baccalaureate (EBacc). Within this continuing system students must study English and mathematics. They then select three other EBacc nominated subjects from sciences, computer science, geography, history and languages and finally a further three subjects are selected from the remaining subjects not already listed, which includes art and design. The rather complicated process for measuring the success of each student against the EBacc was called, Progress 8. The calculation of Progress 8 gives higher weighting to English, Maths and then the three selected subjects from science, computer science, geography, and history. Then the final block

of subjects, that includes art and design might or might not be used to calculate the students' Progress 8 score. OCR in their explanation referred to these three blocks as 'Core', 'EBacc' and 'Other'. It also stated in its explanation of Progress 8 used by both schools and parents that,

> Maths and English are core in the measure. There are then 3 'buckets' or 'slots' for EBacc subjects and then 3 extra 'buckets' or 'slots' to make 8 in total. (Oxford Cambridge and RSA, 2016:1)

So, art and design is delegated to the third bucket titled 'Other' and it might or might not be used to contribute towards the student's Progress 8 score. Such formulisation is underpinned what Ball et al, coined as being a 'performance culture' and an 'audit culture' (Ball et al., 2012:514). The goal is improved performance, but the performance being defined in such a way that maths and English take priority. Such policy enactments negate the value of art and design (as well as other foundation subjects) in students' holistic learning journeys. The immediate result of the implication of the EBacc was that the number of entries to do GCSE art and design fell in 2016 by 6% (NSEAD, 2016). The polarisation of language (core/ foundation) and lack of inclusion of art and design education throughout historical government statutory policy is seen throughout, apart from the insights hidden deep in the pages of the 1959 Crowther Report and more explicitly in the 1960 Coldstream Report.

More recently in Ofsted documentation there is an apparent push to highlight areas in the curriculum that showcase the student's application of 'skills' and 'knowledge' (Ofsted, 2019). This provides a more recent example of how the language of difference is used within the curriculum to position particular types of learning, which as Ofsted, recognise themselves has led to '… a divisive debate…' (Ofsted, 2019:8) arising from the use of these two loaded nouns. Within this same document, there is a definition of the word skill but not knowledge. The unproductive conversations initiated around this will probably be just as polarising as previous language that created hierarchy as previously discussed. Rather, the centralised route of terming them both as 'knowing', as favoured by Michael Polanyi would be preferrable and inclusive.

He writes, 'I shall always speak of "knowing," therefore, to cover both practical and theoretical knowledge.' (Polanyi, 1983:7). In education it is time to acknowledge the importance of challenging ourselves to remove historically imposed hierarchies (Hood and Kraehe, 2017). Barad simply queries, 'How did language come to be more trustworthy than matter?' (Barad, 2003:801). She argues that language has been granted too much power in order to provide a platform to control and determine our relationship with our world, arguing that '… performativity is precisely a contestation of the excessive power granted to language to determine what is real' (Barad, 2003:208). So rather than accepting a language that is contrived and set to control, is it not worth engaging with matter and giving voice to the entanglements that engage us with matter that allow us to grow through haptics from within? Barad offers us,

> …an elaboration of performativity- a materialist, naturalist, and posthumanist elaboration-that allows matter its due as an active participant in the world's becoming, in its ongoing "intra-activity". (Barad, 2003:203)

Within my own autobiographical journey as an educator over the years, I have been externally shaped and zapped by the imposed language of educational policy which has had an impact on how the subject is seen by those who hold hierarchical language as central and defining to the remit and purpose of education. However, I have learned through my career to know that such hierarchical language exists, acknowledge it, and then work around it, and then finally in despite of it, to design and deliver a curriculum that is engaging and varied. In hindsight my approach is very much centred on the ethos of the learning that I encountered at both foundation art and design level, and then later at degree level. My own formative experience was very much centred on the making and working directly with materials. Over this time, I gained an understanding of what was possible when working with materials over an extended period, and indeed the intrinsic value of knowing became apparent both as a maker and an individual through my own learning journey. The language of the national curriculum, which focuses on outcomes, feels very disconnected from these experiences, and does not acknowledge the value of

making and doing in the classroom. It presents a vision of learning that is sterilised. By diffractively analysing the language used in art education both at policy and examination board level over varying periods of time it becomes apparent that there is an undermining hierarchical language that appears to be used without due care that impacts extrinsically on the subject and in the case offered can reduce the student uptake at examination level.

6.2- The Use of Language- Internal

'It is vitally important that we understand how matter matters' (Barad, 2003:203). This quote by Barad, I believe is central to the crucial role that art and design can play in education. Throughout the research project students worked with a range of materials and apparatuses to make and create their developing work. Throughout the whole process of making and doing in art and design the students were enmeshed in their very own material-discursive intra-activity between human and nonhuman. Through the ensuing agential cuts, new material-discursive phenomena were continually being created and through these developing relationships with nonhuman matter, emotions were elicited within the students as exampled by their poems. These emotions (which weren't always positive) were generated from within the process. The project was challenging throughout, but matched the student's ability to access the project, (as evidenced by the quality of their work). However, the students responded individually and emotively as a result of the material-discursive phenomena created from the agential cuts intra-acting within each of their own lived experiences. This created both pieces of work but also emotions that presented themselves in their poems. The relationship that was created within the processes was authentic and tangible. Dennis Atkinson uses the phrase 'poietic materialism' (Atkinson, 2017:134) meaning that through the learning process encountered by the students ongoing intra-activity with the materials used, new and valid outcomes were created both physically and relationally with the matter and themselves. The language used in the poems referenced in the Data Analysis Chapter refers to both feared

limitations but also to hopeful expectations, as we can see in a section of Students 3's poem,

My own personal journey, it was meant to be.
satisfaction, stress, excitement, rush
Both positive and negative is what it consists of
This unavoidable journey

Section of poem by Student 3 (Lines 12-15) (see page 116)

This language used appears to be authentic and real to the students at that time in their development and it was liberated by means of their individual encounters with matter. This is I feel is when matter, matters and from that a respect for matter can be born. Strong emotions were generated within the classroom environment by the students intra-acting with matter. They learned to respond and react to situations. Not only did they develop their haptic knowing but also worked towards navigating their own emotions. These emotions were both in relation to themselves and the matter with which they were working with. The students actively engaged with the material that they worked with and by actively understanding matter now, they will hopefully engage with it in the future in other forms.

6.3- Procedural Versus the Vitality of Making and Doing

Throughout both my teaching career and my own education to date, I have happily explored and internalised theories offering possible insights into understanding how the creative learning experience for students is generated. I will now briefly revisit some of these ideas in order to illustrate how these different models of learning don't fully capture the essence and vitality of the making process. In fact, all of the models relate to the learner and the ways to optimise their learning. None of them focus on the importance of the relationship between the learner, matter, and the apparatuses, which are key constituents of the making process. Rather they focus on the procedural and itemise the factors that need to be met by a learner before proceeding onto

the next step towards drawing the process to a close. One such theory that I became familiar with early on in my professional learning was Vygotsky's Zone of Proximal Development which offers a scaffolding structure that allows individuals the security of their acquired knowledge to give them the confidence to move forward practically with their learning. Maybe exploring how the thought process manifests itself, as written by Wallas (see Chapter 3), offers an insight into the creative process:

1. Preparation- The problem is explored in different ways.
2. Incubation- Latently thinking about the problem.
3. Illumination- When the solution to the problem makes itself apparent.
4. Verification- The solution is carried out. (Wallas, 2014:37-39)

Ken Robinson with Lou Aronica have jointly written about recognising the processes through which we work, in order to understand what makes each of us buzz and to take ownership in what we are good at, which they call 'Finding your element…' (Robinson and Aronica, 2010:8). As briefly explored earlier, Csikszentmihalyi (see Chapter 3) has written extensively about the optimum conditions throughout a process that needs to be met before both creativity and flow can be experienced so that they can be considered be to Creative and/or working in an autotelic state.

However, as the research project developed and I witnessed the students engaging with their work, I started to become aware of the immediacy and directness of the learning being experienced in the now. This directness of learning was happening throughout the whole project but was evidenced particularly clearly in the ceramic house-like construction, which the students created (inspired by Sandy Brown). The photographs analysed in the Data Analysis chapter (see Figures 19-24) reflect the direct engagement with clay during that '…being-of-the-world…' (Barad, 2007:160) haptic learning experience that was being directly engaged with heuristically. Throughout the whole project the students were building on the knowledge gained in previous experiences (see Appendix 3), but they were also being guided and informed by my instructions, which themselves emerged from my own first-hand knowledge of working with ceramics. These experiences provided the

scaffolding of knowing through prior engagement with the clay, needed to support the students to progress through the Zone of Proximal Development (Moll, 1990). The students worked through a process as outlined by Wallas, of identifying the creative problem that they wanted to resolve and experimenting **(Preparation)**, consolidating their ideas **(Incubation)** and then understanding what they needed to do to resolve it **(Illumination)** and then finally creating their successful outcomes **(Verification).** This process was followed by all the groups in the completion of the ceramic pieces. Finally, most or all of the conditions documented (see pages 47-48) by Csikszentmihalyi were available for both flow to be optimised and creative practice to occur as the outcomes were documented in the student's sketchbooks, group design sheets and in their final pieces.

As the research project progressed, I started to understand that there was a separation between the 'procedural' part of art with the 'act of making and doing'. I started to differentiate progressing through a learning experience in which pedagogical procedures are implemented to ensure students find their element as outlined by Robinson or by understanding the stages of the creative process as written by Wallas. The procedural can be seen as the breaking down of the making to understand creativity or how to optimise a sense of flow as written extensively by Csikszentmihalyi. The procedural could be setting in place strategies to ensure that progress is sustained and achievable in such a way as outlined by Vygotsky.

What struck me when revisiting these pedagogical ideas, is that while they could arguably be applied to all subjects within education, they do not fully capture the power and capacity generated when engaging with materials within the art and design education. Barad writes,

> …knowledge practices have material consequences but the *practices of knowing are specific material engagements that participate in (re)configuring the world.* Which practices we enact matter - in both senses of the word. (Barad, 2007: 91)

The pedagogical ideas outlined above are transferrable to other disciplines both in education and other modes of experiencing and doing. However, art and design is especially experience rich, and where each student has the opportunity to handle materials and matter and engage with the continually dynamic relationship between human and nonhuman. As Michael Polanyi wrote '…the act of discovery appears personal and indeterminate.' (Polanyi, 1983:75). There is an uncertainty in art and design which can be unpredictable and unknown: the tacit awareness that each member of the class brought with them, the individual's access and level of heuristic experience that has been built up over time all varies. This melting pot of human and nonhuman actants results in what Atkinson refers to as a '…pedagogy of adventure…' (Atkinson, 2017:130). This adventure is novel for all and is centred around the ongoing material-discursive intra-activity and not the final outcomes. Atkinson defines this as follows,

> The ontology of this force is not located within art objects in whatever form but in the process of a relational ontogenesis, the process of becoming of art's event. (Atkinson,2017:133)

At the centre of the whole creative process are the intra-actions between human and nonhuman actants in that moment. Intrinsic to the process of making the final ceramic pieces (see Figures 19-24) were the student's moment to moment handling of the clay. Each moment within the making process was informed by all their previous experiences including the creation/ exploration of their mind maps, clay wreaths, poems, artists' research, and maquette making. All these experiences were in essence theory that informed the final ceramic outcomes. As Bolt referred to the '…double articulation between theory and practice…' (Barrett and Bolt, 2010:29) where both theory and practice emerge through their intra-action. They all had their own specific problems and challenges that they overcame by working with the clay directly (see Appendix 5 with photos of each of the final pieces and their corresponding design sheets).

