Investigating perspectives on the role of visual arts education in children's inventive development

Hillary Tyrrell, B.Ed

MA

School of Arts Education and Movement, D.C.U.

Dr. Michael Flannery & Dr. Lucy Hill

January 2025

Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of the Master of Arts degree, is entirely my own work and that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

Signed: Hillary Tyrrell

ID No.: 22268356

Date: 4th January 2025

Acknowledgements

As I conclude my research Master's journey, I wish to express my sincere gratitude to those who have generously provided their help, guidance, and support over the past two years.

First and foremost, I am deeply indebted to Dr. Michael Flannery, an outstanding mentor whose unwavering support, invaluable advice, and expert insights have guided me throughout this process. I am also sincerely grateful to my secondary supervisor, Dr. Lucy Hill, whose expertise and thoughtful feedback were invaluable at every stage. Her continued guidance was instrumental in shaping both my research and my understanding of the field.

I would also like to extend my appreciation to the teacher participants who took part in this study. Your enthusiasm and engagement in my research reflect the high value that you place on visual arts education within the school community.

Lastly, I wish to express my heartfelt thanks to my friends and family, especially my amazing partner, Graham, for their constant support, endless patience, and belief in me. I couldn't have made it through this journey without them.

Table of contents

List of Abbreviations

CPD: Continuing Professional Development

GOI: Government of Ireland

INTO: Irish National Teachers' Organisation

NCCA: National Council for Curriculum and Assessment

VA: Visual Arts (Curriculum)

VAE: Visual Arts Education in general

Table of Tables

Table of Figures

Abstract

The very evolution of art is not driven by creativity alone. It is also shaped by groundbreaking inventions that have transformed the way artists express, create and curate their work. This research was motivated by personal professional observations and experiences as a primary school teacher regarding the varying quality of children's art-making experiences from an inventive perspective. Consequently, the primary purpose of this research is to examine perspectives regarding the potential role visual arts education plays in terms of developing children's inventiveness at a time of significant change in the Irish primary school curriculum.

Following a review of relevant literature concerning what is known about visual arts, inventive development and how perspectives shape teaching practice, two key research methods were employed. This includes a deductive thematic analysis of visual arts curriculum documents from 1999, 2023, and 2024, and semi-structured interviews with primary school teachers.

Findings reveal a striking difference between the 1999, 2023 and 2024 curriculum documents regarding the role of inventiveness in visual arts education. While the 2024 curriculum promotes creativity, it lacks explicit reference to "invention," unlike the 1999 curriculum, which often linked visual arts to inventive development. This omission raises concerns about how effectively the new curriculum supports inventiveness.

The teacher interviews reveal that teachers value the link between visual arts and inventiveness. They believe creating a supportive, playful environment that encourages creative

freedom is key to fostering inventive development. However, challenges such as time constraints, lack of student confidence, and inconsistent teaching practices, along with insufficient resources and technology, hinder this process.

The study concludes by recommending a re-evaluation of how inventiveness is recognised in visual arts education. It stresses the need for clearer guidance in the curriculum and increased support for teachers to cultivate artistic inventiveness, ensuring that visual arts can nurture inventive play and development effectively.

Keywords*:* Curriculum, Inventiveness, Primary Education, Teacher Perspectives, Visual Arts

Chapter One: Introduction

If you ask someone what students learn in art classes, you will likely hear that they learn how to paint or draw, *"but it only tells us what they do, not how they learn to think"* (Kimberly et al., 2022). The focus on what students create only scratches the surface, overlooking the deeper question of how Visual Arts Education (VAE) influences their cognitive development. Making this distinction is crucial for understanding the value VAE can have on students' holistic development. Thus, beyond just developing artistic abilities, Visual Arts (VA) provides many benefits. For example, VAE can foster students' decision-making abilities, critical thinking and problem-solving skills (Winner et al., 2013). According to Bell and Robbins (2007), the creative process offers a therapeutic route for processing and expressing difficult emotions, which promotes mental health. Research suggests that students who engage in VAE typically perform better academically (Deasy, 2002). While recognising the broad range of skills that VAE can develop, this research chooses to specifically focus on whether VA is considered an effective subject for fostering inventiveness. According to the Draft Arts Education Curriculum Specification for all Primary and Special Schools for consultation (NCCA, 2024), children who receive an arts education are better able to think critically, take risks with their creativity, think outside the box, make mistakes, and learn from them (NCCA, 2024). It is important to note that in Irish primary schools, arts education comprises three subjects: music, drama and VA (Department of Education, 2023). VAE is seen as a subject immersed in creativity with chances to explore and test out original ideas. While Music and Drama also offer valuable opportunities for creative expression and skill development, I believe VA uniquely provides a rich environment for fostering inventiveness.

The evolution of art because of invention

“From ancient cave paintings to contemporary digital art, the journey of art through history has been nothing short of remarkable” (Dinga, 2023, para. 1). However, the evolution of art isn't driven by creativity alone— it is also shaped by ground-breaking inventions that have massively transformed the art world and the way artists create. Breakthroughs in materials, tools, and techniques have created pathways for new possibilities, redefining what art can be and how it's created. For example, the invention of the metal paint tube in 1841 by American painter John Goffe Rand made paint portable (Myerson et al., 2010). Before this, artists stored paint in fragile, unreliable containers like pig bladders, greatly limiting their mobility (The Paint Tube to Warhol: The Valuing of Art in the Mechanical Age – Open Assembly, 2023). Yet this invention meant that artists could easily transport their materials outdoors for the first time, giving rise to the plein-air painting movement. This invention may be often overlooked or taken for granted, but it proved crucial for the Impressionist movement, allowing artists like Claude Monet and Pierre-Auguste Renoir to go outside and paint directly from nature (The History of the Metal Paint Tube, 2024). This wasn’t just a matter of creative inspiration—it was a practical invention that made a new kind of creativity possible.

Similarly, consider the invention of synthetic pigments. Before this, artists were bound to the natural resources they could find or grind, which limited their palette (Tamburini, 2021). With the invention of synthetic pigments, a vast new range of colours suddenly became available, and artists could push the boundaries of expression in previously unimaginable ways (Tamburini et al., 2024). It was a creative leap that allowed for new creative possibilities. Another critical moment

of inventiveness in the evolution of art can be credited to Marcel Duchamp when he presented a urinal as art with ‘Fountain’ in 1917. According to Kilroy (2017), the overturned urinal is one of the most talked about and studied pieces in art history and has recently been chosen as the most influential piece of art of the 20th century. This wasn’t simply an exercise in creativity—it was a complete reinvention of the concept of art. By declaring that art could be anything an artist designated as such, Duchamp redefined the artist’s role from being a skilled craftsman to a provocateur, a thinker, and a questioner (Kilroy, 2017). This opened the door to conceptual art, where ideas could be just as important—if not more so—than traditional aesthetic beauty or technique (Kilroy, 2017). Moreover, consider the invention of photography. This wasn't just a new medium; it was a total disruption. Suddenly, the role of painting—long considered the primary way to represent reality—was challenged (Snyder, 1982). Not only was a new art form created, but it also freed painting from its traditional role to document reality, enabling artists to play with abstraction, form, and emotion in ways that gave rise to styles such as Impressionism and Modernism. Therefore, all these inventions discussed can be viewed as catalysts for revolutions in how art is produced, experienced, and understood. Even in today’s art world, we are witnessing inventiveness, with many contemporary artists using technology and inventive ways to present their work. For example, Rafael Lozano-Hemmer creates large, interactive installations that mix art and technology. His work often uses real-time data and sensors to respond to viewers. For example, in *'Pulse Room,'* visitors' heartbeats trigger flickering light bulbs, making the gallery feel alive (Lozano-Hemmer, 2006). His use of technology is a significant part of the experience, as he is connecting the artwork to the audience. This kind of work, made possible by new technology, shows how inventiveness drives artistic progress. Another prime example of inventiveness in

today's art world is the rise of blockchain-based NFTs (non-fungible tokens), which have revolutionised the way art is created, sold, and owned. The ability to create, share, and own purely digital artwork has led to a massive rethinking of art's relationship to materiality, ownership, and value. Beeple made history in 2021 when his digital artwork "Every day: The First 5000 Days" was sold for $69 million as a Non-Fungible Token (NFT) (Lyubchenko, 2022). This sale redefined what art ownership could mean in the digital age. Beeple's work emulates how digital artists use blockchain technology and NFTs to break down traditional art collecting, ownership, and distribution barriers (Lyubchenko, 2022). By using digital files and blockchain, Beeple has taken art into new territory. His inventiveness is not just in creating digital imagery but in how he is using technology to reshape the entire art market. Both Lozano-Hemmer and Beeple demonstrate that inventiveness is just as crucial to art's evolution as creativity. Through embracing technology in inventive ways, both artists demonstrate how art can evolve in terms of what art can be, how it can be experienced, and where it can exist. It has made collectors, artists, and institutions rethink what art is and what it means to own it in the digital world. Interestingly, with the constant advancements in AI and growing inventiveness, the future of art holds even more endless exciting possibilities.

All of these great inventions throughout art history were only made possible by individuals harnessing their creativity and inventive abilities. Ultimately, invention expanded what artists could achieve. Thus, art's progression, then, is as much about invention as it is about creativity. Looking back at the inventions throughout art history, each invention in artistic practice—from the invention of the metal paint tube to modern digital techniques like NFTs—relies on moments where someone found a new way of making, seeing, or expressing. I feel inventiveness in art is

often marked by these almost "shock" moments—where a breakthrough or new idea changes our understanding of what art can be. These breakthroughs compel artists and audiences to rethink the very nature of art itself, pushing its boundaries far beyond what was previously imagined. These moments are disruptive because they challenge the assumptions and expectations we have long held about art. These are not just creative insights; they are inventive solutions that have changed the course of art itself.

Therefore, I believe inventiveness in art is about these disruptive moments of rethinking and reinvention—where something new comes into existence, and suddenly, what we believed (personally or globally) art to be, is expanded and challenged. I feel inventiveness is the driving force behind the evolution of art, keeping it unpredictable and endlessly open to reinterpretation. So, while creativity fuels the artist's vision, it is inventiveness that turns those visions into reality, shaping the very fabric of art history. Thus, I believe inventiveness is not just about creativity—rather it is about finding novel ways to create, interact with, or present art that transforms how we experience it. This opinion on the role of inventiveness in art will be further explored and grounded in theory later in the literature review.

Aim of the research/Main objective

The overall aim of this research is to investigate perspectives on whether VA can foster inventive development and if so how. The analysis of VA curriculum-related documents, combined with the perspectives and insights of primary school teachers, forms a crucial part of this study. As teachers are the ones who implement and deliver the VA curriculum in Irish primary schools, their opinions are a crucial source of information. For the purposes of this study, it was decided that the best way

to find answers to the following research questions was to examine the relationship between inventive development and Visual Arts across five key VA curriculum related documents and listen to the opinions and experiences of individuals at the Irish primary school's interface.

Research Questions

The following research questions will be addressed in this study:

1. Is Visual Arts viewed as a subject that can foster inventive thinking skills and dispositions?
2. In what ways does the Visual Arts curriculum develop children's inventiveness?
3. How do primary school teachers develop inventiveness through Visual Arts?

In hope of finding answers to these research questions, an extensive literature review was undertaken in this research to obtain knowledge from other researchers' findings and national educational documents. After undertaking the literature review, I embarked on the data collection phase of this study, where semi-structured interviews with Irish primary school teachers provided further context for the research topic and questions.

Overview of Methodology

Given that the purpose of this study is to investigate the perspectives on the development of inventiveness through the Visual Arts (VA), this research uses an exploratory approach with a qualitative methodology informed by constructivist thinking. The qualitative tool of semi-structured interviews was utilised to collect information about the research topic. The interview participants comprised ten Irish primary school teachers with diverse teaching experiences and backgrounds. Inductive thematic analysis was used to analyse the data from the interview transcripts to gain insight into the teacher's viewpoints on how VA fosters inventive development. In addition, a deductive thematic analytical approach was utilised to determine the relationship

between inventive development and Visual Arts across five key documents including the Visual Arts Teacher Guidelines (GOI, 1999), the Visual Arts Curriculum statements (GOI, 1999), the Draft Arts Education Curriculum Specification (NCCA, 2024), The Primary Curriculum Framework (2023) and the Evaluation of Creative Schools Report (Murphy and Eivers, 2023).

Researcher Positionality

McCaslin & Scott (2003) outline the significance of the researcher's positionality by expressing, "Just as the artist is the primary instrument in painting, the researcher is the primary research instrument in qualitative investigation" (McCaslin, & Scott, 2003, p.453). It is therefore important to provide a clear understanding of my positionality not only for the researcher but for the reader. The initial motivation for conducting a study on this topic originated from my own experience as a primary school teacher, when I began to notice a decline in my student's abilities to come up with ideas by themselves, particularly within VA. At times, I felt that they would rather copy a picture or be told how to do something than figure it out for themselves, suggesting there was a loss in my students' capacity for creative independent thought.

This indicated to me that there was a lack of inventiveness, and a willingness to come up with ideas and test them out. I wondered whether overly structured lessons and template art activities were to blame for this absence of inventive thought. As I started to reflect on my own visual art lessons, I noted the children's artwork looked creative and pleasing, but in reality, they were only duplicating pictures or following templates and not really getting a chance to utilise their own inventiveness.

Additionally, I entered into this research study in the hope of gaining a deeper understanding of primary school teachers' perspectives on developing inventiveness through VA.

I hoped to investigate whether other primary school teachers felt there was potential for inventive development within VA and if so, how could this be done. I am interested in whether these perspectives can be beneficial to the world of education. I am also very interested in finding out how the VA curriculum-related documents address and incorporate the concept of inventiveness. I am very aware that my position as a researcher could pose potential bias. However, I made a conscious effort to always be mindful of my position which helped to counteract the possibility of the researcher's bias affecting the study. I am mindful of Sultana's study that "it is critical to pay attention to positionality, reflexivity, the production of knowledge and the power relations that are inherent in research processes in order to undertake ethical research" (2007, p.380).

Context and Significance

A lot has changed in our society and our classrooms since the launch of the Irish Primary School Curriculum in 1999. To best serve the children of today and acknowledge these changes, the redevelopment of the Primary School Curriculum was paramount. Therefore, as we move further into the 21st century, the Primary Curriculum Framework reflects the general view of society regarding what the curriculum should provide for children (Department of Education, 2023). In the Primary Curriculum, Arts Education encourages children to be creative, express themselves, and explore their own feelings, ideas, and other perspectives by encouraging and fostering artistic and creative growth. (NCCA, 2023). The Draft Arts Education Curriculum Specification For all primary and special schools (NCCA, 2024) highlights the significant role that arts education plays in children's holistic education. It expresses that:

> Through Arts Education, children can exercise agency in their own learning as they become innovative, reflective, broadminded and playful learners who experiment with and engage in symbolic meaning-making.(NCCA, 2024, p.4)

With statements like this, it appears that the curriculum aims to nurture learners to be creative and inventive. Moreover, it seems to recognise children's innate creativity and advocates the need for many opportunities to express and foster creativity and inventiveness (Department of Education, 2023). Yet, according to Kelly (2014), global recessions have negatively impacted how the arts are valued since the 1999 Irish curriculum was released, which, unfortunately, has decreased the importance of creative learning in Irish education. However, with the pending implementation of the highly integrated New Primary Curriculum Framework (NCCA, 2023) there is a great opportunity to draw attention to the potential of visual art education in nurturing inventive development. It is therefore vital that every stakeholder gets involved and discusses the proposed new framework.

Additionally, there is a noticeable gap in the literature concerning the role of VA in fostering inventiveness, particularly within the context of primary education in Ireland. While there is a substantial body of research on the benefits of arts education for children's cognitive, social, and emotional development, there is limited specific focus on how VA activities can cultivate inventiveness. This gap is particularly pronounced in the Irish context, where primary education policies and practices often prioritise traditional academic subjects over creative disciplines. Given the importance of inventiveness in relation to children's holistic development, there is a pressing need for further research that explores the specific ways in which VAE can

nurture inventive thinking skills, foster creativity, and promote innovative problem-solving among primary school students in Ireland. Such research could provide valuable insights for educators, policymakers, and curriculum developers seeking to integrate more creative and inventive practices into primary education.

Layout of the Study

The overall layout of this study comprises five chapters: an introduction, a literature review, a methodology, an analysis and discussion of findings, and a conclusion and recommendations. They are outlined below, and a brief description of each is provided:

Chapter 1: Introduction

This chapter introduces the study, providing background information, the research's aims and objectives, research questions, the methodology adopted, and an overview of the study's layout.

Chapter 2: Literature Review

This chapter starts with an overview of the theoretical framework of the research and then examines relevant literature to provide context for the study.

Chapter 3: Methodology

This chapter outlines the qualitative research approach used in the study. It justifies the selected research method and provides an overview of the key aspects of the methodology. Ethical considerations and research processes and procedures are outlined.

Chapter 4: Analysis and Discussion of VA Curriculum-related documents

Chapter four presents the findings from the analysis of five Visual Arts curriculum-related documents. A deductive thematic analysis was conducted to explore the connection between

inventive development and Visual Arts, focusing on five key documents: the Visual Arts Teacher Guidelines (GOI, 1999), the Visual Arts Curriculum Statements (GOI, 1999), the Draft Primary School Curriculum Framework (2023), the Primary Curriculum Framework (NCCA, 2023), and the Evaluation of Creative Schools Report (Murphy & Eivers, 2023).

Chapter 5: Analysis and Discussion of participant interviews

This chapter presents the findings from the interviews and curriculum documents in two parts. It will showcase the findings for each data collection method and then discuss insights gathered from the data, highlighting the key themes related to perspectives of inventiveness in visual arts.

Chapter 6: Conclusion and Recommendations

Lastly, the final chapter summarises the findings, discusses their implications, identifies the study's limitations, and offers recommendations for future research.

Conclusion

Ultimately to me, Inventiveness is the ability to turn imagination and creativity into practical ideas/ solutions. I believe imagination helps us think of new possibilities, and creativity helps us come up with original ideas, but inventiveness is what happens when we take those ideas and make them real, whether by solving problems, creating new products, or finding better ways to do things. Therefore, a study on perspectives of inventive development in Irish primary schools is needed to better understand how creativity and problem-solving skills are nurtured in students. It can show if the curriculum offers enough chances for students to think inventively. Teachers' views are key, as they work directly with the curriculum and can share how well it helps students develop creative

skills. This study could also highlight ways to improve the curriculum to better support inventiveness.

In this chapter I have discussed my motivations for choosing this field of study, the questions I aim to address, and the research methods used. Lastly, I've provided a study outline that includes a quick summary of each chapter's main points. A review of the pertinent literature will be given in the upcoming chapter.

Chapter Two: Literature Review

The following review of the literature focuses on the value of developing inventiveness and intends to explore why VA can be a wonderful setting for nurturing inventive development. Additionally, this study reviews the literature on VA in Ireland and emphasises the significance of a teacher's perspective towards VA. Table 1 below presents the following themes this literature review explores.

Table 1

Literature Review Headings

Demystifying inventiveness
Innate Inventiveness
Fostering Children's Inventive Development,
Visual Arts Education and Inventive Development
Approaches to fostering inventiveness in Visual Arts Education
The Old Curriculum vs the New Curriculum
Reviews of the 1999 curriculum
Barriers to Inventiveness in Visual Arts Education
The Teacher's Role in Visual Arts Education and Inventive Development,
What are perspectives?
Teachers' Perspectives on Visual Arts Education

Demystifying inventiveness

Inventiveness

> *"Every creative journey begins with a problem. It starts with a feeling of frustration, the dull ache of not being able to find the answer. We have worked hard, but we've hit a wall. We have no idea what to do next."* (Lehrer, 2012, p.6)

This 'feeling of uncertainty' is a common experience when creating art, as individuals are often faced with problems that require exploring new possibilities and thinking outside the box. In these situations, a person's inventiveness often proves crucial to their ability to overcome obstacles. Inventiveness, as described by Runco (2004), is the cognitive ability to generate original and innovative ideas, solutions, or insights. Similarly, Sawyer (2006) describes it as the mental capacity to develop original and creative ideas and solutions. He highlights inventiveness as a fundamental aspect of creative thinking, emphasising its role in driving innovation and problem-solving (Sawyer, 2006). Both Runco (2004) and Sawyer (2006) emphasise the importance of idea generation and originality in their views on inventiveness. Considering these viewpoints, this research will define inventiveness as the ability to generate ideas in addition to being original.

Moreover, while searching for definitions of inventiveness, the term "inventive thinking" has emerged from the literature. Inventive thinking is described as 'an ability to effectively solve non-typical (creative) problems in various domains avoiding a large number of trials and errors' (Sokol, et al., 2008, p. 34). Inventive thinking enables students to think critically, systemically and inventively rather than just focusing on the correct outcome. For instance, when an individual is thinking inventively, they are looking for unusual answers, challenging existing norms, and considering perspectives that others may overlook. In children, inventive thinking is ingrained in

creativity, curiosity and the capacity to understand and manipulate the world around them to adapt and adjust to their immediate environment (Osman, K, 2020). This implies that children's inventive thought processes are fuelled by their innate curiosity and desire to explore their surroundings. While inventive thinking focuses on producing novel concepts, inventiveness encompasses both the generation of these ideas and their practical application. Thus, inventive thinking is a crucial element of inventiveness.

Inventiveness, Innovation and Creativity

Innovating and inventing have long been paired together as interconnected processes, with invention focused on creating something new and innovation centred on applying or improving those inventions (Tidd, Bessant, & Pavitt, 2005). As Tidd, Bessant, and Pavitt (2005) explain, innovators take existing inventions or ideas and apply inventive thinking to adapt, improve, or implement them in ways that create new value or solve different problems. This highlights that innovation is not just about creating something new but also about enhancing and adapting existing ideas to make them relevant in new contexts. While invention is about creating something original, innovation focuses on refining and applying that creation in practical, useful ways. Both processes require creativity, problem-solving, and fresh thinking—key elements of inventiveness, which refers to the ability to generate original ideas and solutions to problems (Sawyer, 2006). Thus, inventiveness can be viewed as essential to both invention and innovation, as it enables individuals to approach challenges in novel ways.

The literature revealed significant parallels between the concepts of inventiveness and creativity. According to Cooper (2018), there is a general consensus that creativity entails idea development, just as inventiveness is defined as the capacity to come up with or demonstrate

new and original ideas (Cambridge Dictionaries Online, 2024). What's interesting is this idea of creating something 'original' and 'novel' was brought up in several of the definitions of creativity. For instance, according to Plucker et al. (2004), the standard definition of creativity is currently thought to be something that is novel and fulfils its purpose. Patson et al (2021) build upon this view in their study and express that traditional definitions of creativity have two main components: originality (or novelty) and task appropriateness (or usefulness). Furthermore, the following definition of 'creative thinking' offered by the Durham Commission defines creative thinking as "making something novel or individual in its context" which can be directly connected to being inventive.

> A process through which knowledge, intuition and skills are applied to imagine, express or make something novel or individual in its contexts. Creative thinking is present in all areas of life. It may appear spontaneous, but it can be underpinned by perseverance, experimentation, critical thinking and collaboration.
>
> (Durham Commission on Creativity and Education, p. 4.)

What is compelling here is that "originality" does not imply making a unique contribution to knowledge. Instead, it means being able to make inventive use of a given set of resources. At the "high creativity" end of the creativity continuum, these ideas might be new to human history, but they could also represent what Craft describes as "creativity with a small c," , ideas that are new to an individual's previous way of thinking (Craft, Jeffrey, and Leibling 2001,45–61). "Creativity with a small c" refers to personal creativity or inventiveness that might not have a huge impact on the world at large but is meaningful and significant to the individual who came up with it (Craft,

2001). So, while an idea may not be entirely new to the world, it can still be considered creative and inventive if it challenges the individual's own perspective or understanding.

Consequently, creativity and inventiveness use similar terms to describe their processes and outcomes. Tang Min (2011) pairs creativity and inventiveness nicely together and calls it 'inventive creativity', which she details as including cognitive ability and motivational attributes. Therefore, to be inventive is to be creative. The definition of inventiveness that I will follow in this research is that inventiveness is about using one's own creativity to act upon thoughts and produce original and imaginative ideas, some of which may be novel and unique to the individual in their own context.

It is clear that creativity, inventiveness, and innovation are closely related terms that overlap, yet each highlights a distinct aspect of the creative process. Creativity is focused on generating new ideas, inventiveness emphasises the act of bringing those ideas to life, and innovation is more about the process through which a domain, product, or service is renewed and adapted to create value and impact. Thus, creativity can serve as the umbrella term that subsumes both inventiveness and innovation, reflecting their interconnectedness in driving progress and problem-solving. In this research, the term creativity will be used as a broad concept encompassing both inventiveness and innovation.

Elements of Inventiveness

As previously indicated, being inventive involves problem-solving and critical thinking skills, yet in order to do these things it implies that inventiveness requires different skills/dispositions that work together. The Talis Habits of Mind framework aims to develop learners who generate ideas

and can think critically (Lucas & Spencer, 2018). This Talis Habits of Mind framework outlines a set of cognitive and behavioural dispositions that are crucial for effective learning and problem-solving. While the framework is primarily focused on creativity, its principles can certainly be related to inventiveness.

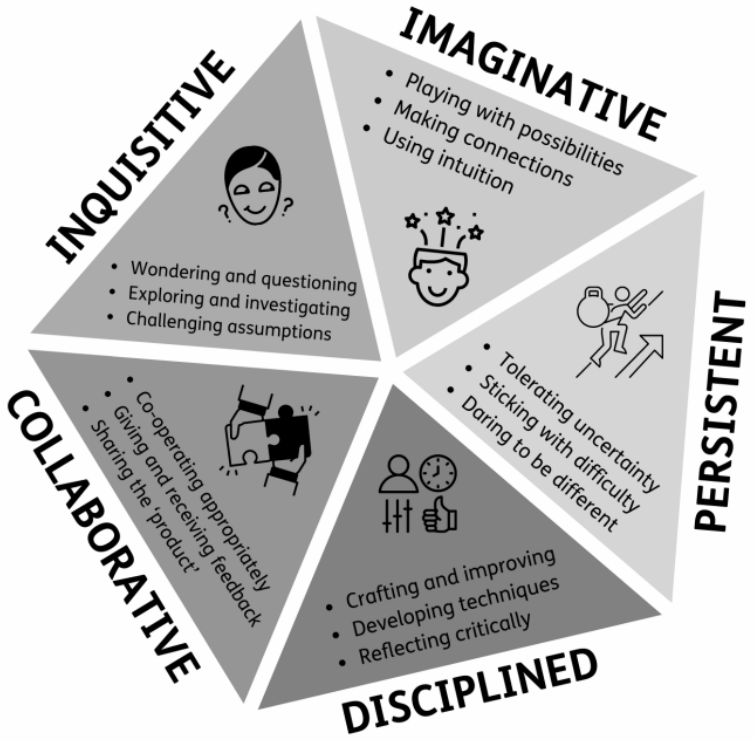

Figure 1

The Tallis Habits of Mind

The framework presented above consists of a set of five creative habits: being imaginative, inquisitive, persistent, collaborative, and disciplined (Lucas, 2017). Further details on these habits of mind are provided in Table 2 below:

Table 2

Information on the habits of mind

1. **Imagination:** This habit emphasises the ability to envision new possibilities, think creatively, and generate innovative ideas.
2. **Inquisitive:** It focuses on logical thinking, problem-solving, and critical analysis to make informed decisions and solve complex problems.
3. **Collaboration:** This habit emphasises working effectively with others, communicating ideas, and collaborating to achieve common goals.
4. **Perseverance:** It stresses the importance of resilience, perseverance, and determination in overcoming obstacles and achieving success.
5. **Disciplined:** This habit encourages self-awareness, self-assessment, and reflection on one's own creative process and learning journey

These five habits of mind in the above can be directly related to inventive thinkers. For instance, inquisitiveness and imagination are the two most related to inventive tendencies. Inquisitiveness is a tendency to question (Watson, 2015). This refers to wondering about things, being naturally curious, and having a great desire to figure things out. Imagination relates to the process of creating ideas in your head from concepts, memories, and beliefs (Davis, 2019). Davis (2019) believes 'The most spectacular use of imagination is in creativity…which requires the generation of something new and effective in some way' (Davis, 2019, p.2). Persistence would relate to persevering through challenges and not giving up easily. Discipline concerns working hard to improve at things they really care about. Finally, collaboration refers to a mutually beneficial and clearly defined

relationship that two or more individuals enter into to reach shared goals (Mattessich & Johnson, 2018). This means working with others, discussing ideas, and providing and seeking advice and feedback. Overall, these habits of mind provide a great outline of what it takes to be inventive.

Figure 2

EnGauge 21st Century Skills Model

Comparably, within the world of Industry, the North Central Regional Educational Laboratory's [NCREL] "enGauge" proposed a framework of essential skills for success in the modern world. (NCREL, 2003). While it primarily focuses on skills relevant to the future workforce, many of these skills are closely related to inventiveness. Inventive thinking has been identified as a core skill both desired and required by the 21st-century workforce (NCREL, 2003;

Omar Ali, 2015). NCREL and Metiri (2003) assert that it is crucial for citizens of the 21st century to have inventive thinking skills (see Figure 2).

NCREL and Metiri (2003) propose that inventive thinking requires these skills and abilities: adaptability, managing complexity, self-direction, curiosity, creativity, risk-taking, higher-order thinking and sound reasoning as shown in Figure 2. Each of these sub-constructs of inventive thinking contributes to the development of inventiveness by fostering the skills and traits needed to generate and implement novel ideas and solutions. The dispositions of the enGauge framework are very similar to that of the 'Tallis Habits of Mind' wheel, see Table 3 below.

Table 3

Tallis Habits of Mind Vs Inventive Thinking (EnGauge, 2003)

Tallis Habits of mind	**Inventive Thinking (EnGauge)**
imaginative	adaptability
inquisitive	managing complexity
collaborative	self-direction
persistent	curiosity, creativity, risk-taking
disciplined	higher order thinking
	sound reasoning

Both models emphasise creativity and problem-solving skills, which are core elements of inventiveness. While the EnGuage model does present key skills that highlight inventiveness, it is more focused on the implications for the wider economy and future employment prospects of children, rather than the lived creative experiences of children in classrooms. Whereas, the Tallis

Habits of Mind is designed to support students in becoming more effective, adaptable, and reflective learners (Lucas, 2017) for their own overall growth. Additionally, as curriculum experiences give pupils opportunities for collaboration, creativity and decision-making (Department of Education, 2023), the Tallis Habits of Mind are very much in line with the goals of the new Primary Curriculum Framework here in Ireland. Therefore, the 'Tallis Habits of Mind' will serve as the conceptual, as opposed to the theoretical, basis for this study. This research deduces that fostering the five habits of mind above can support the development of inventive skills that encourage inventiveness and help make students creative and inventive thinkers.

Innate inventiveness

The ability to be inventive is a natural characteristic that has been crucial to human existence for millennia (Moseley, et al., 2005). From inventing tools that help them survive to creating works of art, the human tendency for inventiveness has been indisputable. Researchers and educators have long acknowledged children's ability to develop original ideas, solutions, and ways of thinking (Osman, 2020). According to Andreasen (2011), the human brain is highly developed, and this is what gives us the ability to create and implement new ideas. On top of that, John Piaget, a Swiss psychologist, proposed that children experience different stages of cognitive development (Babakr et al., 2019). In his theory, Piaget emphasised the importance of the “preoperational stage”, which typically starts between 2 years and 7 years old (Cacioppo et al., 2013). In this stage, children engage in make-believe play, create imaginary friends and demonstrate inventive thinking (Pakpahan & Saragih, 2022). This prompts us to take a deeper look at children’s play and craft experiences as a child’s capacity for coming up with creative ideas, solutions, and ways of thinking are clear signs of inventiveness.

Play is considered a creative activity which supports children's self-discovery and helps them understand their place in the world. Children have a right and a desire to play and play itself has intrinsic value throughout childhood (Department of Education, 2023). Children learn to understand the world through interacting with it (Johnson et al., 2019). Johnson et al., (2019) express that “simple material play can prop up their imagination and enhance their creative play from within” (Johnson et al., 2019, p. 269). This highlights the importance of play as it provides children with opportunities to explore and use their imagination. The primary Curriculum Framework promotes clarity and certainty concerning the appropriateness and relevance of using play and playful approaches in children’s learning (Department of Education, 2023). The Primary Curriculum Framework believes play and playfulness are also crucial components of children's learning experiences (Department of Education, 2023). Through play, children engage with their surroundings and make connections between objects and concepts. This process encourages them to be inventive, as they manipulate materials and imagine new possibilities.

Johnson et al., (2019) affirm that children are born with creative potential and use their imagination to respond to the world that surrounds them. By thinking creatively and imaginatively, children can make sense of their world (Dominey, 2021). Especially in young children, their innate inventiveness is demonstrated through their ability to find new ways to express ideas, like turning everyday objects into unique canvases or using unconventional materials like pasta or buttons to add texture to their artwork. Osman (2020) believes children view the world differently from adults; they have an imaginative mind, which makes them more creative than adults. The story of Caine Monroy, a 9-year-old who built an entire arcade out of cardboard boxes in his father's auto parts store displays, is a perfect example of how a child displays inventiveness (McGalliard, 2016)

This story demonstrates how children can imagine unique ideas and make them a reality (Sweeny, 2017). Comparing adults' and children's inventive capacities is intriguing. A study by Warren et al. (2018) revealed that adults have more fixed implicit beliefs about their skills and attitudes than children, resulting in lower divergent thinking scores as we age (Warren et al., 2018). This suggests that children's thinking is not yet constrained by the knowledge of what works or is the "correct way" to do something. Thanks to this freedom, they can come up with inventive ideas and solutions to problems that some adults would never have considered. Ultimately, children's innate inventiveness is demonstrated through their ability to find new ways to express ideas and when they explore their natural sense of curiosity and imagination.

Fostering Children's Inventive Development

Inventive development in this research will refer to fostering inventiveness, which comprises inventive thinking skills and an inventive habit of mind, including (1) inquisitiveness, (2) imagination, (3) persistence, (4) discipline and (5) collaboration. But why is developing inventive abilities in primary school children crucial? According to the Ministry of Education, Singapore (2010), inventiveness enables children to be flexible and explore various ideas and possibilities. Through encouraging a positive reaction to obstacles, a flexible mindset supports resilience. A child's resilience—the capacity to overcome hardship—is crucial to their overall well-being (Masten, 2014). Therefore, children are more likely to become resilient and learn how to manage stressors when they see challenges as chances to grow and learn. In addition, when children are inventive, they can examine problems differently, consider different points of view and solve challenges effectively and creatively (Ministry of Education, Singapore, 2010). It could be

suggested that children are encouraged to ‘think outside the box’. Very often, ‘thinking outside the box’ involves being independent and taking initiative (Deci, et al., 1991). Typically, when a person makes choices, comes up with original ideas and invents solutions, their self-confidence and self-esteem rise. They gain confidence and self-assurance in their abilities and recognise the power of their ideas, which help them throughout their lives. This demonstrates why it's important to foster children's inventiveness since it will benefit them in more ways than simply the classroom.

As part of their holistic development, a child has the right to develop their inventive abilities. A document called VA Matter: How VAE Helps Students Learn, Achieve and Thrive was published by Arts Education Partnership & National Art Education Association (2019), which stressed the benefits of VA engagement on students: boosting their academic achievements, cultivating skills for learning and improving their educational experiences (AEP & NAEA, 2019). Bearing this in mind, along with a constantly changing and evolving world, the need to nurture and develop children's inventive thinking skills should be of utmost importance to educators and policymakers. In Martin Minsky’s book “Inventive Minds: Creativity in Technology” (2019), it provides insights into the creative processes that drive inventiveness and highlights the importance of education in fostering inventiveness. In his book, he discusses the shortcomings of conventional education and considers alternative approaches, reflecting on the role of mentors, describes high-level strategies for thinking across domains and suggests projects for children to pursue. Minsky once observed we concentrate on preventing mistakes rather than encouraging inventiveness (Minsky, 2019). Minsky's findings demonstrate how education must change its emphasis to encourage inventiveness by creating environments that encourage experimentation, discovery, and creative thinking.

VA and Inventive Development

Both the new Primary Curriculum Framework (2023) and the VA Curriculum (GOI, 1999) advocate developing inventive tendencies and highly support the notion that VA is a subject that can nurture the development of inventive skills. As previously discussed, inventiveness includes an array of skills/dispositions such as creativity, critical and creative thinking, curiosity, experimentation, adaptability and resourcefulness. The following literature will explore how VAE can encourage the development of these traits of inventiveness/ inventive dispositions.

Creativity

It is undeniable that children are naturally creative (Dominey, 2021). We especially see this through their ability to turn nothing into something, and within VAE, children are given opportunities to transform nothing into something. Art education provides a space for children to use their imaginations and develop their unique ideas (Burton, 2014). It is arguable that no subject so closely connects students to creativity than VA. The open-ended nature of art allows for creative thinking to develop (Hetland et al., 2007). The new Primary Curriculum Framework showcases great potential for inventive development in VAE through its emphasis on creativity as a fundamental ability. 'Being Creative' is listed as one of the key competencies in the Primary Curriculum Framework (Department of Education, 2023). This competency acknowledges children's innate creativity, their creative energy, and the need for opportunities to express themselves creatively (Department of Education, 2023). Being creative is described as "the ability to be imaginative, inquisitive, persistent, open-minded and flexible and to collaborate with others, persevere, embrace differences, and take creative risks" (NCCA, 2024, p.6). These attributes are

outlined in Figure 3 and are very similar to the traits associated with inventiveness as previously discussed. In particular, the terms "innovation", "imagination" and ‘curiosity’ have a direct bearing on inventiveness.

Table 4

Attributes of Creativity (primary curriculum framework, 2023)

Being creative	• Participating in and enjoying creative and cultural experiences • Being curious • Being imaginative • Being innovative • Using creative processes • Exploring alternative ways of communicating

By nurturing a culture of curiosity, imagination and innovation, the arts education curriculum lays the groundwork for lifelong inventive growth. According to the Draft Specification (2024),

> Through Arts Education, children can exercise agency in their own learning as they become innovative, reflective, broadminded and playful learners who experiment with and engage in symbolic meaning-making
>
> (NCCA, 2024, p. 4)

Again, we can see that by highlighting the value of innovation, experimentation and risk-taking, the new Arts Education curriculum is cultivating a mindset where inventiveness thrives. The new

framework states that it encourages children to "think outside the box," take creative risks, make mistakes and learn from them, all while developing their cognitive skills (NCCA, 2024). This is another good example of how VA fosters inventiveness as children are encouraged to embrace uncertainty and explore out-of-the-ordinary solutions, which leads to inventive breakthroughs in their artistic pursuits. Therefore, visual art encourages children to think beyond limitations and explore their creativity freely. Moreover, when children make art, they are involved in a 'creative process'. The creative process in art making is a multi-faceted journey that encourages and nurtures creativity. It involves ideation, exploration, experimentation, and problem-solving, ultimately leading to the creation of art (GOI, 1999). As a result, the process of creating art is intrinsically tied to inventiveness since it involves coming up with ideas, exploring possibilities, experimenting with different techniques, and coming up with creative solutions to problems—all of which are crucial elements of inventive thinking.

The current research on exploring inventive thinking skills highlights that creativity is not a particularly high-scoring area when tested among students. For instance, a study conducted by Abdullah and Osman (2010) investigated inventive thinking skills among 500 Bruneian students in the Science subject. This study revealed that the inventive thinking sub-constructs of Creativity, Higher-order thinking and Sound Reasoning were found to be low in mean scores (Abdullah & Osman, 2010). Comparably, Alias (2009) also found levels of creativity to be low among students in the science programme at the Faculty of Education. In contrast, Parker (2008) researched the impact of visual art instruction on student creativity. The study shows a statistically significant correlation between visual art experiences and increased creativity. If creativity is scoring low, we must look to the VA, where creativity is rated highly. As creativity is deeply engrained within VA,

there is scope to explore whether inventive thinking development within the VA could boost creativity levels. This provides essential implications for educators and policymakers that present VA as an excellent subject for fostering inventive development. If schools, teachers, and policymakers invest in fostering children's creative potential and development, it would, in turn, support the nourishment of their inventive thinking skills. As VAE plays a crucial role in fostering students to be creative (Alter, 2010), it would imply that creativity (as part of inventive thinking skills) could be nurtured and enhanced within this subject.

Critical and Creative thinking

This process of creative and critical thinking is essential to inventive development. The complex nature of VA supplies a high-quality platform for engaging students in critical and creative thinking (Efland, 2002; Eisner, 2002; Perkins, 1994;). Visual Art often presents technical and conceptual challenges that artists must solve. This process of overcoming obstacles stimulates critical thinking and creative problem-solving (Csikszentmihalyi, 1996). When it comes to defining critical thinking, it refers to the ability to clearly and logically consider the information presented to us, while creative thinking is about applying the imagination to produce novel or practical ideas (Bailin, 1987; Beyer, 1985; Iakovos, 2011). Alternatively, as (Vincent-Lancrin et al., 2019, p. 25) puts it, *"*Critical thinking is mainly inquisitive, a detective way of thinking; creative thinking is imaginative, the artist way of thinking*" (* p. 25). However we define the terms, it must be made clear that critical thinking and creative thinking are different; critical thinking focuses on 'inquiring', while creative thinking emphasises 'imagining'. Both of these areas are essential outcomes outlined and promoted by the NCCA (1999) VA curriculum. Several

researchers claim that critical thinking includes conceptualising, analysing, synthesising, and evaluating information generated by observation, experience, reasoning, or communication (Piaw, 2010). Hetland et al (2007) specify that critical thinking abilities are crucial for producing artwork when it comes to non-routine problem-solving in VAE. Again, we are drawing attention to the act of making art and the creative process involved, suggesting it is an area where children foster critical thinking skills. Creating artwork involves solving various problems, and the artist must solve these problems by thinking critically (Ulger, 2018).

We understand arts education as one of the types of educational models that allows the awakening of critical thinking from artistic works, as critical thinking is achieved when attitudes, emotions and expression of feelings are developed and when reflection and interpretation are stimulated. (Fernández Santín & Feliu Torruella, 2017). This is a fascinating point, as we are called to direct our attention to the importance of reflection that is involved in visual art education. Reflective practice encourages students to think about their thinking. It prompts them to consider their creative processes and choices while creating art, leading to greater self-awareness and improved problem-solving (Hattwig et al., 2013). It prompts them to think critically about how to overcome these obstacles in future projects (Hattwig et al., 2013). Alter (2009) explored the role of critical and creative thinking in Australian primary schools' VAE. She found that students in visual art lessons engaged in critical thinking when reflecting on their work. During appreciation and reflection periods, students practised analysing and evaluating visual information skills (Alter, 2009). Critical thinking was also apparent when teachers raised critical and probing questions about what sorts of messages were contained in artworks (Alter, 2009). When students are posed with interesting visual problems, it requires them to move beyond the simple art-making process

(Alter, 2009). This provides a key example of how VA can be utilised for more than just creating artwork; when teachers engage students in reflection and challenge them with intriguing questions, it opens up avenues for developing creative and critical thinking. Thus, in VAE, critical and creative thinking can be developed through the art-making process and the reflection of artwork.

Curiosity and experimentation

VAE channels the child's natural curiosity (GOI, 1999). A child "trying something new" and making a mess often just wanted to see what would happen. That child was curious and experimented to find an answer to the question. Pitri (2013) asserts that creative children put themselves in problematic situations and ask 'what if' questions, demonstrating a willingness to try something new. VA allows for experimentation, as children feel free of the pressure of 'getting things right'. Art classrooms allow children to explore their own ideas, fostering curiosity and a sense of ownership over their work (Smith-Shank, 2009). Visual art education teaches children that mistakes and failures can be valuable learning experiences, encouraging them to experiment and problem-solve (Craft, 2001). A classroom with a heavy academic environment enables no freedom to explore and experiment, which is detrimental to children's natural curiosity. Art education often places importance on the creative process rather than the final product and this mindset promotes experimentation and innovation (Burton, 2014). Teaching VA can provide guidance and support for experimentation, helping children explore new techniques and ideas in a structured and constructive manner (Hetland et al., 2007).

Adaptability/ Resourcefulness

Visual art education is essential for developing adaptability by encouraging children to embrace change, think flexibly, and respond imaginatively to new challenges. Children are taught to adapt to new materials, techniques, and creative processes as they work on various projects in VA, which often emphasises exploration and experimentation (Hetland et al., 2007). Often, there is no "right" way to create in VA, which encourages adaptation as students learn to interpret and approach the work in their own particular way (Burton, 2014). Consequently, the NCCA (2018) found:

> VA was spoken about as a calm space in which children could do their own thing and two children mentioned the absence of right or wrong answers. being a significant factor in their enjoyment of the subject.
>
> (NCCA, 2018, p. 37)

This highlights how the VA can provide a supportive environment for some children where adaptability can be developed through fostering freedom of expression, tolerance for ambiguity, and inventive problem-solving skills. Therefore, by encouraging children to explore and experiment without the constraints of right or wrong answers, the VA helps them become more adaptable and resilient in navigating both artistic challenges and everyday challenges.

What is more, during art classes, there are often opportunities for students to participate in critique sessions where they adjust and improve their work in response to comments from peers and teachers, encouraging flexibility and a willingness to change (Freedman, 2013). By encouraging resilience and a positive outlook towards setbacks, visual art education enables kids

to embrace and learn from mistakes, building adaptability (Craft, 2001). Visual art education can significantly foster resourcefulness in children by encouraging them to think creatively, use available materials effectively, and find solutions to artistic challenges. Moreover, problem-solving is frequently a part of artistic activities. Students learn to be resourceful as they identify challenges and devise ways to overcome them (Freedman, 2013). Using recycled and sustainable materials is emphasised in many art programmes. Repurposing and reusing materials in their artwork encourages kids to be resourceful (Smith-Shank, 2009).

In summary, visual art education is a vehicle through which students can develop inventive tendencies such as creativity, critical and creative thinking, curiosity, experimentation, adaptability and resourcefulness.

Approaches to fostering inventiveness in VAE

"How children learn is as important as 'what' children learn" (NCCA,2024, p.24). It's important to consider how VAE in Ireland supports opportunities for inventive development. Children engage as art-makers through investigation, creativity, and exploration, expressing their own thoughts, emotions, and experiences in tangible form through a variety of media (2024). As part of the new arts education curriculum in Ireland, children will have opportunities to engage in the following strands; Creating, Performing and Presenting, and Responding and Connecting. According to the Draft Specification for Arts Education (NCCA, 2024):

> Meaningful and child-centred learning in Arts Education occurs as children actively engage and participate in the interrelated processes of Creating, Performing and Presenting, and Responding and Connecting.

(NCCA, 2024, p.7)

These strands provide ample opportunity for nurturing inventiveness, such as generating ideas, using their imagination, taking risks, exploring, innovating and open-mindedness. (See Table 5 below).

Table 5

The Arts Education strands of the Primary Curriculum Framework

Creating	**Performing and Presenting**	**Responding and Connecting**
● Use their imagination	● Take risks	● Look at and listen to significant and renowned arts works
● Generate ideas and develop creative solutions	● Develop confidence and see themselves as an artist	● Identify and appreciate the value of the arts
● Explore, discover, innovate	● Self-express and communicate with confidence and efficacy	● Interpret, appreciate challenge and critique creative works
● Improvise, compose, devise, design, make, adapt	● Consider the purpose and the audience	● Make connections by analysing and applying knowledge
● Develop and apply skills in disciplines	● Choose multimodal approaches and/or digital technologies to present	● Recognise cross-curricular connections
● Co-create, collaborate, work as a team	● Interpret, arrange, adapt and refine performances and presentations	● Collaborate with other artists
● Foster a broad range of skills for self-expression	● Be persistent be inclusive	● Recognise identities and diversity in the arts of local, Irish, and wider cultures and communities
● Be determined be playful		● Be reflective
		● Be open-minded

These strands provide lots of opportunities for fostering inventiveness, as they encourage children to engage in a range of creative activities that stimulate their imagination and innovative thinking. By focusing on generating ideas, using their imagination, taking risks, exploring, innovating, and fostering open-mindedness, the framework actively promotes inventiveness in children's artistic endeavours. It is clear to see the framework offers a supportive environment that

fosters the skills and dispositions required for inventiveness, enabling children to develop into resourceful, creative, and innovative artists.

The new primary framework provides lots of information to help support teachers create meaningful arts experiences. The very nature of these experiences supports the development of inventive abilities. The framework views teachers as 'skillful and agentic professionals' (NCCA, 2023, p.5) who play a significant role in creating meaningful learning experiences for their students. One of the most significant contributions to pedagogy is made by teachers themselves, who set up the learning environment and provide the resources needed for children to explore, play, inquire questions, experiment, and discover (NCCA, 2023). In arts education, teaching and learning are centred upon playful approaches (NCCA, 2024). Playful teaching methods involve various levels of adult guidance and scaffolding (NCCA, 2024) In the draft 2024, it provides a multitude of ways in which the teacher can promote creative and playful learning experiences in their classrooms, see Table 6 below. It is imperative that teachers foster a safe environment that values student engagement, self-expression, and an openness to taking creative risks where learning from mistakes is emphasised.

Table 6

Creative and Playful approaches

Creative approaches	Playful approaches
• Promoting an atmosphere of playful curiosity, discovery, risk-taking, flexibility, persistence, patience, experimentation and reflection, where children feel • Providing a variety of stimuli and access to cultural experiences to inspire children and nurturing their imaginations • Encouraging children to use their imaginations and to explore individuality in their work so they can create new possibilities, generate and communicate diverse ideas, problem-solve, and create products • Providing opportunities for the formulation of ideas in collaborative supportive environments nurturing individuality in children's work	• Encouraging children to engage in playful exploration and experimentation, considering various possibilities and courses of action, and selecting, applying, modifying, and evaluating materials, ideas and techniques in their arts-making • Encouraging children to collaborate, improvise, inquire and (co-)create in Arts education, as a means of applying and deepening their knowledge of skills, techniques and concepts • Encouraging children to engage deeply, through playful response, with arts works in a variety of styles/genres through guided, open-ended, playful and sensory artistic activities that can involve improvisation, collaboration, dance, movement, hands-on response with materials and objects, and (re-)creation.

These creative and playful approaches to VAE provide a supportive and stimulating environment that nurtures inventiveness by encouraging exploration, experimentation, collaboration, and imaginative thinking. These approaches cultivate the skills and dispositions necessary for children to become inventive artists who are able to generate innovative ideas and express themselves

creatively in diverse ways. Ultimately, this highlights the role of the teacher is vital in fostering inventive development as they need to select suitable approaches and create meaningful experiences

The Old Curriculum vs the New Curriculum

The significance of arts education is made obvious in this new framework and considering all the new changes, it is imperative to address the significant adjustments to VAE since it could impact inventive development opportunities for children. In this section, I will compare the NCCA 1999 VA curriculum to the New Primary Arts Education Curriculum. The following areas will be discussed in more detail, strands, key concepts, and time allocation.

Strands

A key difference between the two curriculums is the strand areas. The 1999 NCCA VA curriculum has six strands: Drawing, painting and colour, printing, clay, construction, and fabric and fibre (GoI,1999a). Each strand comprises two interrelated strand units which involve making art and looking and responding to art, see Table 7.

Table 7

NCCA 1999 VA strands and strand units

Strands	**Strand Units**
Drawing	● Making drawings ● Looking and responding
Paint and colour	● Painting ● Looking and responding
Print	● Making prints ● Looking and responding
Clay	● Developing form in clay ● Looking and responding
Construction	● Making constructions ● Looking and responding
Fabric and Fibre	● Creating in fabric and fibre

This Visual Art curriculum also included a detailed accompanying document, The Visual Art Teacher Guidelines, which contains instructions and exemplars for teaching on each strand with illustrations (GOI, 1999b). These guidelines are helpful and ample in terms of providing starting points and organisational elements for each strand regarding materials, classroom environment, workspace, time and display. According to Ni Bhroin (2012), this accompaniment is uncommon and quite rare when compared to curricula of a comparable nature from the United Kingdom or abroad. The Irish Visual Art Teacher Guidelines and Exemplars are intended to be non-prescriptive but rather as guidelines to offer teachers a sense of what might be explored within the field of VA (NCCA 1999b). In comparison, the New Arts Education Curriculum has significantly reduced the number of strands to 3, namely, Creating, Performing and Presenting, and Responding and Connecting.

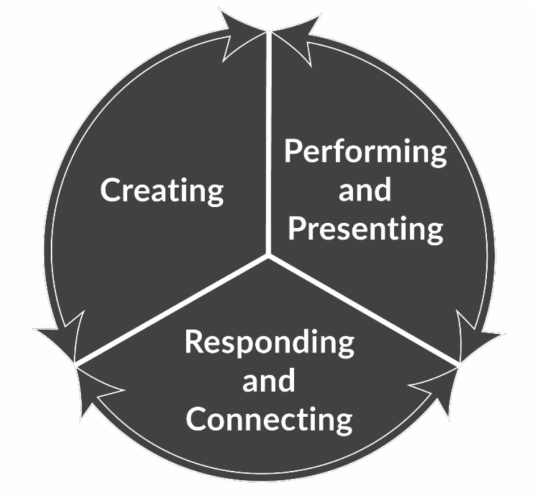

Figure 3

The Primary Curriculum Framework Strands in Arts Education

In the table below, a brief overview provides further detail on each strand. Notably, the VA, Music, and Drama all follow the same strands, so the overview applies to each of these subjects.

Table 8

Overview of Strands

Strand	Overview
Creating	Children use materials, skills, and concepts to create, revise and further develop both individual and collaborative artwork. They also explore, come up with ideas, take creative risks, and experiment. In addition to applying their talents in dance and other integrated art forms, they use their creativity and imagination to improvise, create, design, and make art, drama, and music.
Performing and presenting	Children use a variety of media and art forms to perform and communicate. They use multisensory approaches, such as sounds, visuals, movement, and gesture, to communicate their thoughts, feelings, and ideas. They recognise the value of an audience for the arts and present, exhibit, share, and discuss their work in the areas of drama, music, and integrated arts with others.
Responding and connecting	Children engage in critical reflection, observation, listening, analysis, response, and appreciation of their own and other artists' works that are associated with their local community, Ireland, and the wider art world. Together with dance and other integrated art forms, they should be exposed to a variety of art, drama, and music styles and genres. They gain the ability to make sense of the world, investigate, and relate their experiences to broader settings, cultures, and the artistic community.

What's interesting about this new framework is the removal of strand units. In the Draft Arts Education Curriculum Specification for all primary and special schools for consultation (2024), it showcases within one of its appendices the learning outcomes for each strand. It is notable within this appendix, that the learning objectives for Drama, Music and Art are all grouped together under the same strand. This illustrates the motivation of the new curriculum for simplified,

and straightforward learning objectives. Furthermore, the learning outcomes are divided into 4 stages; Stage Junior and Senior infants, Stage 2 First and Second class, Stage 3 Third and Fourth class and Stage 4 Fifth and Sixth class. Class groups are arranged into these stages in the same way as the 1999 VAC. Unlike the 1999 VAC, which included learning outcomes for each strand unit, the new curriculum has opted to remove strand units and replace them with more general learning outcomes under the strand. As the learning outcomes apply to the strand, they are very broad and open to interpretation. This change may cause conflict among teachers, as some may love the freedom of choice this offers, whereas other teachers may desire more direction and specific learning outcomes to follow. One encouraging aspect of the new curriculum is its recognition that these learning objectives can be accomplished "Through appropriately playful and engaging learning experiences" (NCCA, 2024, p. 17). Play is therefore highlighted as an effective teaching tool for the arts.

Key concepts

Both the old and the new curriculum place huge emphasis on the following core art concepts; line, shape, form, colour and tone, texture, pattern, and space. These concepts are expanded on below.

Art concepts	
Line	Connects two points, and can be thick, thin, delicate, bold, curved, straight, continuous or broken.
Shape	Geometric, like squares and circles, or organic, like free-form or natural shapes.
Form	Constructed in 3D art by using a range of materials and techniques, and suggested in 2D art by using colour and tone.
Colour and Tone	Colour is based on the colour wheel. Tone is the lightness or darkness of a colour. Temperature refers to whether a colour is 'warm' or 'cool'.
Texture	Roughness or smoothness of a surface, and how it feels to touch. Can be constructed in 3D art by using a range of materials and techniques. It can be suggested by using line, colour and tone in 2D art.
Space	The areas around, within and between different parts of a composition.

Figure 4

Screen print of table depicting concepts of Art (sourced from pg. 11. Draft 2024)

According to the 1999 VAC intentions, these concepts will be developed when the strands and strand units have been completed. This may put pressure on the teachers to *feel obliged to* complete each strand and strand unit. However, the new curriculum gives teachers the flexibility to explore these ideas through any kind of art activity they have in mind. Moreover, appendix A of Draft Arts Education Curriculum Specification For all primary and special schools for consultation (2024), provides a clear overview of the progression of these art concepts mentioned above. This appendix contains expectations for each stage broken down so teachers can see how their students can progress with each art concept from one stage to the next. For example, what a child learns about 'colour and tone' in stage 1 will be built on and developed further in stage 2. This is a very helpful document for teachers as it presents clear objectives for each concept that is not limited to a strand or strand unit like the 1999 VAC.