What I started to understand as being central to the whole process was the student's opportunity to actually handle and work with the clay. The

physicality and investment involved to shape and work with a material in a way that responded to the properties of the medium with success. The power, challenge and dynamics involved in creating a new artefact using nonhuman material and working with the properties of the medium through their acquired skills to create an outcome that matched their intended expectations. The creation of work by the students was original to them and their individual group. The vitality of the intra-action between the human and the nonhuman appears to be central to the aim of this research.

6.4- Extrinsic and Intrinsic Forces

During my research, I sketched out two motifs (see Figures 29 and 30) which I jotted down on many occasions as they helped me to visualise and illustrate the significance of the creative embodied experience for the individual and for both the year 9 students and myself. The two components making up both motifs (circles and arrows) are purposely imprecise and a bit messy, reflecting the organic nature of a creative embodied experience.

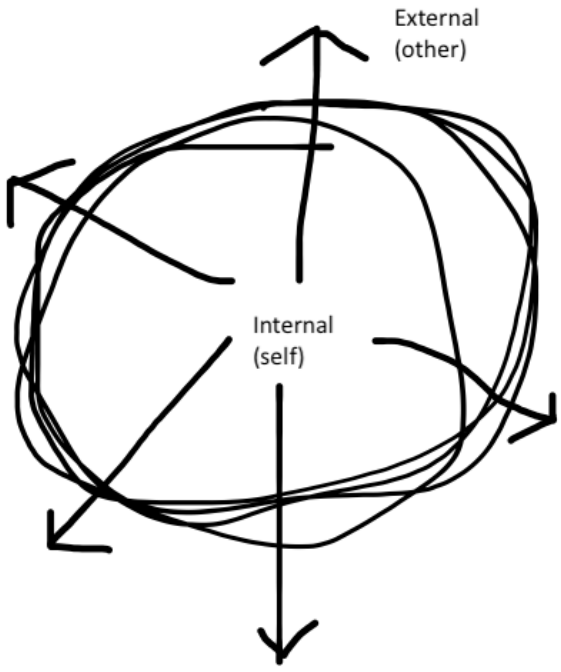

Figure 29 Intrinsic (Embodied Learning Experience)(Own image)

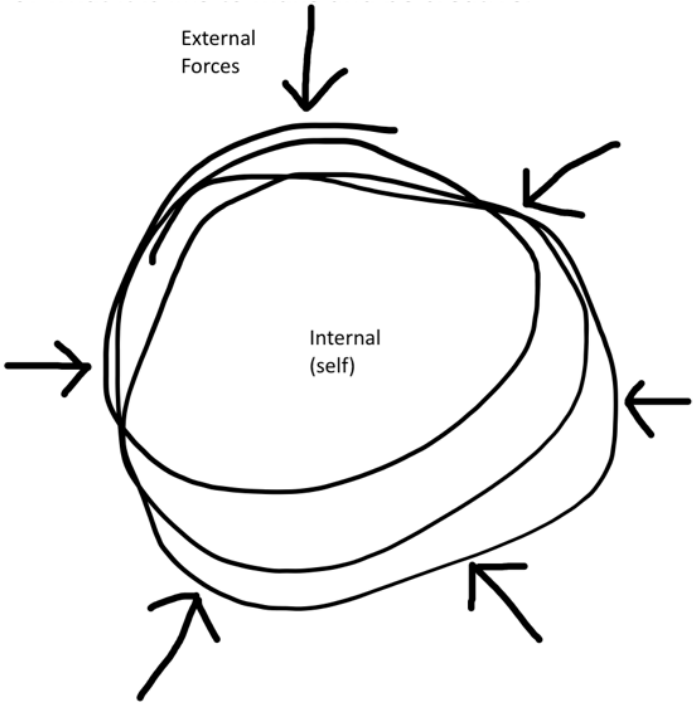

Figure 30 Extrinsic (Imposed Learning Experience) (Own image)

Figures 29 and 30 illustrate both the internal forces and external forces that impact on the creative process and are therefore significant elements within art and design education. I first drew the motifs when reading a book inspired by the artist, Francis Bacon titled, Francis Bacon-The Logic of Sensation (Deleuze, 2005). I was interested in gaining an insight into Deleuze's understanding of Bacon, his work and the creative process. In the 2002 second edition (of 129 pages), an editorial decision was made not to include any images by the artist, or any other artists referred to in the text. There are however, 112 references made to images throughout the book. The ideas theorised by Deleuze are completely left to the written word. In the translator's instruction at the start of the book the reader is informed that the images are widely available elsewhere both online and in catalogues. The first edition of the book was published as a two-set volume, with Deleuze's essays in one and the images in the other. The fundamental problem remained with me that images were not displayed with the text. As I read the book, I created a Word document to collate most of the images that were referred to in the writing. Some were not accessible as they were kept within private collections. I needed the images to be able to access Deleuze's theorising about Bacon's work, otherwise the text would remain unchallenged and not

internalised by me as the reader. This conundrum was central to my growing view that pivotal to the creative process is the intra-action between human and nonhuman. Yet within Deleuze's work and elsewhere, the artefacts are often minimised at the expense of the narratives that people construct around them. It was the author's perceived narrative about the artefact rather that the maker's voice in relation to the materials and the act of making and doing being heard. Ingold agrees that in the field of anthropology it is usually the purpose of artefacts and their impact on culture that is foregrounded rather than the essence of the made object and its developmental origins (Ingold, 2013:7). Barad offers a helpful insight reminding us that our understanding isn't all about text, but rather an intra-action between everything becoming known to one another.

> Meaning is not the property of individual words or groups of words but an ongoing performance of the world in its differential dance of intelligibility and unintelligibility. (Barad, 2007: 149)

A further diffraction of the data offers insights that provide a clear voice to the action of making and doing that is intrinsic to art and design education and acknowledge that it is so embedded in the individual that it risks becoming untraceable (Ingold, 2013:109). This voice can be easily quietened and forgotten by louder and more dominant discourses. This project has been transformative in that it has brought to the forefront everything that I love and value in art and design, both as a practitioner and teacher: the experience of engaging with materials. In my initial project proposal, I articulated a desire to explore the following ideas as expressed by Springgay and Rotas,

> In shifting the prioritizing of mind over matter, human over thing, culture over nature, materialism with its attention to affect, movement, and agential matter develops theoretical possibilities where art is no longer understood as a reflection of reality, but as intensities and dynamic flows. (Springgay and Rotas, 2015:553)

The historical review conducted in Chapter 2 helped me to make sense that I exist in an educational system that both historically and currently continues to prioritise word over doing. Once I realised this, it empowered me to press

'reset' and see the process differently. It opened a lot more possibilities for my understanding of what creativity is and what it can mean in education. It isn't about the mind over matter but rather the mind and matter intra-acting and new knowledge being activated and generated between both the matter and ourselves, along with the affect that this evokes within us. It isn't about human over thing, but rather the ongoing material-discursive intra-activity that empowers us to get to know ourselves and the world that we inhabit. It isn't about culture over nature as the ever-intensifying effects of global warming continually remind us all. As argued by Barad,

> The belief that nature is mute and immutable and that all prospects for significance and change reside in culture merely reinscribes the nature-culture dualism that feminists actively contested. (Barad, 2007)

The art and design learning journey offers individuals rich opportunities to make and do in order to gain an ongoing understanding of their positionality within their knowing. The embodied learning journey (see Figure 29) is intrinsic to the individual. It is immanent. Through the engagement with the materials a relationship ensues, and this can be volatile, but it is ongoing. The students bring all their previous experience with them to their learning. As Barad writes, '…knowing is a matter of part of the world making itself intelligible to another part' (Barad, 2007:185). That is why the arrows flow from the internal (self) to the external (other). The students, and indeed all of us learn because there are no dualities present. This idea is embodied within Barad's powerful proposition that,

> We don't obtain knowledge by standing outside the world; we know because we are *of* the world. We are part of the world in its differential becoming. (Barad, 2007:185)

When Figure 30 is applied it suggests that any visual connections and interpretations of reading Deleuze's book, Francis Bacon-The Logic of Sensation (Deleuze, 2005a) were denied and that the written word was left unopposed or challenged. Yet such text is left to impact extrinsically on future interpretations of made artefacts. Such impact from the outside can also be seen in statutory documentation related to art education which is shoe-horned and packaged to fit the whole educational statutory and political

agenda as evidenced in the formative years of the national curriculum. In these cases, the written word imposes on the practice. In some of his most recent writing Atkinson opens up the practice, inferring that the immanence of a learner's experience is central to them and therefore becomes a rich pedagogical journey for the teacher as well. It is not as he writes simply,

> …a case of coming to understand art through established knowledge and practice (e.g., assessment criteria) but the force of art challenging us to think. (Atkinson, 2017:133)

This idea resonates with what I observed as the students worked their way through the set of ever evolving challenges presented through their physical and intimate intra-actions with matter. The students responded by continually being-of-the-world (Lenz Taguchi, 2010:58), connected and fully engaged, building on their haptic awareness heuristically throughout their learning to build on their growing (individual and group) tacit knowledge. This embodied learning experience came from their ongoing and direct tactile experience with matter that had been enriched over a period of time and not taught through just the use of text/language.

On a personal level this more exploratory approach by the students encouraged me to be more playful and responsive as both teacher and researcher. There was constant mutual realigning and negotiating as I, the students and the materials engaged in continual intra-actions with one another. The outcome for all participants was knowledge-production: a continuously developing tacit understanding that came out of the fluid and responsive intra-actions of both human and non-human matter. The awareness of the ever-developing intra-actions had become a point of great interest as the project developed. A clear and productive example of responding to the situations as they made themselves apparent to me as a teacher was the session that both classes made 'one off' pinch pots (see Figures 27 and 28). This had not been planned in the original outline of the research design but emerged as an idea to include in the project as a result of my growing understanding of the vital role that hands play in the creative process by gathering data about materials through their haptic system

(Rowntree et al., 2018). In this exercise the students simply worked directly with a ball of clay in their hands. The exercise was heightened by the students having to rely solely on the tactile experience of working with the clay body out of their sight as discussed on pages 128-131.

So rather than observing the historical binary divide of human/ non-human, we should now see the art and design process it as an ongoing working collaboration between human and nonhuman. On diffracting the creative process through the new materialist lens, the importance of the intrinsic self was highlighted and this deeply enriches the self 'in-being-of-the-world' (Barad, 2007:160)

6.5- Ethico-onto-epistem-ology and the Role of Apparatuses

Through the making and the engagement with the materials comes not only a force but also an ethics. Barad sees the moral principles (ethics) of human and nonhuman intra-actions being bound up and inseparable in the very nature of being (ontology) and in how we know the world (epistemology). This she hyphenates into a neologism, ethico-onto-epistem-ology (Barad, 2007). As human and nonhuman are in continual intra-action, Barad writes that we cannot arrogantly take the credit and claim all practices of knowing because knowing is itself formed from the entanglement of the human and nonhuman as all matter makes itself intelligible to one another. As already mentioned, Atkinson refers to learning in this way as a '…pedagogy of adventure…' (Atkinson, 2017:130) as the learning unfolds in ways that can't be known beforehand. The ongoing responsibility for myself as a researcher was to maintain an awareness that as I diffractively analysed the data, the ensuing intra-actions continued and that I was part of the ongoing enactment. So, the very process of diffraction and diffractive analysis carries with it an ethics and a responsibility for the researcher to know that no distance can be realistically kept and that we are all intra-acting. Barad eloquently writes that ethico-onto-epistem-ology is,

> …an appreciation of the intertwining of ethics, knowing, and being-since each intra-action matters, since the possibilities for what the world may become call out in the pause that precedes each breath before a moment comes into being and the world is remade again, because the becoming of the world is a deeply ethical matter.'
> (Barone and Eisner, 2012:185)

There were points that I found myself being challenged and questioning my position in relation to issues related to ethico-onto-epistem-ology and the role of apparatuses as they played out in the learning journey. As discussed earlier (see page 113) when both of the classes where in a booked computer room to compose their poems exploring their learning journey to date, they all virtually all made a beeline for a search engine to help with antonyms and synonyms for their poems. This was something that I hadn't specified that they should do. Initially, I was taken aback by this as I thought that they should be able to compose their own poems without any 'artificial' aid. I briefly considered the disappointment that I felt but quickly realised that my expectations were unrealistic in our digital age. I also came to quickly realise that my expectations of situations that arose needed to shift and adapt accordingly. In hindsight, I dare not think of how many times I have sought help from an online spellcheck or online thesaurus while carrying out my research. The computers represented themselves as being tools and apparatuses to do a job that the students wanted to be successful in and to express themselves fully. As already documented apparatuses play a key role in the production of knowledge (see page 58). By assuming that the students wouldn't use online resources, I was being pedagogically naive and controlling, and I knew immediately that it wasn't sustainable or sensible to do so. Barad writes about apparatuses as being ever changing and, indeed, interchangeable. They are phenomena themselves and can be human or nonhuman, created through agential intra-actions themselves (Barad, 2003). The use of the computers and the various online thesauri accessed by the students became without any hesitation became part of most their valid work.

Another example of how ethico-onto-epistem-ology and apparatuses were implicated within the students' making processes was during step 4a (see page 84). During this stage of the project the students experimented with possible designs by making a temporary maquette in either paper or clay. The groups were encouraged to work either with clay to see if structurally their ideas were feasible, or to work in paper if they valued immediacy, (given that making a paper maquette would be quicker than constructing one from clay. One group approached this step differently by sharing their collective thinking and discussion by not only using both paper and clay but also using other apparatuses in their immediate classroom environment (see Figure 31 and 32). By looking at the tall totem pole like structures by Sandy Brown (see Appendix 4) the students surmised that her structures probably had some sort of internal support to ensure their stability. The group responded by using the possible supportive structures within their reach. By using the solid wooden structure and initially playing with the rolls of sticky labels and clay (see Figure 31) they established that their design was viable. However, they understood that making the internal support structure from clay rather than wood would pose another challenge in the final design, as wet clay has minimal vertical tensile strength.

Figure 31
(Own image)

Figure 32
(Own image)

Maquette Making-Using the classroom sticky label holder (originally a kitchen roll holder) as a possible internal structuring for their sculpture.

Figure 33

The following lesson the group made their internal support pole from clay for their final structure and let it go 'leather hard' so that it could hold its own shape. (Own image)

By building on their previous experience of making the clay wreaths (see page 104) inspired by the artist, Phoebe Cummings (see page 103), the students were aware of clay drying in air to a more solid state. They were able to heuristically adapt this knowing and use it in their own designs successfully. Their final ceramic piece can be seen in Appendix 5. This was the only group that challenged the boundaries of working in either clay or paper to make their maquette. They were motivated to use a solid wooden structure alongside clay in order to help them realise their goal. This group worked outside the remit and challenged the parameters set by me as a teacher. They responded intuitively and as a group to their knowing, yet, creatively pushing boundaries and satisfying the brief that they had set themselves. The apparatuses that were immediately around them were used in an alternative way and the affordance of the wooden kitchen roll stand and sticky labels were temporarily modified and adapted to meet the student's needs at that moment. This versatility provides an example of the unique affordances that the students generated themselves. This adaptability was generated by themselves.

Chapter 7 - Conclusion

7.0- Introduction to the Conclusion

I remember very clearly on a dreary Sunday afternoon years ago during my MA Maker Teacher programme, mixing up a series of five different ceramic glazes. Sifting the mixtures by the outside sink adjacent to my studio, I wondered if many other individuals across the country would be making and creating glazes from scratch at that moment in time. The emotive thoughts that I associate with this past experience are that of pride and an empowering sense of self-determination. I mention this as I consider the conclusion, as connecting and relating to the material world is more important now, and art education is in a position to provide an important vehicle to meet the need of educating young people. Making and doing creates unique and ongoing intra-actions between human and nonhuman. These are heuristic learning events both for me, while making those glazes and for the year 9 students carrying out the art and design project. What we learn from them matters, as matter does indeed matter. In a world with finite natural resources in which, as a species it is acknowledged that we collectively have more of a detrimental impact on our world, than our world can recover from, it is time for all the relevant institutions related to the delivery of education to take this onboard and broaden their scope to meet these challenges. In my conclusion I attempt

to draw my research to a close and entwine the different strands of thinking together into a coherent dialogue.

7.1- Conclusion

The following research aim was the thread of inquiry that ran throughout the whole of the research. The research questions and objectives were constituent plies that made up the thread:

Research Aim:

- To explore the richness of the making process within a year 9 art and design classroom.

Research Questions:

- What are the unique affordances of art and design education for year 9 learners?
- What new insights might be gained about the benefits of art and design education by diffracting students' experiences of the making process through a new materialist lens?

Research Objectives:

- Put the art and design learning experience into a historical and political context in order to understand the positionality and use of language in relation to the national curriculum.
- Explore both the making process and the emotive embodied learning that is generated when a group of year 9 students engage with a range of different media to create original pieces of artwork.
- Consider the merits of haptic, tacit knowledge and heuristic learning for the individual within the art and design curriculum and its wider implications for society.

I feel that the initial aim of the research project has remained true throughout the whole research, but the research has also generated insights that have implications for art and design education beyond my own classroom.

The data revealed the importance of the relationship between human and nonhuman and the ensuing material discursive intra-activity (see Figure 4) that is generated in making processes. The art and design rooms are an

environment within the school where students have protected timetabled space to actively engage and be challenged by matter. These encounters and opportunities are vitally important in generating well-rounded and inquisitive minds where students are actively informed by first-hand tactile experiences. We have perhaps grown arrogant and see the nonhuman, to be something that can be commoditised (Bennett, 2010), but we miss the truism that we are not feasible without the nonhuman. As Lenz Taguchi writes 'We are nothing until we connect to something else, even if it is simply the breathing of oxygen.' (Lenz Taguchi, 2010:41). The simplest yet complex biological act that we are bound in order to survive involves nonhuman matter being breathed in, allowing us to successfully maintain life. Barad extensively writes about the connection between human and nonhuman matter. When more than one body comes into contact with one another, the bodies make themselves intelligible to one another and a material discursive intra-action is instigated. In the case of the art and design room, things happen, learning is stimulated, art is created, and learners are motivated to respond. The students' embodied learning experience is instigated by the intra-action of human and nonhuman aided by human and/or nonhuman apparatuses that play a key constitutive role in the genesis of this essentially intrinsic process as illustrated in Figure 34.

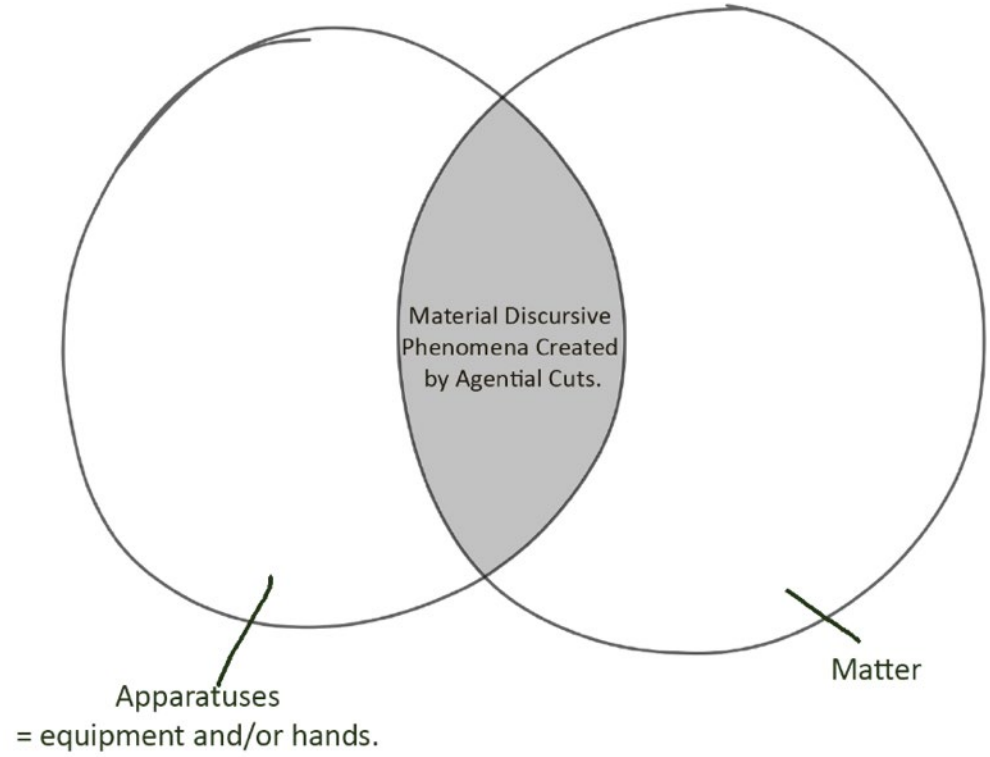

Figure 34

An Illustration of Embodied Learning Centred on the Intrinsic Experience. (Own image)

The force that is generated within the individual to respond by means of their intra-actions with matter is intrinsic to the whole process. This process isn't a procedural one that follows a set course through stages or phases, it has a force, an energy. Entanglement in the creative process generates a force or energy that allows making to be enacted and become real. This is one of the main reasons that the curriculum needs art and design and why our young people need it as well. The findings of this project suggest that students had an open willingness to engage haptically with a wide range of materials. Based on this, I tentatively propose that art and design has the potential to deliver on this connection between human and nonhuman, ourselves, and the planet during these chaotic Anthropocene times. Art can rebuild important and respectful links with matter in order for it to be worked and engaged with rather than simply commoditised and distanced from. Barad explains this concisely with

> We are not outsider observers of the world. Neither are we simply located at particular places in the world; rather, we are part of the world in its ongoing intra-activity. (Barad, 2007:184)

Art and design provides young people with a space to do this and to respond to the materials while building up their tacit awareness heuristically in order to take that knowing into their adulthood.