Time Allocation

Another notable difference between the two curriculums is the time allocated to arts education. The NCCA 1999 VAC proposed 3 hours of art education per week for 2nd 6th classes and 2.30 hours per week for infant classes (NIPT, 2012). This would equate to approx. 10 -12 hours a month of arts education and this amount of time must cover all three arts subjects. In contrast, the new curriculum time allocation for arts education is 8 hours a month for 3rd to 6th and 9 hours for Junior Infants to Second class. Again, as this time is shared out between Music, Drama and VA, this significant drop-in time will no doubt have some effect on arts education and teachers may even experience increased time pressures to complete curriculum demands. The new curriculum claims that children have creative energy and require lots of opportunities for creative behaviour, (NCCA, 2023) which is contradicted by its own reduction of time from subjects that ought to provide plenty of opportunities for creative growth.

However, perhaps it is the goal of the new curriculum that this reduction in dedicated time for art will be compensated through integration, as it places a huge emphasis on connecting ideas across different curricular areas through the arts (NCCA, 2024). According to the new curriculum, integration can take various forms and occur at different levels (NCCA, 2023). Yet the new curriculum offers limited practical guidance for teachers on how to implement it effectively. As a result, some teachers may not fully understand what holistic integration entails, especially if it is merely seen as combining subjects. For instance, a teacher teaching history and asking students to draw a picture of a Greek vase, labelling it as art, does not constitute true integration. The Draft Arts Education Curriculum Specification (2024) states that "Integration provides opportunities for

dynamic and creative pedagogy to facilitate engaged and purposeful learning," yet it does not offer sufficient direction on how to realise these opportunities in practice.

What's more, Arts education can frequently be neglected and suffer as a result of curricular requirements and other school-related stresses (Eisner, 2002). It is therefore sad that there is less time allocated for arts education in the new curriculum. However, the new curriculum advocates block learning for arts education and is hopeful that time allocated for arts will provide opportunities for teachers to use substantial blocks of time in their curriculum planning to enable the use of particular pedagogical approaches such as project work, play, inquiry-based learning, Content Language Integrated Learning (CLIL), and involvement in local initiatives (Department of Education, 2023, p.28).

In summary, the new changes in strands and time allocation will either enhance or hinder opportunities for inventiveness in the VA for children. Yet, the Draft for Arts education appears to be a well-designed curriculum that encourages innovation, experimentation, and creative exploration while providing ample time for artistic development. Therefore, it is likely to foster inventiveness and support children's growth as imaginative and innovative artists. It is also important to recognise the differences between the 1999 curriculum and the new draft curriculum, particularly regarding their structure and available data for analysis. The new curriculum is a framework document focusing on general principles and intentions, with further tools and detailed guidance anticipated for implementation. In contrast, the 1999 curriculum provides a more detailed specification, outlining clearer aims, competencies, and guidelines. One notable distinction is that the new curriculum positions creativity as a key aim and competency, which reflects a more

focused approach to integrating creativity into education, which in turn could foster inventive development.

Reviews of the 1999 curriculum

The Primary Curriculum Framework is in its early stages of implementation yet to be critiqued and evaluated. As a result, we cannot predict how successful this new framework will be. However, the last two reviews regarding the NCCA 1999 VA curriculum, which took place in 2005, have valuable insights which can be helpful for future teaching of VA, namely, an Evaluation of Curriculum Implementation in Primary Schools English, Mathematics (Department for Education and Science, [DES], 2005) and VA' and the Primary Curriculum Review (National Council for Curriculum and Assessment, [NCCA], 2005). The DES (2005) reported that in the VAE field, inspectors found that up to one-quarter of classroom environments were not supportive of pupils' creativity despite acknowledging that students were active agents in the design process of their own artwork. The report expressed that poor lesson stimulus, weak displays and fruitless use of resources in these classrooms stifled pupils' creativity, spontaneity, and independence (DES, 2005). In addition, the Inspectorate (2005) noted that "in some classrooms, insufficient motivation, over-prescriptive starting-points, lack of appropriate strategies and failure to provide stimuli prevented the realisation of curriculum objectives" (p. 41).

What is more worrying, the report revealed that in a minority of classrooms, VA activities were almost entirely teacher-directed, with significant emphasis placed on the creation of formulaic template art, ultimately leading to the detriment of pupils' creativity (DES, 2005). The DES 2005 recommended that pre-designed templates should be avoided in lessons in order to give

students opportunities for individual expression. It was also noted that strands need to be engaged with more consistently; "the creative environment was hindered due to lack of appropriate stimuli and approaches while it was found that in some classrooms 'pupils' creativity was hindered through the use of templates'" (DES, p.41, 2005). This finding demonstrates how using templates contradicts curriculum objectives and restricts student creativity, individual expression, and ownership of their work.

It also shows that there may be a misunderstanding that the goal of visual art is to produce a finished product. However, despite all the guidelines, additional support and resources available to teachers in Ireland, visual art lessons can be dominated by overly structured lessons where creativity and inventiveness are limited. More often than not, templates in VA can be abused and misused because this is the only source of art children have access to. If this is the case, then the creativity is not coming from the child but from the adult, which would be taking away the opportunity for children to develop inventive skills, limiting individual expression and imagination. Hickey's (2005) case study on Issues and Challenges in Implementing the 1999 Curriculum for VA: in a Junior School also revealed a strong focus on replication, leaving lessons more product orientated which does not quite celebrate the individual artistic process echoed in the curriculum. Regimenting visual art like this in the classroom goes against its goals as a curriculum, "to standardise forms of artistic expression can stifle creativity and thereby encourage passivity" (Tan & Gibson, 2017, p.297). This suggests that how Irish primary teachers teach VA can affect and limit the development of creative abilities. If the potential for creative abilities is not being reached, this leads us to question whether capacities for inventive skills are being undeveloped.

Although teachers reported having numerous successful visual art experiences owing to the revised VA programme (NCCA, 2005), the DES (2005) highlighted that teachers feel most comfortable when facilitating activities in familiar areas, namely two-dimensional media, specifically drawing and painting. This is interesting as the NCCA (1999) values themes such as clay, construction, fabric, and fibre as critical areas to encourage inventiveness. It, therefore, indicates that Irish primary teachers who feel uncomfortable in specific areas of the curriculum, mainly clay or construction, rob children of opportunities to develop inventive abilities. This also suggests that teachers may require additional support to develop their inventiveness through clay, construction, fabric, and fibre before they enter these curriculum strands with students. The imbalance between art experiences in two and three-dimensional media, along with the disproportionate time allocated to the artmaking process and responding to works of art, limits the implementation of the envisioned VA programme by the Primary School Curriculum (DES, 2005). While the DES (2005) report outlined a somewhat positive relationship between primary school teachers and VA teaching, it is apparent that teachers' perceptions of strand units of the curriculum affect their implementation of them. For instance, a teacher with a negative attitude towards clay may feel less likely to engage in many lessons involving clay, despite the NCCA (1999) values of its potential for fostering inventive qualities. Thus, it can be devised that teachers' perceptions of VA play a key role in a balanced teaching of VAE.

There is an absence of official reports or studies in Irish research on teachers' perspectives on VA. However, the INTO designed a questionnaire randomly circulated to 1,000 teachers to gain insight into their perspectives and practices on teaching drama, music, and the VA (INTO, 2010). While it does not represent the entire population of primary teachers in Ireland, the replies supply

some insight into educational practice in arts education. VA were revealed to be the area of arts education where respondents were most at ease (INTO, 2010). Despite three-quarters of respondents feeling they were "confident" or "very confident in teaching the VA, the information from the questionnaire correlates with the DES (2005) report, highlighting that activities in drawing and painting dominate the VA programme (INTO, 2010). Not surprisingly, clay, construction and fabric and fibre activities were declared by respondents to be the most difficult art experiences to facilitate (INTO, 2010). Again, these areas of the art curriculum are highly valued as inventive outlets by the curriculum. Nevertheless, teachers often refrain from engaging with these areas, so much so that one-quarter of respondents evidenced that specialist teachers were hired by their schools to deliver elements of the VA curriculum (INTO, 2010). Echoing the evaluations of the NCCA (2005) and the Inspectorate (2005), there needs to be more opportunities presented to students in making art and in responding to artwork in the responses of this questionnaire. This is startling as research has shown how responding to artwork fosters critical thinking, reflection, and analysis skills. Even though responding to artwork features massively in the VA curriculum (GOI, 1999), teachers are unintentionally prohibiting the development of critical thinking skills by not engaging in responding activities, which leads to wasted opportunities for nurturing inventive thinking skills for students. What is more alarming is that three-quarters of respondents professed to devote their teaching time in VA to creating artwork (INTO, 2010). This is a repeated shortfall in what is otherwise appraised as an embraced curriculum. Flannery (2012) suggests that due to teachers ‘expressionistic epistemological leanings’, loco parentis, their digital and cultural literacy, and the thematic approach to planning this aspect of the VA curriculum is poorly implemented. Flannery (2012) suggests that teachers

require continual professional development and access to appropriate resources (Flannery, 2012). Although research applauds the functional and cognitive benefits of the creative process, neglecting other important aspects of the VA curriculum will cause imbalances. If a teacher solely focuses on producing artwork, they take advantage of vital opportunities to stimulate critical thinking, reflection, and analysis, which can mostly occur through responding to artwork.

Despite the hope of the new curriculum, the evidence from the previous reviews on the 1999 curriculum holds valuable information about teachers' perspectives and attitudes towards VAE. The new curriculum is not going to change how teachers value or teach VAE overnight. Additional support and resourcing are needed from the Department of Education for teachers to feel comfortable and confident teaching all curriculum strands and strand units of the VA Curriculum. Unless this is provided, teachers will continue to teach the way they have, and no real changes will be made. Teachers who perceive artmaking as the main focus of their lessons impede a well-rounded VAE for their students. Therefore, recognising the role and impact teachers' perspectives have on what is being taught in their visual art lessons is essential.

Barriers to inventiveness in VAE

Despite several references to developing children's inventive abilities in the Irish VA Primary School Curriculum (NCCA,1999), research indicates that some teachers and schools teach VA in a manner that limits children's opportunities to explore, experiment and invent. Inventive development in VAE may be impacted by the following obstacles presented in Figure 5.

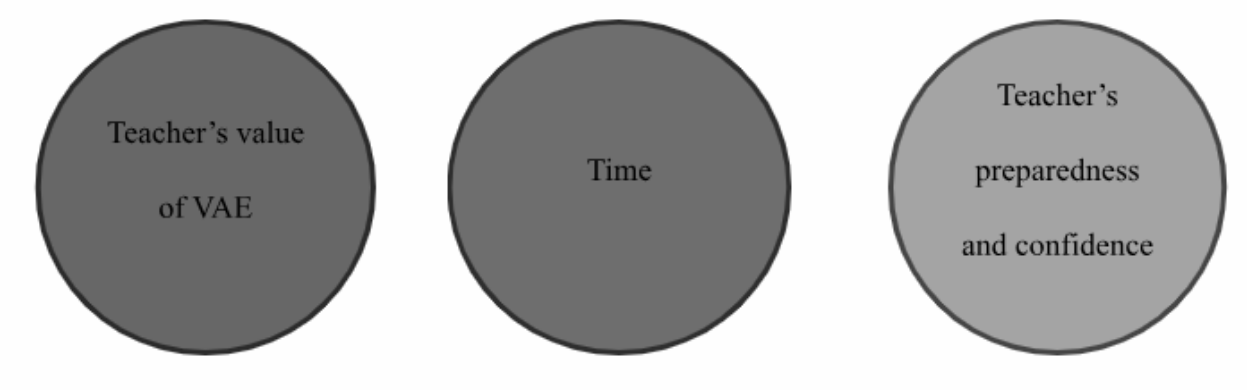

Figure 5

Obstacles impacting Inventive Development

Teacher's Value of VAE

Alter (2011) suggests the VA were acknowledged as only operating and functioning within the affective domain rather than being viewed within the intellectual realm. In other words, the 'productive arts' approach prevails as a vital part of VA (De Backer et al., 2012). Teachers appear far more focused on the 'end product' rather than the 'process', which offers unique, enriching opportunities. Yet some researchers believe the concept of arts learning has moved away from 'spontaneous expression' and more towards viewing arts education as a process that engages students on a cognitive and personal level (Gullatt, 2008; Rabkin & Redmond, 2006). Consequently, VAE is more than just a manual-based subject; there is scope to stimulate creative and critical thinking skills, encourage problem-solving through the creative process and enhance creativity, risk-taking and curiosity.

Time

Another potential impediment to the development of inventive skills through VA is time. The NCCA released an executive summary in December 2016 entitled Proposals for Structure and Time Allocation in a Redeveloped Primary Curriculum: For Consultation. This document allocated 3 hours per week for arts education (which includes VA, drama and music). Thus, VA may only be allocated 1 hour per week, if even. VA can often be considered a luxury in our schools, a place for individual expression but not an essential component of education. According to Jesson (2012), "the lack of time in a crowded curriculum to experiment, innovate, and think about ideas" (Jesson, 2012, p. 14) has a detrimental effect on student creativity in the classroom. Burton (2014) makes a valid point about how teacher burnout can negatively affect the standard of art instruction, and this can be caused by excessive demands and workload, standardised exam pressure, and curriculum restrictions. With the pressure of standardised tests and the emphasis on core academic subjects might cause art education to be reduced, reducing the chances for students to engage in creative expression (Burton, 2014). This highlights a worrying concept, as teachers may be pressured to keep up with other more demanding curricular subjects and devote less time to VA. This implies they may not have time to plan and prepare adequate lessons to develop creative tendencies with so much demanded of them. When compared to other topics, visual art education can occasionally be perceived as less critical or expendable (Hetland et al., 2007). Additionally, with a high number of students in classrooms, teachers in visual art classes may find it challenging to give each student individualised attention and guidance (Efland, 2002). Because of this, it can be hard for teachers to find the time to plan, and they may find template art more manageable and easier to control. However, overprescribed lessons and templates rob students of opportunities to

explore their inventiveness and creativity. This view of VA is a detriment to the potential it holds for unlocking students' inventive abilities.

Teachers' preparedness and confidence

Teachers' preparedness and confidence are other factors proving to be barriers to VAE. The aforementioned DES (2005) report and Ní Bhroin's (2012) research on how the Irish visual art curriculum has been implemented explore the shortfalls in teaching skills in visual art which was linked to a lack of confidence in teachers' own art abilities even with the accompanying guidelines and a two-day in-service training in VA. However, Chapman (2005) pointed out that low levels of confidence and competence in visual art are not exclusive to Ireland, as there are trends noticed internationally in the lack of basic skill sets and experience in art making at the primary school teacher rank. The ability of teachers to provide high-quality art teaching might be hindered by insufficient teacher preparation and professional development (Efland, 2002). For instance, a teacher may not feel confident in their prior knowledge/ experience in VA and, therefore, is not willing to experiment in their art classroom. Furthermore, insufficient resources for her desired art lesson may affect a teacher's preparedness. Insufficient funding, limited access to art supplies, and inadequate space can inhibit the delivery of effective visual art education (Smith-Shank, 2009). On top of that, children from lower socioeconomic backgrounds may be affected as they often attend schools with fewer resources and emphasis on art opportunities (Burton, 2014). This point by Burton 2014, provokes us to look at the school itself and how the school can affect visual art education, too.

The teacher's role in Visual Art Education and Inventive Development

Quality art teaching at the primary level depends more on the teacher (NCCA,1999). As primary school may be the only experience some children have to engage in making and learning about art, it is vital to acknowledge the role the teacher plays in providing quality learning experiences in visual art. Thus, a considerable emphasis is placed on the significance of the teacher's role and influence in delivering a high-quality VA experience to their students (Hattie, 2012). Most recently, in January 2023, The Department of Education published an inspectorate report, looking at VA Draft Guide for Primary Schools, which detailed the most effective teaching and assessment practices in VA. The report affirmed that most effective teaching occurs when teachers' prepare and implement purposeful learning experiences for each strand of the VA curriculum that facilitates the development of pupils' creativity and innovation' (Inspectorate, 2023). However, this report does not provide any information on how teachers are doing this or, alternatively, what ineffective practices teachers engage in. This leads us to question how some teachers are regarded as successful while others fall short. Yet, we can presume it relates to teaching methods and approaches used by primary school teachers in their VA lessons.

In VA, the quality of the teaching process greatly depends on the creative and effective combination of teaching methods that are general and subject-specific (VA) (Tomljenović, 2018). Therefore, utilising effective teaching methods in visual art classes is an important part of the teachers' role. According to the NCCA (1999) VA Teacher Guidelines, the teacher should be viewed as more of a catalyst than a teacher of technique (NCCA,1999). This highlights a vital purpose of a primary school teacher's role, which should be more concerned with creating

opportunities that encourage children to explore and experiment using their creative and inventive tendencies instead of focusing on teaching specific art techniques. Therefore, focus should be placed on what teaching approaches help teachers facilitate inventive and creative development in their art classes. Encouraging a method of guided discovery in a VA curriculum allows the teachers to create authentic creative experiences for their students while encouraging genuine artistic engagement, "in an art lesson, the children should remain the designers: this role should not be taken from them" (GOI, 1999b, p.12). Instead of creating the lot themselves, the teacher should contribute to finding feasible ways to stimulate the kids' inventiveness (GOI, 1999, p36). The January 2023 Inspectorate report agrees with this notion, emphasises guided discovery and open-ended and playful learning, and expresses that over-reliance on teacher-designed tasks should be avoided (Inspectorate, 2023). Therefore, guided discovery is an effective approach in VAE. Through engaging in guided discovery, teachers are nurturing inventive tendencies where students can actively explore and learn by making their own discoveries with guidance and support from the teacher.

Furthermore, the teacher plays a role in creating opportunities for reflection, which stimulates critical thinking, as discussed, a key component of being inventive. In VA, students reflect on their work and creative processes. Reflection allows them to identify what worked, what did not, and how they can improve, supporting ongoing inventive development (Hattwig et al., 2013). Teachers can model inventive thinking and creativity by sharing their own creative processes and ideas. Leading by example can inspire students to develop their inventive abilities (Sawyer, 2006). Therefore, a more deliberate 'teacher-directed' approach is needed to foster these thinking skills among students (Alter, 2011). Thus, analysis and reflection are highly supported

within VA when adequately executed by teachers. This contradicts guided discovery, which is heavily promoted as the key teaching method in VA. This allows us to consider that other teaching styles and approaches could potentially develop inventive skills, and we should not rely on just guided discovery. For instance, in VAE, self-directed learning is a student-centred approach where the student shapes their learning experience. With self-directed learning, students have the flexibility and power to decide for themselves what, why, how, and where to learn (Francis, 2017). This means they can control their learning journey, set their own goals, and explore their creativity. In self-directed learning, the teacher offers appropriate levels of support and guidance, adjusting their assistance as needed. This scaffolding helps students develop the skills and confidence to take control of their learning (Vygotsky, 1978). When a teacher facilitates self-directed learning, students can select what techniques and resources they want to use for their artwork. Autonomy empowers them to take ownership of their creative processes and encourages inventive thinking (Ryan & Deci, 2000). Therefore, the teacher's role in self-directed learning can be seen as that of a facilitator, mentor, and guide.

We can see that teachers play a vital role in VA and in fostering inventive development, which can be done through the teaching methods they use. Guided discovery, teacher-directed learning and self-directed learning are some examples of methods teachers can utilise to nurture the inventive tendencies in their students. However, the teaching method and techniques are a choice that is solely up to the teacher, and they alone decide how to teach their visual art lessons. This research believes this choice is dictated by the teacher's perspective of visual art education.

Visual Arts, Inventiveness, and STEAM Education

There is a growing trend in integrating the arts into STEM (Science, Technology, Engineering and Maths) and making it STEAM (Jones, 2011). STEAM is important because it helps teachers incorporate multiple disciplines simultaneously and supports learning experiences that enable children to explore, question, research, discover, and practise creative problem-solving techniques (Colker & Simon, 2014). Incorporating the arts into STEM is a perfect match because of STEAM's thrives on creativity and design, unlocking new possibilities for invention and imaginative problem-solving (Sharapan, 2012). According to Bertrand & Namukasa (2020), STEAM concepts are second nature for children, as they like to explore and experiment. Thus the addition of arts to STEM shows a growing understanding of the value of the arts as a critical element in education for fostering creativity and innovation. The Draft Arts Education Curriculum Specification For all Primary and Special Schools For Consultation (2024) reflects this global movement towards STEAM, as it strongly emphasises the integration of arts across subjects and states 'How children learn is as important as 'what children learn' (NCCA, 2024, p. 24). In this document, it suggests key areas for consideration in the teaching of arts education, and notably, integration is mentioned. This new arts curriculum highlights that *"Diverse learning experiences provide children with opportunities for problem-solving, decision-making, creativity, and collaboration"* (NCCA, 2024, p.28). According to this new arts curriculum, through integration, children can engage in inquiry-based learning, design-thinking processes and or explore various different themes in project-based work (NCCA, 2024). This showcases the value that the new curriculum possesses on the importance of nurturing critical thinking, problem-solving, and creativity in young learners, thus encouraging a generation of innovative and inventive minds. The following explores the

connection between the role of STEAM education and Inventiveness and STEAM in the visual arts classroom.

The Role of STEAM Education

Young children need time to explore, create, and innovate (DeJarnette, 2018). They want to learn and gain an understanding of how the world works (Koester, 2013). Banko et al (2013) believe that young children have a natural disposition toward science with their sense of creativity, curiosity, and persistence. DeJarnette (2018) asserts that young children have a natural sense to work with materials, try things out, and problem-solve. DeJarnette (2018) also believes that STEAM activities provide young children with a natural environment for collaboration and communication. In STEAM education, teachers play a vital role by challenging young students to evaluate their designs critically and think about ways to enhance them (Ingram, 2014). By guiding students through questioning, teachers can transform playful experimentation into meaningful learning experiences, fostering problem-solving skills, creativity, and resilience. This approach helps students develop a deeper understanding of STEAM concepts.

In a 2014 article published in *Education Week*, Jolly highlights the ongoing debate between STEM and STEAM advocates, acknowledging that both approaches have value, but that STEM tends to focus more on maths and science for specific objectives, while STEAM broadens the scope to include design, computer graphics, performing arts, creative thinking, and even playful problem-solving in the exploration and design of solutions. However, as Herro and Quigley (2016) point out, the relative novelty of STEAM means that there are still few in-depth examples of its teaching practices documented. Despite the lack of research on STEAM teaching practices in K-12 classrooms (Kim & Park, 2012), many schools have embraced the inclusion of the "A" in

STEM, promoting the arts and humanities as a way to enhance STEM learning (Delaney, 2014). Supporters of STEAM argue that traditional STEM approaches are often too narrow, overlooking the importance of student creativity and expression, which are essential for fostering innovation and deeper engagement in learning.

According to DeJarnette (2018), early exposure to STEAM offers numerous benefits for young children. Becker and Kyungsuk's (2011) research found that cohesive STEAM lessons in the curriculum positively impacted elementary student achievement. In a study by Bertrand & Namukasa (2020), the main finding focused on how students developed perseverance and adaptability, along with character-building skills such as curiosity, imagination, oral and written communication, collaboration, and critical thinking and problem-solving. Introducing STEAM at a young age also helps reduce gender-based stereotypes and barriers in STEM fields (Davidson, 2011; Kazakoff et al., 2013). STEAM teaches students *skills* such as "critical thinking and problem-solving; collaboration and communication; and creativity and innovation" (Liao et al., 2016, p. 29) that can be applied in various contexts. Similarly, Conley et al. (2014) argue that integrating the arts into STEM enhances communication and critical-thinking skills. These STEAM initiatives enable students to transfer their knowledge across disciplines, enabling them to creatively tackle problems both inside and outside the classroom (Gess, 2017; Liao, 2016). As Hughes (2017) emphasises, developing these character-building or transferable skills is crucial for students: "They need to cultivate and apply them for successful learning, living, and working" (p. 102). Bequette and Bequette (2012) explore how creative processes intersect with design thinking to address scientific problems. For instance, a science student might use art to model a scientific concept. In contrast, an engineering student could apply design principles to create solutions that

are both functional and visually appealing. These connections highlight the importance of interdisciplinary learning, encouraging students to engage with both their technical skills and their creativity. Therefore, by including the arts, STEAM not only encourages students to think outside the box but also nurtures communication and visual literacy—skills that are essential in today's rapidly evolving world. However, there is still limited research on the effects of STEAM initiatives in early childhood education (Moomaw, 2012).

Inventiveness and STEAM in the Irish Visual Arts Classroom

In recent years, STEAM education has become popular around the world, and Ireland is no exception. Irish primary schools have increasingly adopted STEAM-based approaches to learning, recognizing the importance of interdisciplinary education that merges creativity with technical knowledge. The Department of Education in Ireland emphasises the need for schools to prepare students for a rapidly changing world by promoting skills such as creativity, innovation, and adaptability (DES, 2015). Irish primary schools have begun to embrace STEAM initiatives, such as the "Discover Primary Science and Maths" program, which encourages students to engage with scientific and creative thinking through inquiry-based learning (Science Foundation Ireland, 2020). These initiatives highlight the potential for visual arts to contribute to students' understanding of scientific concepts while promoting creativity and inventiveness. Furthermore, the National Strategy on Education for Sustainable Development in Ireland emphasises the importance of creative and critical thinking in addressing global challenges, such as climate change and sustainability (DES, 2014). Visual arts projects that engage with these themes—such as creating artwork from recycled materials or designing eco-friendly products—teach students to approach complex problems with inventiveness, encouraging them to find practical and

imaginative solutions. Inventiveness is at the heart of both the visual arts and STEAM education. Visual arts play a vital role in this process, as they provide a platform for experimentation and self-expression (Eisner, 2002). As the Irish education system continues to adapt to global trends, the role of visual arts in fostering innovation and expanding the boundaries of what is possible in both art and science cannot be understated. With initiatives like STEAM, Irish schools are preparing students not just for academic success but for a future where creativity and problem-solving are key to addressing the challenges of tomorrow. By integrating the arts into STEAM education, students learn to approach challenges from different angles, think outside the box, and develop innovative solutions. This inventive mindset is essential for success in the 21st century, where the ability to combine creative thinking with technical skills is increasingly valued across industries (Robinson, 2011). By encouraging students to think critically, creatively, and collaboratively, STEAM fosters an inventive mindset that will serve them well in an increasingly complex and interconnected world.

STEAM is significant because it helps teachers incorporate multiple disciplines at the same time and promotes learning experiences that allow children to explore, question, research, discover, and exercise innovative building skills (Colker & Simon, 2014). Including the arts in the STEM disciplines is a natural fit because of STEAM's emphasis on creativity and design (Sharapan, 2012). According to Bertrand, M. G., & Namukasa, I. K. (2020), STEAM concepts are second nature for children, as they like to explore and experiment within their natural environment. Adding art provides additional options for educators to present STEM concepts to children, especially at the elementary and early childhood levels (Bertran & Namukasa, 2020). Robelen (2011) states that STEAM integration allows for the intersection of the arts with the

STEM fields, which not only can enhance student engagement and learning but also help unlock creative thinking and innovation. As a result, visual arts in STEAM education serve as a crucial link between abstract concepts and real-world applications, helping students understand and creatively apply their knowledge, ultimately enhancing their ability to innovate.

However, it is important to note that when confronted with the new emphasis on STEAM education in primary grades, many teachers feel intimidated, lack self-efficacy, and exhibit negative attitudes due to insufficient training (Jamil, et al. 2018). As a result, when teachers feel inadequate in certain content areas, they often spend less time teaching those subjects to their students (DeJarnette, 2018). Research by Nugent et al. (2010) showed that effective professional development significantly boosts teachers' knowledge of engineering and fosters more positive attitudes toward STEM. This, in turn, boosts their self-efficacy and confidence in teaching STEM lessons. Self-efficacy refers to an individual's belief in their own ability to succeed at a task (Myers, 2014), reflecting their perception of their capabilities. The lack of STEM and STEAM training for elementary and early childhood teachers underscores the urgent need for quality professional development. This could potentially present an area for further research within an Irish context.

Conceptualising perspectives and their importance

Teachers' perspectives on VAE are vitally important to the way in which they teach VA. As my research proposes to gain insight into Irish primary school teachers' perspectives on developing inventive thinking skills through VA, it is first essential to define 'perspectives' and then examine the factors that influence teachers' perspectives on VA teaching and learning.

Research commonly associates the definition of perspective with a point of view or particular attitude towards something. A point of view in philosophy is often referred to as a particular attitude or way of thinking. While Hughes (2005) contends that possessing ‘a view or prospect’, ‘a particular manner of perceiving something’, or ‘an appreciation of the value of things’, are all examples of perspectives. With this in mind, this research will view perspectives in regard to attitudes. People's attitudes influence how they respond, either favourably or unfavourably, to things, circumstances, or propositions (Guilford, 2004). According to Robert (2001), an attitude typically consists of three parts:

- A cognitive component (beliefs)
- An emotional or affective component (such as liking or disliking)
- A behavioural component (tendency to act towards these items in various ways)

In other words, attitudes, as defined here, suggest that people act in ways consistent with their deeply held ideas, opinions, and feelings. Therefore, when referring to a person's attitude, we are typically trying to gain insight into their behaviour. For instance, it is easily understood when we say someone has a positive attitude toward work or a negative attitude toward work, we refer to the person's attitude regarding behaviour and emotions. For example, a teacher's attitude toward developing inventive abilities through VA encompasses their point of view about the topic (e.g. thought); how they feel about this topic (e.g. emotion), as well as their actions (e.g. behaviours) and these combine to affect how the teacher will engage with developing inventive abilities in VA. This is known as the tri-component of attitudes (see Figure 6). Affect (a feeling), cognition (an idea or belief), and behaviour are the three parts of an attitude (an action).

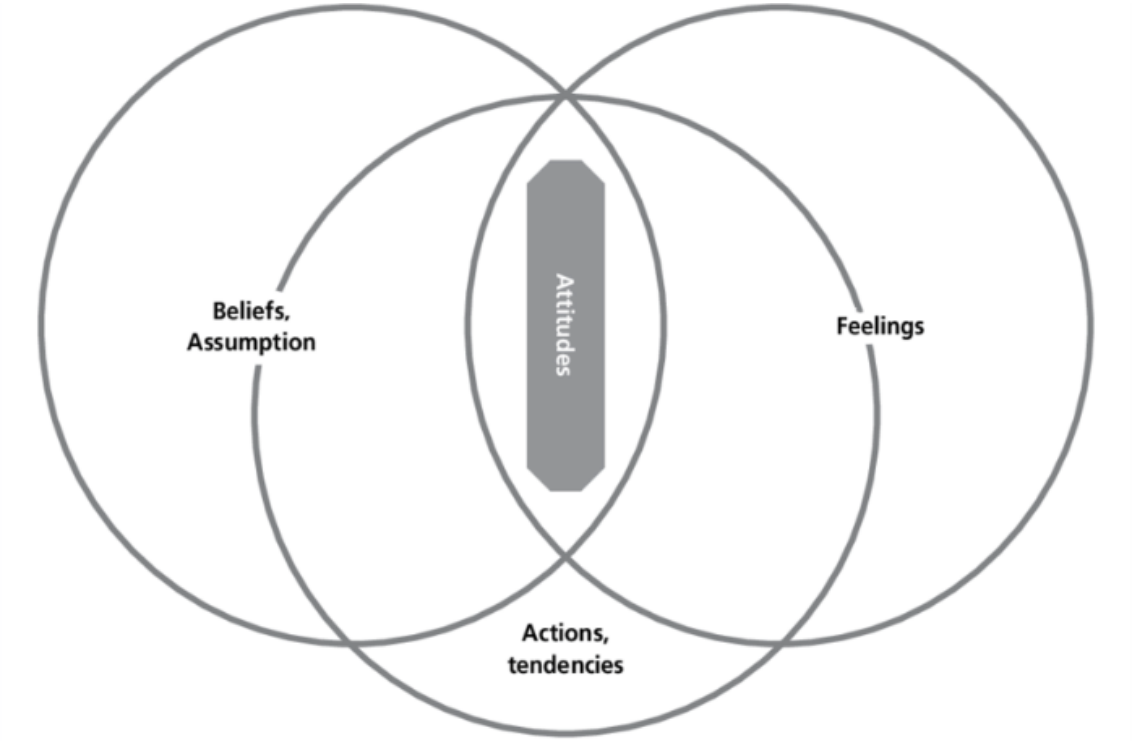

Figure 6.

The tri-components of attitudes taken from (Amusan et al., 2017).

The tri-component model shows that attitudes consist of feelings, thoughts, and actions. The feeling and belief components of attitudes are internal to a person, yet we can view a person's attitude from their resulting behaviour. Therefore, our attitudes influence how we see circumstances and act in response to them or toward objects (Pickens, 2005). Ultimately, it can be implied that a person's perspective is influenced by their attitude, which compiles feelings, beliefs and actions.

Teachers' perspectives on VA

It is crucial to remember that teachers as individuals may have very different and diverse abilities and aptitudes concerning VA, which may affect their role as art educators. (Taylor, 1992). It is, therefore, vital to acknowledge that each teacher will have their perspectives on the value of VAE and on the teaching of VAE. Even the most accomplished VA teachers would only consider themselves experts in some art areas because it is too broad a subject (Taylor, 1992). A study by Alter et al. (2009) investigating Australian primary school teachers revealed that time constraints, perceptions of the value of arts, teacher's own ability and confidence levels in the arts and broad scope of the subject were crucial factors affecting teachers' perspective towards arts education. Considering how these factors affect perspectives on VA, teachers' own ability and confidence levels in VA, past art experiences, and perceptions of the value of arts will be discussed in more detail

Teacher's own ability and confidence levels in VA

Teachers were once learners and students themselves, and their prior experiences with art can affect their attitudes, abilities and confidence level towards art education (Iglesias & Ye, 2019). Alter et al. (2009) found that most participants considered their individual skills and knowledge to adequately influence their ability to provide effective arts practices. In addition, the data analysis of this study revealed varying levels of teacher confidence concerning teaching art. The INTO (2009) report made an excellent point stating:

> Teachers who are practised in the art of developing creativity are generally focused on creating a classroom culture that thrives on creativity. They build a repertoire of strategies

> designed to spark new ideas and bring out a spirit of creativity in students, and they adapt and create ideas for their own curriculum needs.
>
> (Creativity and the Arts in Primary School, INTO, 2009, p.12)

This suggests that teachers with a strong sense of confidence in their artistic abilities are likelier to adopt innovative and creative teaching approaches. It also highlights how a classroom culture that values creativity is usually a priority for teachers skilled in developing creativity. We can then gather that when teachers believe in their own competence in VA, they are more inclined to experiment with different teaching techniques and encourage students to explore their inventive potential. Fisher (2002) made a relevant argument that creative learners need creative teachers who provide adventure and who are willing to do the unexpected (Fisher, 2002). Conversely, low-confidence teachers may stick to traditional methods and refrain from taking risks in the classroom. They might feel less comfortable trying new and unconventional approaches, which could limit the range of experiences they provide their students. Interestingly, the DES (2005) and the INTO (2010) reported that primary school teachers favoured two-dimensional art activities, mainly drawing and painting. Other strand areas like clay, construction, fabric, and fibre were neglected and deemed difficult to teach (INTO, 2010). Similarly, responding to artwork was another failed area to be implemented by teachers (DES,2005; INTO,2010). Children can create inventive works of art and develop their abilities to innovate in crucial areas such as clay, construction, fabric and fibre and looking and responding. However, some teachers seem to disregard these areas. It is suggested that strands like these may be areas where teachers feel less confident in their abilities.

Therefore, it can be said that teachers who perceive themselves as efficacious in the realm of VAE are better positioned to create an environment that nurtures imagination and inventive expression.

Past visual art experiences

Teachers' art experiences impact their teaching and attitude towards art education (Iglesias & Yan, 2019). The Alter et al. (2009) study supported this and found that teacher's confidence and abilities were related to teachers' prior or tertiary experiences within each area of the creative arts. All participants believed that the lack of quality arts education in primary, secondary and tertiary areas did not sufficiently prepare them for their responsibilities when they entered the primary classroom (Alter et al., 2009). This implies that teachers' prior art learning and teaching significantly impact their teaching abilities, skills and confidence levels. Potentially, suppose a teacher had bad experiences or received poor training in VAE. In that case, it is reflected in their own practices, and they would be ill-equipped to teach VA adequately. However, it must be noted that teachers were once learners and students themselves, and their prior experiences with art can affect their attitudes, abilities and confidence level towards art education (Iglesias & Ye, 2019). Conversely, if a teacher receives an excellent tertiary education in VA and can see the subject's possibilities, they will be more inclined to try out new approaches. Thus, it is clear that teachers' prior art learning and teaching significantly impact their teaching, abilities, skills and confidence levels.

Teachers' perception of the value of art

Teachers' perceptions of visual art significantly impact the value they assign to it. In a study by Tomljenović, Z. (2018), he found that teachers viewed art as nurturing the development of motor

skills, the development of visual and aesthetic sensitivities and the learning of VA and visual observation. Moreover, Tomljenović, Z. (2018). specified that there is an increased awareness of the necessity to develop students' cognitive abilities. As cognitive abilities are deeply rooted in inventive thinking skills, so if VA can be viewed as an area where these abilities can thrive, it provides a basis for the idea that inventive thinking can be developed within this subject. Although the knowledge mentioned above and skills represent an essential goal of the VA subject, teachers do not consider it necessary in the context of the general education students acquire (Tomljenović, 2018). Concurring with this, the Alter et al. (2009) study found numerous teachers asserted how the arts were 'not as academic' as other areas and admitted that the arts subjects were practised irregularly as a priority they give to them are often lower than other curriculum areas (Alter et al., 2009). Disappointingly, this suggests that teachers' perception of VA is mainly regarded as a practical "or "non-cognitive "subject by the teachers in the study.

Teachers' perspectives on VA massively affect how they teach and create learning opportunities for their students. It is important to note that there is virtually no Irish literature concerning Irish primary school teachers' perspectives on developing inventive thinking, let alone developing inventive thinking skills through VAE. Thus, this research sets out to close the gap in Irish literature on teachers' perspectives on developing inventive thinking skills through VAE.

Conclusion

The literature highlights the close relationship between creativity and inventiveness. While these concepts are deeply connected, this project specifically focuses on inventiveness due to the subtle yet significant distinction between them. As discussed in the literature, creativity involves generating original ideas or solutions by thinking in new ways or seeing things from a different perspective. It focuses on the process of coming up with imaginative concepts. On the other hand, inventiveness goes further by focusing on the application of those creative ideas. It is about transforming those imaginative concepts into functional, practical solutions. Essentially, creativity addresses the "what" we imagine, while inventiveness concerns the "how" we bring those ideas to life. From my own experience, I've observed that while many children are creative, fewer exhibit inventiveness. I've noticed that while children may have a wealth of ideas, they may not always know how to implement those ideas or translate them into tangible outcomes. This gap between creativity and inventiveness is significant, as it suggests that while children may be highly imaginative, they may need additional support or guidance to develop the skills needed to turn their ideas into innovations or solutions. This distinction between creativity and inventiveness highlights the importance of fostering both imaginative thinking and the practical application of those ideas in educational settings. This highlights the need to nurture both creative thinking and the ability to put ideas into practice in educational settings.

Additionally, this literature review has revealed a significant gap in research regarding inventive development through VAE in Irish primary schools. Despite this gap, the existing

literature supports the decision to conduct this study, highlighting the potential for VAE to nurture children's innate inventiveness and creativity through engaging and meaningful learning experiences. Additionally, the research discussed in this chapter underscores the importance of teachers' perspectives in shaping students' art experiences. Barriers such as time constraints, teachers' value of VAE and teacher preparedness and confidence are identified as potential obstacles to inventive development in VAE. However, the evidence suggests that inventive development can be fostered through VAE, particularly when the learning approach is creative and playful. The chapter also touches upon factors such as teachers' own abilities and confidence levels in VA, as well as their perception of the value of art, which can influence their perspective of VAE. In the following chapter, the research strategy and methodology chosen for this study will be outlined, providing further insight into how inventive development through VAE will be explored and analysed.

Chapter Three: Research Methodology

The following chapter describes and explains the design, methodology and methods used to conduct this research. It offers justifications for the selected design choice and explains why the chosen methods were deemed the most effective for achieving the research's objectives. This chapter provides information on the research questions, adopted research approach, research tools, data collection, data analysis, validity, positionality, bias and limitations.

Research Questions

This research intends to investigate perspectives on the role VAE plays in nurturing children's inventive development by exploring the following research questions:

1. How do primary school teachers develop inventiveness through VA?
2. In what ways does the VA curriculum develop children's inventiveness?
3. How well do Irish primary schools develop children's inventiveness through VA?

The intention of this research is to obtain insight into whether Irish Primary School Teachers value and utilise VA as an area for inventive development. Furthermore, this study wishes to gain a clear idea of how Irish Primary School Teachers create opportunities for inventive development within their VA lessons. The findings from this research can also help inform the Draft Arts Education Curriculum Specification (NCCA, 2024) and contribute to the development of the related online teachers' toolkit.

Adopted Research Approach

At the beginning of this study, a choice was made between qualitative and quantitative methodologies to see which one would be most effective in gathering sufficient data to meet the research questions. "Qualitative research is distinguished from quantitative research in that quantitative research is concerned with frequency while qualitative research is concerned with abstract characteristics of events" (Kincheloe, 2002, p.188). While there are benefits to using quantitative methods, the most suitable approach in this case was determined to be qualitative research since it provided chances to explore attitudes, behaviours, and experiences (Dawson, 2009). Considering the research topic of this study concerns perspectives, using a qualitative approach, would allow for more in-depth insight into primary school teachers' opinions on inventive development and VA.

Small-scale studies employing a qualitative methodology are typically exploratory investigations. An exploratory study aims to learn new information or concepts by delving into a relatively unknown topic (Denscombe, 2010). This research is an exploratory quantitative study which aims to investigate primary school teachers' perspectives on nurturing inventive development through VA. This research embodies a constructivist approach which contends the idea that there is no single reality or truth but multiple realities (Wellington, 2015). Since the purpose of this research study depends on the opinions of the participants as a result of their experiences, constructivism was judged to be the most acceptable method (Creswell, 2003).

The qualitative approach also suited the deductive thematic analysis of the VA curriculum related documents; the *Visual Arts Teacher Guidelines* (GOI, 1999), the *Visual Arts Curriculum Statements* (GOI, 1999), *the Primary Curriculum Framework (NCCA, 2023),* the *Draft Arts*

Education Curriculum Specification (NCCA, 2024), and the *Evaluation of Creative Schools Report* (Murphy & Eivers, 2023). According to Creswell (2013), qualitative research seeks to interpret complex data and derive insights from it. Thus, this approach would be beneficial in answering the research questions as it focuses on understanding the underlying themes, concepts, and language used in the documents. This is useful for examining how the documents define and value inventive development and inventiveness.

Research Tools

This study employed a deductive thematic analysis to examine the relationship between inventive development and Visual Arts, focusing on five key documents: It was important to analyse the five key documents—the Visual Arts Teacher Guidelines (GOI, 1999), the Visual Arts Curriculum Statements (GOI, 1999), the Primary Curriculum Framework (NCCA, 2023), the Draft Arts Education Curriculum Specification (NCCA, 2024), and the Evaluation of Creative Schools Report (Murphy & Eivers, 2023)—to gain a deeper understanding of how inventive development and inventiveness are worded, framed, and valued across these foundational texts. Each document plays a critical role in shaping the educational approach to creativity and inventiveness within Irish schools and understanding how these concepts are treated provides insights into the direction and emphasis placed on them within arts education. It is important to note that while the Murphy and Eivers report operates outside the policy framework of the legally mandated school curriculum, it provides a valuable external perspective on the implementation and impact of Creative Ireland's objectives. It was therefore included for analysis because it evaluates the outcomes of the Creative Ireland initiative, offering insights into how creativity is indirectly fostered in schools. The report

explores how national creativity policies are translated into educational practice, highlighting systemic challenges, opportunities, and outcomes that may not be explicitly addressed in the primary Creative Ireland documents. Furthermore, it examines the alignment—or lack thereof—between these initiatives and school curricula, as well as their practical realities, offering critical implications for shaping future educational strategies.

This study also utilised semi-structured interviews as the key instrument for gathering data. According to Kelly, (2006) conducting interviews is a more organic method of gathering data than having people fill out questionnaires. Because the researcher is present and both parties can ask questions and request clarification or additional information as needed, interviews offer a more comprehensive picture and help the interviewee comprehend the process (Drever, 2003). It must be noted that the disadvantages of interviewing were highly considered, as the administration of this kind of data collection can be very time-consuming. Additionally, transcribing the data also takes a lot of time due to the level of detail needed, and finally, data analysis also takes a significant amount of time (Drever, 2003). However, I felt semi-structured interviews were the most fruitful qualitative method to answer the research questions and meet the study's objectives. This research tool was most appropriate for collecting data as the nature of semi-structured provides participants with plenty of opportunities to express their opinions and ideas freely in a conversational, informal and relaxed manner (Cachia & Millward, 2011; Schatz, 2012). This was a crucial component of my research because it focused on the unique experiences and personal perspectives of the teachers regarding visual art and inventive development.

Data Collection

The data collection process consisted of the following steps which will be discussed in more detail below; seeking ethical approval, finding participants, obtaining permission/ informed consent, data protection and interviewing.

Ethical Approval

All good research studies must acquire ethical approval (Denscombe, 2010), and this study's data-gathering phase could not begin until approval was received. Thus before any interview could take place, I had to complete the Dublin City University's Research Ethics Committee (REC) application form. I then had to use the Research Ethics Application Portal on DCU's Loop to send the REC application form and associated documentation. The REC application form is accessible through the following link: https://www.dcu.ie/researchsupport/research-ethics. Following that, applications are reviewed by the REC and once REC approval was obtained, I was able to begin gathering participants and timetabling interviews.

Participants

In this study, the interview participants comprised 10 practising primary school teachers from diverse educational contexts to ascertain their perspectives and practices concerning VAE and children's inventive development. Table 8 below shows the years teaching, the current class level and the college education of each teacher participant.

Table 9

Teacher Participant Background Information

Teacher Participant	Years Teaching	Current Class	College
T1	16	6th class	Froebel Maynooth University
T2	3	4th class	University of Edinburgh
T3	20	4th class	St. Patrick's College DCU
T4	28	3rd class	St. Patrick's College DCU
T5	13	6th class	St. Patrick's College DCU
T6	1	5th class	Froebel Maynooth University
T7	3	Special Educational Teaching	Hibernia College
T8	2	Senior infants	Hibernia College
T9	1	3rd class	Hibernia College
T10	15	5th class	Hibernia College

As evidenced by the table, the range of teacher experience is quite significant and ranges from newly qualified teachers to teachers with 28 years of experience. Since there were only ten individuals in the sample, it was, therefore, my responsibility to improve the validity through deliberate, purposive sampling (Denscombe, 2007), and in order to do this, I deliberately selected teachers who had different years of experience and taught in varying classes ranging from Senior Infants to Sixth Class, as well as in the Special Education Teacher setting. I deliberately selected teachers with varying years of experience and who taught in different class levels, from Senior Infants to Sixth Class, as well as in Special Education settings, to ensure a diverse range of

perspectives. The teachers' level of expertise in teaching VA did not determine who was targeted to participate in the study. I felt choosing teachers with varying years of experience, different class levels and educational settings would provide a good overview of the understanding of primary teachers' viewpoints on fostering inventiveness in the VA. According to Cohen et al. (2007), convenience sampling is defined as a sampling strategy that is typical of the group as a whole. Therefore, a smaller sample size may be utilised as long as it is representative of the entire population (Cohen et al. (2007). Ultimately, the criteria selected attempted to give a realistic representation of the entire population, even if they were based on a much smaller sample size.

Participation was voluntary, with informed consent aligned with the ethics protocols. The teachers could withdraw at any time per the ethics requirements. Prior to the interviews, each participant received a Plain Language Statement, a copy of the interview questions and an Informed Consent form, which outlined the purpose of the study, and their obligations. Before the interview, I went over the documentation with the participants to make sure they understood the procedure and could sign the consent and agreement forms. Every participant gave me their consent, either verbally or in writing. Newton (2010) highlights that semi-structured interviews provide a framework in which participants can disclose personal thoughts and emotions. Every participant was told that, upon consent, I could use their responses and data in my research in complete confidentiality and pseudonymisation.

Data protection

To protect participants' identities, all names were altered, and pseudonyms (Creswell 2014) were used throughout. To protect the privacy and security of the teacher participants' personal

information, I personally performed the interviews while adhering to data protection laws. I secured all of the recording equipment, transcripts, and source data in a locked filing cabinet and used a password-protected laptop. Participants were made aware that all personal data and related files would be deleted using a secure deletion tool that will wipe all files from hard drives and shared drives once the retention period is complete. Similarly, all audio files will be deleted from the recording device using a similar process.

Interviewing

Strategic planning and preparation were key to ensuring that semi-structured interviews ran smoothly. To practise interviewing and make sure I was retrieving the right data and collecting it consistently, I had to pilot my interview process (Cottrell, 2014). Pilot interviews are the only way to improve an interview guide that includes essential and related questions to the research subject (Creswell, 2007). Before conducting the ten semi-structured interviews, a primary school teacher colleague very generously offered to be the subject of a pilot interview. I prepared a predetermined set of questions and topics for this pilot interview, which were arranged thematically to help guide the conversation towards the study's objectives while still allowing time for additional issues to come up. Following the pilot interview, (See appendix I) I had the opportunity to review and modify the questions to improve their clarity and yield more insightful answers. Aggee (2009) recommended that the interview questions should address not only the research questions but also a broader inquiry that would capture the perspectives and experiences of each interviewee. The design of the interview questions was informed by the literature review, and later on, it also aided with the data analysis (Robson & McCartan, 2016). After doing the literature review, I discovered

a gap in the literature specifically regarding VAE nurturing inventive development, which further highlights the significance of primary school teachers' prospective contributions to this study.

The timetable for the interviews commenced on the 6th of November 2023 and was completed by the 20th of December 2023. The interviews were conducted face-to-face at a time and place of the participants' preference. The in-person interviews were conducted in a quiet, private setting that enabled me to document the subject's viewpoint, emotions, and ideas in my research area (Newton, 2010). The availability and cooperation of all participants helped to ensure the data collection was achieved through the designated time period. Each interview lasted approximately thirty minutes and was conducted outside school hours. The interview question set the tone for the nature of the interview and made sure that all topics were covered. To ease the interviewee into the process, questions about teaching experience and training were asked at the beginning (Drever, 2003) this was followed by questions about inventiveness, VA and inventive development in VAE (See Appendix D for interview questions). The data gathered was recorded using iPhone voice memos, and audio recordings were later transcribed into a textual transcript analysis. In addition to being a necessary tool for analysing data in the future, the recorders freed me up to participate more fully in the discussion without being interrupted (Adams, 2010).

Data Analysis

It was important to analyse five documents—the Visual Arts Teacher Guidelines (GOI, 1999), the Visual Arts Curriculum Statements (GOI, 1999), the Draft Arts Education Curriculum Specification (NCCA, 2024), The Primary Curriculum Framework (NCCA, 2023) and the Evaluation of Creative Schools Report (Murphy & Eivers, 2023)—to better understand how the

ideas of inventive development and inventiveness are described and valued in visual arts education. I used both deductive and semantic approaches to analyse the document, focusing on the root term "invent." This root term helped to identify relevant variations such as invention, inventive, inventor, inventively, and inventiveness. A root word is the basic form of a word without any prefixes or suffixes. To facilitate this analysis, I used the "Ctrl + F" function in the PDF documents to quickly locate the occurrences of the code. This method provided the number of occurrences and their locations within the documents. The corresponding sentences were then extracted, referenced, and organised into a table (Appendices E, F, and G). These findings were analysed in relation to the existing literature and the research questions guiding the study.

Regarding the semi- structured interviews, I transcribed all recordings using Microsoft Word's Dictate tool. Microsoft Word's dictation tool lets users turn spoken words into text in their documents. It uses advanced speech recognition technology to transcribe speech accurately. The tool works best in quiet places with little background noise. A study by MacKenzie et al. (2020) looked at how effective dictation software, including Microsoft Word's tool, is for people who struggle with writing. The study found that participants who used the dictation tool improved their writing fluency and overall quality compared to those who wrote by hand. I had to re-listen to each recording several times until I was certain the transcript was accurate which in turn helped me to familiarise myself with the data. Following Braun & Clarke's (2006) recommendations, the transcripts were deeply examined and the collected data was assessed and initial codes were created. Next, common patterns or themes within the data were identified, the data was then organised and grouped into more specific themes, these themes were reviewed, reanalysed and

defined by name. The phases of thematic data analysis, which were adapted from Braun and Clarke (2006) are presented in Figure 7.

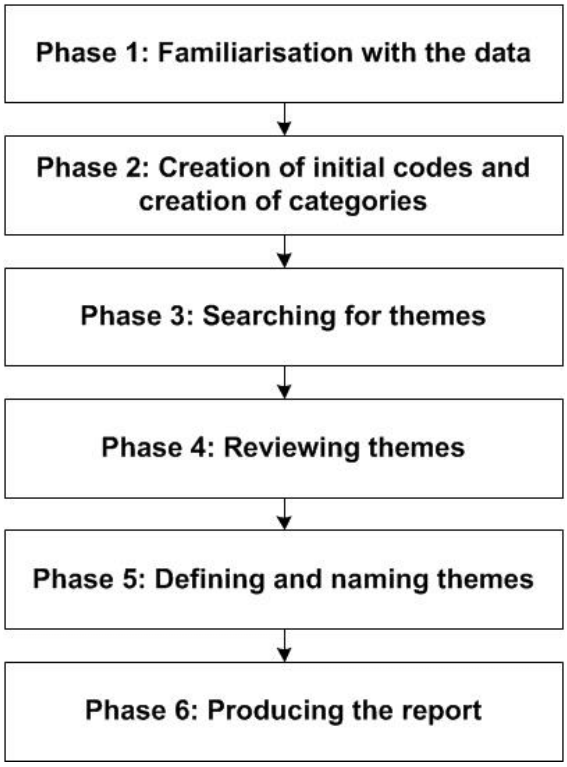

Figure 7

Phases of Thematic Data Analysis

At the end, the analysis is compiled, the results are given, and samples of the data are gathered, all the while referring to sources from the literature review and the research questions.

Validity and reliability in qualitative research

According to Cohen et al. (2007), validity is attained when the instruments used for gathering data are appropriate for the job and capable of producing the information needed to address the research questions. As previously stated, considering the number of participants and timeframe of this exploratory study, the semi-structured interviews were determined to be the most efficient methods available. To ensure validity and reliability the interview questions were followed exactly, direct verbatim transcriptions of the interview recordings was ensured through Microsoft Word's Dictate tool and double-checked for accuracy, and careful coding was done to make sure the results were trustworthy and in accordance with Creswell (2003). The semi-structured interviews provided insight into the teachers' beliefs and experiences in teaching VA and inventive development.

Researcher positionality

It is important to note a clear understanding and awareness of my positionality, not only for the researcher but also for the reader (McCaslin & Scott, 2003). It is crucial to acknowledge my positionality, as this awareness benefits both me as the researcher and the reader (McCaslin & Scott, 2003). As a primary school teacher with a strong passion for visual arts (VA), I recognise that my personal experiences and biases may shape my understanding of its role in education. My training and background have emphasised the self-expressive, imaginative, and multiliteracy outcomes of visual arts, which can inadvertently overshadow its inventive potential. This focus might lead to a limited perspective on how visual arts can foster inventive thinking, particularly when this aspect is not explicitly highlighted in the curriculum documents. Throughout the research process, I became acutely conscious of my positionality and vested interests, as these

could affect my methodological approach. I did my best to maintain an unbiased viewpoint throughout this investigation. My goal was to educate myself based on the conclusions of the literature review and the viewpoints of the research participants, not to validate my own opinions.

Participant Bias

According to Robson and McCartan (2016), participant bias is when someone responds in a way that is intended to appease others rather than reflect their own opinions, however in the instance of a displeased participant, the opposite may be true. Therefore, I made sure to emphasise to each participant that as a neutral researcher, I was interested in documenting their own opinions and experiences throughout the interview process. The aim of this study was to explore the perspectives and experiences of primary school teachers rather than to validate my own beliefs (Neuman, 2014). The difficulty of maintaining objectivity throughout the investigation should strengthen the validity of the findings as a whole.

Limitations of the study

Convenience sampling was used to choose all of the study participants, which, as Cohen et al. (2007) point out, is representative of the participants as a group rather than the entire population. Since the results of this small-scale exploratory study may have been impacted by the convenience sampling used, larger-scale research employing random sampling might counteract these limitations.

Although I was looking into individual attitudes, experiences, and qualities to a certain narrative, I was able to get a lot of intriguing data through semi-structured interviews, not all of which could be used. According to Patton (2002), the use of semi-structured interviews can

diminish comparability because answers will vary from interview to interview in terms of wording and order. Every interview will, nevertheless, have a unique consistency that can be examined.

It is important to acknowledge, there are limitations to using technology for transcription. For instance, accuracy can be an issue, as speech recognition may struggle with different accents, background noise, and specialized terminology. Additionally, these tools often require manual editing for punctuation and clarity, which can be time-consuming.

Conclusion

This chapter outlined the research approach undertaken and sought to give grounds for the chosen research methodology. This study was conducted using an exploratory approach and a qualitative research method through semi-structured interviews to examine primary school teachers' perspective on fostering inventive development through VA. This chapter has presented the reasoning for selecting this research approach and method while reviewing and advocating the data collection and thematic analysis process. The researcher's positionality was acknowledged along with the trustworthiness, bias and limitations of this study. The following chapter presents and discusses the findings that resulted from the qualitative data gathered through semi-structured interviews with teachers. Additionally, links are drawn between the findings and the relevant literature that has been reviewed for the study.