Through the evolution of Australopithecus afarensis (early hominids that roamed the planet between 3-4 million years ago) and their subsequent descendants, the size of the brain has developed in direct correlation to the use and adaptability of their hands (Wilson, 2000:18), yet unfortunately, we are living through a time when we like to distance ourselves from matter and tactile stimuli and this only highlights the importance and potential of the learned art experience in the art and design classrooms everywhere. As Kneebone states, 'School curricula have been hollowed out in the belief that doing and making are subordinate to thinking' (Kneebone, 2017:294). However, doing and making *is* thinking, and providing a different embodied learning experience for each student. One of the key components of this research project was the data generated by students when working individually and as groups with clay. For the vast majority of the students, what they learned about working with clay as a material was learned within the two art classrooms of the school. Their experience was built up over their Key Stage Three entitlement. The learning experience that each student gained was very personal to them and the groups that they worked with, it had all been gained through their immediate connection with matter. It was through their hands working with clay directly and using tools to shape and construct that the genesis of their art learning was generated. The learning experience was intrinsic to each student. They responded and adapted as they went along, but the connection of the hands, tools and clay as linguist and anthropologist Shirley Brice Heath comments '…gives us the tactile capacity to gain information and knowledge about objects and materials in the world around us' (Rowntree et al., 2018:40). The contact with the clay generated the agential cut that produced the material discursive phenomenon. This '…force of art…' or '*…poietic materialism…*' (Atkinson, 2017:147) as described by Atkinson, instigated by the student working in that moment, enhancing their level of

knowing that if needed again could be applied or adapted. This ongoing haptic experience for the students helped them to build up their knowing heuristically by means of their developing tacit awareness. At the origin of the learning experience remains the direct contact with the material and the ensuing agential cuts. This enrichment of the student's tacit acumen is specific to each learner, as evidenced by their individual work in their sketchbook and the diversity of their outcomes when working in groups when contributing to each other's development of knowing and remains with them as they move forward. However, tacit knowing isn't something that can be easily 'pinned down' to be assessed and formalised. Polanyi urges us to consider living in a world where tacit thought is valued,

> But suppose that tacit thought forms an indispensable part of all knowledge, then the ideal of eliminating all personal elements of knowledge, would in effect, aim at the destruction of all knowledge. (Polanyi, 1983)

One of the main products of making and doing are the emotional reactions. I had almost become blind to the value and presence of emotions while making and had learned to manage them. However, for the students it had a sizeable input into their relationship with making and engaging with the subject and there was a rawness that they needed to continually navigate. Through their poetry they brought the affective nature of engaging to the surface for all to witness by means of their use of language. Their emotive responses were initiated and evoked within the students when they were making and doing. In his writing about emotions Damasio states,

> First, their content always refers to the body of the organism in which they emerge. Feelings portray the organism's interior- the state of internal organs and internal operations.
> (Damasio, 2019:102)

The emotions that were generated are part of the embodied learning experience and are intrinsic to each student's learning journey. This is an integral part of their heuristic development that is instigated by the

engagement with matter. As Damasio further explains emotions are triggered by

> …the properties of sensory stimuli- colour, textures, shapes, acoustic properties-tend to produce, more often than not, a quiet perturbation of the body state. (Damasio, 2019:102)

Sensory processes will likely instigate an emotive reaction of some sort (Damasio, 2019). Art is therefore a place in the curriculum that is rich in such affordances and stimuli where students can learn to express, process and harness their emotions in order to engage with their own development (Spendlove, 2007). Although, the emotions evoked were negative at times, the process of making and doing through a sustained period of time with materials appeared to channel the student's thinking to be more positive and resolute as the making progressed. Young people and in fact everyone needs the space to be able to do this. The art and design room provides a regularly timetabled space to invest, experience and ultimately work towards providing a safe space to regulate, manage and become aware of their ongoing internal emotional states. This aspect of art education is undervalued.

Throughout the learning journey the collaborative experiences generated between the students proved to be intrinsic to the development and sharing of their ongoing creative experience. Their relationships between themselves and the nonhuman were continual and ongoing, and they actively embraced them. As a teacher, maker, and researcher my collaboration straddled both the intrinsic and the extrinsic. As a teacher I represented the hierarchical system working within set statutory guidelines and procedures both as a teacher delivering their art and design entitlement but also as an employee of the school where the data was generated. Yet as a maker my sense of knowing came within my own and shared ongoing intra-activity. As a researcher, I was able to see the learning journey both intrinsically and extrinsically.

The current Ofsted inspection framework makes it clear that every school's curriculum needs to be carefully designed to promote development of skills

and detailed knowledge (Ofsted, 2021). The binary language separating knowledge and skills is being referred to again in how the national curriculum is being delivered and inspected. Polanyi dismissed this separation of 'knowing what' and 'knowing how' and instead simply used 'knowing' instead to refer to both. In the student's making both were combined,

> Learning events are taking place just as much and simultaneously between your hands handling the material things as they do in your - thinking body/mind, handlings concepts, notions and emotions.'
> (Lenz Taguchi, 2010)

The use of language needs to be very carefully considered in order to avoid the language of hierarchy and separation (as exists presently) in the national curriculum. A review of the national curriculum which acknowledges the value of all subject areas from the outset is crucial in order to invest and plan for the success of learners as we move into an uncertain future.

The following (see Figure 35) is a diagrammatical representation of the making process as explored and analysed throughout this research project. At the core of the process is the making and the entangled relationships between humans and the nonhuman. From the material discursive intra-activity, the material discursive phenomena are created. This I see as being intrinsic to the individual (either working with matter individually or collectively) in which the knowing is generated through the entanglements between the human and nonhuman. The richest heuristic learning experiences would appear to occur at this intrinsic level, informed by the student's ongoing haptic and tacit knowing which has been generated by themselves or in collaborative scenarios. The data suggests that intrinsic processes will often evoke emotions within the learner and a relationship will be established between themselves and the nonhuman. These emotions as verified by the data, can be challenging and vary.

The intrinsic learning experience doesn't go unchallenged. The extrinsic forces impact on the subject from outside the actual creative making process. They can impact on society's perceptions towards the subject and its validity by

means of politics and educational policy. Extrinsic forces can impact on what is considered to be the role of art and design education, when it can be done and for how long. The extrinsic forces don't practice art, but they do enact power upon it.

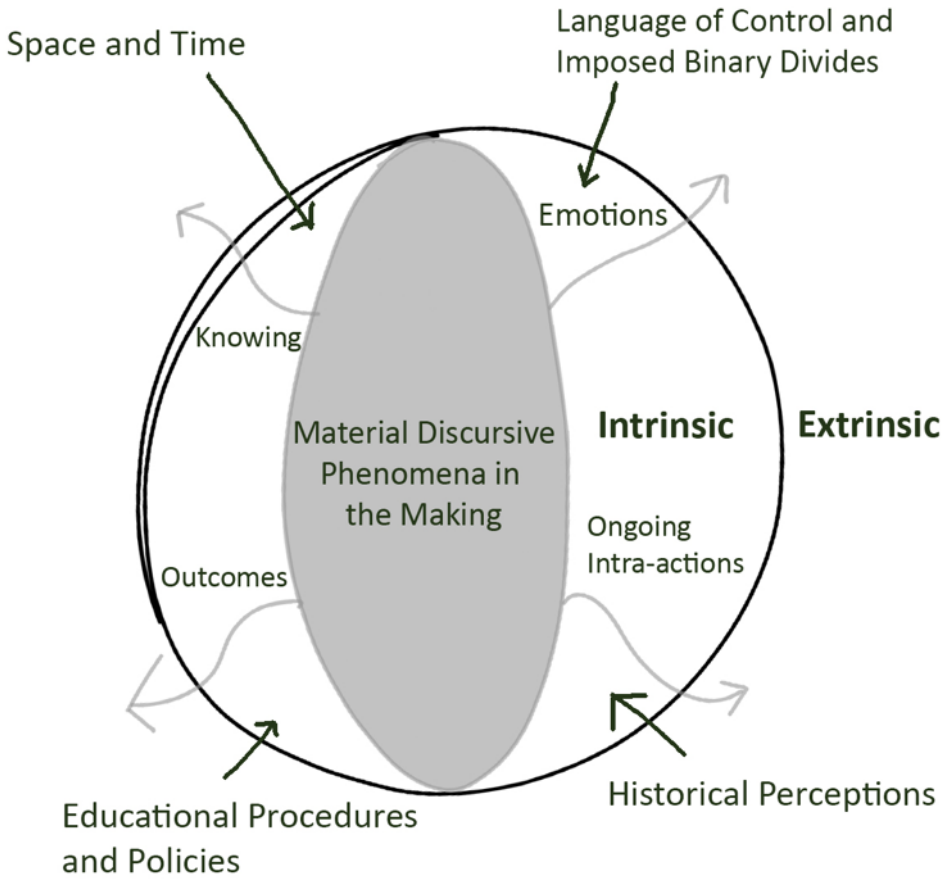

Figure 35

Diagram Illustrating the Genesis of Making in Art and Design Education and the Corresponding Restrictions. (Own image)

In carrying out this research, it has given me the opportunity to uncover layers of the art and design learning journey that maybe I took for granted or had assumed everyone knew about. I have explored and analysed the unique and intrinsic value that the creative process offers learners throughout their Key Stage Three statutory entitlement. As my research moves forward, I will continue to champion a subject that others had championed before me and give me more of an informed platform from which to contribute to ongoing educational debate and research within the field. It has provided me with the

opportunity to stop, look and intra-act with the entangled matter around me and, to start to unravel some of the threads that hold it together so exquisitely, and above all to continue to question from an informed viewpoint.

It is widely accepted that humanity's connection and relationship to the world that we inhabit is in crisis and unbalanced (jagodzinski, 2018). There is a clear and widening disconnect between human and nonhuman. As a subject, art and design's intra-activity between human and nonhuman is pivotal, enabling those who participate with it to have an affective connection with their physical world. The developing heuristic experience embraced in art and design is perfectly positioned to offer a hugely positive outlet for young learners to be actively given the opportunity to engage and emotionally invest in all our futures. The importance of young learners immersing themselves readily with matter strengthens the relevance and relationship with the natural world rather than distancing ourselves from taking any responsibility. More research into how art and design could contribute to improving our relationship with the material world should be welcomed on a much larger scale across the other Key Stages and a wider scope of schools that represent the broader socio-economic make-up of the country. An overhaul of the national curriculum to reflect related issues and the outdated language of hierarchy should be seriously challenged at policy level.

References

Adams, J. (2018) 'Editorial: Art and Design as Agent for Change.' *International Journal of Art and Design Education*, 37(4) pp. 558-559.

Arts in Schools, P. and National Curriculum, C. (1990) *The arts 5-16. Practice and innovation.* Harlow: Oliver & Boyd.

Ashwin, C. (1975) *Art education : documents and policies 1768-1975.* SRHE monograph ; 23. London: Society for Research into Higher Education.

Atkinson, D. (2017) 'Without Criteria: Art and Learning and the Adventure of Pedagogy.' *International Journal of Art & Design Education*, 36(2) pp. 141-152.

Atkinson, D. (2017) 'Some Thoughts on the Finitude and Infinitude of Learning and Teaching in the Context of Art in Education.' *In* jagodzinski, j. (ed.) *What is Art Education?* New York, NY: Palgrave Macmillan, pp. 127-142.

Bacon, F. (1962) *Three Studies for a Crucifixion.* Painting, Each panel is 198.1x 144cm, Online. Guggenheim.org.

Ball, S. (2003) 'The Teacher's Soul and the Terrors of Performativity.' *Journal of Education Policy*, 18(2) pp. 215-228.

Ball, S. and Bowe, R. (1992) 'Subject Departments and the 'Implementation' of National Curriculum Policy: An Overview of the Issues.' *Journal of Curriculum Studies*, 24(2) pp. 97-115.

Ball, S., Maguire, M., Braun, A., Perryman, J. and Hoskins, K. (2012) 'Assessment Technologies in Schools: "Deliverology" and the "Play of Dominations".' *Research Papers in Education*, 27(5) pp. 513-533.

Barad, K. (1998) 'Getting real: technoscientific practices and the materialization of reality.' *differences: A Journal of Feminist Cultural Studies*, 10(2) p. 87(84).

Barad, K. (2003) 'Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter.' *Signs*, 28(3) pp. 801-831.

Barad, K. (2007) *Meeting the universe halfway : quantum physics and the entanglement of matter and meaning.* Durham [N.C.]: Duke University Press.

Barone, T. and Eisner, E. W. (2012) Arts based research. Los Angeles: SAGE.

Barrett, E. and Bolt, B. (2010) *Practice as research : approaches to creative arts enquiry.* London: I.B. Tauris.

Barrett, E., Bolt B. (eds.) (2013) Carnal Knowledge: Towards a *'New Materialism' through the Arts.* London/London: I.B.Tauris

Bennett, J. (2010) *Vibrant matter : a political ecology of things.* Durham: Duke University Press.

Bleazby, J. (2015) 'Why some school subjects have a higher status than others: The epistemology of the traditional curriculum hierarchy.' *Oxford Review of Education*, 41(5) pp. 671-689.

Brinson, P. (1982) *The Arts in schools : principles, practice and provision.* London: Calouste Gulbenkian Foundation.

Bushnell, E. W. and Boudreau, J. P. (1993) 'Motor Development and the Mind: The Potential Role of Motor Abilities as a Determinant of Aspects of Perceptual Development.' *Child Development*, 64(4) pp. 1005-1021.

Carlson, A. G. and Curby, T. W. (2014) *Fine motor skills and academic achievement; Fine motor skills provide a surprising pathway to school readiness*. Psychology Today. online: Psychology Today, Sussex Publishers, LLC. [Online] [Accessed on 31st May 2020] https://www.psychologytoday.com/gb/blog/psyched/201402/fine-motor-skills-and-academic-achievement

Carlson, A. G., Rowe, E. and Curby, T. W. (2013) 'Disentangling fine motor skills' relation to academic achievement: the relative contributions of visual-spatial integration and visual-motor coordination.' *The Journal of Genetic Psychology*, 174(5) pp. 514-533.

Casian, S., Lopes, A. l. and Pereira, F. t. (2018) '(Re) thinking Emotions in Visual Education Activities: Students' Experiences.' *International Journal of Art & Design Education*, 37(3) pp. 399-412.

Central Advisory Council for England. (1959) *The Crowther Report: 15-18.* Education in England. [Online] [Accessed on 15th May 2022] http://www.educationengland.org.uk/documents/crowther/crowther1959-1.html

Colwill, I. (1996) 'The Revised National Curriculum in England and the European Dimension.' *Internationale Schulbuchforschung*, 18(1) pp. 57-64.

Craft, A., Jeffrey, B. and Leibling, M. (2001) Creativity in education. London ;: Continuum.

Csikszentmihalyi, M. (1997) *Creativity: flow and the psychology of discovery and invention.* New York: HarperPerennial.

Damasio, A. (2019) *The strange order of things:life, feeling, and the making of culture.*

Deleuze, G. (1984) *Difference et repitition.* 4 édition. ed., Paris: Presses universitaires de France.

Deleuze, G. (2005) *Francis Bacon: The logic of sensation.* United States: University of Minnesota Press.

Deleuze, G. (2005) *Pure immanence: essays on a life.* New York: Zone Books.

Deleuze, G. and Guattari, F. (2016) *A thousand plateaus.* Bloomsbury Revelations. India: Bloomsbury.

Department for Education. *Art and Design programmes of study:key stage 3*. London: National Curriculum. [Online] [Accessed on 17th May 2022] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/239062/SECONDARY_national_curriculum_-_Art_and_design.pdf

Department of Education and Science. (1981) *Circular 6/81 The School Curriculum.* Education In England. [Online] [Accessed on 17th May 2022] http://www.educationengland.org.uk/documents/des/circular6-81.html

Dolphijn, R. and Tuin, I. v. d. (2012) *New materialism : interviews & cartographies.* 1st ed., New metaphysics. Ann Arbor [Mich.]: Open Humanities Press.

Education Act 1944. London: HSMO.

Education Act 1902, London: HMSO.

Fernandes, L. (1999) *Producing workers:The politics of gender, class, and culture in the Calcutta mills.* 2nd ed., New Delhi: Vistaar Publications.

Fischer, U., Suggate, S. and Stoeger, H. (2020) 'The Implicit Contribution of Fine Motor Skills to Mathematical Insight in Early Childhood.' *Frontiers in Psychology*, [Online] [Accessed on 3rd May 2022] https://www.frontiersin.org/articles/10.3389/fpsyg.2020.01143/full#h1 https://doi.org/10.3389/fpsyg.2020.01143

Graham, D. and Tytler, D. (1993) *A lesson for us all : the making of the national curriculum.* London ;: Routledge.

Graham, M. and Goetz Zwirn, S. (2010) 'How Being a Teaching Artist Can Influence K-12 Art Education.' *Studies in Art Education*, 51(3) pp. 219-232.

Guattari, F. (1995) *Chaosmosis : an ethico-aesthetic paradigm.* Sydney: Power Publications.

Hickey-Moody, A. and Page, T. (2016) *Arts, pedagogy and cultural resistance: new materialisms.* London: Rowman & Littlefield International.

Hickey-Moody, A., Palmer, H. and Sayers, E. (2016) 'Diffractive pedagogies: dancing across new materialist imaginaries.' *Gender and Education*, 28(2) pp. 213-229.

Hood, E. J. and Kraehe, A. M. (2017) 'Creative Matter: New Materialism in Art Education Research, Teaching, and Learning.' *Art Education*, 70(2) pp. 32-38.

Ingold, T. (2013) *Making: anthropology, archaeology, art and architecture.* London: Routledge.

jagodzinski, j. (2017) What is art education? : after Deleuze and Guattari. New York, NY: Palgrave Macmillan.

jagodzinski, j. (2018) Interrogating the Anthropocene: Ecology, Aesthetics, Pedagogy, and the Future in Question. Institute for Urban Design (US).

Jones, K. (2012) *Power, Democracy- and Democracy in Education*. Forum for comprehensive education. online: Lawrence Wishart. [Online] [Accessed on 16th March 2022] https://journals.lwbooks.co.uk/forum/vol-54-issue-2/abstract-5114/

Kaufman, J. C. and Baer, J. (2005) Creativity across domains : faces of the muse. Mahwah, N.J.: L. Erlbaum Associates.

Kiverstein, J. and Miller, M. (2015) 'The Embodied Brain: Towards a Radical Embodied Cognitive Neuroscience.' *Frontiers in Human Neuroscience*, 9

Kneebone, R. (2017) 'Medicine: Discovery through doing.' *Nature*, 542(7641) p. 294(291).

Kneebone, R. (2020) *Expert, Understanding the Path to Mastery.* Great Britain: Penguin Books.

Knowles, J. G. and Cole, A. L. (2008) *Handbook of the arts in qualitative research : perspectives, methodologies, examples, and issues.* Los Angeles: Sage Publications.

Leavy, P. (ed.) (2018) *Handbook of arts-based research*. 1st ed., New York: The Guilford Press.

Lenz Taguchi, H. (2010) *Going beyond the theory/practice divide in early childhood education : introducing an intra-active pedagogy.* Contesting early childhood. London ;: Routledge.

Lenz Taguchi, H. L. (2012) 'A diffractive and Deleuzian approach to analysing interview data.' *Feminist Theory*, 13(3) pp. 265-281.

MacLure, M. (2013) 'Researching without representation? Language and materiality in post-qualitative methodology.' *International Journal of Qualitative Studies in Education*, 26(6) pp. 658-667.

Marinkovic, B. (2021) 'Tacit Knowledge in Painting: From Studio to Classroom.' *International Journal of Art & Design Education*, 40(2) pp. 389-403.

Martins, N. (2017) *Nicky Martins Ceramics*. [Online] [Accessed on 16th March 2022] https://www.nickymartinsceramics.com

Marzke, M. W. (1997) 'Precision grips, hand morphology, and tools.' *American Journal of Physical Anthropology*, 102(1) pp. 91-110.

Mason, J. (2002) *Researching your own practice: the discipline of noticing.* New York;London;: RoutledgeFalmer.

Maw, J. (1993) 'The National Curriculum Council and the Whole Curriculum: reconstruction of a discourse?' *Curriculum Studies*, 1(1) pp. 55-74.

McLoughlin, M. (2019) "The textile student needs little Giotto, (or a little will go a long way)' (Pevsner. Nov 1968). The 1970 Coldstream Report in response to the art school unrest of 1968.' *Journal of Design History*, 32(2) pp. 170-187.

Moll, L. C. (1990) *Vygotsky and education : instructional implications and applications of sociohistorical psychology.* Cambridge ;: Cambridge University Press.

NACCCE. (1999) *All our futures : creativity, culture & education : report to the Secretary of State for Education and Employment, the Secretary of State for Culture, Media and Sport.* Sudbury: DfEE.

Newman, T (2020) 'Collaboration is uncomfortable.' *International Journal of Art & Design Education*, 39, (4). pp.788-794

Norton, J. (2001) Diffraction Diagram. Diagram. Online: Tate Papers.

NSEAD. (2016) *GCSE art and design numbers have fallen sharply this year*. [Online] [Accessed on 17th May 2022] https://www.nsead.org/news/newsroom/gcse-art-and-design-numbers-have-fallen-sharply-this-year/

Ofsted. (2019) *School inspection update*. Ofsted. [Online] [Accessed on 17th May 2022] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/772056/School_inspection_update_-_January_2019_Special_Edition_180119.pdf

Ofsted. (2021) *Education inspection framework*. [Online] [Accessed on 17th May 2022] https://www.gov.uk/government/publications/education-inspection-framework/education-inspection-framework#what-inspectors-will-consider-when-making-judgements

Oxford Cambridge and RSA. (2016) *Curriculum planning and the Ebacc*. [Online] [Accessed on 17th May 2022] https://www.ocr.org.uk/Images/315273-curriculum-planning-and-the-ebacc.pdf

O'Connor, E. (2017) 'Touching tacit knowledge: handwork as ethnographic method in a glassblowing studio.' *Qualitative Research*, 17(2) pp. 217-230.

Pahl, K. and Pool, S. (2011) "Living your life because it's the only life you've got': Participatory research as a site for discovery in a creative project in a primary school in thurnscoe, UK.' *Qualitative Research Journal*, 11(2) pp. 17-37.

Peake, N. (2011) *Fallen Shed.* Diagram, 28x28cm, Online. Needles and Pens Gallery.2011.

Polanyi, M. (1983) *The tacit dimension.* The Terry lectures. Gloucester, MA: Peter Smith.

Polanyi, M. (1998) *Personal knowledge : towards a post-critical philosophy.* London: Routledge.

Robinson, K. (2001) *Out of Our Minds: Learning to be Creative.* Chichester: Capstone Publishing Ltd (a Wiley company).

Robinson, K. and Aronica, L. (2010) *The element : how finding your passion changes everything.* London: Penguin Books.

Roline, K., Karolien, P.-B., Elmarie, C. and Neeske, A. (2018) 'Posthumanist and New Materialist Perspectives as Navigational Tool in Art Education Research: A Diffractive Analysis.' *Critical Studies in Teaching and Learning,* 6, pp. 35-57. [Online] 1. [Accessed 10.14426/cristal.v6i1.124

Rousell, David and Fell, F (2018) 'Becoming a Work of Art: Collaboration, Materiality and Posthumanism in Visual Arts Education'. *International Journal of Education through Art*, 14 (1). pp. 91-110.

Rowntree, J., Hooson, D. and Clayground, C. (2018) *Clay in common : a project book for schools, museums, galleries, libraries, and artists and clay activists everywhere.* First edition. ed., Axminster, England: Triarchy Press.

Royal Academy of Arts. (1768) *Instrument of Foundation*. Instrument of Foundation. Online: RA. [Online] [Accessed on 30th January 2022] https://www.royalacademy.org.uk/art-artists/archive/instrument-of-foundation#:~:text=The%20Instrument%20of%20Foundation%20is,the%20Royal%20Academy%20of%20Arts

Science, D. o. E. a. (1987) *The National Curriculum: a consultation document.* UK: HMSO. (Science, D. o. E. a. Report)

Secretary of State for Education and Science. (1985) *Better Schools*. Education in England. [Online] [Accessed on 17th May 2022] http://www.educationengland.org.uk/documents/wp1985/index.html
Sennett, R. (2009) *The craftsman.* London: Penguin.