Chapter four: Findings and Analysis of VA Curriculum-related Documents

Introduction

This chapter describes and discusses the findings that emerged from analysing five key VA curriculum-related documents in a deductive and semantic manner, using the root term "invent" as an appropriate code to ensure we identified terms such as invention, inventive, inventor, inventively, and inventiveness. This examination helped uncover the terminology and emphasis placed on these concepts, highlighting their importance in the curriculum and guiding future educational practices.

Analysis of VA Curriculum statements (GOI, 1999)

Deductive and semantic thematic analysis using the root term "invent" yielded thirty-nine results in the VA curriculum statements of the 1999 primary school curriculum (GOI, 1999), (Appendix F). Four themes emerged from the analysis concerning (1) The role of visual arts, (2) media strands, (3) concept development, and (4) planning and assessment.

1. The Role of Visual Arts

The 1999 curriculum makes various references to the role VA has in encouraging and promoting inventiveness. It describes VAE as a way to offer "creative and aesthetic experiences through exploring, investigating, experimenting, inventing, designing, and making" (GOI, 1999b, p. 5). Alter (2010) supports this view, noting that VAE uniquely fosters more innovative and adventurous thinking when individuals engage with art and visual media. The curriculum provides children with opportunities to create symbols, express emotions, and transform their observations

into original representations of reality (GOI, 1999), thus nurturing their inventive thinking. It further emphasises how children "assimilate and respond to experience" through artistic activities such as drawing, painting, and constructing, all of which are designed to encourage creative exploration and problem-solving (GOI, 1999b, p. 6). Eisner (2002) reinforces this view by explaining that art educators often approach art-making as a problem-solving process, where students face challenges and make creative decisions throughout the process. Additionally, the curriculum stresses the role of VA in fostering inventiveness, by linking it to children's ability to organise and express ideas, emotions, and experiences in tangible forms (GOI, 1999). This approach encourages students to think critically and experiment with different solutions, enhancing their inventiveness. The curriculum also states, "The developing child naturally invents symbols to represent the human figure, animals, and a variety of observed objects" (GOI, 1999, p. 6). It recognises the child's innate ability to invent, which highlights the value it places on inventiveness. Through these experiences, the curriculum provides rich opportunities for children to develop their inventiveness and expand their creative potential.

2. Media Strands

The 1999 curriculum encourages children to engage with multiple forms of media, believing that it will foster their creativity through exploration and experimentation (GOI, 1999). Across the media strands, inventiveness is promoted as a means for students to manipulate and experiment with materials, such as inventing stitches in textile work, creating patterns in mixed-media pieces, or designing costumes for imaginary characters (GOI, 1999, p. 23, p. 40). When analysing each strand and unit, it was interesting to notice the numerous inventive opportunities were more so

'hands-on' activities that require students to mould and create. For instance, "fabric and fibre" are described as adaptable materials that offer opportunities for students to "explore, invent, and design" at different levels (GOI, 1999, p. 7). More specifically, the terms "invent," "inventing," and "invention" appeared most prominently in the strand areas of; Fabric and Fibre, Clay, and Construction. In a study by Murphy (2018), which explored the "Construction" strand in the Irish Primary School Visual Arts Curriculum, key findings indicated that these hands-on activities contributed to the development of a sense of responsibility, resilience, and independence in students. Table 10 showcases examples from the curriculum of the suggested learning objectives aimed at fostering inventiveness.

Table 10

Sample of Quotes from 1999 VA Curriculum

Quote	**Reference**	**Categorization**
invent mixed-media pieces in both representational and non-representational modes	GOI, 1999, p.21	Clay
invent a costume for an imaginary character.	GOI, 1999, p. 23	Fabric and fibre
work inventively with cubes or oblong blocks of clay and add details to suggest a solid structure	GOI, 1999, p.36	Clay
designing a large imaginative complex with a	GOI, 1999, p.38	Fabric and fibre

variety of spaces for inventive use (e.g. a castle)		
talking about and inventing stitches	GOI, 1999, p. 39	Fabric and fibre

Notably, the focus on these strand areas highlights the curriculum's emphasis on creative exploration and invention.

3. Concept Development

A key aspect of the 1999 curriculum is the emphasis on developing concepts through inventive processes. The curriculum encourages children to invent and experiment with shapes and forms, fostering movement, balance, contrast, and spatial awareness in their artworks (GOI, 1999, pp. 28, 46). For instance, children are encouraged to "work inventively with cubes or oblong blocks of clay," where they add details to solid structures, enhancing their understanding of form and space (GOI, 1999, p. 36). The curriculum also encourages students to "invent and work with shapes that have a variety of characteristics" (GOI, 1999, p. 16) and to "invent and experiment with shape in compositions in collage, print, drawing, and painting" (GOI, 1999, p. 28). The inventiveness ingrained in these activities supports development in areas such as spatial reasoning, design thinking, and problem-solving. Furthermore, it emphasises the importance of taking risks in their creative process, stating that students should "take risks in making and responding to artworks so that his/her work is always personal and inventive" (GOI, 1999, p. 82). Through creating imaginative structures, experimenting with shapes, and developing their own artistic techniques, students build the skills necessary for concept development.

4. Planning and Assessment

The curriculum advocates for the meaningful planning of art activities to nurture creativity and inventiveness. The planning process is designed to ensure that children have purposeful experiences with different art media, allowing them to "explore, experiment, imagine, design, invent, and communicate" (GOI, 1999, p. 8). The 1999 curriculum places emphasis on integrated learning as a means to offer "added opportunities for creativity and inventiveness" (GOI, 1999, p. 8). Therefore, the curriculum encourages teachers to plan thoughtfully when integrating other subjects, with the aim of intentionally creating opportunities for inventiveness. While this curriculum acknowledges the value of connecting subject areas, it falls short in providing clear, actionable strategies for achieving meaningful integration that foster inventiveness.

Eisner (2002) points out that teachers can greatly influence a child's art experience by creating a supportive environment that helps them learn. This setting encourages independence, skill development, and teamwork, while also providing a safe space for taking risks and learning from both planned and unplanned outcomes. Similarly, Goldberg (2017) stresses the importance of teachers, saying that "in teaching and learning, one thing is always for certain: students are at the core of everything we do" (Goldberg, 2017, p. 4). In this way, teachers assess their students and reflect on their teaching methods to better meet each child's needs. What's more, assessment within this framework does not solely focus on finished products but also on the creative processes students undergo, including the risks they take in "making and responding to artworks" (GOI, 1999, p. 82). Teachers are encouraged to assess not only the technical skills but also the inventiveness and individuality expressed through the students' work. This approach to planning

and assessment ensures that creativity is fostered, and that students are given the space to take risks, explore new ideas, and develop their own personal styles.

Analysis of Teacher Guidelines (GOI, 1999)

Deductive and semantic thematic analysis using the root term “invent” yielded thirty-seven results in Teacher Guidelines for Visual Arts (GOI, 1999) (Appendix E). Four themes emerged from the analysis concerning (1) the centrality of visual arts, (2) Design, (4) Media strands, (4) Planning and organising.

1. The Centrality of Visual Arts

The centrality of VA refers to the idea that VA plays a crucial role in education and the holistic development of the child, and it emphasises that VA is not just a supplementary subject but is essential for fostering creativity, critical thinking, and expression. According to NicCraith (2009), "Arts Education is life-enhancing, is central to children's development and is invaluable in stimulating creative thinking" (NicCraith, 2009, p.7). This view clearly comes across from the 1999 VA Teacher Guidelines. For instance, the guidelines assert that visual arts education "helps to develop sensory awareness, enhances sensibilities and emphasises particular ways of exploring, experimenting and inventing" (GOI, 1999, p.2). This emphasis on exploration and experimentation highlights the role of visual arts as a medium through which children can connect their imaginative lives to their real-world experiences. Craft (2005) supports this view, noting that art education encourages creativity and innovative thinking. The guidelines further note that activities such as "drawing, painting, inventing, and constructing" serve as "unifying forces in children’s learning and development" (GOI, 1999, p. 2). These activities allow students to draw from various aspects

of their experiences, ultimately creating new and meaningful artistic expressions. Hetland and Winner (2004) also affirm that engagement in the arts enhances cognitive skills, including critical thinking, problem-solving, and decision-making. Thus, the central role of visual arts fosters a creative environment where inventiveness is not only encouraged but also viewed as fundamental to the learning process.

2. Design

Design is portrayed as a key aspect of the visual arts curriculum, closely tied to the notion of inventiveness. “Design has a very important role to play in the primary curriculum, and can be defined as active planning, inventing, making and relating parts to a whole in either two- or three-dimensional media” (GOI, 1999, p.15) This definition highlights the importance of creative problem-solving and reinforces the idea that inventiveness is central to the design process. By actively engaging in planning and making, students are encouraged to explore new ideas and invent original solutions, fostering their creative potential and enhancing their ability to think critically about their materials and designs. The guidelines state that students are provided with opportunities to "experiment with print-making techniques, to use them inventively, and to produce prints for functional use as well as for their own sake" (GOI, 1999, p. 7). Moreover, the guidelines encourage children to "make imaginative and expressive use of materials for designing and inventing" (GOI, 1999, p. 7). Hickman (2005) states that it is essential that students should have an opportunity through creative activity to express themselves, not only imaginatively but in a truly original outcome. By fostering an environment where students can design and make unique objects, the curriculum promotes imaginative and inventive use of materials. This process nurtures their ability

to invent as they learn to manipulate materials in unique ways to achieve their goals. Thus, the curriculum not only promotes the technical aspects of design but also encourages a mindset of inventiveness, empowering students to become creative thinkers and makers.

3. Media Strands

Much like the 1999 Visual Arts Curriculum, the term "invent" frequently appears throughout the guidelines, particularly in relation to the media strand areas. Again, this emphasis is especially notable in relation to hands-on activities, highlighting the curriculum's focus on experiential learning. Some examples of this can be found in the table below.

Table 11

Sample quotes from 1999 VA Teacher Guidelines

Quote	Reference	Categorization
They have opportunities to experiment with print-making techniques, to use them inventively, and to produce prints for functional use as well as for their own sake	GOI, 1999, p.7.	Print
As well as sculptural expression, they have opportunities to design and make objects for use and wear (the latter to a limited extent in the absence of a kiln), using their powers of invention and expression	GOI, 1999, p.7	Clay
Children are encouraged to make imaginative and expressive use of materials for designing and inventing and to make models to their own design.	GOI, 1999, p.7.	Construction

They are encouraged to use fabric and fibre as materials for imaginative invention in both two- and three-dimensions…	GOI, 1999, p.8	Fabric and fibre
All sorts of bric-àbrac, crumpled paper, chunks of polystyrene or little boxes could be used as a base for an invented landscape,	GOI, 1999, p. 103	Papier mâché

Through exploring these various media strands, the guidelines appear to be outlining key areas where inventiveness can thrive and develop. We can also see the guidelines emphasise the importance of using different materials creatively. This versatility allows students to experiment with textures and forms, fostering a rich environment for creativity. The guidelines also note that "children soon discover that lines can make shapes and they use them to invent their symbols" (GOI, 1999, p. 8). This understanding of media as a tool for inventiveness empowers children to manipulate materials uniquely, enhancing their artistic abilities.

4. Planning and Organising

Effective planning and organisation are vital in nurturing a culture of inventiveness in the classroom. The guidelines encourage teachers to plan activities that promote "linkage and integration" to provide children with added opportunities for creativity and inventiveness (GOI, 1999, p. 19). This integrated approach allows students to showcase their strengths and interests, creating a more personalised learning experience. Additionally, teachers are guided to stimulate children's inventiveness rather than design every aspect of their projects (GOI, 1999). The guidelines state, “The teacher’s own contribution should consist in finding feasible ways to stimulate the children’s inventiveness, rather than in designing the lot himself/herself.” *(*GOI, 1999, p.36). Moreover, activities should encourage "children to enjoy handling, exploring,

inventing, constructing and designing" *(GOI, 1999, p. 110).* This highlights the teacher's role in planning opportunities where students can effectively explore and experiment with the art-making process. In the Irish context, the teacher has been described as having "frontline responsibility for providing a broad and balanced arts education for the children in his/her care" (Morrissey, 2013, p. 41). Therefore, the guidelines reinforce the notion that students should remain the designers of their own work, fostering a sense of agency in their creative endeavours.

Analysis of the Primary School Curriculum Framework (NCCA, 2023)

Deductive and semantic thematic analysis using the root term "invent" yielded no results in the Draft primary school curriculum framework (NCCA, 2023). This finding was quite surprising as one would have expected that there would have been some legacy statements from the 1999 curriculum and the new framework has an increased focus on integration and key competency development. Having conducted a second search using the appropriate code "innovate" to cover innovation, innovative, innovator and innovate, only one reference emerged in relation to the key competency of being creative (NCCA, 2023, p. 12) which can be seen in Figure 8.

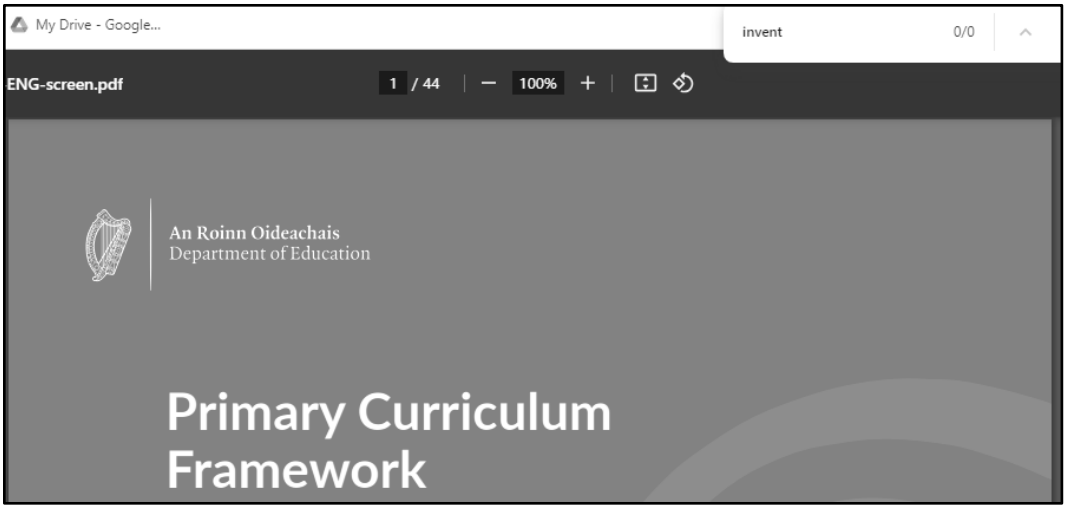

Figure 8

Screenprint of the ctrl f function the Primary Curriculum Framework

The absence of the term "invent" in the 2023 Draft Primary School Curriculum Framework suggests a significant departure from the 1999 curriculum, where inventiveness was deeply tied to the idea of children experimenting with materials, discovering new ways of doing things, and developing their own ideas. Inventiveness was not only tied to creative expression but also to critical thinking, problem-solving, and exploration. By omitting references to inventiveness, the 2023 framework may reflect a narrower understanding of creativity that focuses more on outcomes than on the process of creative exploration.

Analysis of Draft Arts Education Curriculum Specification (NCCA, 2024)

Deductive and semantic thematic analysis using the root term "invent" yielded no results in the Draft Arts Education Specification (NCCA, 2023), which can be seen in Figure 9. Again, this was surprising in light of the prevalence of references to inventiveness in the Visual Arts (GOI, 1999) curriculum. Having conducted a second search using the term of "innovate", two key quotations and categories emerged. Under the heading of Arts Education promotes expressiveness and skills development, it notes that "Through Arts Education, children can exercise agency in their own learning as they become innovative, reflective, broadminded and playful learners who experiment with and engage in symbolic meaning-making" (NCCA, 2024, p. 4). Under the revised strand of "Creating" in the new specification, it writes that it is important that children have opportunities to explore, discover and innovate (NCCA, 2024, p. 20). But from a document perspective, inventiveness seems to have been side-lined, overshadowed, and overlooked.

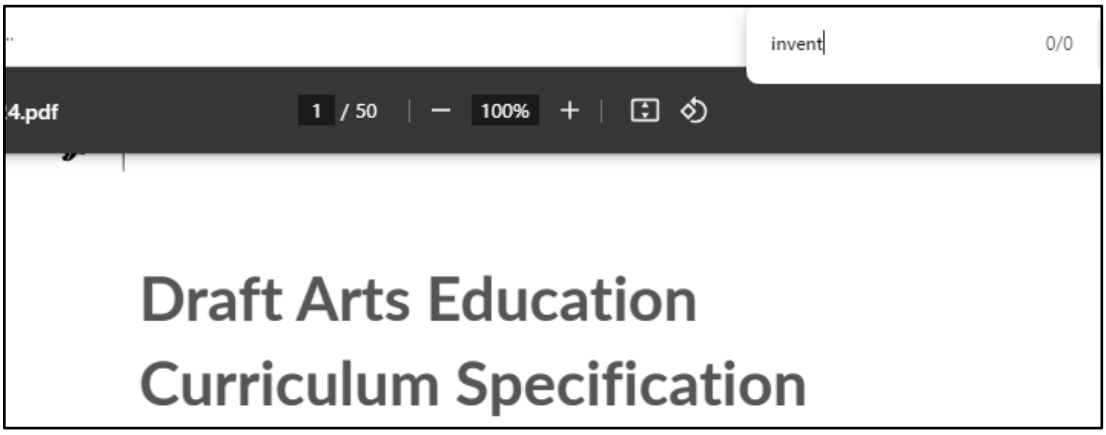

Figure 9

Screenprint of the ctrl f function on the Draft Arts Education Curriculum Specification

The fact that inventiveness is almost entirely absent from the 2024 specification suggests a major philosophical shift in how creativity is being conceptualized. Although the document mentions that children can become "innovative, reflective, broadminded, and playful learners" (NCCA, 2024, p. 4), yet without a strong emphasis on inventiveness, the path to fostering such learners is unclear. The absence of "invent" suggests that this aspect of creativity may be side-lined, leading to a curriculum that potentially limits the depth of creative exploration and critical thinking in students.

Analysis of the creative schools Evaluation Report (Murphy & Eivers, 2023)

Deductive and semantic thematic analysis using the root term “invent” yielded a number of results in the Creative Schools Evaluation Report by Murphy and Eivers (2023). Their report presents an evaluation of the first four years (2018-2022) of the Creative Schools initiative. It provides information on the experiences of children and young people, teachers, educators, arts practitioners and artists. The Creative Schools programme “has opened up a very broad range of experiences for students and pupils and each participating school has had a unique journey” (Arts in Education Portal, 2024, para. 6). Creative Schools experiences have included circus, architecture, heritage, music, comedy, literature, coding, traditional arts, science, horticulture, film, design, craft, drama, visual arts and dance. Table 12 evidences how this report connects inventiveness and VA from a number of perspectives. These relate to the (1) programme, (2) creativity, (3) teacher role and (4) responsibility and divergent thinking.

Table 12

Quotation, reference and category are tabularised

Quote	Reference	Theme
This initiative provides opportunities for children and young people to build their artistic and creative skills; to communicate, collaborate, stimulate their imaginations, **be inventive**, and to harness their curiosity.	(Murphy & Eivers, 2023, p.	Creative Schools initiative
Elsewhere we see a differentiation between what is termed 'big C' creativity which refers to the work of great scientists, **inventors** and composers such Einstein, da Vinci or Mozart and 'little c' (Craft, 2001) which refers to everyday creativity.	(Murphy & Eivers, 2023, p.	Big and little creativity
Taylor described five levels of creativity: (i) expressive spontaneity as uninhibited production of ideas; (ii) technical creativity as exceptional skill with language or tools; (iii) **inventive creativity as an adaptation of something already known for a new purpose;** (iv) innovative creativity which involves pushing the boundaries of a discipline to develop new ideas; and finally (v) emergent creativity which can lead to greater conceptual development of principles and paradigms.	(Murphy & Eivers, 2023, p.	Inventive creativity
[Cropley] recommends that teachers should aim to encourage inventive creativity and at least some elements of innovative and emergent creativity. Undoubtedly, many subject areas lend themselves to expressive spontaneity and technical creativity, and the challenge for teachers then is to afford space, time and contexts to challenge students to extend their thinking beyond the normal, well-worn paths of school subject matter.	(Murphy & Eivers, 2023, p.	Teacher role and responsibility
Divergent thinking involves inventing answers by extending available information and noticing unexpected aspects. The process involves generating multiple possibilities and ideas from a given piece of information. Divergent thinking	(Murphy & Eivers, 2023, p.	Invention and divergent thinking

allows for multiple answers and solutions, as each individual may suggest a range of different solutions.		

1. The Programme

The Creative Schools initiative provides children with rich opportunities to build their creative and artistic skills by engaging with a diverse array of experiences. These include circus, architecture, heritage, music, coding, and more, as detailed in the report. The initiative emphasises inventiveness by encouraging students to communicate, collaborate, and harness their curiosity. As noted, it *"provides opportunities for children and young people to build their artistic and creative skills; to communicate, collaborate, stimulate their imaginations, be inventive, and to harness their curiosity"* (Murphy & Eivers, 2023, p. X). This quote highlights how the programme nurtures inventiveness through diverse forms of creative expression, allowing students to explore new ideas and develop inventive approaches across artistic disciplines.

2. Creativity

Creativity in the context of the Creative Schools initiative is seen from multiple perspectives, including the differentiation between "big C" and "little c" creativity. The report references the work of Craft (2001), who distinguishes between "big C" creativity, which is associated with significant contributions made by great figures like Einstein or Mozart, and "little c" creativity, which refers to everyday acts of creative thinking and problem-solving. The initiative aims to foster both types, particularly "little c" creativity, which involves practical inventiveness in the daily experiences of children. The report states, "*Elsewhere we see a differentiation between what*

is termed 'big C' creativity... and 'little c'... which refers to everyday creativity" (Murphy & Eivers, 2023, p. X). This distinction highlights the accessibility of creative invention in everyday classroom experiences, promoting inventiveness as an integral part of learning.

3. Teacher's Role

The teacher's role in fostering inventive creativity is also emphasised in the Creative Schools initiative. Taylor's five levels of creativity, mentioned in the report, include "inventive creativity"—the adaptation of something known for a new purpose. Teachers are encouraged to promote this level of creativity, challenging students to push beyond routine thinking and extend their creativity in new ways. As stated in the report, *"Copley recommends that teachers should aim to encourage inventive creativity and at least some elements of innovative and emergent creativity" (Murphy & Eivers, 2023, p. X).* The report stresses that the teacher's role goes beyond teaching technical skills; it involves creating an environment where students can experiment, make discoveries, and invent. This approach challenges educators to inspire inventiveness by providing time, space, and contexts that stretch students' thinking beyond conventional subject matter.

4. Responsibility and Divergent Thinking

The fourth theme centres on the relationship between inventiveness and divergent thinking. Divergent thinking is a crucial component of creative processes, involving the generation of multiple possibilities and ideas from a given piece of information. (REF) In the Creative Schools initiative, students are encouraged to invent solutions by extending what they already know and noticing unexpected aspects in their creative exploration. As the report explains, *"Divergent*

thinking involves inventing answers by extending available information and noticing unexpected aspects. The process involves generating multiple possibilities and ideas from a given piece of information" (Murphy & Eivers, 2023, p. X). This form of thinking allows children to move beyond singular answers, embracing multiple approaches and inventive solutions. By cultivating this mindset, the Creative Schools initiative fosters an environment where students are empowered to explore a range of creative possibilities, supporting both their personal growth and academic development.

Conclusion

This chapter has presented and discussed the key findings from a detailed deductive and semantic analysis of five core Visual Arts curriculum-related documents. The analysis revealed important insights into how inventiveness is treated across these documents. The findings highlight both the strengths and gaps in how inventiveness is integrated into current and evolving curricula.

In examining the NCCA 1999 Visual Arts Curriculum, it's clear that inventiveness is a core element throughout the document. It plays a crucial role in encouraging creativity and self-expression, as well as in media strands and concept development. The curriculum highlights inventiveness as essential for both artistic and cognitive growth. It also highlights the need to provide children with opportunities and support to explore, experiment, and innovate in their art activities.

Similarly, the NCCA 1999 Visual Arts Teacher Guidelines clearly position inventiveness as a central theme within visual arts education. By emphasising the centrality of visual arts, the

role of design, the exploration of diverse media, and the significance of effective planning and organisation, these guidelines create an environment where children are encouraged to think inventively and creatively.

The absence of the term "invent" in both Primary School Curriculum Framework (NCCA, 2023) and the Draft Arts Education Specification (NCCA, 2024) was a very alarming finding. This is surprising because it overlooks the importance of creativity, inventiveness, and original thinking, which are key in today's education. Invention helps children develop problem-solving skills and creativity and prepares them for the future, especially in subjects like arts and STEM/STEAM. Without focusing on invention, the curriculum might miss the chance to help children explore, create, and think in new ways.

The Creative Schools Evaluation Report demonstrates how inventiveness is woven throughout the programme, from the diverse creative experiences it offers to the ways it encourages teachers to foster inventive thinking. Through this initiative, creativity is framed not only as an artistic or expressive act but as a process of exploration, experimentation, and innovation—qualities that are nurtured through responsibility, divergent thinking, and active teaching roles.

Chapter six will offer summary findings of the document analysis and explore the implications of these findings for curriculum development and revision, offering suggestions on how better to embed inventiveness and creativity in future educational frameworks to ensure they remain central to children's learning experiences. The next chapter will discuss the findings and analysis of the interviews with the teacher participants.

Chapter Five: Findings and discussion from participant interviews

This chapter presents the findings and analysis from a qualitative research study that investigated perspectives on the role VAE plays in developing children's inventiveness. Data was collected and analysed through semi-structured interviews with ten primary school teachers in Ireland, focusing on how effectively the Irish VA Curriculum and teaching practices foster inventive development in VAE. In light of the research questions, literature review, and conceptual framework of the study, this chapter presents the findings using thematic analysis and evaluates the significance of the results. This chapter is structured around the 3 primary research questions:

1. How do primary school teachers develop childrens' inventiveness through VA?
2. In what ways does the Irish VA curriculum develop children's inventiveness?
3. Is VA viewed by teachers as a subject that can foster inventiveness?

For each of these research questions, distinct themes emerged from the data, which will be explored in detail. While each research question generated distinct themes, the findings highlight various enablers and barriers to fostering inventiveness in Visual Arts Education (VAE). Instead of addressing the questions in isolation, this chapter will take a holistic approach, integrating broader themes to ensure that all factors influencing inventiveness—such as teaching methods, curriculum constraints, resource availability, and teacher perceptions—are fully explored. The discussion will be structured to capture these interconnected elements, shedding light on both the opportunities and challenges within the Irish Visual Arts curriculum and teaching practices.

How do primary school teachers develop inventiveness through VA?

The analysis revealed four key themes on how primary school teachers foster inventiveness through VA: Creating a supportive and encouraging environment, Creative Freedom, Play in art lessons and Challenges.

Creating a supportive and encouraging environment

Several of the participating teachers believe that one of the most crucial ways to foster children's inventiveness is to create a supportive and encouraging environment. Regarding what makes an environment supportive and encouraging, the teacher participants gave varying responses. For instance, some teachers felt a key component to a supportive environment for inventive development was emphasising that mistakes are opportunities for learning and improvement. Edwards (2014) highlights how young children are constantly making mistakes while learning about the world around them. In order for children to learn how to persevere through their mistakes they need to be met with a positive response from the adults around them (Cristin Kelly, 2019). This is reflected through Teacher participant T6 comment who expressed "I always try to instil the aspect of nothing is wrong in art, that everyone is trying their best, that making mistakes is OK" (TT6, October 2023). This openness to trial and error can foster inventiveness, as students are more likely to explore new ideas and approaches without the constraint of fearing they might be wrong. Craft (2001) asserts that teaching children through visual art encourages students to try and solve problems by teaching them that mistakes and failures can be beneficial learning experiences. Therefore, by encouraging students to view mistakes as a natural and acceptable part of learning, teachers can create an environment where students feel safe and supported to experiment and take risks.

Praise and reassurance were other components contributing to a supportive environment mentioned by some teacher participants. Teacher participant T4 expressed that "The big thing is to give them praise for what they're doing well and encourage people when something, if something doesn't turn out well and that they can try it again or and they know the next time" (TT4, October 2024). This comment highlights the significance of how Teachers can help students feel more confident by using positive reinforcement and by praising and recognising their accomplishments. This method teaches children that experimentation and trying again are essential to the creative process and are necessary for the development of inventiveness. Similarly, teacher participant T8 reflected deeply, expressing that:

> I try to teach them to have confidence in what they're doing and also to just trust the process trust and keep doing what they're doing because I find if they're not happy that they can give up easily but if they have the better confidence or reassurance off me they might trust the process more and it will turn out the way they want it to be.
>
> (TT8, September 2023)

The comment highlights the importance of teacher reassurance in building students' confidence. By encouraging students to trust the process and reassuring them of their abilities, the teacher helps them persist even when they encounter doubts. This teacher felt that their encouragement could increase their student's confidence allowing them to continue exploring and experimenting, rather than giving up when they feel uncertain. Therefore, through praise and reassurance from teachers, it can create an environment where students feel relaxed and confident in their own abilities and as a result, they are more likely to engage in creative thinking and take innovative approaches, ultimately fostering greater inventiveness.