Smartt Gullion, J. (2018) *Diffractive ethnography : social sciences and the ontological turn.* New York, NY: Routledge.

Smelik, A. M. (2018) 'New materialism: A theoretical framework for fashion in the age of technological innovation.' *International Journal of Fashion Studies*, 5 pp. 33-54.

Souleles, N. (2013) 'The Evolution of Art and Design Pedagogies in England: Influences of the Past, Challenges for the Future.' *International Journal of Art & Design Education*, 32(2) pp. 243-255.

Spendlove, D. (2007) 'A Conceptualisation of Emotion within Art and Design Education: A Creative, Learning and Product-Orientated Triadic Schema.' *International Journal of Art & Design Education*, 26(2) pp. 155-166.

Springgay, S. and Rotas, N. (2015) 'How do you make a classroom operate like a work of art? Deleuzeguattarian methodologies of research-creation.' *International Journal of Qualitative Studies in Education*, 28(5) pp. 552-572.

Stephens, C., Tate, B. and Yale Center for British, A. (2008) *The history of British art : 1870-now.* London: Tate.

Vernon Lord, J. *Post-war curriculum and assessment development: Coldstream, Summerson, art history and complementary studies*. online: University of Brighton. [Online] [Accessed on 16th March 2022] http://arts.brighton.ac.uk/arts/alumni-and-associates/the-history-of-arts-education-in-brighton/post-war-curriculum-and-assessment-coldstream,-summerson,-art-history-and-complementary-studies#:~:text=October%201960%20saw%20the%20publication,Diploma%20in%20Art%20and%20Design.

Wallas, G. (2014) *The Art of Thought.* 2nd ed., Tunbridge Wells, Kent: Solis Press.

Walsh, L. (2016) A guide to eighteenth-century art. Hoboken: John Wiley & Sons, Inc.

Wilson, F. R. (2000) *The hand.* New York
London: Random House International ;
Hi Marketing.

YouTube. (2010) *David Gergen interviews Frank Wilson on the Hand.* 4mins24 secs. [Accessed on 16th March 2022] https://www.youtube.com/watch?v=U5XRpD8m_ek

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Appendices

Department for Education

Art and design programmes of study: key stage 3

National curriculum in England Purpose of study

Art, craft and design embody some of the highest forms of human creativity. A high-quality art and design education should engage, inspire and challenge pupils, equipping them with the knowledge and skills to experiment, invent and create their own works of art, craft and design. As pupils progress, they should be able to think critically and develop a more rigorous understanding of art and design. They should also know how art and design both reflect and shape our history, and contribute to the culture, creativity and wealth of our nation.

Aims

The national curriculum for art and design aims to ensure that all pupils:

- produce creative work, exploring their ideas and recording their experiences
- become proficient in drawing, painting, sculpture and other art, craft and design techniques
- evaluate and analyse creative works using the language of art, craft and design
- know about great artists, craft makers and designers, and understand the historical and cultural development of their art forms.

Attainment targets

By the end of key stage 3, pupils are expected to know, apply and understand the matters, skills and processes specified in the programme of study.

Published: September 2013

Art and design – key stage 3

Subject content

Key stage 3

Pupils should be taught to develop their creativity and ideas and increase proficiency in their execution. They should develop a critical understanding of artists, architects and designers, expressing reasoned judgements that can inform their own work.

Pupils should be taught:

- to use a range of techniques to record their observations in sketchbooks, journals and other media as a basis for exploring their ideas
- to use a range of techniques and media, including painting
- to increase their proficiency in the handling of different materials
- to analyse and evaluate their own work, and that of others, in order to strengthen the visual impact or applications of their work
- about the history of art, craft, design and architecture, including periods, styles and major movements from ancient times up to the present day.

Reference: DFE-00189-2013

Appendix 2- The Year 9 Scheme of Work.

The scheme of work and associated student documentation for the research project: Art Learning Journey.

Key Stage 3 Art, Craft and Design Departmental Project Plan

At the core of Art, Craft and Design education at the School is creativity and the empowerment of the students to explore and understand the fast-changing world around them. Our aim is to engage, inspire and challenge students providing them with the skills and understanding on their journey to becoming reflective and independent learners.

Year Group: **9** Duration: **1 ½ terms** Title: **Art Learning Journey** Date: **January 2019** Critical Analysis Links: **Grayson Perry, Sandy Brown, Native American Totem Poles, Edmund De Waal, Clare Twomey & Phoebe Cummings.** Written By: **Mrs. N Martins**		
Project in brief: In this project the students will be exploring what art and design education has meant to them and what they have taken from the experience during their Key Stage 3 education. The students will source their own ideas from their own learning journey and then respond with them to a range of artists and cultures that have used materials and processes heuristically (i.e., learning from experience). Each form will create a collaborative ceramic site-specific piece of ceramics that has majolica glazing and ceramic decals.		
Task Set	Objectives	Expectations
Hand out the homework lists and introduce the project. **(c)**	Set the scene for the students to carry out and complete the final project of their KS3 experience in their art and design learning journey.	All handouts attached into the student's sketchbooks.
Create 2 group mind maps (in tables) to the following statement- **Is art and design different to other subjects? (c)** One mind map should record the similarities and the other should be document what the students see as being different. Students then circulate around the class and share their perceptions with one another. The mind maps can then be amended and copied by the class teacher for each member of each group to have a copy for their H/W No1 (1 Week).	Create 2 mind maps outlining what students perceive what the subject has offered them since year 7.	2 rough mind maps in readiness for completion of H/W No1.
Introduce the students to the work of Phoebe Cummings and how she creates work in clay that isn't fired. It is	Students to create a class wreath illustrating the tools that they have used during their	Attach handout about Phoebe Cummings in their sketchbook. List their

photographed and reclaimed. At the start of the next lesson look at how the clay has dried. Take a photo and then reclaim the clay in water. Discuss how this process of destruction feels **(d)**. Now ask the students to slot some words into a word bank in pencil that capture the following **(d)**: How they feel about making art. What skills have they learned? (Both specific to art and design but also, in relation to their learning in art itself.) What aspects of art and design have they learned most from? Do you like working directly with the different materials? Introduce the students to Concrete poetry and set H/W No 2. **(c)** https://wordart.com/create Explain ceramic decals to the students. (Use NM's ceramics) Compose the concrete poem using wordart.com. Save the work into named folders in the	learning journey. This is to be displayed in a water-tight circular container. Each student gets a small amount of clay (100g/ 150g/ 200g). In this lesson the students are being asked to consider their connection with the subject and what it means to them. They are also, being prompted to reflect on the purpose of this curriculum subject and what role they perceive it playing in their overall learning journey. Students to consider their relationship and connection with their learning with regards to art and design. Complete a poem that could be used for the decal on the surface of the ceramic outcome.	clay experience to date and finally list the ceramic skills that they have experienced. Class teacher to take a photo of the student's hands working in clay and a photograph of the final outcome/ wreath. Students to annotate their thoughts about both the work of Phoebe Cummings and how they felt about responding in clay. Discuss the outcome of their ceramic workshop. Discuss what it feels like to reclaim their work. Is it a positive thing? Is it a metaphor for anything? Create a word bank to help with their concrete poem. Set H/W No 2 for 1 week. Use wordart to compose their poem. Print out a copy and attach it

student drop folders that are then immediately transferred by the subject teacher to NSF-Art-Yr9 Art Learning Journey-Form. Students to save their files with their name and form and concrete poem.		into their sketchbooks. Save their file into a shared area for the class teacher then to save into the departmental area. Students to save their file with their name, form and concrete poem.
Using the research gathered, both on their selected artists and their previous ceramic experience the students are to carry out a large collaborative design sheet (see Powerpoint for the layout) outlining what they want to make. There should be 5 design sheets in each class.	Collate, share, discuss and plan what they intend to make as a group for their final piece. Use clay, cameras, paper, paint and visual resources to explore their ideas.	Complete an A2 design sheet. The design for the final piece needs to: Respond to their artist. Be collaborative To stand and be secure. To fit into the kiln and be portable. (Up to one kiln load per form.) Be glazed and have decals added. Be well-constructed. Once this stage is completed the students should share their findings and agree how to take the designs forward as a form. How this is done will depend on each form and the designs that they have created.
Side task- Introduce the decal process. Ask for 3 members of the form to work together and create a commercially ready A3 decal sheet to be sent to Stoke. This might mean working at lunchtime. As students used Photoshop both in Yr7 and in their last project they will be familiar with the package.	Side task- Create an A3 sheet of decals for digital ceramics in Stoke. 1 sheet of decals per form.	Side task- Create an A3 sheet of decals for digital ceramics in Stoke. 1 sheet of decals per form. Use the space wisely and vary the scale.
Main Class- Make their collaborative pieces that demonstrate the heuristic	Make a body of collaborative work	

and haptic learning that they have encountered through both this project but also through their prior experiences. Fire Glaze *(make up glazes in advance)* Add decals Final firing Display Self-assessment **(c)**	that satisfies the brief.	It is hoped that the students realise their intentions and carry out a body of ceramic work that: Responds to their artist. Are collaborative Both stands and is secure. Fit into the kiln and is portable. (Up to one kiln load per form) Is glazed and have decals added. Is well-constructed.
Subject Specific Language: Haptic, Tactic, Heuristic, Decals, Concrete Poem, Collaborative, Glazing, Ceramic Decals, Porous, Site-specific Work		
Techniques Covered: Research, Composing a concrete poem, Design, Ceramics,		
Key for the following opportunities (a) ICT, (b) Numeracy, (c) Literacy, (d) Spiritual, Moral & Cultural Links (e) British Values		
Personal learning and thinking skills (PLTS) Independent Enquirers Team Workers Effective Participants Self-Managers Reflective Learners Creative Thinkers		

Discipline/ Skill 1	Grade breakdown	Year 9 - Grade 3
Drawing/ Recording *Drawing can be executed using a wide range of media such as wire, thread and print e.t.c. However at the core will be pencil work. The DSLR cameras are also a valued resource when recording.*	**Coverage**	**To observe with a conviction that is supported by technical knowledge. Using line, tone, texture, scale proportion and composition. To also draw with different media.**
	Beginning to work at set grade	To use drawings to inform and document creative development. To draw for a range of purposes which can include both observational and expression.
	Working securely at grade +	To draw and record in a range of ways which are appropriate to the purpose of the task, with ease and assuredness.
	Showing excellence at this grade ++	To use the full range of techniques and drawing styles demonstrated throughout the Key Stage in an informed and knowledgeable way.
	Exceptional performance at this grade (EP)	Working skilfully within the grade boundary and are recording consistently well with flair, control and confidence.

Discipline/ Skill 4	Grade breakdown	Year 9 - Grade 3
Clay *Possible construction skills like; slabbing, coilingand pinching can be used. Clay handling, storage and firing are also taught.*	**Coverage**	**Employ a range of techniques to create a completed piece of work.**
	Beginning to work at set grade	Work in clay with an acquired knowledge.
	Working securely at grade +	Work with clay with accuracy and sound construction techniques.
	Showing excellence at this grade ++	Create work that demonstrates good evaluation and reflection to create a purposeful and well defined piece of work.
	Exceptional performance at this grade (EP)	Working skillfully within the grade boundary. Constructing consistently well with flair, control and confidence.

Discipline/ Skill 8	Grade breakdown	Year 9 - Grade 3
Graphics *Graphics as a discipline is broad and can include illustration and design. Artwork can be created by hand, on the computer or a mix of the two.*	**Coverage**	**Using taught graphic and illustration techniques to create an outcome that satisfies a brief and has an audience.**
	Beginning to work at set grade	Able to create work that satisfies a set brief. Using the graphic and/or illustration techniques with growing confidence.
	Working securely at grade +	Able to create work that satisfies a brief and have an understanding of how to progress it. Using the graphic and/or illustration techniques with confidence and with a degree of independence.
	Showing excellence at this grade ++	Able to work to a brief successfully and continually self-assess the work as it progresses. Using the graphic and/or illustration techniques with conviction and independence.
	Exceptional performance at this grade (EP)	Working skillfully within the grade boundary. Applying graphic and Illustration techniques consistently well with flair, control and confidence.

Discipline/ Skill 9	Grade breakdown	Year 9 – Grade 3
Critical Analysis *Please note that critical analysis can refer to artists, designers, craftspeople, architecture or any other artform or imagery deemed appropriate by the teacher. The critical analysis can be contemporary, historical or indeed futuristic.*	**Coverage**	**To be able to compare and contrast the work of others critically and make informed decisions about the work being researched. To display and present findings creatively.**
	Beginning to work at set grade	Student is able to easily find appropriate and related images. Work is accredited and annotated. Some attempt has been put into the presentation. A critical analysis is offered.
	Working securely at grade +	Artist research is thoughtfully executed and annotation is carefully considered and an informed evaluation of the work is offered both visually and written.
	Showing excellence at this grade ++	The presentation of the work relates closely to the work of the artist being studied. A personal evaluation of the work is offered that provides an insight to both the artist/s being studied and how their work is informing the classwork.
	Exceptional performance at this grade (EP)	Working skillfully within the grade boundary. Research is of consistently high standard showing flair and control. There is consistently high quality evidence showing confident understanding and linking with the work of others.

Discipline/ Skill 10	Grade breakdown	Year 9 - Grade 3
ICT *Throughout the course, students will use the DSLR cameras and be introduced to the Adobe packages – namely Photoshop and Illustrator.*	**Coverage**	**To build on continuing knowledge and to start to use the ICT packages in a more creative and fluid way.**
	Beginning to work at set grade	To start to use various packages confidently such as Adobe Photoshop and Adobe Illustrator to create outcomes.
	Working securely at grade +	To be able to evaluate and build on knowledge so as to both retrace procedures and to navigate their own way so as to produce meaningful outcomes.
	Showing excellence at this grade ++	To show creativity when using a range of packages with a sustained confidence to create exciting outcomes.
	Exceptional performance at this grade (EP)	Working skilfully within the grade boundary. ICT is of consistently high standard showing flair, control and a clear understanding.

Year 9 – Art and Design Learning Journey
List of homeworks.

1. **Design Homework**-Using links with the graphic style shown by the two artists Nigel Peake and Antoine Corbineau create two mind maps using the information gathered in class. The central text to your first mind map should read- **Is art and design different to other subjects? NO** and the other should read- **Is art and design different to other subjects? YES.** Plan to put the 'NO' mind map on the left-hand side of the double page and the 'YES' mind map on the right-hand side. In this homework consider your planning and presentation skills. *Consider a wash in the background and other subtle use of colour. Feel free to add other comments that you have thought of since the class activity onto your mind map*.
   https://folioart.co.uk/illustrator/antoine-corbineau/
   https://www.nigelpeake.com/work/2008/hawkins-and-brown/

2. **Research Homework- (One week)** 1) Carry out some research into what a concrete poem is and write a definition. 2)Then research a concrete poem that you find appealing and print it out and attach it into your sketchbook. 3) Using the word bank that you have created in class create a poem that expresses your art and design learning journey to date. Give your poem a title. Both write it out by hand and print it out and attach both into your sketchbook. 4) It is our intention to work with the poem using word art next lesson so please have it with you on a memory stick or saved onto your network. **Extension task**-If you have time, familiarise yourself with the website https://wordart.com/create and play with illustrating your poem. *The composition of this poem is an important part of this project, so take time to consider how your work has developed and grown since year 7. Think about what is like to have worked with the different media that you have. Is working directly with different materials important? If so, why?*

3. **Research Homework-** Now that all of the classes have been allocated an artist or culture to inform their collaborative project, it is time to do some research. Carry out a double page research into your artist or culture that include the following:

- 4-6 images of related images of artwork that are accredited, good quality and a decent size.
- Image of the artist or members of the culture that created the artwork.
- Some background information that is pertinent to the artwork being carried out in class. Such as, the ideas and concepts behind the artist's work or what the culture wanted to achieve when creating their artefacts.
- Images of both the raw materials used and the tools used to create the outcome.
- What your personal opinions are of the artwork that you have been researching and how you feel that you can take it forward in your classwork.
- *As discussed in previous projects, visual literacy is very important. How you present your work informs the viewer of how you are engaging with the work. Show your skills and make sure that the homework satisfies all of the bullet points to the best of your ability. Gather all the resources first before displaying them on the prepared double page of your sketchbook.*

N.B.

1. *Summer examination task will be issued after these homeworks have been completed.*
2. *Make sure that you bring your sketchbook to every lesson as it will be an integral part of the project.*
3. *Due to the summer examinations, there isn't time to set yourselves a homework related to this project.*

Year 9 – Art and Design Learning Journey.

Haptic- *Relating to the sense of touch, in particular relating to the perception and manipulation of objects using the sense of touch.*
Tactic knowledge-*Intuitive knowledge and know- how, which is rooted in context, experience, practice and values. It is hard to communicate as it resides in the mind of the practitioner. (Taken from -* http://www.knowledge-management-tools.net/different-types-of-knowledge.html*)*
Heuristic- *Enabling a person to discover or learn something for themselves.*
Concrete Poem- *Poetry in which the meaning or effect is conveyed partly or wholly by visual means, using patterns of words or letters and other typographical devices.*
Collaborative- *Produced by or involving two or more parties working together.*
Glaze- *A vitreous substance fused on to the surface of pottery to form an impervious decorative coating.*
Ceramic decals- *A design prepared on special paper for durable transfer on to another surface such as glass or porcelain.*
Porous- *(of a rock or other material) having minute interstices through which liquid or air may pass.*
Site-specific art- *Artwork created to exist in a certain place.*

Year 9 – Art and Design Learning Journey.
Project in Brief

Introduce the project.
I
Mind map: Is art and design
different to other subjects? Yes/NO
I
Look at and respond to the work of Phoebe Cummings.
I
Create concrete poem
I
Research artists that have created multiple pieces or as part of site-specific work.
I
Design work collaboratively.
I
Create outcomes in clay and design ceramic decals.
I
Fire
I
Glaze
I
Add ceramic decals
I
Fire
I
Display and self-assess.

Year 9 – Art and Design Learning Journey.
Related websites

Phoebe Cummings- http://www.phoebecummings.com
Grayson Perry- https://www.saatchigallery.com/artists/grayson_perry.htm
Sandy Brown- http://www.sandybrownarts.com
Native American Totem Poles- https://www.warpaths2peacepipes.com/native-american-culture/totem-poles.htm
Edmund De Waal- http://www.edmunddewaal.com/
Clare Twomey- http://www.claretwomey.com

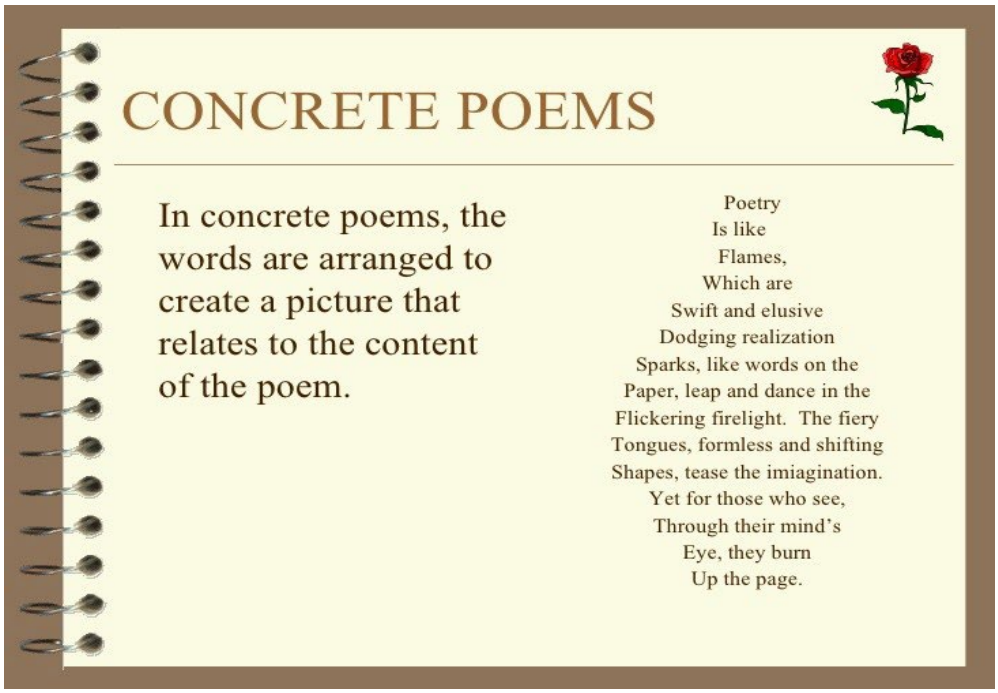
Poetry Compositions.

On the left-hand side of the next page rule out a rectangular box that fills up half of the page. Give it the title: Word bank for my concrete poem. Insert two extra boxes for any possible antonyms and synonyms that might prompt you with your composition.

Fill the boxes with words that satisfy the following questions:

- How do you feel when creating and working with different materials?
- What skills have you learned throughout your KS3?
  (Be both specific to art and design skills but also, in relation to learning itself in the subject and what it feels like.)
- What aspects of art and design have you learned most from?
- Do you like working directly with the different materials?

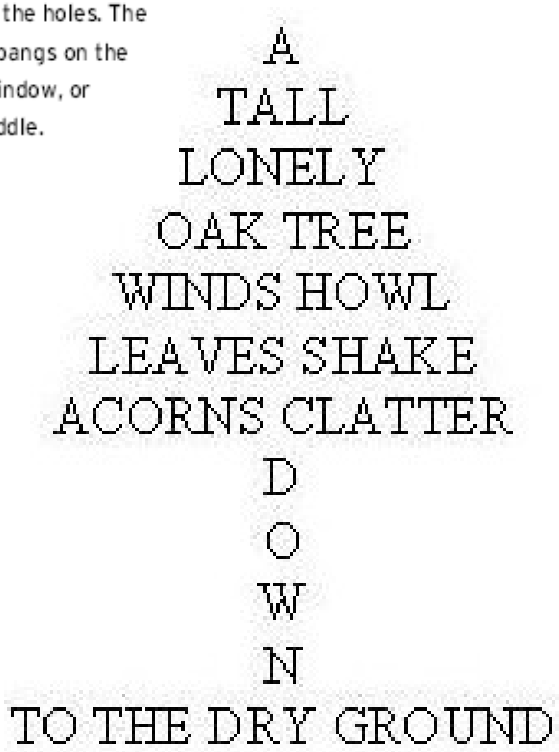
Introduction to concrete poetry and set H/W No 2.



Examples offered by a member of the English department

"Raindrop"

A
drop
of rain is
like a sudden
knock at the door.
Unexpected, yet often
welcomed with a smile. It
can brighten your day or ruin
your plans. It can make you laugh
or make you sad. Whether the raindrop
is moving fast or slow, or is big or small,
it always gets everyone's attention. A rain-
drop contains many secrets. It is a bubble of
anticipation and surprise. It cleanses the earth,
it feeds the flowers, and fills the holes. The
raindrop is never silent. It bangs on the
roof, spatters on the window, or
splashes into a puddle.
A raindrop.