An interesting finding mentioned by one teacher was to teach a philosophy that values acceptance of one's creations. Teacher participant T3 explained this clearly when she said;

> The big motto in our class is there's no such thing as bad art, but we say that there's art you like and art you don't like. So you might create a piece of art and you're not that keen on it but then we'll talk about why you don't like it and sometimes we'll have a do-over if we want to try …..but generally speaking I'm trying to teach them skills, but I'm trying to teach them to be OK with what they create and realise it's always a process.
>
> (TT3, September 2023)

By emphasising that "there's no such thing as bad art," the teacher creates a classroom atmosphere where students feel safe to express themselves without fear of judgement. The idea that art can be something you like or don't like encourages students to critically evaluate their work, understand their preferences, and learn from their experiences. The option to "do-over" gives students the freedom to experiment and improve, reinforcing the idea that creativity is a continuous process. This teacher's comment highlights how a supportive and encouraging environment fosters inventiveness by promoting acceptance and reflection in the creative process.

Creative Freedom

When teachers were asked which visual art lessons sparked the most inventive development, there was an overwhelming response centred on the power of 'freedom' and 'free reign' activities. Teacher responses suggested that when children embrace freedom, they can explore, experiment, and develop inventive ways to express their ideas. Teacher participant T4 provided more detail about how freedom in art can foster inventiveness by revealing;

> So just let them off and I think you just have to give them a very loose idea or no idea at all and just give them to materials like we used to do junk cars in infants for Aistear and they love it and they go out with an egg box on a string and have made their mom a necklace and the mom was delighted with this you know, like so I think my what my idea of inventiveness is, I don't even know because they'll show me**.**
>
> (TT3, September 2023)

Furthermore, Teacher participant T10 felt that by allowing children to be free to use materials in their own way, rather than prescribing specific methods, teachers can encourage independent thinking and experimentation. As quoted by T10:

> Allow the children to be free maybe, instead of telling them how to use the products and you know stationary etcetera, you could just engage the children more in the planning of projects and avoid templates and I suppose just allowing the children to create what they want.
>
> (TT10, October 2023)

T10 is highlighting an interesting point here, that by engaging students in the planning of projects and avoiding the use of templates, this can further support freedom, giving students the opportunity to take ownership of their creative process. Sawyer, (2012) advocates that freedom can encourage creative risks and the ability to push the boundaries of traditional norms (Sawyer, 2012). This

open-ended approach fosters a sense of curiosity and originality, as students are encouraged to pursue their own ideas, ultimately enhancing their inventiveness.

Some teacher participants felt that not showing the end product could encourage more freedom and foster inventive thought. According to Edwards (2014), the creative process should be prioritised over activities that focus only on producing a finished work of art. For instance, teacher participant T10 stated:

> I suppose the main thing is not to show them the end product of the start of a lesson, allow failure, allow them to brainstorm, allow them to work together to put their ideas together to see if they can research and come up with something unique that might be different to somebody else.
>
> (TT10, October 2023)

By not showing the end product at the start of lessons, teachers could encourage greater freedom by allowing students to focus on their own creative journey rather than trying to replicate what was presented in front of them. This approach would therefore invite students to explore various different possibilities, experiment with techniques, and make decisions based on their own artistic instincts. This opinion of not showing the end product was also brought up by T2, who asserted the following;

> They always talk about showing them what a good one looks like, but then telling them this is how it should look and less about them exploring your creativity, so it's hard -so I suppose you have to adapt to the children.
>
> (TT2, September 2023)

These comments raise the question as to whether showing the end product at the start of a lesson might stifle imagination and limit inventive possibilities. According to Edwards (2014), emphasis should be placed on the creative process instead of focusing on producing a finished product. He emphasises how students should find the creative process to be an enjoyable and welcoming activity, as they don't have to focus on their skills and abilities but instead focus on the creative learning process. The DES carried out a study in 2005 that stated that in some Irish classrooms there can often be too much focus on the final product of artwork through the use of template and formulaic art activities (Nic Craith, 2009). However, several teacher participants had conflicting opinions about this, and felt having an 'end product' may suit the particular teacher themselves or the more anxious child in the classroom. T2 commented that: "I think teachers love 'how to'(lessons), well I certainly do …but again it depends on the child, so if they're very anxious or anything like that they might like to know what it's going to look like" (TT2, September 2023). Similarly, T4 expressed: "Some children are perfectionists and that they're not they're risk averse and that they find it much more difficult to be inventive" (TT4, October 2023).

For these students, having a clear example to follow provides a sense of security and direction, reducing the overwhelming nature of open-ended tasks. With a similar viewpoint, Cristin Kelly's study from 2011 discovered that participants in her study appeared to be more concerned about making mistakes during the artistic process when there was a focus on the finished product. Thus, there is an argument to be made for showing an end product, as it offers students a goal to work towards, which can help build their confidence in the creative process. Although it may alleviate anxiety, we must question whether it helps develop inventiveness.

Play in art lessons

Another intriguing theme was the role of play, which teachers identified as a powerful catalyst for developing inventiveness. Yet it must be noted, the finding that "play" is essential for nurturing inventiveness extended beyond the VA context, as it was highlighted by several teachers for its critical role in fostering inventiveness across all areas of the school experience. This point is illustrated through teacher participant T8 comment;

> I'm in a Junior School where we do play time and Aistear so I think that really helps their inventiveness, like during play if maybe they've blocks they could build something totally random and there’s no right or wrong during play time.
>
> (TT8, September 2023)

Through play, students are encouraged to experiment without fear of mistakes, fostering a sense of curiosity and creativity. Some teachers even expressed their desire for more play opportunities in the more senior classes. The work of Lillard, A. S. (2013), supports this finding and states play provides a creative outlet for children to express themselves freely and imaginatively. Teacher participant T2 felt the same way and expressed the following;

> I think in certain ways, so like for the young kids, I love Alistair Bryce Clegg, UK guy, he's talks a lot about play -I think that's the way that inventiveness can be done through visual art, letting them play around with things, not just saying it has to be modelled exactly like this. Say like you were doing an apple not saying, ‘it has to look like an apple’ no ‘what does it look like to you.
>
> (TT2, September 2023)

Perhaps, because play provides a natural and enjoyable context for exploration and experimentation, it is the perfect way to nurture inventiveness in children. Smith, & Pellegrini (2013) support this as they highlight how play allows children the freedom to explore and experiment with ideas, materials, and environments without the pressure of predefined outcomes. This freedom can encourage creative thinking and problem-solving skills, and ultimately inventiveness Thus the findings above suggest when play and freedom are combined, it can undoubtedly lead to inventive growth.

Challenges

Despite their suggestions, the teacher participants encountered significant challenges that can affect nurturing inventiveness in VAE. Their perspectives revealed a complex landscape of obstacles impeding inventive growth in the classroom. Among the key issues identified were time constraints, a lack of confidence, teacher preferences and abilities, and technology/resources. These barriers each played a unique role in shaping the teachers' experiences and will be explored in greater detail below.

Time constraints

Time emerged as a significant barrier, highlighted by four out of the ten teacher participants. According to teacher participants, lack of time negatively affects their visual art lessons as they feel forced to rush their students through the creative process, limiting their ability to facilitate deep, meaningful exploration of ideas. When time is constrained, teachers feel pressured to focus on completing the activity rather than nurturing creativity, leading to more structured, less open-ended tasks. This can be reflected in the following teachers’ comments:

> Time is a major issue because you want them to have an end product but you also want them to have the learning experience and to know to discover other artists and say that there's so much room for every type of art in the world but then you're also looking at the clock going, right we need to get that stuff done.
>
> (TT3, September 2023)

> Time because there's so much else to do sometimes it is just easier for me to put something up on the board for them to do because I find when they kind of do it themselves then there's a lot of rubbing out involved and a lot of 'I don't want to do this' and I just think everything is a lot longer when it's child LED but when I do it like we're following the steps.
>
> (TT8, September 2023)

The lack of time can therefore encourage teachers to rely on templates or predetermined outcomes, which stifles both the teacher's ability to guide inventive thinking and the students' opportunities to experiment and innovate. On many occasions, the teacher participants discussed how their students' creativity/inventiveness can often be stifled by the amount of time that is allocated to coming up with ideas and/or the amount of time that they have to complete the art activity. Teacher participant T5 expressed;

> Time is a huge thing though for inventiveness and creativity so when we are too pushed with too much work to get through and kids get stressed that's the first thing that goes and their creativity and their inventiveness goes because they are too driven by the constraints of time.
>
> (TT5, October 2023)

As highlighted by teacher participants in the comments above, when children feel pressured by time they begin to rush and creativity and inventiveness is the first thing to go. This is supported by Jesson (2012), who affirms it is crucial to make sure that students have enough time for creative work because it is extremely difficult to be creative on the spur of the moment. Additionally, according to Jesson (2012), informing students ahead of time about a creative assignment might help them plan it out and advance their ideas. However, a comment made by T5 offered hope by illustrating that some teachers recognize the importance of giving more time to art, valuing it as essential for fostering creativity. They commented:

> One thing would be like giving time to art, so art is scheduled for an hour a week but I usually give nearly two just to give them the time to actually go with their ideas and encouragement -so encouraging them with their ideas and go wild with their ideas , with their art lesson and I'm giving them options like rather than giving them a template like give them the option to like that go on a different tangent to what the lesson is.
>
> (TT5, October 2023)

By extending art lessons beyond the scheduled hour, the teacher demonstrates a commitment to allowing students the freedom to explore their ideas fully. The teacher's approach of encouraging students to "go wild" with their ideas and providing options rather than rigid templates reflects a belief in the power of creative expression and the need for sufficient time to nurture it. This proactive stance shows that, despite the challenges, some teachers are dedicated to creating an environment where creativity and inventiveness can flourish by prioritising time for artistic exploration.

Teachers also highlighted how time constraints impact not only their students but themselves as well. Teacher participant T6 felt, “I do think that as a teacher you're under different time constraints and if we want children to develop all of these skills we've been talking about I don't think they have the time to” (TT6, October 2023). The crowded curriculum is one of the "most significant challenges facing teachers in terms of effective curriculum implementation," according to the INTO (2015), which reiterates this point (p. 29). According to Jesson (2012), curriculum overload can have a negative effect on the creative process because it leaves little time for ideation and experimenting. Thus, with high expectations from other subjects, time delegated to VA lessons may suffer as teachers feel pressured to get things done.

Lack of confidence

Teacher participants revealed a deeply concerning issue: many children in their classes struggle with a lack of confidence when it comes to creating art, with some students often feeling embarrassed by their artwork. This challenge was mentioned by 4 of the teacher participants as a major barrier which inhibits inventive development. This is voiced clearly in the following comment by Teacher Participant T5 below:

> Lack of confidence, so a lot of them really just don't want to make mistakes. They don't want theirs to stand out for the wrong reasons and there's such fear in 6th class of just making a mistake and just they don't want to be too different from the norm and that's what's hard in art. (TT5, October 2023)

This pressure to *“not be too different from the norm*” and almost conform to a *"perfect"* standard can make students more focused on the outcome rather than the creative process. Therefore, some children may worry about how their artwork will be perceived by others, including peers, teachers,

or family members. This finding is particularly disheartening, as it underscores how the creative process, which should be a source of joy and self-expression, can instead become a source of anxiety and self-doubt for some students. According to Jesson (2012), peer competition can have a detrimental effect on students' creativity since it makes them feel under pressure and they worry what other people will think of their work. In another comment, T10 explained,

> I think a lot of children can lack confidence and you know you might have heard, but I often hear in my own classroom like ‘ohh I can't draw or I can't do that’ so definitely you know it's really important that the teacher, I suppose instils confidence in each child and sometimes especially with older children, I feel that they think the main barrier is embarrassment. A lot of the children can feel that they don't want to do something or they give up or they restart a project because they're embarrassed about what their peers might think of what they have produced.
>
> (TT10,October, 2023)

Ryan & Deci (2000) suggest that fear of negative evaluation or ridicule can lead to feelings of embarrassment or reluctance to share their work. Furthermore, Dweck, C. S. (2006) explains that some older children may compare their artwork to that of their peers or perceived standards of excellence, leading to feelings of inadequacy or self-consciousness if they believe their work does not measure up. Both these remarks by the teacher participants emphasise how children may self-criticise, fear judgement, and compare their work to others, all of which can cause them to feel insecure and embarrassed. Robinson (2011) suggested as we age we often lose some of our creative confidence and that education might be the reason for stifling the growth of creativity. In a comment made by Teacher T7, they expressed:

> If their piece doesn't end up looking exactly like a cat especially the cat that the teacher has on the board or the cat that the teacher has drawn then there can be you know tears and upset so I think it's important not to say place emphasis on the child that has you know drawn or painted the perfect cat.
>
> (TT7, September 2023)

This comment underscores the importance of not emphasising perfection in art, as doing so can discourage creativity and contribute to a child's fear of making mistakes. This is a common scenario many teachers can relate to; when a child's artwork doesn't match the example provided by the teacher—like the "perfect cat" on the board—they may feel that their efforts are insufficient, leading to frustration, tears, and a lack of confidence. Yet when teachers model an open-minded and non-judgmental attitude towards art, and does not *'place emphasis on the child that has, you know drawn or painted the perfect cat',* providing students with the freedom to explore their ideas without rigid expectations allows them to develop their unique creative voice. It's worth highlighting an insightful comment from teacher T10 mentioned above "you know it's really important that the teacher, I suppose instils confidence in each child" (TT10, October 2023). According to Robinson (2011), children have a lot of creative confidence when they first start primary school, but as they become older, that confidence gradually diminishes. This highlights the crucial role teachers play in nurturing and sustaining that creative confidence—a responsibility that future researchers could explore in greater depth.

It's worth highlighting that one teacher participant made a compelling point: inventiveness is impossible for students who lack imagination. Without the ability to imagine, students struggle

to generate original ideas, which is the foundation of creative thinking. T5 expresses this opinion and asserts the following about imagination;

> If they don't have the imagination then they struggle with the actual inventing of an aspect and so I think in terms of that they nearly need sometimes to go in pairs and group works for some of the activities just so that they have other ideas to help them with it.

(TT5, October 2023)

Similarly, teacher participant T3 agreed with this point and proclaimed, "*imagination can be tricky to teach"*. Kelly (2014) states that imagination is at its peak during early childhood and begins to deteriorate as they progress through primary school. Reasons for this lack of imagination may be explained by Jesson (2012) who proclaims that as children grow older, the more pessimistic they become, which might have a negative effect on their creativity. According to the 2009 Cambridge Handbook of Creativity, children frequently experience a creative slump between the ages of 9 and 10. According to NicCraith (2009), children of this age tend to be less impulsive and more compliant, which may be linked to the lack of creativity that occurs around this specific age. Considering the fact both teacher participants T3 and T5 teach senior level classes, possible reasons they might be experiencing a lack of imagination and confidence in their students may be due to this creative slump. Comparably in a study by Crisitin Kelly (2019), she found the older children, particularly those in the 6th class interviews, felt they were more creative when they were younger and that they had more freedom when they were younger in art and this enabled them to have 'more ideas' and 'say random things'. These findings from Kelly's study suggest that as

children get older, they are less likely to try being creative or inventive with their artwork because they don't want to stand out or be noticed for the wrong reasons.

Teacher's preferences and abilities

The findings of this study suggest that some teachers may lean towards product-driven lessons or template art because it suits their preferences and/or abilities, which can limit opportunities for inventive exploration. Teacher participant T9 revealed, "I think us as teachers we kind of want a product more so than a process it's kind of like we wanted to put it up on a wall and for everyone to see it" (TT9, September 2023). This comment highlights a mindset that can hinder inventiveness in visual art. By prioritising the final product over the creative process, teachers may inadvertently limit students' opportunities to explore, experiment, and express their unique ideas. If teachers are solely looking for end products for display purposes or to hang up around the classroom, the focus will be placed on the aesthetic of the child's artwork and not the creative process behind it. This also links back to the previous concern of lack of confidence as often the child's art will not look like the original inspiration source and this may encourage disheartenment and self-criticism. According to a 2005 study conducted by the DES, the usage of templates and formulaic art activities might lead to an excessive emphasis on the artwork's end product in some Irish classrooms. Therefore, focusing solely on the end product can be problematic and can impede inventive growth.

According to Robinson (2011), children have a lot of creative confidence when they first start school, but that confidence steadily wanes as they get older. Teacher participant T4 provides the reason for this as she expressed "I think maybe it's our fault for doing template art from the

beginning, that's kind of what they learn art is" (TT4, October 2023). Regimenting visual art like this in the classroom goes against its goals as a curriculum, "to standardise forms of artistic expression can stifle creativity and thereby encourage passivity" (Tan & Gibson, 2017, p.297). Teacher participant T8 confirms the use of templates stating that " I think in my school anyway there's a lot of templates that go around so if we could get rid of the templates and let children do what they want to do" (TT8, September 2023). The DES (2005) report strongly recommends against the use of templates and should be avoided to allow pupils to express themselves freely (DES,2005). With templates, there are limited opportunities to be creative or to explore or to problem-solve, which hinders inventive development.

However, some participant teachers argued valid points to defend the use of template and formulaic art lessons. One teacher participant T4 provided the following explanation;

> If teachers are not naturally creative themselves or if they're not haven't got the art skills and sometimes they can be afraid of art so as to see it as being skilled driven and process driven as opposed to product and product driven.
>
> (*TT4, October 2023)*

This suggests that when teachers lack confidence in their own abilities, they may be less inclined to implement inventive art lessons and templates that suit them best. On the other hand, you could have a teacher who is creative and confident in their VA but does not have the time or energy to facilitate such lessons. Teacher participant T3 expresses this point by stating "I feel like you have to be very creative and when your energy goes down I think your creativity goes down" (TT3, September 2023). Sometimes, with the many demands placed on teachers, their energy and creativity for art lessons can deteriorate. This often leads them to rely on templates, as they offer

a more manageable and less demanding approach. With a similar view, T7 expressed the following:

> In my first year out, I would say you know you're nearly just kind of trying to get through it and survive, especially with, I had you know I had a younger class and there was no additional support in my room. So, I had 28 little sets of hands during a painting lesson or whatever lesson, it could be very overwhelming and very stressful.
>
> *(TT7, September 2023)*

Similarly, T2 admitted she can be a 'control freak' and shared that, "I feel that when you have 26 kids you're trying to make sure they're all on task, you don't give them enough time for that creativity to flourish really" (TT2, September 2023). This is supported by Jesson (2012), who states that some teachers tend to overfeed their students with information rather than providing them with the space they need to develop their thoughts and ideas of their own. Although it may help teachers to remain in control and have a calm environment within their art lessons, the use of templates and overly prescribed lessons are not helpful in developing inventive abilities. However, the findings do shed light on why some teachers rely on templates or overly structure their lessons.

Technology/Resources

Some teacher participants expressed that using technology within their art lessons has become a barrier towards fostering inventiveness. Teacher participant T5 felt very strongly about this, stating that "Originality is something I have been focusing on again because the imagination just isn't there anymore. I don't know the iPads or something but something is really stopping it" (TT5, October 2023). This teacher felt that her students have become reliant on technology and no longer want to think for themselves. T5 went on to explain:

> Everything we start it's like ‘can I use an iPad’ you know and that's what they want and every subject, even geography today, ‘can I get an iPad and find that?’ and ‘no you have an atlas’ ,even at this you know, just the iPads were used too much and that's I think being a massive barrier now with them at this age, that's all they want.
>
> (TT5, October 2023)

This is totally contradictory to Gomez (2007) who found that using modern technology in the classroom can “support the expression and development of creativity” (p. 35). Yet, the findings here indicate that using technology is similar to template art, they are not using their imaginations to create something new. This suggests that perhaps children have less freedom to be creative and inventive in today’s classrooms. Again, this could be linked to a lack of confidence as children fear being judged for the wrong reasons so when they have something to copy they feel less open to criticism.

` The findings of this study also revealed that lack of resources can hinder inventiveness, with class budgets often to blame. Teacher participant T4 asserted the following:

> So class budget can be a barrier when you have smaller classes because each parent is contributing a small amount of money with a small class of a smaller budget means when you're buying materials that are shared out you can't it's tricky to stretch the money of it ..materials are getting more expensive at the moment and so at the moment the parents are funding our art budget.
>
> (TT4, October 2023)

When class budgets are limited, and parents are contributing small amounts to fund art materials, teachers face difficulties stretching these funds making it challenging to offer a variety of creative

tools and supplies. As a result, the restricted budget can limit students' ability to experiment and explore their artistic ideas, ultimately stifling their inventive development.

In what ways does the Irish VA curriculum develop children's inventiveness?

The following themes emerged regarding how the Irish VA Curriculum fosters children's inventiveness: The Process of Making Art, Specific Curriculum Strands, Needed Revisions to the New VA Curriculum and Desired Support.

The Process of Making Art

All teachers unanimously felt that the opportunities to physically make and create artwork within VA played a significant role in developing inventiveness. The key reasons for why teachers felt this way include; the freedom to develop creativity, the ability to use imagination, the confidence it instils, the inspiration to push ideas further, and the opportunity for decision-making. Providing more reasoning, teacher participant T10 commented that "it gives them the freedom to develop their creativity and it again just I suppose instils confidence in them that they can do something" (TT10,October 2023) . Additionally, T4 expressed that "I think it gives them a chance to try things out to see what works and what doesn't and when they have something successful it gives them encouragement to be more inventive" (TT4,October 2023). These comments highlight how allowing students to physically create art fosters inventiveness as it provides them with the freedom and space to explore their creativity. T10's remark emphasises that making art allows students to develop their creativity while also building their confidence in their abilities, which is essential for inventive thinking. T4 adds that the process of trying out different ideas and experimenting with what works and what doesn't lead to successful outcomes, which in turn

encourages students to take more risks and be more inventive. These comments illustrate how children can improve their inventiveness through the process of making art, as they use their imaginations, critical thinking skills, and problem-solving abilities to figure out what works best for them.

While participants emphasised that making art fosters inventiveness, one teacher, T5, highlighted a challenge. They noted, "I suppose it gives them the ideas to go further with it, but it's a hard one because if they don't have the imagination, then they struggle with the actual inventing of an aspect" (TT5, October 2023). This suggests that without imagination, students may find it difficult to fully engage in creative processes, even when given the opportunity to create art. While the act of creating art can inspire and encourage further exploration, T5 points out that if students lack imagination, they may find it difficult to move beyond the basic ideas provided and engage in more inventive creation. The perception by teachers that children are lacking in imagination is something worth exploring further. What factors are hindering the flow of imagination? Is the classroom environment truly conducive to allowing imagination to flourish? Perhaps it’s not the children who are lacking in imagination, but rather the conditions they are placed in that are limiting its development. This highlights the importance of nurturing both artistic skills and imaginative thinking for students to fully benefit from art-making.

Specific Curriculum Strands

The findings identified specific three strand units that teachers most frequently mentioned as the curriculum areas that best foster inventiveness. Firstly, Construction was the top area teachers considered to develop inventive abilities most. The VA curriculum (1999) highly supports this

point and states the construction strand ‘can encourage inventiveness’ (p.7). Teacher participant T9 felt that “construction is a great one because you’re actually inventing something they're actually making something” *(TT9, September 2023).* Construction would be considered a ‘hands-on’ strand and in responses from teacher participants it was linked with ‘junk art’, ‘exploring materials’ and ‘freedom’. As teacher participant T5 puts it, “if it's just painting, they tend to go the same route but if you give them something with actual hands-on materials then they actually know they have to be different” (TT5, October 2023). Another teacher participant noted that “when it comes to things like print you have to kind of follow rules a bit more as a little bit more rigid and you can't be as inventive, whereas construction skies the limit” (TT4, October 2023). Both teacher T9 and T4’s comments emphasise how the construction strand nurtures inventiveness more effectively than other strands. This leads us to question: could it be that the materials used in construction are more immediately suggestive of other forms, objects, or ideas, and therefore naturally spark imagination and possibility thinking?Does this tactile approach encourage more inventive thinking?

Secondly, the Drawing strand proved to be a popular choice amongst teacher participants for encouraging inventiveness. Supported by Vygotsky, (2004), a direct way to express imagination is through drawing. The following comments in Table 13 exhibit why teachers felt the Drawing strand was an area that has good inventive potential;

Table 13

Teachers' quotes on the strand of Drawing

"They are at the stage where they are able to draw now, they have a huge choice" (TT4, October 2023)
" I think drawing shows a lot about a child's ability and where they're at and how comfortable they are with art and you'll see the girls that love to draw in their spare time, you see the ones that will doodle" (TT3,September 2023)
" I'd say drawing in my school because they have confidence in their drawing and like that they can rub it out to do what they want to do so it kind of get a bit more like different unique pictures when they're drawing whereas when they're like doing clay they copy each other art or paint yeah kind of coping" (TT8,September 2023).

These comments from teacher participants T4, T3 and T8, suggest that when children are confident in their drawing abilities, they can be more inventive and try out new ideas, techniques, and materials without fear of failure. Through drawing, children can explore possibilities beyond the confines of the physical world by creating drawn worlds, scenarios, and items that don't exist. According to Vygotsky's (1967) theory of imagination in development, imaginative play and creative activities like drawing are crucial for the cognitive and emotional growth of children and support creative thinking and inventiveness.

Thirdly, the fabric and fibre strand emerged as another key area for fostering inventiveness. Teacher 10 highlighted its potential, stating, "Fabric and fibre is another good one because you can supply the children with the necessary equipment, and then they can run with that. You know, you obviously have to scaffold a little bit" (TT10, October 2023). This comment highlights how the fabric and fibre strand encourages inventiveness by providing students with the tools they need to explore and experiment independently, while still allowing for guided support from the teacher. This balance between freedom and structure enables students to be inventive within the framework provided. However, one teacher participant offered a hopeful perspective on the curriculum strands. Teacher T1 remarked, "Any strand lends itself to inventiveness if we don't tell the children what to do and I said as teachers I think we like to guide lessons in a certain direction" (TT1, September 2023). This comment suggests that by giving students more autonomy, any curriculum strand could become a powerful avenue for nurturing inventiveness.

Needed Revisions to the New VA Curriculum

When asked about changes they'd like to see in the new curriculum to better nurture inventiveness through VA, teacher participant T1 expressed, "Maybe Aistear and play to be developed in all class levels would help this and less ICT as they're very reliant on technology for their ideas" (TT1, September 2023). This opinion is particularly intriguing because again the importance of play is being highlighted. Moreover, it suggests that reducing reliance on ICT can help better foster inventiveness by encouraging students to rely more on their own imagination and problem-solving skills rather than simply replicating ideas they find online. Furthermore, another teacher expressed the need for more clarity and emphasis on the skills and processes that they are required to teach

in VAE from the new curriculum. T3 felt she would like a more ‘skill-based’ curriculum with not so much focus on the product. She expresses this point further by saying:

> I know that's what we have now but it's not what's happening in classrooms and there's too much pressure in school to have something that you can put up on a wall or something that you can take home or something that you can store in a portfolio.
>
> (TT3, September 2023)

T3’s desire for a more "skill-based" curriculum with less emphasis on the end product could significantly enhance inventiveness in the new curriculum. By focusing on developing skills rather than producing a perfect final piece, students would be encouraged to experiment, take creative risks, and explore different techniques without the pressure of achieving a specific outcome.

The importance of allocating sufficient time to VA emerged as a key finding among several teachers, who agreed it is crucial for fostering inventive development within the new curriculum. Teacher participant T2 confirmed this sentiment, stating, “I think we need more time definitely assigned to it” (TT2, September 2023). T4 agreed with T2, but highlighted their disappointment with the draft for the new curriculum expressing, **“**I would prefer to see an hour on the weekly time allocation count. I'm disappointed to see that with the new curriculum the last point to be reduced down particularly for senior level” (TT4,October 2023). This highlights the concern that without adequate time, the potential for nurturing creativity and inventiveness in students may be compromised.

Desired Support

Teachers were asked what support they would like to help encourage inventiveness through VA, findings include '*workshops, PDST support, CPD courses, chatting with other teachers, watching other teacher's lessons, Croke Park given to training support, and more time set aside for art'.* The top response was 'visits from outside artists/ professionals. Teacher participant T10 said:

> I think you know visits from outside artists might help teacher make teachers who may be less confident …..I suppose support in relation to these experts coming in might just give the teacher the know how as to how to support the children as best as they can and realising through these artists that perhaps maybe it isn't that complex or difficult to do.
>
> (TT10, October 2023)

This comment highlights how visits from outside artists can foster inventiveness in VA by providing teachers with valuable support and insights. Additionally it proposes that by interacting with experts, teachers who may feel less confident can gain practical knowledge and strategies for effectively guiding their own students. Teacher-artist collaborations have the potential to yield exciting experiences wherein both parties can explore, grow, and even revolutionise their practices for the benefit of their students and the school communities they serve (Kenny & Morrissey, 2016). This, in turn, empowers teachers to support their students more effectively, encouraging them to explore and experiment with their own inventive ideas without fear. This is supported by Haplin (2013) who expresses that a more cooperative approach to artists and working with teachers is needed to genuinely bring about change (Blaney referenced in Halpin 2013). Teacher participant T5 made an interesting point when she stated:

> Some of the art lessons that I'm doing in 6th class are what I was taught in college, like between leaving college and now we've done nothing and art. Even in a Croke park could be like an art workshop or something like that…we do all these like CPD's on like IT and STEM but art doesn't seem as important sometimes.
>
> (TT5, October 2023)

This raises concern because if teachers are not taking it upon themselves to learn anything new about VA then some teachers may never build upon their VA knowledge. This lack of focus on professional development in the arts could reflect a deeper issue of the Visual Arts being undervalued within the curriculum. According to Bloomfield and Childs (2013), a teacher's creative confidence can foster creative growth in their students. But if a teacher has not learned anything new since college, how can they feel confident to try to foster the creative and inventive growth of their students?

Additionally, T5 asked for support from the curriculum, wondering if *"*If you do have students that do have that staggered imagination like how can we actually support them, like if there was something in the new art curriculum that could actually help us help them" (TT5, October 2023). This comment is requesting guidance from the new curriculum to address this issue, suggesting that resolving it could significantly enhance the development of inventiveness in students. Now is the perfect time to raise these questions, as the curriculum is currently in the design stage. Addressing these concerns at this stage ensures that the curriculum can be adapted to better support both teachers and students, ultimately fostering a more inventive and creative learning environment.

Is VA viewed as a subject that can foster inventiveness?

Regarding the final research question concerning whether VA was perceived as a subject that can foster inventiveness, three themes emerged: Teacher's Opinions on Inventiveness, Consistent Recognition, and Varying Awareness.

Teachers' Opinions on Inventiveness

Before delving into the specifics of inventiveness in VA, teachers were asked to describe their personal understanding of what inventiveness means. A key finding is that creativity was highlighted by 9 out of 10 teachers as a central element to inventiveness. More detailed definitions include the following table.

Table 14

Teacher's perspectives on inventiveness

"Being creative and using your imagination"	T1
"Allowing the children to have a bit of creativity in their thinking and learning so you know or taking a brief and you know immediately just carbon copying what is expected thinking outside the box taking something further"	T7
"It's being creative, it's when you merge a few ideas with others to create something new, it's unique ideas and having a different perspective on an old idea"	T4
"I would say creativity,kind of think sometimes we mix up creativity with originality and that tends to put people off but I think creativity can be just doing something that you've always done in maybe a different way" "Inventiveness is an attribute of creativity"	T2
"I think inventiveness to me means free reign for complete creativity with an emphasis on something that's new and novel…I think the best way to describe it is fostering you know original creations of the children and trying to have each child being a little bit different to each other if there's an end product being designed"	T3

The definitions of inventiveness provided by the teacher participants above align closely with the Tallis Habits of Mind, which emphasise qualities such as creativity, innovation, and flexibility in thinking. The teachers' definitions highlight the importance of unique ideas and new perspectives on existing concepts. This aligns with the Tallis Habits of Mind, particularly those related to **"**Innovative Thinking" and "Perspective Taking".

When teachers were asked what inventiveness requires, a range of essential traits emerged such as curiosity, imagination, good questioning skills, observation, playfulness, risk-taking, confidence, open-mindedness, thinking critically, originality, and flexibility. Additional data gathered from the teachers indicated a wide variety of school experiences that they felt were crucial to encouraging inventiveness. These include drama, reading stories, playing games, VA drama music, yard time, project work, stem, science experiments, art activities, Aistear, play, free time, and asking how questions. Notably, it was encouraging to see that some participants mentioned VA as a school experience that nurtures inventiveness. Teacher participant T7 elaborated on the process of fostering inventiveness, noting that it occurs when students are given the freedom to "take something beyond just a brief that's put in front of them allowing them to incorporate their own creativity into something" (TT7, September 2023). Teacher T10 highlighted a different approach to fostering inventiveness, emphasising the value of questioning and exploration over direct instructions. She explained,

> I suppose asking questions rather than showing the children everything that you want them to learn, so for example, if you were teaching them in an Art lesson how to do something else instead of showing them step-by-step guides, kind of let them figure it out themselves.
>
> (TT10, October 2023)

T10's observation reinforces the value of inquiry-based learning. Teacher participant T3, spotlighted another school experience that fosters inventive development, expressing that "not having to follow set instructions for a task, being allowed to investigate it or create something without any kind of pressure to do it in a certain way" (TT3, September 2023). This comment reflects how allowing students to explore and experiment without rigid constraints encourages

inventive thinking. By giving students the freedom to approach tasks in their own unique ways, schools can stimulate inventiveness and original problem-solving.

Consistent recognition

VA was recognised by all teachers as an area that develops inventiveness. However, it is important to note that some teachers grouped VA into the category of 'The arts' along with music and drama when answering. Teachers consistently highlighted VA as a subject that promotes creativity, self-expression, critical thinking, independence, and the use of imagination. For instance, Teacher participant T3 commented that; "I think it's the most obvious candidate of all the subjects for nurturing inventiveness" (TT3, September 2023). Teacher participant T4 provided a reason for her answer expressing the following, "I do think that while some people might think that the arts are not important I think it's really important because it helps children express themselves it helps them discover themselves" (TT4, October 2023). It was encouraging to see VA acknowledged as a significant area for fostering inventiveness. However, other subjects were also highlighted by teachers as equally important for nurturing creativity and inventive thinking. Play, English and Maths were also frequently cited as subjects that effectively develop inventiveness. Despite my expectations, STEM and STEAM were mentioned only briefly—STEM by two teachers and Science by three—while STEAM was not mentioned at all. Given that VA can be seamlessly integrated with subjects like Science and Maths, this raises a question about whether VA is being fully leveraged for its inventive potential. Despite its recognized role in fostering creativity, there seems to be a need to explore whether its integration with other subjects is being maximised, especially when Maths, Science, and English are also celebrated for their contributions to inventive development.

Varying Levels of Awareness

Before the interviews, teachers were asked about their connections between VA and inventiveness. The responses revealed varying levels of awareness: only 3 out of 10 teachers confidently affirmed this connection, 2 acknowledged it but only in relation to Science, 3 hoped they were fostering inventiveness, and 2 had never considered it. This suggests that, while teachers recognise ways in which VA could nurture creativity, it may not be a primary focus in their teaching practices. This also suggests that the word creativity is interchangeable with inventiveness This indicates that teachers may use *creativity* as a broader term that includes *inventiveness*, without clearly distinguishing between the two. In other words, they might see creativity as the overarching concept, which sometimes leads to *inventiveness* being treated as part of that same idea. This overlap suggests that teachers may not always recognise inventiveness as a separate, specific outcome from creativity in their teaching practices. Despite this, the traits and experiences mentioned by teachers align with the Tallis Habits of Mind, such as curiosity, flexibility, and innovative thinking. These habits are intrinsically linked to creativity and inventiveness, even if teachers are not fully aware of their connection. As T7 noted, “I would like to think that I have but definitely not to the extent that I think it could be. I don't know how encouraged we are as educators and to encourage inventive thinking with our students” (TT7, September 2023). This highlights a gap between the potential of VA to foster inventiveness and the current level of emphasis placed on it in educational practice.

Chapter Six: Conclusion

The aim of this research project was to investigate perspectives on the role of VAE in children's inventive development. Through reviewing relevant literature, it revealed a significant gap in research regarding inventive development through VAE in Irish primary schools. Regardless of this gap, the literature justified the decision to conduct this study as it emphasised the potential VAE has to foster children's inventiveness and the important role teachers play in the process. Throughout this study, my goal was to gather a greater understanding of whether VA can foster inventive development from (1) undertaking document analysis of key VA related documents and (2) interviewing teacher participants. Findings report that while teachers appreciate that VAE has potential to foster inventiveness, there is less emphasis placed on its inventive development potential in the new primary school curriculum framework and draft art education specification in comparison to Irish VA Curriculum and Teacher Guidelines (GOI, 1999).

Key conclusions for document analysis

The study reveals a major change in how the concept of "invention" is addressed in Visual Arts related curriculum documents over time. Surprisingly, in the most recent documents, like the Draft Arts Education Curriculum Specification (NCCA, 2024) and the Draft Arts Education Framework (NCCA, 2023), there is no formal mention of "invention". The stark contrast points to a clear change in the focus and language of the curriculum, indicating a shift away from explicitly recognising "invention" as a key element in arts education. This absence is even more significant when compared to older documents, such as the 1999 Visual Arts Teacher Guidelines and Curriculum Statements, where "invention" is mentioned nearly sixty times.

This significant shift shows a reduced focus on invention in arts education, which raises concerns about missed opportunities to nurture inventiveness and creativity in students. This finding makes the research even more relevant and compelling, as it uncovers a critical gap in the evolution of the arts curriculum. Ultimately, I feel that the loss of a direct emphasis on invention is unfortunate and a missed opportunity, given its potential to foster inventive development. It's somewhat ironic that the newer curriculum, which claims to be more integrated, has overlooked the important connections between artistic, expressive and inventive development. Furthermore, the research highlights the need to revisit and possibly revise the curriculum to ensure that fostering inventiveness/inventive thinking remains a key part of arts education.

Key conclusions from semi-structured interviews

When aiming to foster inventiveness through VAE, the teacher participants advocated the following strategies:

1. Creating a supportive and encouraging environment
2. Providing creative freedom
3. Incorporating play into VA lessons

1. Creating a supportive and encouraging environment

Several of the teachers stressed the value of creating a classroom environment where students feel supported and are encouraged to experiment without the fear of making mistakes. By fostering a supportive atmosphere, teachers can help students feel more confident in their creative abilities and, in turn, nurture their inventive abilities. Some teachers highlighted the importance of reassurance and praise, which can be important elements in successfully building a supportive and encouraging environment. However, it is important to note that there was no mention of teachers

discussing the support or encouragement of inventiveness through demonstration or modelling of inventive skills or dispositions. Nor did they highlight the importance of drawing attention to or acknowledging signs of inventiveness within children's artwork. This suggests a gap in actively fostering and recognizing inventive thinking, which could play a key role in nurturing creativity in the classroom.

2. The importance of Creative Freedom

The teachers emphasised the importance of allowing children creative freedom in their visual art lessons. The teachers felt that activities that offered children ‘freedom’ and ‘free reign’ were particularly effective at encouraging inventiveness. According to the perspectives of the teacher participants, this freedom allows students to explore their ideas without the constraints of strict rules or guidelines, which can lead to more original and creative outcomes. The research also revealed that teachers should refrain from showcasing the ‘final product’ at the beginning of a lesson. Rather than concentrating on creating the final result. Edwards (2014) contends that the creative process should be prioritised. This would enable students to focus on their own creative process rather than attempting to copy the work that was displayed to them, thus fostering greater independence. However, there were differing views among the teacher participants regarding this, with some believing that the "end product" would be more appropriate for the teacher’s preference or the more nervous child in the classroom. Some teachers felt that providing an indicative exemplar could serve as a helpful scaffold for learning, especially for students who may need more guidance or those who feel less confident in the creative process. From an inclusive arts perspective, this approach could support a wider range of learners by offering a visual reference without stifling originality. However, considering the literature, it’s important to strike a

balance. Looking and responding to artworks is often seen as a practical and engaging starting point for artmaking. Rather than simply copying or replicating a given example from the teacher, the compromise might be to encourage students to observe, analyse, and draw inspiration from it. This approach could maintain the integrity of inventiveness while offering support where needed.

3.The essentiality of Play in VA lessons

Play emerged as a significant factor in developing inventiveness, with teachers noting that playful exploration is a powerful tool for fostering creativity. It is important to note that the ideal of "play" being essential for nurturing inventiveness extended beyond the VA context, as several teachers highlighted its critical role in fostering inventiveness across all areas of the school experience. In fact, some teachers expressed that they wished there were more possibilities for play in the older classes.

Reported challenges to inventive VA

Teachers recognised a number of challenges that can prevent inventiveness from arising in the VA classroom. Name barriers included:

1. Time constraints
2. Lack of confidence among students
3. Teachers' preferences and abilities
4. Limited resources or technology

Time, in particular, was a major concern, as teachers felt it limited their ability to facilitate deep, meaningful exploration of ideas. However, calling for more time for VAE is not something new. The goal of this perspective might be to rethink how classroom time with VA is used, emphasising inventiveness rather than just increasing the hours spent on Arts education. Additionally, this study

has shown that from the perspectives of the teacher participants, many children in their classes struggle with a lack of confidence when it comes to creating art, with some students often feeling embarrassed by their artwork and fearing judgement from peers. This challenge was mentioned by four of the teacher participants as a serious barrier which inhibits inventive development. While fostering inventiveness is the ideal, it's worth highlighting that one teacher participant made a challenging perspective: inventiveness is impossible for students who lack imagination. This perspective highlights that for some children who appear to struggle to generate original ideas might also struggle with inventive thinking. Therefore, from an inclusive arts perspective, we must consider nurturing children's imaginations as a kind of precursor to their inventive development. Developing their imaginative self-efficacy can help them to be more inventive with regard to how the self express and create. Therefore, we must consider nurturing children's imaginations as well as inventive development.

Another interesting finding was in relation to teachers' own preferences and abilities that can impact the effective fostering of inventiveness. Some teachers believed that using template art was occasionally more practical for them due to curriculum pressure to complete tasks on time or classroom management concerns. One teacher even acknowledged that they were a "control freak" and that their ideal art classes were those with template art and overly structured lessons. It's now a little more clearer why teachers could be drawn to template art and structured lessons, even though they don't always foster creativity and inventiveness. The results also showed how crucial it is for teachers to build and maintain a relationship with their own creativity and inventiveness. According to Bloomfield and Childs (2013), a teacher's creative confidence can foster a student's creative growth. NicCraith (2009) builds on this point and emphasises that this involves both

artistic knowledge and the teacher's ability to inspire and engage their students. This implies that the teacher does not need to be a professional artist, but if they can model creative confidence they can inspire their students to take more creative risks and be inventive. This echoes back to the point that teachers need to model and demonstrate inventiveness for their students. By doing so, they not only guide the creative process but set an example of how inventive thinking can be applied in art-making process. Modelling inventiveness can encourage students to explore new ideas, take creative risks, and develop their own imaginative skills, making it a vital part of fostering inventive development in the classroom.

Role the VA Curriculum plays in fostering inventiveness.

The findings identified included strengths and areas for improvement regarding the role the VA curriculum plays in nurturing inventive development.

The Process of Making Art

The teachers all agreed that the process of making artwork is central to developing inventiveness. The findings expressed that the hands-on experience of creating art helps students develop creativity, imagination, confidence, and decision-making skills. However, some teachers noted that students who struggle with imagination may find it challenging to engage fully in creative or inventive processes.

Some strands perceived more inventive than others

The study found that certain strands of the visual arts curriculum, specifically, Construction, Drawing, and Fabric and Fibre, are most effective in encouraging inventiveness in students. Teachers frequently mentioned these strand areas as the ones that best support inventive development. This is because they involve hands-on activities that help students practice problem-solving, experimentation, and personal expression—important skills for becoming inventive. These strands give students unique opportunities to explore their creativity through tactile, visual, and spatial experiences, which other areas of the curriculum may not provide as effectively. When examining the connection between teachers' views and the analysed VA curriculum-related documents, there appears to be a strong correlation between the two. Both the teachers' perspectives and the NCCA (1999) Visual Arts Curriculum and Teacher Guidelines emphasise the importance of the Construction**,** Fabric and Fibre strands for developing inventiveness. These strands, which teachers identify as most effective in fostering creativity and inventiveness, are also highlighted in the curriculum and guidelines as crucial for inventive development. For example, the NCCA (1999) Teacher Guidelines stresses the importance of providing students with opportunities to express their ideas, feelings, and experiences through different forms of art. This approach supports inventiveness by encouraging students to take creative risks and freely express themselves. Similarly, in the interviews, teachers noted that hands-on, exploratory strands like Construction and Fabric and Fibre are particularly useful in nurturing inventive thinking. This alignment shows that both the curriculum and the teachers share the same goal: promoting creativity, critical thinking, and inventiveness through hands-on, exploratory activities that engage students in meaningful and creative learning experiences.

Desired improvements in a future Arts Education curriculum

Teachers expressed a desire for revisions to any new Arts Education Curriculum to better support inventiveness. Suggestions included integrating play-based learning across all class levels and reducing the reliance on technology, which some teachers felt hindered creative development. One teacher expressed disappointment with the reduction in time allocated to the Arts with the new curriculum.

Desired increased CPD Support

To improve their teaching and facilitation of inventiveness, the teachers identified a need for additional support, such as workshops, continuing professional development (CPD) courses, and more opportunities for collaboration with other educators and artists. The top recommendation was visits from outside artists or professionals to inspire and guide teachers and students.

Varying levels of awareness amongst teachers

Findings revealed both consistent recognition and varying levels of awareness of VAE's potential to develop inventiveness in children.

Teacher opinions on Inventiveness

Teachers generally recognised creativity as a central component of inventiveness, with many identifying traits such as curiosity, imagination, and critical thinking as essential for fostering this quality. These traits make a great link with the Tallis Habits of Mind. Additionally, a wide variety

of school activities, including VA, Science, English and Maths were seen as crucial for encouraging inventiveness.

Consistent Recognition

Teachers consistently acknowledged VA as a subject that promotes creativity, self-expression, critical thinking, and imagination. However, some teachers grouped VA as ‘Arts’, linking it with music and drama. However, it must be stated that some teachers tended to view Visual Arts as part of a broader subject category called "Arts"**,** which in the Irish education system includes music, drama, and visual arts**.** This grouping implies that while teachers appreciate the unique value of Visual Arts, they sometimes consider it as one component of the larger "Arts" group, rather than treating it as a distinct subject with its own focus.

Varying Levels of Awareness

The findings revealed varying levels of awareness among teachers regarding the connection between VA and inventiveness. While some teachers confidently recognised this link, others were less certain or had never considered it, suggesting that the potential of VA to foster inventiveness may not be fully realised in some classrooms.

Limitations of the Study

The investigation has a number of limitations that must be considered. Firstly, is that the data was gathered from a relatively small sample size of participants with just ten Irish primary school teachers taking part in the interview process. Even though the participants varied in age, experience, and school type, they were primarily selected from Dublin. Focusing on one sample of teachers from one geographical area, elicits limited perspectives. The use of purposive sampling

to select participants with high self-efficacy further narrows the scope of the findings. As noted by Cohen, Manion, and Morrison (2007), this sampling method means that the sample "does not represent the wider population; it simply represents itself" (p. 113). Because of this, the survey does not accurately reflect primary teacher perspectives from all throughout the nation, which may result in a narrow range of viewpoints. Thus, the findings of this research may not be generalisable.

Further investigations could address these limitations by involving a larger number of teachers with more diverse backgrounds from various locations. As a result, the data set would be larger, and the conclusions would be more widely understood. Another problem is that the new curriculum is about to be implemented, and teachers are still working out what changes it will bring and whether those changes will create opportunities for inventiveness or not.

Recommendations

This study offers ten key recommendations for future practice:

1. Teachers to encourage more 'free-reign' art lessons. When children are given creative freedom, they can explore and express their ideas without rigid constraints. Teachers themselves should try to be more free-spirited regarding these types of lessons and encourage the children to explore, experiment and create.
2. Teachers need to incorporate play into VA lessons. This not only makes learning more fun but also encourages students to take creative risks, try out new ideas, and connect more deeply with the artistic process. By making learning playful, teachers tap into their students' innate creativity, which could help them become more inventive thinkers.

3. As teachers often face a lack of confidence in their students and often hear phrases like teacher participant T10 mentioned, “O*hh I can't draw or I can't do that”* '(TT10), they should actively try building students’ confidence in their artistic abilities, helping them overcome self-doubt and embrace their creativity. Instead of pointing out the artwork that looks perfect, they can celebrate and emphasise uniqueness and reward students who explore and try something different even if it did not turn out as they had wished. What's more, they need to model and demonstrate inventiveness in their approach.
4. Teachers should avoid template art and overly structured lessons. In order to foster inventiveness, teachers should avoid product-driven or overly structured art lessons, which can limit students’ opportunities for creative exploration and inventive development.
5. Teachers’ ought to reflect on their own personal inventiveness and creativity. By cultivating their own creative and inventive instincts inside and outside the classroom, they can enhance their ability to support and inspire students' inventiveness.
6. Teachers should be encouraged, supported and rewarded for undertaking continuing professional development in VA or embracing opportunities to learn from artists who innovate. They need to have more options from CPD courses that encourage inventiveness and creativity. Some “Croke Park hours could focus on developing aspects of VA.

7. Curriculum developers should bring back and highlight the concept of "invention" in future Visual Arts curriculum updates. This would help students develop creative problem-solving skills and encourage innovative thinking.
8. Educators and policymakers should revisit older curriculum documents, like the Visual Arts Teacher Guidelines (1999), which offer stronger support for inventive skills. Using

elements from these older documents could help balance creativity and invention in the modern curriculum.

9. Teachers should receive ongoing training on how to promote inventive thinking in arts education. This would equip them with effective tools to nurture students' creativity.
10. Finally, reviewing the curriculum across all subjects, not just arts, could reveal a wider trend of downplaying invention. Addressing this could lead to a broader integration of these important skills in education.

Future Research

Acknowledging this research is context-specific and cannot be generalised, a natural extension to this research could entail expanding the research and conducting further interviews with more primary school teachers nationwide. Future action research might focus on the role and practices of teachers in fostering children's confidence to be more inventive. Other research might explore the ideal balance between freedom and structure for more inventive VA and what lesson stimuli, experiences, and approaches encourage children to be more inventive.

Final Thoughts

In conclusion, as we look to the future of VAE, it is crucial to acknowledge the importance of fostering inventiveness in students. This study reveals how VAE is constantly evolving and how it can encourage students to develop their creativity and inventiveness. To me the absence of the term "invention" in recent curriculum documents such as the Draft Arts Education Curriculum Specification (NCCA, 2024) and the Draft Arts Education Framework (2023) was a very intriguing finding. This contrasts sharply with its frequent mention in the older curriculum and guidelines,

signalling a major shift in focus. This transition not only reflects changing educational priorities but also raises essential questions about the implications for student creativity and inventive development. This oversight needs attention, as fostering inventiveness is vital for students' holistic development. To address this, we should learn from older curriculum frameworks and reintroduce the concept of "invention," and provide better training for teachers in this area. By doing so, we can create a supportive learning environment that encourages students to explore new ideas and develop their inventive thinking skills, encouraging a more holistic development.

As both a researcher and a teacher, I found speaking to the participants and listening to their opinions and experiences invaluable. Although this study may not be generalisable, it did show the significance of what the teachers had to offer, emphasising that inventiveness can be developed through the VA. Ultimately, this research provided me a more thorough overview of how primary school teachers perceive and foster inventiveness through VA and how the Irish VA Curriculum can support this aim. Conducting this research has reinforced my thinking about the importance of creating a supportive environment, offering creative freedom, and incorporating play into art lessons. I am motivated to find ways of addressing the challenges reported including time constraints, lack of confidence among students, teachers' preferences and abilities, and limited resources/ technology. Even though the VA is widely acknowledged as a vital area for developing inventiveness, more needs to be done to ensure that all teachers fully understand and are ready to use this potential effectively. Teachers and teacher educators can benefit from this research by learning practical ways to encourage inventiveness through Visual Arts Education (VAE). By examining the experiences of primary school teachers, the research highlights effective teaching strategies, identifies challenges, and offers solutions to help teachers foster creativity within the

limits of the current curriculum. The findings provide valuable opportunities to inform future planning and preparation for the implementation of the new curriculum. For example, in-service training sessions at education centres could incorporate these insights, helping teachers develop targeted approaches to integrate inventiveness into their practice. This work also offers teacher educators a framework to design programs that emphasise the role of creativity and inventive thinking in modern education. Therefore, this research lays the groundwork for additional studies and useful suggestions on how to improve the VA' capacity to encourage inventiveness in the primary school classroom.

To conclude, I'd like to leave you with a memorable quote from one of the teacher participants:

*"*What my idea of inventiveness is, I don't even know because they'll show me"

(TT3, September 2023).

This insight reminds us that teachers do not need to have all the answers or fixed ideas about inventiveness. Instead, they need to be open to learning from their students, who often surprise and inspire with their own inventive ideas.

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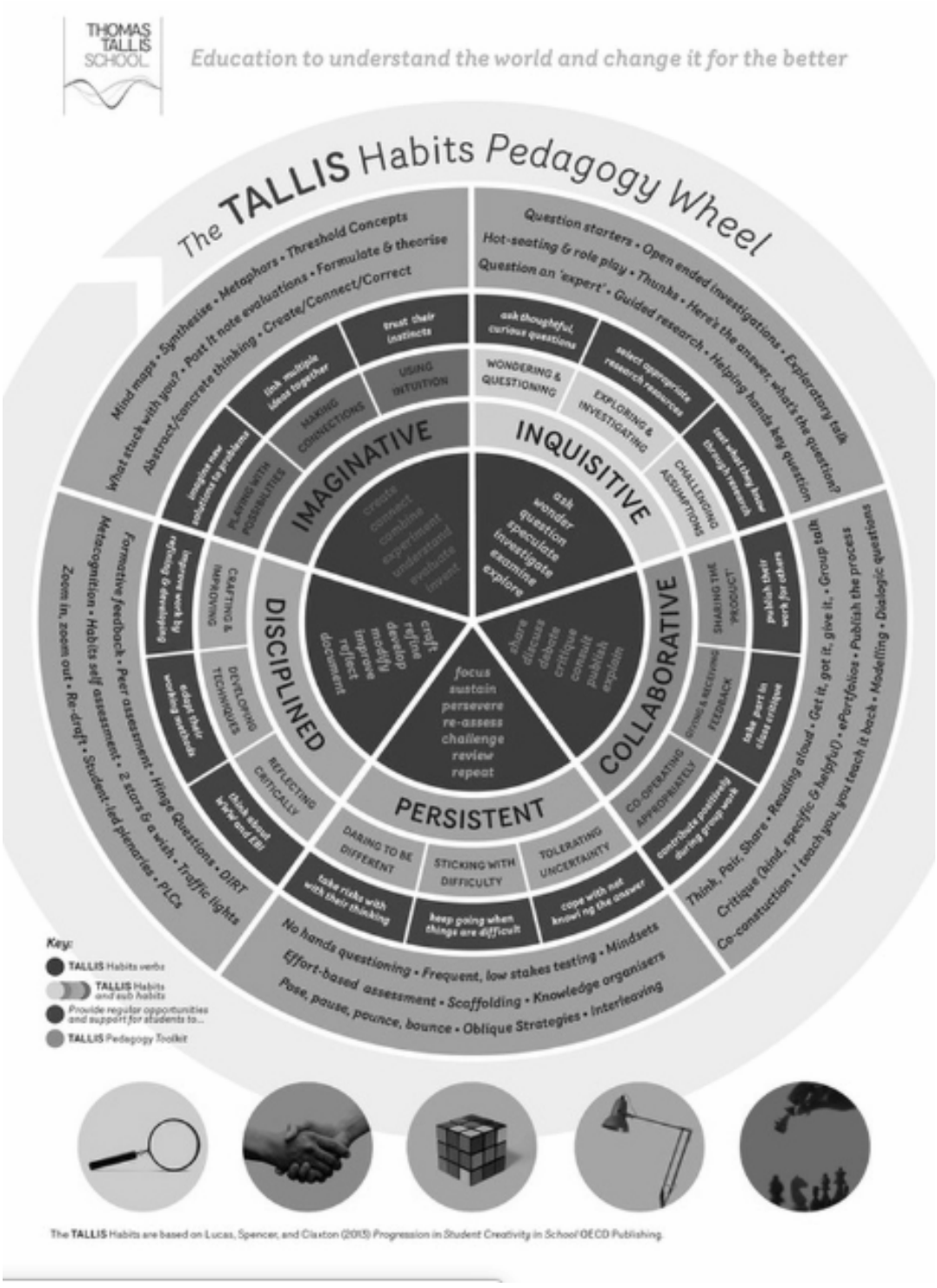
Appendix A: The "Tallis Habits Pedagogy Wheel"



Appendix B: Plain Language Statement

Principal investigator's name: Dr. Una McCabe, Dr. Michael Flannery (Lecturers in School of Arts Education and Movement) and Hillary Tyrrell (MA by Research student)

Contact details of the principal investigator:

Hillary.tyrrell4@mail.dcu.ie
Michael.flannery@dcu.ie
Una.McCabe@dcu.ie

Data Controller: Dublin City University, School of Arts, Education and Movement

Data Protection Officer's Identity: Mr. Martin Ward

Data Protection Officer's Contact Details: data.protection@dcu.ie
Ph.: 7005118 / 7008257)

My name is Hillary Tyrrell and I am undertaking a research project as part of my Masters by Research degree in the School of Arts Education and Movement within the Institute of Education, Dublin City University. Other principal investigators for this project include Dr. Una McCabe and Dr. Michael Flannery from the School of Arts Education and Movement. This research explores VAE and its potential for developing children's inventive capacities. You, in your capacity as a practising primary school teacher, are invited to take part in an individual thirty-minute in-person interview about this topic as part of this research. You will be asked sixteen questions that will ask you to share your thoughts about inventive thinking, VAE and integrating inventive abilities into VA. .

Please read the information provided below carefully. You should clearly understand the risks and benefits of taking part in this study so that you can make a decision that is right for you. Your participation in this research study is completely voluntary. You have the right to decline to participate or to withdraw from the study at any time without penalty or loss of benefits to which you are otherwise entitled. Our contact details are described above should you have any questions about the research or participation.

Why is this study being done?
Inventiveness is important for children because it helps them develop a range of skills and qualities that are essential for success in life. Therefore, developing and fostering inventive thinking skills should be paramount in our schools. This study investigates the role VAE can play in nurturing inventive development.

Who is organising and funding this study?
The study is being conducted by Hillary Tyrrell who is completing an MA by Research in the School of Arts Education and Movement at Dublin City University. There is no funding required for this study.

Why am I being asked to take part?
As a primary school teacher, we can learn from your experiences to better understand teachers' perspectives on VAE and inventive development.

How will the study be carried out?
A thirty-minute in-person interview will take place at the time and location of your choosing. If necessary, a Zoom call can be arranged if better suited. The interview will be audio-recorded via iPhone voice memos. These voice recordings will be transcribed using Otter.ai software and uploaded to a private DCU Google Drive account.

Is the study confidential?
All interview data will be kept confidential. Although the data retrieved from the interviews will be written up in the results section of the final research paper, your identity will be changed to a pseudonym, for example, 'Teacher 1'. It is important to note that the confidentiality of information can only be protected within the limitations of the law. It is possible for data to be subject to subpoena, freedom of information claim or mandated reporting by some professions.

All interview data will be kept secure. The audio recording will be uploaded to Otter.ai for transcription and deleted from voice memos. Once transcribed, it will be transferred and saved to a private DCU Google Drive account. This interview transcription will be deleted when DCU has graded my thesis and I have completed the programme. I will make you aware when and where you can read the findings of the study.

What are the benefits?
The benefits of participating is the opportunity to share your perspective regarding the development of children's inventive capacities, the role VAE can play and to reflect upon your

classroom practice in relation to strengths and points for further development. The researcher will provide a list of relevant sources and resources concerning inventive thinking development in the classroom.

What are the risks?
There are no physical or medical risks to you in taking part in this interview. Your responses to the interview will not affect your teaching or reputation. The information received from the interview will be pseudonymised and stored only until the data is extracted; within the GDPR regulations.

Where can I get further information?
If participants have concerns about this study and wish to contact an independent person, please contact:

The Secretary, Dublin City University Research Ethics Committee, c/o Research and Innovation Support, Dublin City University, Dublin 9. Tel 01-7008000, e-mail rec@dcu.ie

Appendix C: Informed Consent Form

Principal investigator: The principal investigators are Dr. Una McCabe and Dr. Michael Flannery who both work in the School of Arts Education and Movement at Dublin City University (DCU) and Hillary Tyrrell who is completing a Masters by Research at DCU.

Data controller: Dublin City University (DCU)

DCU School: School of Arts Education and Movement

Clarification of the purpose of the research: The purpose of this study is to investigate primary school teachers' perspectives on the role VAE plays regarding children's inventive development

Confirmation of particular requirements as highlighted in the Plain Language Statement

Participation in the study involves partaking in an individual audi-recorded interview of thirty-minutes duration to answer questions and share perspectives on inventive thinking, VAE and integrating VA for children's inventive development.The interview transcript will be used by the researchers to inform their findings.

Participant – please complete the following (Circle Yes or No for each question)

I have read the Plain Language Statement (or had it read to me)	*Yes/ No*
I understand the information provided	*Yes/ No*
I understand the information provided in relation to data protection	*Yes/ No*
I have had an opportunity to ask questions and discuss this study	*Yes/ No*
I have received satisfactory answers to all my questions	*Yes/ No*
I am aware that my interview will be audiotaped	*Yes/ No*

Confirmation that involvement in the Research Study is voluntary

Participation is voluntary and participants may withdraw from the Research Study up to February 2024 as data analysis will have been completed by then. If you wish to withdraw from

the study at any time before February, 2024, please contact Hillary Tyrrell at 083 8741394 or Hillary.tyrrell4@mail.dcu.ie

Confirmation of arrangements to be made to protect confidentiality of data, including that confidentiality of information provided is subject to legal limitations

Confirmation of arrangements regarding the retention / disposal of data

Every effort will be made to respect participants' and their schools' identity using pseudonymisation. Only Dr. Michael Flannery, Dr. Una McCabe and Hillary Tyrrell will have access to the data. All related files and back-up files will be deleted using a secure deletion tool that will wipe all files from hard-drive and shared drives. Audio files will be deleted from the recording device using a similar process. All printed data files will be stored securely in a personal filing cabinet with a lock and will be shredded at the end of the retention period.

I have read and understood the information in this form. My questions and concerns have been answered by the researchers, and I have a copy of this consent form. Therefore, I consent to take part in this research project.

Participants Signature:

Name in Block Capitals:

Witness:

Date:

If participants have concerns about this study and wish to contact an independent person, ***please contact:*** **The Secretary, Dublin City University Research Ethics Committee, c/o Research and Innovation Support, Dublin City University, Dublin 9. Tel 01-7008000, e-mail** rec@dcu.ie

Appendix D: Refined interview questions

Introductory questions (5 minutes)

1. How long have you been teaching?
2. From what higher education institute did you graduate?
3. What class do you currently teach?
4. Describe the teaching methods or approaches that reflect your teaching style.

Inventiveness (10 minutes)

5. What does the term 'inventiveness' mean to you?
6. What key attributes or skills do you believe are necessary for inventiveness / thinking inventively?
7. What kinds of school experiences do you think develop children's inventive abilities?
8. What primary school curriculum subjects foster inventive development?

Visual art education (5 mins)

9. Why do you think we teach VA as part of the primary school curriculum?
10. What skills/dispositions do you try to develop in your VA lessons?
11. Are there any barriers to teaching VA effectively?
    a. If so, please explain why so?
    b. If not, please explain why not?

Inventive development in visual art education (10 mins)

12. In your opinion, how can inventiveness be developed through VA?
13. What type of visual arts lesson(s) do you think enable children to be more inventive?
14. Are there any particular VA strand(s) that nurtures inventiveness more than others?
15. What role do you think imagination plays in VA plays in nurturing inventiveness?
16. What role do you think creating art in VA plays in nurturing inventiveness?

17. Have you connected VAE with inventiveness before this interview? If so, please explain why so? If not, please explain why not?
18. What changes would be helpful in the new arts curriculum to nurture children's inventiveness?
19. What kind of supports do you think teachers need to be more inventive in their teaching of VA?

    Do you have any other thoughts or perspectives to share regarding VAE and inventive thinking

Appendix E: Deductive semantic analysis of the VA curriculum document (GOI, 1999)

Quotation	Reference	Category
Visual Arts activities enable the child to make connections between the imaginative life and the world and to organise and express ideas, feelings and experiences in visual, tangible form. In drawing, painting, constructing and inventing, the child assimilates and responds to experience and tries to make sense of it.	GOI, 1999b, p.6	VA
Visual arts education provides for creative and aesthetic experiences through exploring, investigating, experimenting, inventing, designing and making in a range of media.	GOI, 1999b, p.5	VA
Drawing is an instinctive way for the child to communicate understanding, feelings and his/her imaginative life. The developing child quite naturally invents symbols to represent the human figure, animals and a variety of observed objects.	GOI, 1999b, p.6	Drawing
Fabric and fibre are adaptable and enjoyable media for creativity and are materials in which the child can explore, invent and design at all levels.	GOI, 1999, p.8	Fabric and fibre
Integrated learning is an important aspect of primary education. Well Planned, integrated topics provide a variety of contexts for developing concepts and skills and are added opportunities for creativity and inventiveness. They would include VA activities that incorporate a number of media (linkage), as well as cross-curricular activities.	GOI, 1999, p.8	Linkage and integration with VA
to enable the child to have enjoyable and purposeful experiences of different art media and to have opportunities to explore, experiment, imagine, design, invent and	GOI, 1999, p.8	Aims

communicate with different art materials to enable the child to develop the skills and techniques necessary for expression, inventiveness and individuality		
An awareness of shape • begin to develop sensitivity to qualities of flat shape • invent and work with shapes that have a variety of characteristics	GOI, 1999, p.16	Concepts and skills development for infant classes
invent mixed-media pieces in both representational and non-representational modes	GOI, 1999, p.21	Clay
invent a costume for an imaginary character.	GOI, 1999, p. 23	Fabric and fibre
Invent and experiment with shape in compositions in collage, print, drawing and painting	GOI, 1999, p. 28	Awareness of shape
work inventively with cubes or oblong blocks of clay and add details to suggest a solid structure	GOI, 1999, p.36	Clay
designing a large imaginative complex with a variety of spaces for inventive use (e.g. a castle)	GOI, 1999, p.38	Fabric and fibre
talking about and inventing stitches	GOI, 1999, p. 39	Fabric and fibre
make small inventive pieces with fabric and fibre	GOI, 1999, p. 39	Fabric and fibre
invent a costume using old clothes	GOI, 1999, p.40	Fabric and fibre
invent and experiment with a variety of shape characteristics to create movement, balance, contrast, emphasis and/or a sense of space in drawings, paintings, print, collage and appliqué	GOI, 1999, p. 46	Awareness of shape
use malleable materials as media in which to design and invent	GOI, 1999, p.46	Clay
express his/her imaginative life and interpret imaginative themes using inventive pattern and detail	GOI, 1999, 48	Drawing

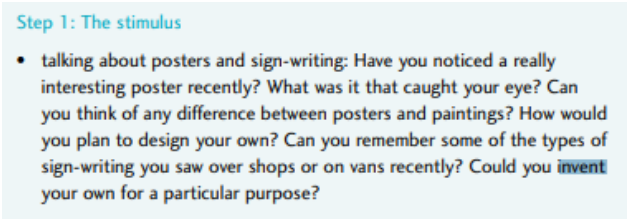
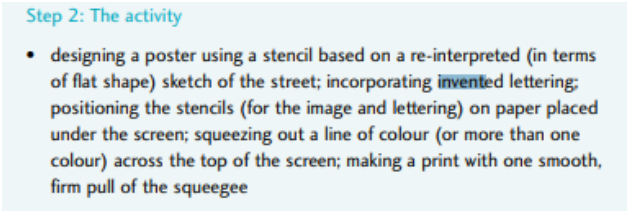
work inventively and expressively with cubes or oblong blocks of clay	GOI, 1999, p.54	Clay
work inventively and expressively with papier mâché	GOI, 1999, p. 54	Clay
exploring ways of inventing stitches for decorative effect	GOI, 1999, p.58	Fabric and fibre
make small inventive pieces in fabric and fibre	GOI, 1999, p.58	Fabric and fibre
decorating a piece of fabric with invented stitches	GOI, 1999, p.58	Fabric and fibre
invent a costume for a character from a story or use fabric as a stimulus for an exotic costume design	GOI, 1999, p.58	Fabric and fibre
how he/she invented, adapted and/or combined stitches for decorative effect	GOI, 1999, p.59	Looking and responding
He/she will enjoy drawing and painting futuristic fashion, designing and sketching a plan for a three-dimensional model with moving parts, and inventing cartoon characters.	GOI, 1999, p.62	Planning
invent and experiment with a variety of shapes to create rhythm, balance, contrast, emphasis and/or a sense of space in drawings, paintings and other media	GOI, 1999, p.64	Awareness of shape
use three-dimensional materials as media in which to design and invent.	GOI, 1999, p.64	Awareness of form
draw imaginative themes using inventive pattern and detail	GOI, 1999, p.66	Drawing
work inventively and expressively with papier mâché	GOI, 1999, p.72	Clay
inventing stitches for decorative effect a simple batik experiment	GOI, 1999, p.76	Fabric and fibre
make small inventive pieces in fabric and fibre	GOI, 1999, p.76	Fabric and fibre

make simple character toys: making inventive use of old clothes and pieces of fabric to make toys based on stories, poems, drama	GOI, 1999, p.76	Fabric and fibre
design and make a costume an inventive and distinctive costume as a variation on a theme for members of a band	GOI, 1999, p.76	Fabric and fibre
take risks in making and responding to artworks so that his/her work is always personal and inventive	GOI, 1999, p.82	Assessing disposition towards art activities

Appendix F: Deductive semantic analysis of the VA Teacher Guidelines (GOI, 1999)

Quote	Reference	Category
Visual arts education helps to develop sensory awareness, enhances sensibilities and emphasises particular ways of exploring, experimenting and inventing.	GOI, 1999, p.2	The centrality of visual arts education
They can also be unifying forces in children's learning and development: drawing, painting, inventing and constructing bring together different elements of children's experience from which a whole new experience can develop	GOI, 1999, p.2	The visual arts in a child-centred curriculum
They have opportunities to experiment with print-making techniques, to use them inventively, and to produce prints for functional use as well as for their own sake	GOI, 1999, p.7.	Print
As well as sculptural expression, they have opportunities to design and make objects for use and wear (the latter to a limited extent in the absence of a kiln), using their powers of invention and expression	GOI, 1999, p.7	Clay
Children are encouraged to make imaginative and expressive use of materials for designing and inventing and to make models to their own design.	GOI, 1999, p.7.	Construction
They are encouraged to use fabric and fibre as materials for imaginative invention in both two- and three-dimensions…	GOI, 1999, p.8	Fabric and fibre
Children soon discover that lines can make shapes and they use them to invent their symbols.	GOI, 1999, p.8	Visual element LINE

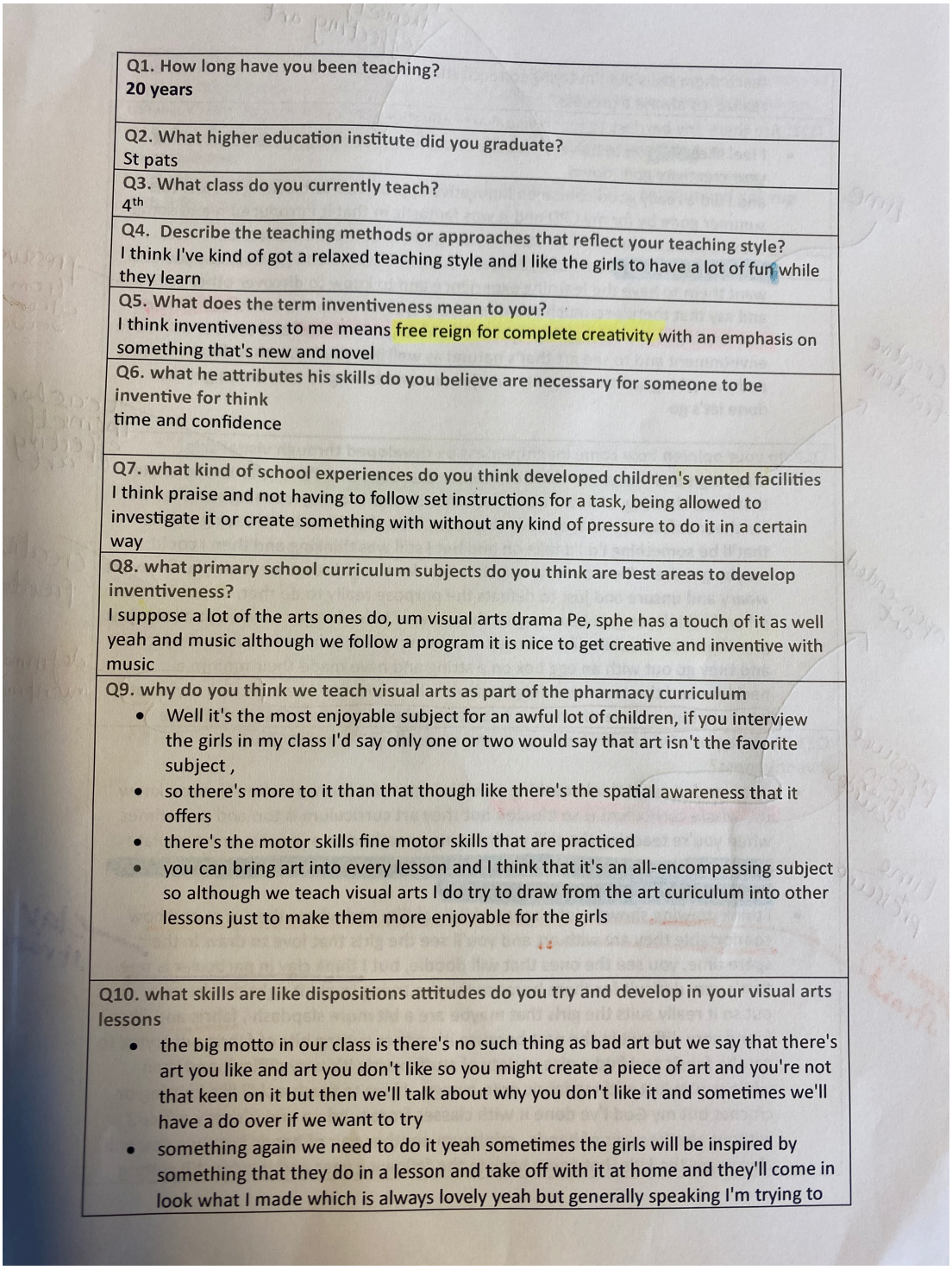
Young children struggle very creatively with this and invent their own ways of suggesting space	GOI, 1999, p.11	Visual Elements
Design has a very important role to play in the primary curriculum, and can be defined as active planning, inventing, making and relating parts to a whole in either two- or three-dimensional media.	GOI, 1999, p.15	Design
Many types of design activities provide valuable experiences at all stages of primary schooling when they promote observation, invention, expression and creativity.	GOI, 1999, p.15	Design
Visual arts activities that involve linkage and integration should be planned for, to give children added opportunities for creativity and inventiveness and to enable them to show strengths and interests which might otherwise remain untapped.	GOI, 1999, p.19	Planning for linkage and integration
In the process of making and responding to art, the child may demonstrate qualities of imagination, inventiveness and involvement which can be observed at the time but may not be evident in a finished piece of work, or may not be recalled easily.	GOI, 1999, p.20	Teacher Observation
A developing imagination provides outlets for inventiveness, fantasy and everyday experience in the first years in school.	GOI, 1999, p.29	Practical starting points
Besides its obvious place in pictorial work, imagination is essential in designing, planning and inventing in two and three dimensions, and children show great enthusiasm in these areas.	GOI, 1999, p.30	Practical starting points
The less experience they have had, the more important it is to talk about the discoveries they make and the possibilities they see for creativity and invention.	GOI, 1999, p.30	Practical starting points
Integration with art should not consist of making props for teaching another subject, since the	GOI, 1999, p.33	Organising linkage and integration

element of imaginative invention is likely to be seen as undesirable in this case, rather than highly desirable, as it should be.		
The teacher's own contribution should consist in finding feasible ways to stimulate the children's inventiveness, rather than in designing the lot himself/herself.	GOI, 1999, p.36	Arts Education
	GOI, 1999, p.47	Print lesson exemplar
	GOI, 1999, p.47	Print lesson exemplar
invent and develop their graphic symbols for the human figure, animals and a wide variety of observed objects	GOI, 1999, p.56	Drawing
The subject matter is all-important with children at infant level, and the more relevant it is to their experience and understanding the more inventive and expressive their drawings are likely to be.	GOI, 1999, p.57	Drawing
A wealth of invented pattern and detail should be encouraged in their drawings of imaginary happenings, places, machines, buildings or monsters. Because they are now generally at a peak of expressiveness,	GOI, 1999, p.58	Drawing
enjoy the immediacy of drawing media to explore the visual world, to communicate their understanding of what they see and imagine, to clarify ideas and to design and invent.	GOI, 1999, p. 64	Drawing

Some preparatory work could be done on inventive lettering, but legibility should be a priority.	GOI, 1999, p. 91	Drawing
Inventive modelling should be part of the process.	GOI, 1999, p. 102	Clay
All sorts of bric-àbrac, crumpled paper, chunks of polystyrene or little boxes could be used as a base for an invented landscape,	GOI, 1999, p. 103	Papier mâché
They will happily take things apart and invent new uses for them.	GOI, 1999, p. 104	Construction
Young children make 'houses' and create play spaces that require considerable inventiveness and planning	GOI, 1999, p. 104	Construction
Children enjoy handling, exploring, inventing, constructing and designing with them.	GOI, 1999, p. 110	Fabric and fibre
Maintaining an inventive approach to the media is important: the children should remain the designers.	GOI, 1999, p. 110	Fabric and fibre
Activities in this area will include investigating the construction of fabric and creating their own, interpreting nature in weaving and appliqué, inventing dramatic costumes to dress up in, creating their own soft toys in a simple way, designing for fashion, and using the computer to plan their designs.	GOI, 1999, p. 110	Fabric and fibre
Through their experience in handling and inventing with fabrics, the fabrics themselves may come to suggest ways of designing and making	GOI, 1999, p. 110	Constructing with Fabric and fibre
A character invented in play or drama activities may spark ideas for a costume	GOI, 1999, p. 111	Fabric and fibre
Once children are proficient with the needle, stuffed toys and simple puppets can be made for invented characters.	GOI, 1999, p. 111	Fabric and fibre

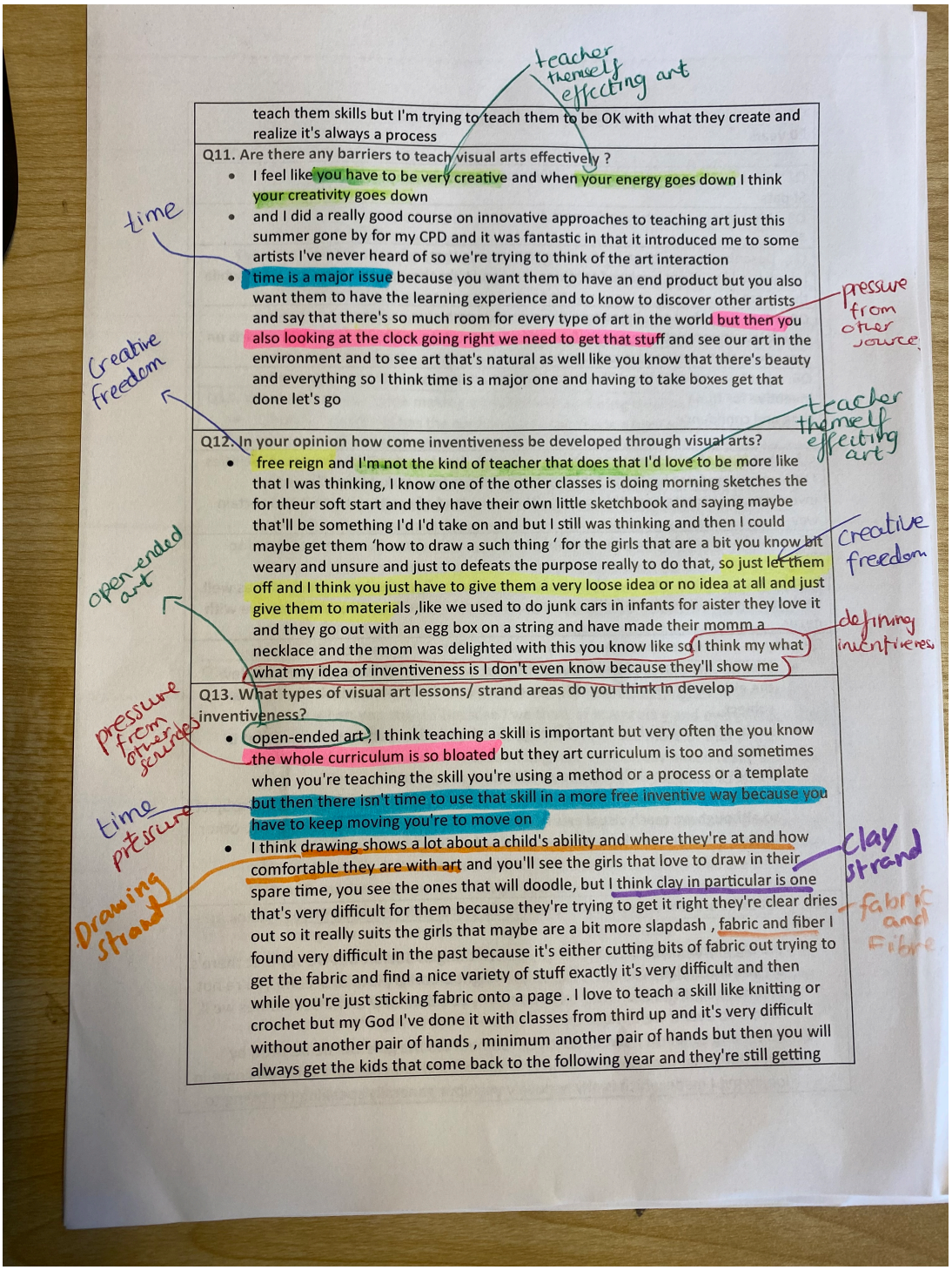
Creating simple, non-representational forms presents children with endless possibilities for imaginative expression and invention.	GOI, 1999, p. 113	Making a soft sculpture lesson exemplar
With experience, children will use fabric and fibre more consciously as a medium in which to design and invent.	GOI, 1999, p. 114	Fabric and fibre
experimenting with stitches of their own invention and, as they acquire dexterity with the needle, with established stitches	GOI, 1999, p. 117	Fabric and fibre

Appendix G: Interview transcript excerpt



Q1. How long have you been teaching? **20 years**
Q2. What higher education institute did you graduate? St pats
Q3. What class do you currently teach? 4th
Q4. Describe the teaching methods or approaches that reflect your teaching style? I think I've kind of got a relaxed teaching style and I like the girls to have a lot of fun while they learn
Q5. What does the term inventiveness mean to you? I think inventiveness to me means free reign for complete creativity with an emphasis on something that's new and novel
Q6. what he attributes his skills do you believe are necessary for someone to be inventive for think time and confidence
Q7. what kind of school experiences do you think developed children's vented facilities I think praise and not having to follow set instructions for a task, being allowed to investigate it or create something with without any kind of pressure to do it in a certain way
Q8. what primary school curriculum subjects do you think are best areas to develop inventiveness? I suppose a lot of the arts ones do, um visual arts drama Pe, sphe has a touch of it as well yeah and music although we follow a program it is nice to get creative and inventive with music
Q9. why do you think we teach visual arts as part of the pharmacy curriculum • Well it's the most enjoyable subject for an awful lot of children, if you interview the girls in my class I'd say only one or two would say that art isn't the favorite subject , • so there's more to it than that though like there's the spatial awareness that it offers • there's the motor skills fine motor skills that are practiced • you can bring art into every lesson and I think that it's an all-encompassing subject so although we teach visual arts I do try to draw from the art curiculum into other lessons just to make them more enjoyable for the girls
Q10. what skills are like dispositions attitudes do you try and develop in your visual arts lessons • the big motto in our class is there's no such thing as bad art but we say that there's art you like and art you don't like so you might create a piece of art and you're not that keen on it but then we'll talk about why you don't like it and sometimes we'll have a do over if we want to try • something again we need to do it yeah sometimes the girls will be inspired by something that they do in a lesson and take off with it at home and they'll come in look what I made which is always lovely yeah but generally speaking I'm trying to

Appendix H: Transcript coding in progress



Appendix I: Pilot Interview Questions

Introductory questions (5 minutes)

1. How long have you been teaching?
2. From what higher education institute did you graduate?
3. What class do you currently teach?
4. Describe the kind of teaching you try to enact in class?

Inventive thinking (10 minutes)

5. What do you understand about the term 'inventive thinking'?
6. What skills do you think are involved in inventive thinking?
7. What kinds of school experiences do you think develops children's inventive thinking?
8. What primary school curriculum subjects develop inventive thinking?
9. Have you connected visual arts education and inventive thinking before this interview?

a. If so, please explain why so?

b. If not, please explain why not?

Visual arts and inventive thinking (15 minutes)

10. Why do you think we teach visual arts as part of the primary school curriculum?
11. What kinds of artwork do the children create in your visual arts lessons?
12. What skills do you try to develop in your visual arts lessons?
13. What dispositions do you try to develop in your visual arts lessons?
14. Looking back, do you think your teaching of visual arts has developed inventive thinking?

a. If so, please explain why so?

b. If not, please explain why not?

15. What kind of support would you like to develop inventive thinking in visual arts?
16. Do you have any other thoughts or perspectives to share regarding visual arts education and inventive thinking?