Mrs Martins' example of a concrete poem.

Poem related to:

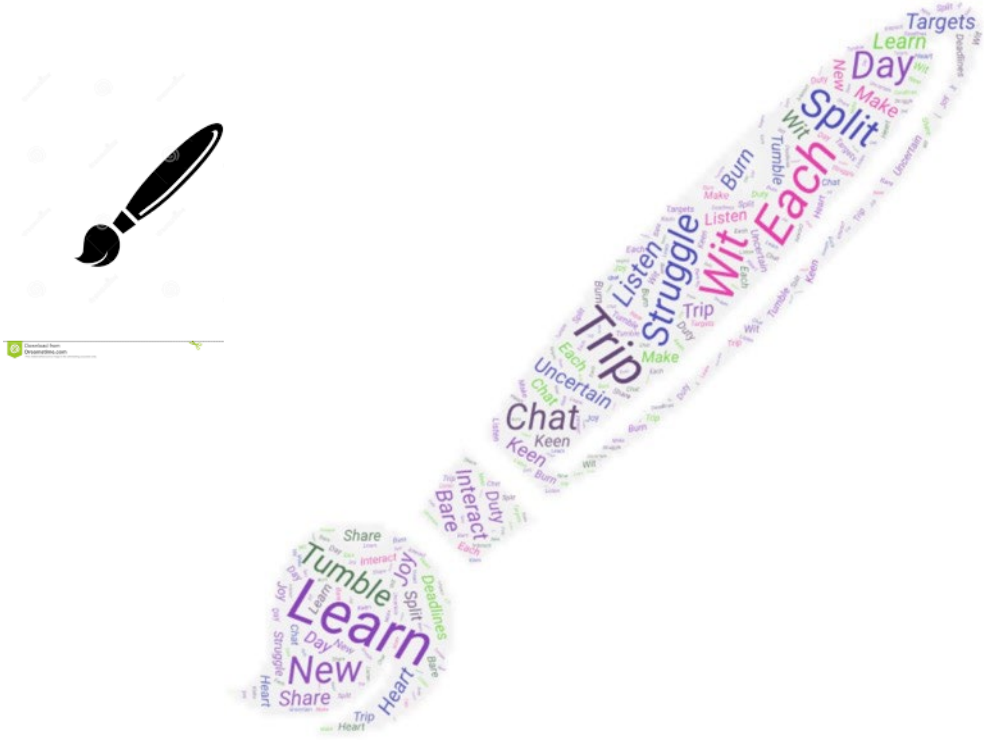
Learning School

Own learning Journey Education

Created in- https://wordart.com/create

Struggle, tumble, trip, and split
Each new day uncertain
But at least I have my wit.
Chat and listen
Interact and learn
Deadlines and targets
That make my heart burn.
Joy of learning
Keen to share
All of us are in it
And that duty we bare.

<u>Play with the colour and the shapes.</u>



Final task completed at the end of the project and attached into the student's sketchbooks.

And to Conclude…

1. What did we learn?

Discuss and document

2. Is the art and design learning journey important?

Discuss and document.

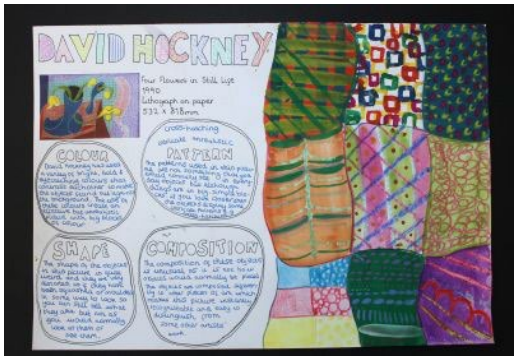
3. What do you want to tell those reading my research?

Discuss and document.

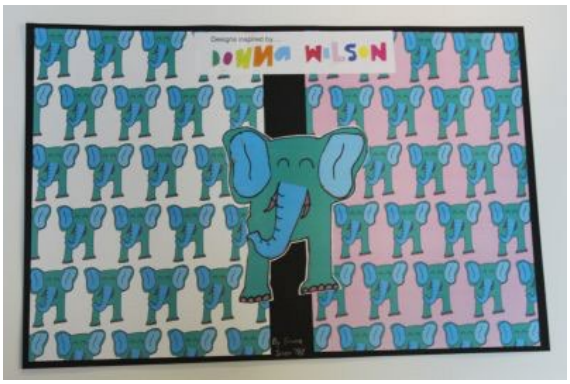
Appendix 3- Prior Experience from Year 7, 8 and 9.

Our Previous Experience in Art Yr7

Project 1-Still Life



Project 2- Kitsch Creature Creations



Project 1- Symbols, Patterns and Process

Project 2- Terracotta Toys

Our Previous Experiences in Art **Yr9**
Project 1- My Manchester

Appendix 4- Selected Artists Linked to the Project.

Phoebe Cummings- British

https://www.youtube.com/watch?v=3BsLpvw1_q0

https://www.houseandgarden.co.uk/video/phoebe-cummings-interview

Untitled, 2010. Raw clay, view of installation in residency studio, V&A Museum. Right: Vanitas, 2012. Raw clay, steel, and glass, view of installation at Jerwood Space, London.

Triumph of the Immaterial
Women's Hour Craft Prize winner 2018 Unfired clay.

What I think about Phoebe Cumming's work.

Photograph of our collaborative piece- Wreath illustrating the tools of our learning journey.

Photograph of me responding to Phoebe Cummings.

Responding with clay is…

My experience of working in clay to date- Skills that I have used before-

Work by Mrs. Martins

All images taken from www.nickymartinsceramics.com

Decals from http://www.digitalceramics.com

Grayson Perry

Born in Chelmsford in 1960-Lives and works in London.

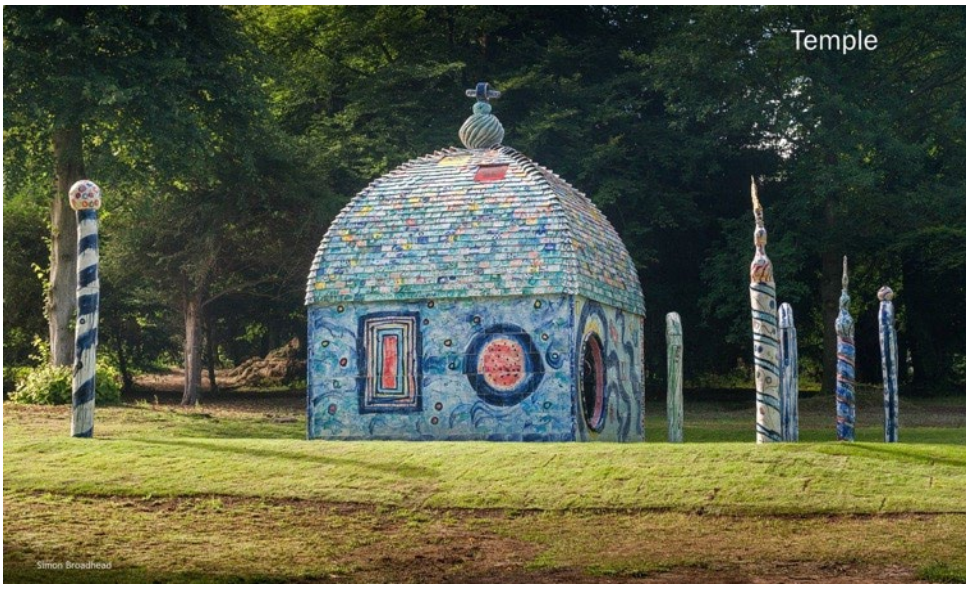
Grayson Perry Barbaric Splendour 2003
Glazed ceramic 67 x 35 cm

[Grayson's approach to sketchbook work]

Grayson Perry
Over the Rainbow
2001
Earthenware
53x41cm

The Taj Mahal on the River Stour
Grayson Perry's, A House for Essex
https://www.saatchigallery.com/artist/grayson_perry

Sandy Brown – British Ceramicist.



Temple at Messums in Wiltshire

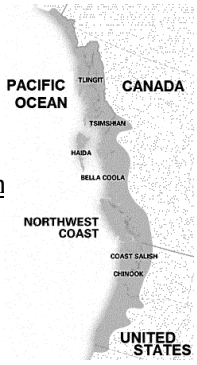
All images unaccredited but taken from: http://www.sandybrownarts.com

Native American Totem Poles

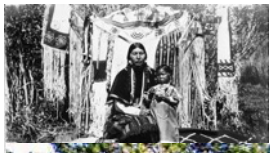
What are Totem Poles?

Definition of Totem Poles: Native American Totem Poles or posts are sculptures carved into large trees by cultures of the indigenous peoples of the Pacific Northwest Coast of North America. Totem poles are carved and painted with symbols and totems or figures such as animals, that represent the emblems of clans or families and relates to their belief systems. A totem is an emblem, such as an animal or plant, that is believed to have spiritual significance and watches over the family, clan, or tribe symbolising their guardian spirit or helper. Totem Poles were not worshipped but they inspired respect.

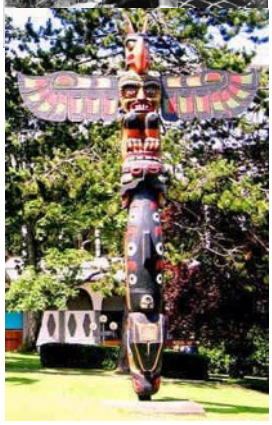
The Tlingit TRIBE
The Haida TRIBE
The Bella Coola TRIBE
The Chinook TRIBE
The Tsimshian TRIBE Coast Salish



The Chinook Tribal Flag



Members of the chinook Tribe



https://www.intltravelnews.com/2017/totem-poles-canadian-northwest-coast

Text and images taken from
https://www.warpaths2peacepipes.com/native-american-culture/totem-poles.htm

Clare Twomey

Born in 1968, UK. Lives and works in London, UK.

Manifest: 10,000 Hours
York Art Gallery, United Kingdom July 2015 - May 2017
Trophy
Cast Courts, Victoria & Albert Museum September 2006

Trophy was a new work commissioned by the V&A Museum that played with notions of value, permanence and the culture of collecting. The artist worked in collaboration with Wedgwood to produce 4000 small birds made from Jasper Blue –an historical material created by Wedgwood in the 1800s– that were then displayed throughout the Cast Courts; the concept was to create a unique object for the museum's collections that would be both beautiful and desirable.
Within five hours of opening, the public had taken each one of the 4000 birds that made up the collection; although they were not formally invited to take the birds home, many followed the behaviour of others in the space.

Text and images taken from http://www.claretwomey.com

Edmund de Waal

British artist born 1964.

In time, II, 2017

The poems of our climate 2018

A different light (detail), 2016

All images taken from http://www.edmunddewaal.com

Appendix 5- Completed Design Sheets with their Corresponding Ceramic Forms.

Completed sets of classwork for all the groups from the two year 9 forms that took part in the research project. The classwork includes an A2 completed design sheet alongside the finished hand built ceramic piece glazed in majolica glaze with a ceramic decal.


yr 9 learning Journey
Art Learning Journey
SHATTER RESISTANT


Yr 9 Learning Journey
SHATTER RESISTANT


Year 9 Learning Journey


Year 9 learning Journey


Year 9 Art Learning Journey
CHALLENGES
THINGS 2 CONSIDER:


YEAR 9 Learning Journey
THINGS TO CONSIDER: