



Looking to See, Seeing to Learn: Can the implementation of Visual Thinking Strategies foster the development of critical and creative thinking skills within the context of an Australian primary school classroom?

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Statement of Originality

This is to certify that to the best of my knowledge, the content of this thesis is my own work. This thesis has not been submitted to any other institution or for any degree or other purpose.

I certify that the intellectual content presented in this thesis has been produced by me and any assistance received in preparation of this thesis and the resources used have been acknowledged.

Margaret Cunningham

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Abstract

A well-designed curriculum is the foundation of a flourishing education system. Yet, there is an increasing consensus that curriculum content alone is no longer sufficient to foster confident and successful 21st century learners. With this in mind, this study investigates the development of critical and creative thinking skills, identified in the Australian curriculum as one of seven essential general capabilities. Within the Australian curriculum, however, there is no clear indication as to how these skills might be developed. Furthermore, research indicates that teachers face a pedagogical dilemma. On one hand, the capability skills are valued but on the other a lack of confidence, and time constraints, limits a teacher's ability to nurture these essential skills. To this end, the study examines how critical and creative thinking skills may be fostered within the context of an Australian primary school classroom by implementing the Visual Thinking Strategies (VTS), a visual arts inquiry-based pedagogy developed in the United States, in which a work of art is closely observed and accompanied by a facilitated discussion. Developed initially to assess the aesthetic knowledge of art museum visitors, research in the US has found the process to be effective in nurturing critical and creative thinking in students from the primary to tertiary level. Structured around three deceptively simple questions: What's going on in this picture? What do you see that makes you say that? What more can we find? These questions are designed to encourage imaginative, spontaneous responses, developing through facilitated discussion, into more nuanced evidence-based reasoning. With no art history knowledge required, VTS provides a 'level playing field' for all students. Findings indicate that the guided learning process of VTS enhances student agency by encouraging an empowering mindset; that each is personally contributing to the active process of learning in their 'thinking community.' Disruption, as with the Covid-19 pandemic, offers a possibility of change. This 'disruptive' research in which the visual arts are brought in from the traditional margins, offers both student and teacher a positive transformative pedagogy of benefit to future learning especially in terms of the development of critical and creative thinking.

Chapter 1- Framing the study

... art is not supposed to be just beautiful, appropriate for a setting, or easy. Its most satisfying function is that it allows us to exercise our minds (Yenawine, 1991, p. 25).

It is acknowledged, nationally and internationally, that a well-designed curriculum is the foundation of a flourishing education system. Equally, there is an increasing consensus that curriculum content alone is no longer sufficient to foster confident and successful learners. With this in mind, the current study sought to investigate the implementation of critical (CT) and creative thinking (CRT) skills, which have been identified in the Australian curriculum (AC) as one of seven general capabilities designed to support successful 21st century learning. Within the Australian curriculum, however, there is no clear indication as to how these capability skills might be developed.

Furthermore, research has indicated that many teachers face a dilemma when considering how to foster the critical and creative thinking capabilities of their students. On one hand, CT and CRT are valued but on the other a lack of pedagogical confidence, frequently accompanied by time constraints, has been found to limit a teacher's ability to nurture these essential thinking skills in their students (Ab Kadir, 2018; Alter, 2011; Case & Wright, 1997).

To in some way address this 'dilemma', the following study examined how CT and CRT may be fostered by implementing the Visual Thinking Strategies (VTS), an art-based pedagogy developed in the United States, in which a work of visual art is closely observed and accompanied by a facilitated discussion. Developed initially to assess the aesthetic knowledge of art museum visitors, longitudinal research has found the process to be effective in nurturing critical and creative thinking in students from the primary to tertiary level (Housen, 2001-2002). Can this result be replicated in the Australian context? To this end, the research project worked with Stage 2 students to investigate if, in fact, the VTS can be an empowering tool to nurture critical and creative thinking.

Key Terms as applied during this study.

Creative thinking (CRT)

Employing inductive reasoning, CRT flexibly considers relationships between available evidence thereby generating creative possible solutions to a specific problem, which are in turn assessed by the complementary concept of critical thinking (CT) (ACARA, 2022; Beghetto, 2015; Paul & Elder, 2006).

Critical thinking (CT)

The reflective nature of metacognition underpins critical thinking (Ellerton, 2017; Mulnix, 2012). In CT the solution to a problem is delayed while deductive reasoning assesses all available evidence.

Curriculum and Pedagogy

The goal of a curriculum, as stated in the *Melbourne Declaration on Educational Goals for Young Australians* (MCEETYA, 2008), is to produce successful, confident and creative learners, who become effective citizens. The school curriculum is, however, culturally constructed (Kennedy, 2019), which communicates to the community *what* students should learn, thus reflecting the valued knowledge of a society (Reid, 2019). Pedagogy relates to *how* the curriculum will be implemented. It is concerned with the study of teaching and learning (Alexander, 2022).

Visual Thinking Strategies (VTS)

The goal of the VTS visual arts inquiry-based pedagogy is to empower students, and collaboratively develop confidence in their ability to think critically and creatively while sharing interpretations of a closely observed work of art (Housen, 2001-2).

Chapter 2 - A curation of perspectives

All understanding has a frame of reference, a bias if you will, that frames the way we think and express what we have learned. The issue is not one of seeking an unbiased view. There is no view that does not have a slant on things (Barone & Eisner, 2011 pp. 171-2).

The following review explores how the essential skills of critical and creative thinking may be fostered within a quality visual arts program. First, the review considers the historical positioning of the Arts in education (dance, drama, media studies, music and visual arts) then attention is drawn to the specific discipline of the visual arts and various beneficial outcomes for student engagement in a visual arts program are identified. Next the review details how such benefits may foster the development of 21st century 4C skills – critical thinking, communication, collaboration and creativity – and the General Capability skills of critical and creative thinking, one of seven general capabilities designed to augment the implementation of the Australian Curriculum (ACARA). Finally, the Visual Thinking Strategies (VTS) pedagogy is examined as a potential visual arts-based tool for the fostering of critical (CT) and creative thinking (CRT) skills within the context of an Australian Stage 2 classroom.

2.1 A brief history of Arts education

The vigorous debate regarding curriculum content began in the nineteenth century when free public education systems were established in many Western countries in response to the needs of the Second Industrial Revolution of electricity enabled mass production (Kennedy, 2019). Writing on the cusp of the Third Industrial Revolution with production increasingly automated and powered by electronics, Toffler (1970) in his seminal work *Future shock* identifies the pervasive feeling of unease, which arises within a population as it attempts to adapt to an accelerated pace of change, as one technological development precipitates another at a faster and faster rate. Such destabilisation is the antithesis of what Bleazby in the 21st century (2015) describes as society's desire for certainty in

an everchanging world. Yet, in the immense technological change of the emerging modern world of the late 19th century, a confident and optimistic certainty is observed by Hughes (1980). It seemed that “the machine meant the conquest of process” (p. 11).

Thus, standardisation of basic manufacturing methods underpinned the factory system of production; a model of efficiency and mass production which transferred to the ground-breaking innovation of free public education. “Mass education”, in the words of Toffler (1970), “was the ingenious machine constructed by industrialism to produce the kind of adults it needed” (p. 354), a population literate in the 3Rs of reading, writing and arithmetic, and newly regulated by the clock. The Arts, if included, often acted as an instrument to boost learning in these core subject areas (Ballam, 2007; Geahigan, 1992). Nevertheless, at the turn of the 20th century a parallel progressive movement in education offered a broader trajectory for curriculum content. Drawing inspiration from the writings of Dewey (1891, 1902, 1916), the Arts were deemed to be a critical discipline of inquiry for both the cognitive and social–emotional development of the whole child; a controversial expansion of the scope of education (Hardiman, 2016), which was reinforced in the 1947 influential work of Herbert Read, *Education through art*. However, the role of the Arts in education remained contested due in large part, as Fleming (2010) contends, to their association with leisure rather than learning, suggesting also the impact of class differences. Nevertheless, the energy of persistent advocacy for an arts rich education during the 1940s and early 50s led to an increase in their perceived educational value and subsequent inclusion in curriculum (Caldwell & Vaughan, 2012). In the United States, for instance, 1947 saw the establishment of the National Art Education Association (NAEA) to research and promote art education. In that same year, the publication of *Creative and mental growth* by Viktor Lowenfeld, described as the “most influential art educator of this [20th] century” (London, 1998, p.56), further bolstered the case for the Arts in learning and in turn their perceived educational value. A decade later this perception changed markedly.

The 1957 launch of the first satellite in space, the then USSR’s Sputnik, triggered an

international shock wave; a *cold war* catalyst in the United States (US) for concern about the state of education. The subsequent US government response saw the passing of the National Defense Education Act (NDEA) with funding directed towards science and mathematics. In reality, as Kisida and Bowen (2019) assert, this highlighted the existing dichotomy of thought regarding arts education, one which favoured standardised testing and accountability. This, as Ravitch (2010) had earlier claimed, meant that “whatever could not be tested did not count” (p. 21). In a related and equally forthright comment, Aprill (2001) elaborated that student achievement “has become a code phrase for high stakes test scores” (p. 26). Ironically, such narrow thinking boosted research into the value of the Arts to “the entire educational process” (Goodman, 1998, p. 1). Convinced of the cognitive nature of the Arts, but acknowledging a lack of vigorous research, renowned philosopher Nelson Goodman founded *Project Zero* in 1967 to systematically conduct research into arts education (Goodman, 1988). This momentum continued irregularly in the following decades. *Champions of change: the impact of the arts on learning* (1999), for example, is one such US-based comprehensive research initiative, which “explore[d] why and how young people were changed through their arts experiences? (Fiske, 1999, p. iv).

One element of the enduring debate surrounding the place of the Arts in education is the persistent discussion concerning a ‘curriculum hierarchy’ of what should be taught with an often-ambivalent attitude towards the frequently marginalised Arts (Barton & Ewing, 2017; Bleazby, 2015; Ewing, 2018; Geahigan, 1992; Green, 2018), a concept described by Tyack and Cuban (1997) as a ‘grammar of schooling’ (GoS). Education stakeholders, they claim, are habituated “by everyday custom in schools ... and cultural beliefs, until they are barely noticed. They become just the way schools are” (p. 86). “It is just natural”, agree Rogoff, Turkanis and Bartlett (2002, p. 3), “to take for granted the accustomed ways of doing things” (p.3). Thomas (2002) and Sternberg and Kaufman (2010) have also pondered this situation and frame it, with a hint of negativity, as unmitigated inertia. Lamenting more recently, Fullan (2020) declares the current further entrenched

GoS situation to be “cataclysmic” (p. 661) for both education, and society. Interestingly, a tempering of his pessimism is indicated as he looks for a way forward within another cataclysmic event, the Covid-19 pandemic. It may provide, declares Fullan (2020), the very catalyst required for “redrawing the grammar of schooling as we take a year or two in transition to a new era that will either be terribly bad or terribly good. There is no in between” (p.660); an argument similarly proposed by Cunningham and Gibson (2022) for curriculum re-engagement with the Arts, of which the often-voiced perception was that “the Arts are nice but not necessary” (Davis, 2008, p. 25). According to education philosopher John Dewey (1916) more than a century ago, and thus suggestive of an entrenched tension reflective of the GoS, the Arts in education were neither frill nor luxury. Inquiry and learner experience, the hallmarks of Dewey’s philosophy, have from the outset to the present influenced pedagogy and fostered calls for the inclusion of the Arts in the curriculum (Eisner, 2002; Gibson & Ewing, 2011, 2020; UNESCO, 2020; Winner & Hetland, 2008). It is noteworthy, however, comments Rose (2012) that most industries since the advent of free public school education have been transformed by emerging research and technologies but that is often not apparent in education curriculum content and pedagogy. Kennedy’s explanation (2019) of why this might be so is significant. Broader than the commonly recognised subject domains, curriculum for Kennedy is a culture-shaped instrument of the collective designed “to capture a nation’s soul by articulating valued knowledge, skills and beliefs that will [importantly] benefit young people in the future” (p. 121). As arts advocates Gibson and Ewing (2011, 2020) have frequently argued, the now curriculum mandated 21st century skills of creativity, critical thinking, communication and collaboration may be effectively nurtured within the creative arts; an ironical position for the often marginalised Arts.

Significant studies have provided valuable insights into the benefits of an arts rich curriculum, and continue to do so internationally, such as the exploration of global arts education by Barton and Baguley (2017). But, as Bamford (2002) argued more than two decades previously, it is

essential we have similar systematic research within the Australian context; a challenge met nationally by a variety of researchers (including Barton, 2019; *Creative Australia*, 2011; *Creative Victoria*, 2014; Fleming, Gibson & Anderson, 2016; Gibson & Ewing, 2020), who have established a robust base on which to build future research. Despite both national and international “unequivocal research evidence” (Ewing, 2020, p. 75) recognising that the Arts play an intrinsic role in the wellbeing of a nation and its citizens, attitudes towards the value of arts education remain subject to debate. As with the previously noted habituated mindset of the ‘grammar of schooling’ (Fullan, 2020; Tyack & Cuban, 1997), it appears that, as Latham and Ewing have recently discussed (2017), an accustomed traditional mindset continues “to override research” (p. 6). This, Ewing (2018) and Reid (2019) contend, is perhaps best evidenced by the absence of the Arts as a discipline in the first phase of the development of the Australian curriculum during 2008-9.

2.2 The visual arts

The visual arts are one of five previously mentioned discrete disciplines in the specific Key Learning Area (KLA) related to the Arts. In NSW the *Creative Arts* is one of six KLAs while *The Arts* is one of eight in the Australian curriculum, all being mandated curriculum areas designated as essential for the education of Australia’s young people; policy wise, the value of the collective Arts is thus acknowledged. Perhaps not always considered, but such acknowledgement accords with international belief. Ratified by Australia, Article 31 of the United Nations (UN) Convention on the Rights of the Child (1989) specifically includes access to the Arts as a human right for the child: “States Parties shall respect and promote the right of the child to participate fully in cultural and artistic life and shall encourage the provision of appropriate and equal opportunities for cultural, artistic, recreational and leisure activity”.

Each Arts discipline shares many cognitive and social-emotional benefits of assistance for student learning. For that reason, ‘The Arts,’ as Gibson and Ewing (2011) explain, is a term that

they - and others including Winner, Hetland and Veenema (2013) – have used “as a kind of shorthand collective noun” (p. 2) when participating in the Arts discourse. To investigate the collective value of the Arts, Winner, Hetland and Veenema (2013) chose as their “laboratory” (p. 1) the discrete discipline of the visual arts. This, too, was the laboratory for the present visual arts-based study, which investigated how “looking to see” might offer young learners an empowering opportunity to cultivate their ability to think critically and creatively.

Across the decades, and over many generations of students, education scholars have made sound arguments for the central place of the visual arts in the holistic development of young people (Anderson & Gibson, 2004; Arnheim, 1969; Caldwell & Vaughan, 2012; Davis, 2008; Dewey, 1934; Efland, 2002; Eisner, 1979, 2002; Emery & Flood, 2019; Ewing, 2020; Gibson & Ewing, 2020; Lowenfeld, 1964). The holistic development of the child is considered a central tenet of the *science of learning*, an umbrella term which includes the dynamic interplay of cognitive and social-emotional factors; elements of cognitive and social-personality psychology. Both examine human behaviour, learning in this instance, but use different approaches. Agarwal (Agarwal & Bain, 2019), a cognitive psychologist, pinpoints the difference between both. The cognitive approach (perceiving, attending, thinking for example) typically examines “mental operations, or ‘behind the scenes’ behaviours occurring *inside* our heads (p. 19). Conversely, the alternate approach investigates “what happens *outside* our heads” (p. 19) (culture, relationships, environment), the social-emotional aspects of learning. The holistic development of the child –academic and social-emotional - depends on the interaction between both approaches. To spark that essential interaction, a shared observation and interpretation of a work of art offers an effective stimulus.

2.3 The visual arts – Facilitating wonder

What happens when we look at a work of art? For the beholder there is no one answer to this question. There is, however, a near universal response – wonder. Why wonder? one might ask.

Might not reasoning be more productive? Several scholars have pursued answers to this question. Costantino (2010) and Fisher (1998) explore the concept through a consideration of aesthetics, Dewey (1891/1969), prior to his later exploration of aesthetics and thinking (1934), considered wonder to be an “intellectual feeling” (p. 261), and Glaveanu (2017), expressing puzzlement, introduces wonder “as an important yet underdeveloped concept within the creativity literature” (p. 175). Building on Egan, Cant and Judson’s (2014) model of *wonder-full education* as an energising capacity for perplexity, Wolbert and Schinkel (2021) both agree and extend the argument with their conviction that “experiences of wonder [lie] at the heart of learning and education” (p. 440). Curriculum implementation, they further assert, is dependent first on a “wonder -full pedagogy” (p. 175), which in turn is contingent on the pedagogical capability of the teacher; an educationally sound assertion. Factors such as the ethos of the classroom and school are discussed but, puzzlingly, pedagogical support is not offered for implementation of the program. Taking a novel approach and expanding the above discourse, Tan (2015) suggests that learners would benefit from a tempering of the often-voiced view that we live in “an age of uncertainty and ambiguity with unprecedented challenges” (p. 161). “Those with a creative mind-set,” she further suggests, “might call this millennium an age of wonder” (p. 161) in which the now ever-present digital media and new technologies are “facilitating imagination and invention” (p. 161). But, she asks, is there a corresponding innovation in education – curriculum and pedagogy - and, if so, how are today’s learners being encouraged to think creatively and critically? Attention has been drawn to a variety of perspectives surrounding the energising concept of wonder, which has been described succinctly by Piersol (2013) as “the extraordinary that is still within the grasp of our comprehension” (p. 19). Importantly, all the above scholars, expressing accord with this description, are united in their belief that wondering is a catalyst for inquiry, a bridge between the actual and the possible. That is the underlying premise of this current study.

Burgeoning research interest in the concept of wonder has contributed to a now critical body

of literature, the interconnective importance of which concept is clearly evidenced in the title of the recent journal article by Schinkel, Wolbert, Pedersen and de Ruyter (2023), 'Human flourishing, wonder, and education'. Crucially, it appears that this relationship has been similarly accepted by national and state education policy makers. Nationally, this was demonstrated in a series of video logs (vlogs) entitled *Fanning the flames of wonder* (2019) notably presented by David de Carvalho the CEO of ACARA. The title he considered to be a summarising metaphor for the active role of teaching. (The vlog, perhaps also a subtle suggestion regarding the importance of digital media to present-day creative learning and teaching?) The communicated view, apt as it is, is not new. As philosopher educationist Dewey proffered more than a century previously, the kindling of wonder offers a potential "spring to intellectual action" (1891/1969, p. 261). Within a similar time frame of de Carvalho's advocacy of wonder, the notion was also in the air in NSW, a possible educational contagion of sorts (Burgess, Riddell, Fancourt & Murayama, 2018; Mendoza & King, 2020). In 2018, the NSW Education Standards Authority (NESA) began a two-year review of the state's Kindergarten to Year 12 (K-12) curriculum "to ensure that the NSW education system is properly preparing students for the challenges and opportunities of the twenty-first century" (NESA, 2020a, p. v). Reform, its report advised, was indeed imperative, and as its title indicates, wonder again was nominated as the fuel for change - *Nurturing wonder and igniting passion: Designs for a new curriculum*. Interestingly, within each title, of vlog or report, a glimmer of wonder remains, an ineffective amount that requires fanning, or nurturing, as in a smouldering fire. Thus it is, as Piersol (2013) clearly claimed a decade ago "it is not so much adding wonder to the curriculum as it is a process of uncovering the wonder that exists there already" (p. 16). In fact, it is "this 'light', this capacity to wonder, that should be fuelling our love of learning in the first place" (p. 18). To do so it is a question of *how* (pedagogy) rather than *what* (curriculum), as this visual arts-based study sought to demonstrate.

2.4 The visual arts – The benefits

Some fifty years ago Eisner declared that “art teaches us to be alive” (1972, 281). Underpinning that notion was Eisner’s belief in the importance of seeing “the interrelationship of things” (p. 281). Continuing, he asserts that “experience in art, in either its production or its appreciation, demands attention to the relatedness of elements within a whole” (p. 281), a belief of importance in an increasingly “particularize[d]” world (p. 281). It is generally acknowledged, however, that the visual arts have often been marginalised in the service of accountability in education, such curriculum tension Efland (1984) terms the “perennial issue” (p. 267). Yet, since the dawn of human society the Arts have been fundamental to the human experience. Visually we have been captivated by the recording of ancient hands on rock faces or the animals that populated the world of our long-ago ancestors. Art, as many scholars maintain, has been “the universal language through which people from all times and all places have been able to catch the essence of life” (Sabol, 2021, p. 128). Turner (2006) elaborates and powerfully explains that “art is an inevitable by-product of mimesis – *a primordial, and truly human, cognitive adaption* that occurred very early in hominid prehistory *and became the signature feature of the human mind*” (p. 14, emphasis added); an entwining of art and human cognition. Thus, for the holistic development of the child – that ‘interrelationship of things’ - the benefits of engagement with the visual arts are countless. Similar to Lipman’s remarks concerning thinking skills, “the list [of benefits] is endless, because it consists of nothing less than an inventory of the intellectual powers of mankind (sic)” (2003, p. 8).

2.4.1 Academic benefits

Academic learning at school is hinged on mastering the basics of literacy and numeracy, foundational skills accepted as crucial for effective learning at school, and beyond; an understanding creatively articulated by Perkins and Salomon (2012). School is but a stopover in life they claim, which offers “knowledge-to-go, not just to use on site” (p. 248); a memorable and apt

metaphor. In the now “overwhelmingly visual” (Newman & Ogle, 2018, p.ix) 21st century world, however, many arts researchers (Bamford, 2010; Barton & Baguely, 2017; Davis, 2008; Efland, 2002; Eisner, 2002; Emery & Flood, 2019; Gibson & Ewing, 2020; Groff, 2013; Little, Felten & Berry, 2010; Sabol, 2013, 2021) argue that the traditional basic skills be extended to include that of visual literacy, or “visuacy,” as suggested in the 2008 report of the National Review of Education in Australia, *First we see* (Davis, 2008, p. 11). Not only were visual literacy skills considered ‘no less important to the development of human beings ... than the fundamentals of reading and writing and basic communication’ (p. vi) – traditional literacy – but the long-term neglect of visual education was also acknowledged. The solution offered is relevant for this current study. “Australian education and arts organisations must act collaboratively to generate innovative visual education practices for contemporary times” (p. vii). In that same year, 2008, Elkins proposed that the provision of “a visual culture ‘core curriculum’ for all students” (p. 8) would enhance their academic outcomes, a claim building on the work of previous scholars. Eisner (2002) and Efland (2002), for instance, have long avowed their belief in the cognitive benefits of learning within the visual arts. Earlier, moreover, Eisner importantly clarified his position regarding making and responding (terms used in creative arts syllabi): “Experience in both the creation and appreciation of art can properly be conceived of as a product of intelligence” (1972. p. v). Eisner further argues “that an educational program that neglects the qualitative aspects of intelligence, one that side-steps the metaphorical and affective side of life, is only half an education at best” (p. v).

Because of the ubiquitous impact of the visual “ambient culture” (Goodman, 1988, p. 2) on society in general, Watts (2018) makes a thought-provoking point of importance for learners. He wonders, as does Hickman (2010), if it might be that “the more children see, the less they notice” (p. 160), an idea related to this project’s art-based investigation of ‘looking to see’. Both terms, noticing and seeing, correlate with the cognitive process of perception formulated over time by such scholars as Arnheim (1969), Eisner (2002), Feldman (2002), Goodman (1972), and Perkins and

Gardner (1988). The relationship between cognition, thinking and perception is vigorously emphasised by Arnheim. “I see no way of withholding the name of ‘thinking’ from what goes on in perception” (p. 14), concluding definitively that “visual perception” as in the observation of artworks, “is visual thinking” (p. 14). Perkins (1994) clearly agrees as the title of his seminal work demonstrates: *The intelligent eye: learning to think by looking at art*. Perhaps a response to his earlier asked question: “Why do we bother with art at all?” (1988, p. 128).

When the learner is engaged in close observation of a work of art, a schematic cascade of positive learning benefits is set in motion. Student engagement, however, is a hoary term in education – in modern parlance a ‘suitcase word’ (Minsky, 2006) – which Zyngier (2007) notes is frequently invoked without a clarifying definition; an expression lacking in “conceptual clarity” claim Macfarlane and Tomlinson (2017, p. 7)) Yet, there is some truth in Newmann’s (1986) comment that “we know it when we see it” (p. 242). ‘It’ is to be seen in the alignment between curriculum and pedagogic process, say Macfarlane and Tomlinson (2017), a multifaceted (cognitive, emotional and behavioural) relationship “beginning to be subject to serious critique” (p. 7). In fact, this relationship had been investigated previously by the *Fair Go Project* (1999-2011) in southwest Sydney from the perspective of a vital need for pedagogical change. Without specifying the visual arts, a sense of wonder proved to be the ultimate catalyst for improved student engagement, for an increased sense of belonging and achieving, as evidenced in the title of a subsequent paper: ‘A sense of wonder: Pedagogies to engage students who live in poverty’ (Munns, 2007, p. 312). Lit by pedagogic change (unspecified), a spark of wonder was seen to ignite “a fire of engagement” (p. 312); a finding later supported by de Carvalho (2019) in his perceptive desire to fan ‘the flames of wonder’ within Australian students. Again, the question is - ‘how’?

“Works of art are good things to think about”, is the title a conference paper presented by Tishman and Palmer (2007). The words seize our attention and spark our interest, as does an artwork for the viewer. A “sensory anchoring,” the powerful metaphor chosen by Perkins (1994,

p.5)) to illustrate this feat is, in reality, the intention of the artist “to draw and hold attention” (p. 5). For the student, as an inherently curious and “natural learner” (Darling-Hammond, 2020, p. 109), this provides a remarkable opening for authentic learning. In a thoughtful related comment Tishman (2017) suggests that “from the standpoint of learning there is something singularly powerful about looking for oneself” (p. 65). Continuing, she raises the question, as does the current study, “of why direct observation is such a compelling and engaging learning behaviour” (p. 65).

Langer (1942) long ago asserted that “our understanding of the world begins in the eyes” and “is not a passive process” (p. 84). In that statement, the elemental value of scrutinising an artwork was identified by the philosopher. The close observation of an artwork, described as ‘slow looking’ by Tishman (2017, p. 1), is an active intellectually stimulating process for the young learner. Frey (2015) interestingly observes that the young viewer more often than not comes to an artwork with fewer preconceptions than adults and, as a consequence, may engage more keenly and perceptively from the outset. Without referencing the visual arts specifically, the value of keen student interest has been studied by other scholars. Darling-Hammond (2020), for instance, takes a broad view and posits that interest is “cognitively energizing” (p. 123) boosting intrinsic motivation and attention, all of which sustain “engagement in learning activities” (p. 123) across the curriculum. Academically this is important. In a related comment, Neville (2007) similarly suggests that attention may be our most significant learning resource, as good attention skills may be applied to any subject at school to enhance learning. Embedded in this concept, not surprisingly, is the commonly held belief in the power of the child’s natural curiosity, a blend of both thinking and feeling (Arnold, 2005; Efland, 2002; Eisner, 2002). The philosophical musing of Foucault (2000) that curiosity embodies “a sharpened sense of reality, but one that is never immobilized before it” (p. 325), seems to speak to Arnold’s (2005) positioning of curiosity amongst an array of features central to learning. Imagination, Arnold maintains, is underpinned by a characteristic sense of “curious anticipation” (p. 70), the facility to fuel creative speculation; a notion similarly addressed

by Craft (2015) with her question “what if?” (p. 153), and Greene (1991) with her articulation of the “possibilities of clearings, of new openings” (37). In a similar vein pondering possibility, Beghetto and Schuh (2020) perceive imagination to be a core capability on which creativity and thinking skills depend. Broadening this reasoning, Arnold (2005), Bandelli (2018) and Greene (1995) importantly conclude that the cognitive nature of imagination makes empathy possible. Greene (1995), without supplying a pedagogic framework, writes eloquently that “empathy enables us to cross the empty spaces between ourselves and those we teachers have called ‘other’ over the years” (p. 3); an issue addressed in the AU Curriculum (version 8.4, 2017) general capability of *intercultural understanding*. De Botton and Armstrong (2016) and Ewing (2013) believe the aesthetic appreciation of an artwork would offer a beneficial pedagogic tool to, respectively, encourage an expansion of the child’s worldview, and counteract rejection of the ‘foreign’ other; a wide-spectrum cognitive tool of benefit to “making thinking better” (Perkins, 1994, p. 3).

A turn toward a more active student-centred style of learning would, Tan (2015) contends, make thinking better by “inject[ing] life into the minds” (p. 165) of students. A dialogue infused observation of an artwork work is a well evidenced process to do so (Catterall & Peppler, 2007; Marshall, 2019; Siegesmund, 2005; Tishman, 2017; Wilks, 2003, 2005; Yenawine, 2013). The process is built on the understanding that in dialogue –as in the ‘conversation’ of Eisner (2002) and Gaita (2023) - we are wholly present to “one’s own and others’ ideas” (English, 2016, p. 1060), a belief matched by Alexander (2004, 2020). Thus, the benefits of coupling visual and verbal responses to an artwork are many and include the following.

**An artwork is accessible to all students*, it “can make the ordinary seem extraordinary (Weber, 2008, p. 44). A work of art captures the attention of the naturally inquiring child (Housen, 2001-2; Perkins, 1994). A disposition described by Marshall (2017) as the child’s “innate openness to new ideas, situations, and things” (p. 14). Furthermore, as Efland (2002) colourfully states, “perceptually vivid aesthetic encounters” in the visual arts are of “educative value” (p. 159).

**An artwork presents an 'authentic' problem to be solved.* Authenticity, Alexander (2004)

explains signals to the student the teacher's interest in their thinking (Alexander, 2004, 2022).

Elaborating, Tan (2015) maintains that a pedagogical shift is demanded this century. In addition to the visibility of content and teacher thinking, it is now necessary to "make students' minds and thinking visible to the teacher and [importantly] the learners themselves" (p. 165) – metacognition.

**An artwork presents an opportunity* for the student to demonstrate the complex and nuanced thinking that Eisner (2002) believes they are capable of and, furthermore, furnishes a potent indicator that "a school is doing well" (Eisner, 2001, p.367).

**An artwork, moreover, is ambiguous.* Students learn through dialogue infused thinking that there is more than one right answer and reflection is encouraged (Lampert, 2006). In purposeful dialogue – as is the discussion of an artwork - Alexander (2004, 2022) and Phillipson and Wegerif (2020) theorise that students freely share ideas building on each other's contribution to develop a coherent understanding.

**An artwork cultivates writing skills.* Eisner (1981) believes that "[c]hildren who do not learn to see will not be able to write, not because they cannot spell, but because they have nothing to say" (p. 470).

**An artwork closely observed stimulates thinking skills.* Researchers including Burchenal and Grohe (2008), Costa (2007), Hailey, Miller and Yenawine (2015), Housen (2001-2), Tishman (2018) and Yu, Garces-Bacsal and Wright (2017) suggest that discussion of a closely observed artwork fosters the development of a student's capacity to think creatively and critically within the visual arts, and more broadly across the curriculum. Once developed, cross- curriculum transfer of these skills is implied in the Australian curriculum (Version 9.0, 2022). "Critical and creative thinking involves students thinking broadly and deeply using skills ... and innovation in all learning areas at school and in their lives beyond school" (General capability of critical and creative thinking, 2022, np).

Thinking skills transfer has, however, been long-considered a “finicky phenomenon” (Perkins, 1994, p. 87). Contradictory research conclusions - a consistent theme of inquiry into the effects of visual arts education on students’ academic outcomes - highlight the need for a continuing focus on this issue. Interestingly, Hetland and Winner (2001) made such a plea so that they might better “understand the *puzzling finding* that when the arts are granted a serious role in our schools, academic achievement often rises” (p.6). Still with no clear answer in 2018, the Victorian Curriculum and Assessment Authority (VCAA) commissioned Anderson and Beavis (2018) to conduct a review of the learning transfer literature with particular focus on the capability of critical and creative thinking (CCT), thus implying the foundational importance of CCT to learning in the 21st century. Although conflicting theories and perspectives remained in evidence, the reviewers found that students’ CCT ability was fostered by pedagogical strategies based on metacognitive, questioning and reasoning skills, a finding of particular interest for the present investigation. Furthermore, the VCAA reviewers crucially found that learning transfer was supported when students exercised metacognition.

2.4.2 The visual arts – Social and emotional benefits

The academic and social emotional benefits of engagement in a visual arts program interweave contributing to effective learning for students (Jefferson & Anderson, 2017; Smilkstein, 2011; van Heusden & Gielen, (2015)); a relationship applicable to learning across the curriculum. Crucially, the fundamental nature of this notion is acknowledged in *The Australian Student Wellbeing Framework* (NSW DET, 2015) for schools and more broadly in the wider research world. In the words of Darling-Hammond and her colleagues (2020, p. 29)), “academic learning is tightly intertwined with social and emotional skills” which, moreover, “are reinforced by instructional approaches that reduce anxiety and support a growth mindset” (p. 219). The current study offers

one such instructional approach. The interwoven benefits, surveyed in distinct sections to allow for a richer understanding, evidence the value of ‘responding’ in the visual arts.

Bruner (1960) and Dewey (1964) agree that education is neither outcome nor result. It is “a process of development, of growth” (Dewey, 1964, p. 4), which because of ever-increasing societal change is in “a constant process of invention” (Bruner, 1966, p. 22). Furthermore, Bruner (1960) and Dewey (1964) suggest a second crucial constant - the contribution of schools “to the social and emotional development of the child if they are to fulfil their function of education for life in a democratic community” (Bruner, 1960, p. 9). For most contemporary researchers, including Darling-Hammond (2020) and Hirsh-Pasek (2022) and their colleagues both constants remain relevant as does their philosophy of education as a process to develop the whole child.

The OECD recently conducted its first international *Survey of Social and Emotional Skills* (2021) in response to increased awareness and discussion of their relationship with academic learning. Other studies in recent decades have indicated the positive impact of a quality visual arts program on student learning and their attitude to school in general. Winner (2000) for example, asserts that a quality visual arts program can change the atmosphere of a school, as does the United States National Art Education Association (NAEA) (2016), with its suggestion that the visual arts may act as a catalyst “to create a dynamic school culture” (p. 13). Winston (2014) and Hetland, Winner, Veenema and Sheridan (2013) contend that engendered positive feelings about school can improve student attendance and academic performance, which in turn Catterall (2012) and Bowen and Kisida (2021) found to be of particular benefit for disadvantaged students. Of subsequent benefit is the potential for the development of confidence and ownership of learning self-efficacy and communication skills when verbally sharing interpretations of an artwork within an empathic learning community (Bamford, 2006; Burton, Horowitz & Abeles, 2000; Catterall & Peppler, 2007; Fleming, Gibson & Anderson, 2016; Rice & Yenawine, 2002). The impact of nonverbal communication, a less mentioned benefit of aesthetic experience, is discussed by Mastandrea,

Fagioli and Biasi (2019) for, amongst other things, its contribution to the development of interpersonal relationships.

Because children are naturally drawn to creative inquiry, as Marshall (2017) maintains, a student's curiosity, attentiveness and anticipation are heightened when responding to an artwork (Greene, 2001; Marshall, 2017; Perkins, 1994) and contemplation "of images can make the ordinary seem extraordinary" (Weber, 2007, p. 44). Relatedly, Berliner and Judd (2019) bluntly state that "without curiosity learning is a laborious chore" (p. 168), which seems to imply a link between curiosity and joy in learning. Surprisingly, the literature is limited on the concept of joy (Johnson, 2020). Van Capellen (2020), however, building on the research of Johnson (2020), posits that "joy connects us to our core identity ... It is the emotion that makes life worth living in the moment" (p. 40). With education in mind, Ross and Dwyer (2021) were thus prompted to ask, "does this curriculum bring students joy?" (2021, *The Conversation*, np). Curriculum is not the problem argue Hirsh-Pasek and her colleagues (2022). They contend that the curriculum may bring "learning to joyful classroom practice" (p. 4) with a shift in mindset and a review of implementation strategy; a notion supportive of the goal of the current inquiry.

In the atmosphere of instant engagement when responding to a work of art, the student furthermore becomes aware of their own thinking (Eisner, 2002; Perkins, 1994; Yenawine, 2013). This metacognitive act both empowers the student and encourages the development of an aesthetic awareness (Gibson & Ewing, 2011; Seidel, Tishman, Winner, Hetland & Palmer, 2009; Smith, 2004), which Gibson and Ewing (2011) importantly maintain satisfies "our basic need for beauty" (p. 131), a concept noted by Winston (2008) to be problematic from the late 19th until the turn of the 20th century with a slow re-turn to an appreciation of beauty then occurring. Winston (2014) is engaged in creating a culturally democratic 'pedagogy of beauty' in which students will connect with the imaginative and cognitive energy of beauty and in the process "make the classroom a cheerful, good-hearted place where young people can feel comfortable enough to take creative

risks” (2014, p.14). The re-emerging interest in beauty is examined by Watts (2018) in the context of education research, which he notes continues to focus on “art practice and minimise[s] aesthetic pleasure” (p. 151), that is, current research in art education continues to foreground making over responding.

An authentic visual arts program can also potentially change the dynamics of a classroom (Gibson & Ewing, 2011) to one in which appreciation of diversity, and empathy for fellow students, fosters an atmosphere of connectedness and unified harmony (Bresler, 2013; Greene, 1995; Jensen, 2001). Put simply, as Tough (2016) explains, “changing the environment in the classroom ma[kes] it easier for them to learn” (p. 48) as an empathic community of learners (Lucas & Spencer, 2017; Rogoff, 1994). Empathy has today become an increasingly valued social-emotional skill (Davis, 2008; Dunn & Wright, 2015; Kangas, 2019; Pink, 2006; Riddett-Moore, 2009). Like Arnold (2005) and Greene (2001) before him, Pink (2006) deems empathy to be an individual’s “stunning act of imaginative derring-do, the ultimate virtual reality – climbing into another’s mind to experience the world from that person’s perspective” (2006, p. 159). This ‘stunning act’ Dunn and Wright (2015) suggest, is a central element of engagement in the visual arts and demonstrates the potential to impact positively on student behaviour. Detailed above are the benefits for the learner engaged in the visual arts. Importantly they align with goal two of the Alice Springs (Mparntwe) Education Declaration (2019): *Encourage young people to hold high expectations for their educational outcomes; ensure that education promotes and contributes to a socially and cohesive society that values, respects and appreciates different points of view and cultural and social diversity.*

2.5 The 4Cs – Creativity, critical thinking, communication and collaboration

While the 3Rs (reading, writing and arithmetic) met the needs of the 19th century Industrial Age workforce, they are deemed no longer sufficient in the 21st century Knowledge Age. This view is supported by numerous educationalists (for example, Jefferson & Anderson, 2017, 2021; Dede,

2010; Gibson & Ewing, 2020; Trilling & Fadel, 2009, 2013; Warner, 2006) who agree with Richard Florida (2011) that “our definition of education must be broadened” (p. 155).

To this end, the Partnership for 21st Century Skills (P21), a US coalition of education and business leaders was formed in 2002 to investigate how best to meet the academic and professional needs of students. P21 distilled eighteen 21st Century vital skills into an interdependent group of four: creativity, critical thinking, communication and collaboration commonly referred to as the 4Cs (P21, 2009), which are now emphasised in the revised NSW Kindergarten to Year 12 (K-12) curriculum to ensure that students are prepared “for the challenges and opportunities of the twenty-first century” (NSW Education Standards Authority (NESA, 2020a, p.v)

Figure 1

The 4Cs: An explanation adapted from P21

Creativity	In the creative process, students will “be open and responsive to new and diverse perspectives” (P21, 2009, p. 3). Newly generated ideas will be effectively communicated to others. Incorporated group input and feedback will enable a useful contribution to a product or discussion.
Critical thinking	Students analyse and evaluate alternative points of view, Students reflectively “interpret information and draw conclusions based on the best analysis” (P21, 2009, p. 4).
Communication	P21 refers to communication as a process of effective listening and the articulation of “thoughts and ideas clearly and effectively through speaking and writing” (2010, p. 4).
Collaboration	Communication’s partner skill of collaboration is evident when a student demonstrates the ability to work respectfully in a diverse team, sharing responsibility for collaborative work and valuing individual input (P21, 2009).

Education, The Partnership maintains, continues to be founded on the solid ground of content knowledge but now must also include in the 21st century the active participation of students in the knowledge-getting process; the view also of the pedagogical process investigated during this study.

Interestingly, scholars including Dede (2010), Kay and Greenhill (2011) and Stevens (2012) propose that the 4Cs are not ground-breaking as is the innovation of the age, but are timeless skills now foregrounded to bridge the education gap between school and a rapidly changing society. Evidence suggests that a quality visual arts program has the potential to develop, foster and extend these skills (Alter, 2011; Costa, 2007; Eisner, 2002; Gibson & Ewing, 2020; Housen, 2002; Perkins, 1994; Sawyer, 2015). Hennessey and Amabile (2010) suggest, however, that the lack of a clear definition for creativity and critical thinking has led to contradictory theories.

“Creativity is often viewed as a rather mystical affair” writes Florida (2011, p 18), thereby hinting at a possible reason for the muddled thinking surrounding the concept. Hennessey and Amabile (2010) suggest, for example, that the lack of an agreed definition for creativity has led to contradictory theories. Related is the advice of Beghetto (2010) and Lobman (2014) to beware of engaging in a dichotomy of learning and creativity, which pointlessly separates the intertwined cognitive and affective elements of learning. Further confusion relates to the difference between creativity and creative thinking. To clarify, Lucas and Spencer (2017) offer a basic definition: “Creative thinking is what you do when you are being creative and creativity is the outcome of this” (p. 17); a simple definition that masks an underlying complexity. Amongst teachers, Beghetto (2020) explains, there is a common misunderstanding that evidence of creativity sits with the production of a tangible creation. Continuing, Beghetto broadens creativity’s scope to include the “more subjective, internal constructions of smaller-c creativity” (p. 456), an intangible conceptual product, which has also been identified and studied by Sternberg and Kaufman (2010). The dynamic nature of the concept is interestingly demonstrated in Beghetto’s evolving theory of creativity. Writing in 2019, the researcher stresses that “creativity is not a thing, but a distinction we bestow on particular experiences, ideas, actions, and artifacts. ... This is an often overlooked, but important assumption” (p. 28), which is of relevance for this study.

According to many researchers, including Harris and de Bruin (2018), and Cremin and Chappell (2019), teaching for creativity demands a shift in focus from the traditional teacher transmission of knowledge to pedagogies characterised by a teacher-learner coconstruction of knowledge in which imagination, possibility thinking and risk-taking flourishes (Beghetto & Schuh, 2020), where the student may ask “what if ...?” (Craft, 2015, p. 153). Creativity in schooling, often thwarted by time and curriculum testing constraints, is also frequently deprioritised as a leisure activity (Grigorenko, 2019; Root-Bernstein & Root-Bernstein, 2017). Viewed from an alternate perspective, constraint does not suppress creativity, but rather as Beghetto, (2018) argues, it is a constant from which “creative expression emerges” (p. 27). Illustrative of the complexity surrounding the concept of creativity, Rubenstein, McCoach and Siegle (2013) further observe that classroom creativity practice is also influenced by the teacher’s own creativity or feeling of negative creative self-efficacy; the ‘creativity gap’ identified by Makel (2009). One solution, Beghetto, Kaufman and Baxter (2011) suggest, is to provide pedagogical support for teachers, which would mitigate against their negative self-efficacy and its consequent impact on classroom creativity. Such support would also be useful for teachers to gain a clearer understanding of critical thinking.

Critical thinking has been a goal of education for more than a century with attention increasing from the 1980s (Ennis, 1993; Fisher, 1999) until the present “new wave of interest” (Wegerif & Kaufman, 2015, p. 7). The Australian curriculum, sitting within this “broad global ... context” (Ditchburn, 2015, p. 28), compellingly affirms this stance. For example, the importance of critical thinking for argumentation, evidential reasoning and nuanced evaluation of positions or ideas is again confirmed in ACARA (V 9.0, 2022). In a more philosophical vein, Gormley (2017) thoughtfully elaborates: “Critical thinking is rooted in intellectual humility and reflects considerable tolerance for and appreciation of alternative points of view” (p. 28). Yet, Ellerton (2017) notes that many who proclaim the importance of critical thinking are puzzlingly unable to precisely describe what the concept means. Despite the “pervasive vagueness” (Hemming, 2000, p. 173) about

meaning, most educators, then and now more than two decades later, value the concept's inclusion in the curriculum. Without clarification there is a danger, Hemming cautions, that the critical concept may be reduced to a rhetorical cliché or slogan.

Mason (2007) contends that the relationship between CT and learning may be seen during the process where “new knowledge develops by critically falsifying the known” (p. 140). Competing theories have long surrounded this issue, which Ab Kadir (2018) suggests has impacted the development of an effective generalizable approach to teaching CT. Critical thinking skills, developed in response to a challenge, are frequently viewed as either cross curriculum general skills (Ellerton, 2020) or specific to a particular domain (Willingham, 2007, 2019). Within either perspective, a student's response is underpinned by an idiosyncratic ‘habit of mind’ (Costa & Kallick, 2008; Hogan & Winner, 2019). Tishman, Jay and Perkins (1993) explain that “a good thinker possesses... abiding tendencies to explore, inquire, seek clarification, take intellectual risks, and think critically and imaginatively” (p. 147), which in turn are activated by a trio of sensitivities, inclination and ability (Perkins, Jay & Tishman, 1993).

Many (Alexander, 2004; Dewey, 1934; Dysthe, Bernhardt & Esbjørn, 2013; Eisner, 2002; Moran & John-Steiner, 2003) agree that it is, in fact, the communication and collaboration that exists in the visual arts classroom that enables critical thinking and creativity to flourish. As Perkins (1994) explains, the “sensory anchor” (p. 5) provided by a work of art encourages the reflective thought process of critical thinking, the imaginative possibility of creativity, and communication and collaboration by way of active listening and respectful discussion, all significant elements of 4Cs thinking. Furthermore, Siegesmund (2005) highlights the potential development of self-efficacy (Bandura, 1997) resulting from effective communication with peers. Self-efficacy, a notion embedded in the previously cited *Alice Springs (Mpamtwe) Education Declaration* (2019), a goal of which is to foster within young people a positive outlook for their educational outcomes.

The 4Cs, a shorthand term encapsulating an abundance of elements, is an appealing and creative concept. Many scholars have been stimulated to create fresh sets across the disciplines and the alphabet. In the field of education, Gibson and Ewing (2020) propose an additional 4Cs – curiosity, compassion, courage and connection. To the original four Cs, this researcher would also include courage and confidence– entwined and empowering ‘soft’ skills whose benefit for the young learner was demonstrated during the present study’s investigation of the VTS pedagogy.

2.6 The general capability of critical and creative thinking (CCT capability)

In the Australian curriculum (AC) the Australian Curriculum, Assessment and Reporting Authority (ACARA) importantly links knowledge and skills, thereby acknowledging that content alone is no longer sufficient in the 21st century. Interestingly, this key integration has endured a lengthy gestation as its importance was perceptively stressed more than three decades previously in the Carrick Report of 1989. In arguing for “the development in students of initiative, creativity, flexibility, problem solving and the ability to work with others” (Carrick, 1989, p. 25), it seems to offer a recipe for the current capability of critical and creative thinking. CT and CRT are discrete elements of the capability but are inextricably linked “bringing complementary dimensions to thinking and learning” (ACARA, Version 9.0, 2022). Many aspects of the accumulated body of research literature has been integrated into the AC’s perception of the capability. For instance, Paul and Elder (2006), long time researchers of CT and CRT, state that “neither can be separated from the other without an essential loss to both” (p. 34), with which Lipman (2003) agrees. In contrast, Mulnix (2012) separates CT and CRT but contends that CT is a skill that may be taught and subsequently transferred across curriculum domains. Vaughn (2005) concurs: “Good critical thinking is the same everywhere” (p. 8). As does Brookhart (2020) regarding thinking as “a teachable and learnable skill” (p. 148); understandings with which Willingham (2020) disagrees.

To aid the development of these capabilities, a schematic structure identifies four key interrelated notions: inquiring, generating ideas, analysing and reflecting (see Figure 2 below).

Figure 2

Characteristics of the four key notions of inquiring, generating ideas, amplifying and reflecting adapted from ACARA (2017)

Inquiring	Identify and explore information from source material. Compare and categorise facts and opinions. Pose questions to identify and clarify issues.
Generating Ideas	Speculation when considering multiple possibilities. Infer when meanings drawn from observations. Collaboratively expand on known ideas to create new knowledge.
Analysing	Link prior knowledge and available evidence to form a conclusion. Adjust course of action according to new information. Explain and justify ideas and outcomes.
Reflecting	Self-awareness of own thinking (metacognition); understanding thinking behind conclusions. Revise original thinking if necessary. Transfer and apply information from one context to another.

Less explicitly examined in the critical and creative thinking (CCT) capability literature is the fundamental role of metacognition and pedagogy. From the perspective of the student, Ellerton (2017), Larsen (2013) and Mulnix (2012) highlight the crucial importance of a student's metacognitive ability to facilitate the development of CCT skills and their transfer. Ab Kadir (2018), on the other hand, expresses concern that the curriculum lacks pedagogical support for the teacher when developing the capability thinking skills in the classroom. In an earlier study with teacher participants, Alter (2011) similarly found that teachers would benefit from professional support to develop their pedagogical content knowledge (PCK); knowledge of both content and pedagogy as discussed by Gess-Newsome and colleagues (2017). The goal of this research project is related to these key concerns.

2.7 The Visual Thinking Strategies - VTS

Visual Thinking Strategies (VTS), an inquiry-based pedagogy, was originally developed in the US by cognitive psychologist Abigail Housen and art museum educator Philip Yenawine to enhance learning outcomes for art museum visitors (Housen, 1999; Yenawine, 2013). Longitudinal research has revealed that the higher order thinking skills of creative and critical thinking acquired during the iterative VTS process were relevant for, and transferable to, external education systems: schools, colleges and universities (Burchenal & Grohe, 2007; DeSantis, 2008; Housen, 2001-2002). This notion is corroborated by Larsen-Freeman (2013), who found that iteration, the frequent return to a procedure with different examples, supported the transfer of learning. The constructivist VTS pedagogy builds on earlier research by scholars: for example, Arnheim and his intertwined perceiving and thinking (Arnheim, 1969), Piaget and his ordered cognitive stages of development (Piaget, 1962), Dewey and his conviction that education is a “*process*” (1964, p. 4), Vygotsky and his *zone of proximal development* (Vygotsky, 1978) and Elliot Eisner’s belief that “to scrutinize [images] appreciatively” is of core educational value (Eisner 2002, p.xii).

Structured around three “deceptively simple” (Housen, 2001-2002, p. 120) focus questions, the VTS process connects evidence within an artwork to an individual’s life experience. These questions are designed to encourage imaginative, spontaneous responses, developing, through facilitated discussion, into more nuanced evidence-based reasoning. Throughout the process, the facilitator points to what the student is speaking about, and again when paraphrasing the student’s comments. With no art history knowledge required, VTS provides a *level playing field* for all students.

The above expression, signalling the equity and inclusiveness to be found in the VTS pedagogy, also relates to the growing body of literature investigating the positive effect of a more playful approach to learning (Sahlberg & Doyle, 2019; Weisberg, Hirsh-Pasek & Golinkoff, 2013; Zosh, Hirsh-Pasek, Golinkoff and Dore, 2017). Sahlberg and Doyle (2019), for instance,

compellingly argue that both intellectual and physical play is essential for the nourishment of the physical and cognitive development of a child. Play, in the context of education, is defined as “those engaging activities, both self-guided [free play] and guided by adults [guided play], that allow a child to use her or his creativity, curiosity, and imagination in a process that can have powerful intellectual and physical benefits for the child” (Sahlberg & Doyle, 2019, p. 50).

Burgeoning research suggests that guided play offers students a sense of agency in their own learning “with adults playing the supporting role of scaffolding their exploration” (Zosh, Hirsh-Pasek, Golinkoff & Dore, 2017, p.175). Echoing the findings of earlier studies of the VTS process (Housen, 1999; 2001-2002), such research is supportive of VTS as a useful tool to foster the General Capability skill of critical and creative thinking. Proposing a broader perspective, Weiskey and colleagues (Weisberg, Hirsh-Pasek, Golinkoff, & McCandliss, 2014) suggest that guided playful learning – as is VTS - enhances student agency by encouraging an empowering mindset; a belief that each is, indeed, personally contributing to the process of learning. Curiosity and discovery are shared pivotal elements in these two learning strategies, each of which, importantly, identify as an active process of learning, rather than a product or outcome (Sahlberg & Doyle, 2019; Yenawine, 2013).

The VTS process, emphasising the limitless “power of art” (Housen, 2002, p. 121) to engage a student’s natural curiosity, is likewise supported by research. Others including Costa (2007) and Perkins (1994), who identify the ease of visual art accessibility as a key feature enabling the cultivation of thinking skills and the disposition to enquire. Closely linked is Moran and John-Steiner’s (2003) encouragement for the creation of a safe community of learners, a practice central to the VTS process. “Equal collaborators”, they claim, “can form thought communities ... in which to continue their own and each other’s development” (p. 83). In this instance via the dialogic VTS process, a method of learning advocated by Alexander (2004, 2008, 2022). In such a community, “permission to wonder” (Yenawine, 2013, p. 1), provides a fundamental learning tool. In

Yenawine's words, when students are responding to a work of art, they are given "permission to be puzzled and to think. To use what they already know, to reflect on what they don't: the first steps in learning" (2013, p. 2). "Permission to wonder" resonates with others. Arnheim (1993), Bresler (2013) and Latham and Ewing (2017) consider *wonder* to be at the heart of visual arts practice. *Wonder*, insists de Carvalho (2019) - the chief executive officer of ACARA – is a stimulant for all learning.

Chapter 3 – Let there be joy

“Intrinsic motivation to learn is defined as the intention to engage in a specific learning activity because the activity itself is interesting, enjoyable or otherwise satisfying” (Schiefele, 1999, p. 259).

3.0 Introduction

This study investigated how engagement with works of art might foster the essential skills of critical and creative thinking within Stage 2 students in the Australian context. Curriculum policy makers stress the value of these higher order thinking skills. Teachers likewise acknowledge their importance, yet policy is frequently not coupled with pedagogy. Teaching, a theory and culture saturated process, is, as Alexander (2008) maintains, at the centre of pedagogy but the two are not the same. “Pedagogy is the act of teaching together with its attendant discourse. It is what one needs to know, and the skills one needs to command” (Alexander, 2008, p. 173). To address this teaching dilemma, the research project investigated how the implementation of the art-based Visual Thinking Strategies (VTS), might provide a practical pedagogic solution. To that end, the following overarching question guided the study:

Can the Visual Thinking Strategies process be successfully implemented to foster the development of creative and critical thinking skills within the context of an Australian Stage 2 primary school classroom?

Three sub-questions also informed the study:

- i) How does the close observation of visual artworks develop these skills?
- ii) How might the VTS process of encouraging speculative evidence-based thinking support creative and critical thinking skills?
- iii) How might the VTS process foster the development of courage and confidence among primary school students?

3.1 Qualitative research: The rationale

As VTS is a visual arts inquiry-based pedagogy, the overall project design adopted a dynamic student-centred approach. Historically, positivism has been the dominant research paradigm in education, in which the prevailing ideas have been that knowledge is discovered by elite specialists collecting numerical data (Knowles & Cole, 2008). The perception of the Arts within this discourse was one of enjoyment and entertainment and “had little to do with matters of knowledge” (Eisner, 2008, p.3). The research project, centred on dialogue and multiple interpretations of visual art images by Stage 2 primary students, challenged this restrictive view.

The study employed a qualitative research methodology and adopted a constructivist ontology. The compatibility of such an approach is captured by scholars Denzin and Lincoln (2011), who describe qualitative research as an exploration of “the world of lived experience” in which “individual belief and action intersect with culture” (p.2). Implied in this statement is the importance of context as the learner actively constructs knowledge, a view shared by Freire (1970) and Bryman (2012). Qualitative research is, however, a broad methodology exhibiting a multiplicity of approaches, thus making it difficult for scholars to agree on a single clear definition (Denzin & Lincoln, 2011; Flick, 2018). Nevertheless, there are core features common to all approaches, which include the following:

- i) Qualitative research is situated “out there” (Flick, 2018, p.4) in a natural setting;
- ii) It is fundamentally interpretative, employing rich nuanced description (Creswell, 2019 Eisner, 2001);
- iii) Researcher reflexivity informs knowledge production (Flick, 2018); &
- iv) Qualitative research “is emergent rather than tightly configured” (Creswell, 2003, p.181).

The latter feature, related to Richards and Morse’s claim that “qualitative research is usually not preemptive (2007, p.73), broadly identifies the critical point of difference between qualitative and quantitative research – a qualitative study aims to create understanding, a quantitative study aims to

test an existing understanding (Richards & Morse, 2007). While in agreement, Knowles and Cole (2008) extend such thinking, which in turn meshes with the methodological choice for this study. They observe that it is “the emergent nature of qualitative research in general,” (p.61) that affords methodological compatibility with the “fluid and flexible” (p.60) nature of visual arts-informed research. Elaborating further, Knowles and Cole (2008) argue that the use of art “in research is not for art’s sake” (p.62) but is a mode of inquiry intended to involve participants “in an active process of meaning making ... which is explicitly intended to evoke and provoke emotion, thought, and action” (p.62).

3.2 Research design: Case study

A single visual arts-informed case study was selected as the research strategy. An appropriate choice, according to Yin (2014), for research questions asking *how* a particular phenomenon might be investigated. Further validation of this research strategy is provided by Meriam (1998), who states that case studies have “proven particularly useful for studying educational innovations, for evaluating programs, and informing policy” (p. 41). There are, however, multiple approaches to the case study, but most agree that a case study is “an empirical inquiry that investigates a contemporary phenomenon (the ‘case’) in depth and within its real-world context” (Yin, 2014, p. 16) over a sustained period of time (Stake, 2005). The population in the study at a metropolitan government school was a Stage 2 (Year 3) class, in which the VTS process was implemented. The specific ‘case’ was a group of six students of mixed ability and gender purposefully selected from within the class by the class teacher; a strategic choice which Bryman (2012) and Simons (2014) consider a strength for the execution of a case study. The small size of the study allowed in-depth investigation using multiple data collection methods, which analysis then transformed into a coherent text. This process has been concisely described by Stake (2005). “A case study is both a process of inquiry about the case and the product of that inquiry” (p. 444).

A Stage 2 Year 3 class was selected for developmental reasons. First, it is generally accepted that amongst the cohort of incoming Year 3 students, all are not equal. A wide range of cognitive and social-emotional differences is frequently observed at the start of the academic year, indicating the effect of society's non-level playing field. A level playing field, however, is a central element of the VTS pedagogy – no art history knowledge required, all literacy levels accommodated, all required information is within the visual text, equal status of participants. A tacit goal of this study, therefore, was to explore how the implementation of this pedagogy might address this often-present imbalance. The importance of doing so was revealed in the 2018 triennial Programme for International Assessment (PISA) of 15-year-old students in reading, mathematics and science. After high achievement in 2000 (OECD, 2000) – Australia ranked 4th in reading behind Finland, Canada and New Zealand – Australia has now slipped in international rankings. So much so that in 2018 Australia's reading result was graphed as “steadily negative” (Schleicher, 2018, p. 11). This situation was further compounded in the state of NSW with PISA results for reading being the lowest in the nation. The wider implication of these results specifically related to the current study. PISA, “based on a model of lifelong learning” (OECD, 2000. p. 14) does not simply assess a student's capacity to recall facts. “Instead, it also examines a student's ability to reflect and apply that factual knowledge to new situations and problems. In other words, PISA assesses a student's higher order thinking skills, not a curriculum” (Cunningham & Gibson, 2023, p. 5).

Stages of the child's physical development is accepted, and generally visually noticeable. Similarly, the invisible brain has a natural learning process, which correlates the child's stages of learning with the development of neural structures (Smilkstein, 2011). The selection of Year 3 participants aged 8-9 years thus related to their stage of neurological development. Educational neuroscience has found that by eight to ten years of age, children have developed sufficient metacognitive capability to engage in abstract self-reflection and criticism (McCollum, 2019); an important, if surprising, finding for some researchers beyond the field of neuroscience. Abrami and

his colleagues (2015), for instance, ponder the possibility that “young children may be more capable of CT than some have surmised” (p. 26). A similar “important conclusion” is reached by Willingham (2019); “children are more capable than we thought” (p. 13).

The VTS process is underpinned by the following three open-ended questions which encourage the development of the CCT capability skills discussed in the previous chapter.

1. *What’s going on in this picture?*
2. *What do you see that makes you say that?*
3. *What more can we find?*

Figure 3

VTS process adapted from Yenawine (2013)

Stimulus Questions	Student Responses	Researcher - Facilitator
1. <i>What's going on in this picture?</i>	Engages a student's natural curiosity, encouraging spontaneous imaginative responses. Stimulates discussion at any level of aesthetic development.	Points to and paraphrases each observation throughout, linking related ideas.
2. <i>What do you see that makes you say that?</i>	Challenges the student to look more closely, then cite evidence within the artwork.	Neutral manner maintained indicating the equal value of each comment.
3. <i>What more can we find?</i>	Invites further close looking whilst also indicating that 'looking to see' takes time. There is always more to find. Sharing of multiple interpretations fosters an attitude of mutual respect, and acceptance of ambiguity; stimulates metacognition.	Paraphrasing: models active listening, indicating its importance for understanding. Assists language development.

3.3 Data collection

Historically, children were the subjects of positivist research, “studied but not heard, researched on but never with” (MacDougall & Darbyshire, 2018, p.3). In recent decades, however, a more inclusive attitude has resulted from an increasing acceptance of qualitative research with children. As MacDougall and Darbyshire (2018) have further argued, the newly acknowledged *citizen child* is now to be researched with respect, and child participants to be considered “legitimate social actors with agency” (p.3); a fresh trajectory endorsed in the United Nations *Convention of the Rights of the Child* (CRC) (1989). The nature of the VTS pedagogy is reflected in the above discussion.

In line with the broad aim of qualitative research to “understand experience as nearly as possible as its participants feel it or live it” (Sherman & Webb, 1988, p.7), the study employed multiple data collection methods which enabled the capture of a rich depth of data, a strength of case study research (Appleton, 2002; Harrison, Birks, Franklin & Mills, 2017; Stake, 2008; Yin, 2014). Furthermore, the methods employed related to the constructivist VTS problem solving process: sustained art observation accompanied by facilitated collaborative evidence-based discussion. Embedded in the process was the encouragement of a positive mindset accompanied by a motivating sense of curiosity and anticipation, which strong evidence suggests influences the construction of new knowledge (Bolton & Armstrong, 2013; Dweck, 2012; Housen, 2001-2002; Jensen, 2001, 2019). In addition, and of not least importance, is the ‘feel good’ sensation, which may be activated in the brain when looking at art (Kawabata, 2004); that sense of wellbeing which contributes to successful learning.

3.4 The data collection strategies employed included:

- **Researcher administered pre-and post - intervention benchmarking writing tasks**
stimulated by the observation of a specific digitally presented painting, *Race to the market*,

Tahiti by Nicholas Chevalier. The pre-intervention task acted as the mechanism for comparison with post-intervention results. The introduction to the assessment tasks, scripted and read to the students by the researcher prior to both activities, was scripted to standardise instructions and add to research rigour. Image selection was informed by VTS constructivism in combination with longitudinal research investigating stages of aesthetic development conducted by Abigail Heusen, co-founder of Visual Thinking Strategies (Appendix 1). The selected images were developmentally appropriate for Stage 2 primary school students as beginning Stage 1 and early Stage 2 viewers.

VTS image criteria below relate to the *Subject Matter guidelines* (pp.80, 81 of NSW K-6 Creative Arts Syllabus, 2006).

Accessibility and Engagement– subjects of interest with reasonably familiar people, actions, settings, living things and emotions.

Narratives – layered in meaning. Frequently found in genre scenes, stopped action moments and images of family, work and play.

Ambiguity – sufficient complexity to perplex, inspiring nuanced discussion (Yenawine, 2003; Hailey, Miller & Yenawine, 2015).

Figure 4

Artworks observed during the study

Week	Artwork details
1 	Chevalier, N. (1880). <i>Race to the market, Tahiti</i>. [oil on canvas]. The Art Gallery of New South Wales, Sydney, NSW, Australia. https://www.artgallery.nsw.gov.au/collection/works/6080/
2 	Streeton, A. (1891). <i>Fire's on</i>. [oil on canvas]. The Art Gallery of New South Wales, Sydney, NSW, Australia. https://www.artgallery.nsw.gov.au/collection/works/832/
3 	Ryden, M. (2006). <i>The apology</i>. [oil on canvas]. https://www.markryden.com/the-apology
4 	Seurat, G. (1884). <i>Bathers at Asnières</i>. [oil on canvas]. The National Gallery, London, England. https://www.nationalgallery.org.uk/paintings/georges-seurat-bathers-at-asnieres
5 	Gruner, E. (1919) <i>Spring frost</i>. [oil on canvas]. The Art Gallery of New South Wales, Sydney, NSW, Australia. https://www.artgallery.nsw.gov.au/collection/works/6925/
6 	Chevalier, N. (1880). <i>Race to the market, Tahiti</i>. [oil on canvas]. The Art Gallery of New South Wales, Sydney, NSW, Australia. https://www.artgallery.nsw.gov.au/collection/works/6080/cs

- **Researcher journal** recorded naturalistic observations and reflections.
- **Audio recordings** of VTS dialogic discussions during Weeks 3 and 5, which were then transcribed to aid data analysis. This practice enabled not only the capture of the dialogue but also the nuances of *how* it was delivered.
- **Focus group** discussions with the six study participants.

The three focus questions were:

1. Were you surprised by anything that happened when you started sharing your thoughts about the pictures?
2. Do you have any questions you would like to ask me?
3. What worked well for you? What did you enjoy, or not?

The discussions generated by focus questions 1 and 3 were audio recorded, then transcribed by the researcher to act as a prompt during later analysis.

3. 5 The researcher

In a qualitative study there is an “intimate relationship” (Denzin & Lincoln, 2011 p. 8) between researcher and the researched. It is important, therefore, that the researcher contemplate how their worldview might impact a study (Guba & Lincoln, 1995). As O’Toole (2006) has succinctly argued, “nobody comes to research neutral” (p. 34). Thus, the researcher was mindful of her role as the primary data collection instrument and interpreter of the collected data (Creswell, 2019; Eisner, 1991). Alert to this fact, I engaged in the study not as a ‘disembodied researcher’ but as one who was ‘embodied’, and consequently discounted a dichotomous mind-body split (Ellingson, 2017). Traditionally, the background of the researcher was considered a bias to be eradicated. However, as Creswell (2019) and others advise, the exercise of reflexivity is essential. This is not to excise the researcher’s past experiences and insight, but to create an awareness that the researcher’s background may shape the course of the study; it may even act as a catalyst and “provide a puzzle

that leads to a research question” (Richards & Morse, 2007, p. 126). *Looking to see, seeing to learn* is one such example. Acknowledging the possibility thinking of Anna Craft I wondered, “what if?” (Craft, 2011, p. 51). What if I were to draw on my background as a primary school teacher and art museum guide, might it be possible to generate a fresh approach for the fostering of thinking skills amongst young 21st century students? My “educational imagination”– “the human capacity we all have to move from existing knowledge and experiences to new understandings and possibilities” (Beghetto & Schuh, 2020, p. 250) - suggested its possible potential.

3.6 The school

The selected school has a large minimally diverse student population and is situated in a moderately affluent long established metropolitan area. Community interaction is welcomed, and the Arts are encouraged, which is indicated by the appointment of specialist teachers for visual arts and music. The executive is open to research projects at their school, which would suggest a growth mindset towards teaching and learning.

3.7 Data analysis

Data collection and data analysis in qualitative research, ideally occurring simultaneously (Creswell, 2019, is “an iterative process in which collection informs analysis, which then informs additional collection” (Holley & Harris, 2019, p. 156). The generation of a large quantity of data typifies qualitative research. During the iterative analysis of the rich amount produced during the current singular case study, the researcher will first organise, then identify patterns contributing to emergent themes (Bryman, 2012). To coordinate the multiple perspectives gained through the employment of a variety of data collection instruments, and at the same time promote validity (Creswell, 2019), the study engaged with the metaphor of *crystallization*, a concept broadly introduced by Richardson (1994) as an extension of triangulation and developed methodologically

by Ellingson (2009). I considered crystallization to be useful as a mechanism to gain understanding which, dependent on researcher reflexivity, enabled the multiple, even infinite, forms of data and analysis – as with the infinite reflections, refractions and perceptions possible through the prism of the crystal - to be interwoven into a coherent text. Of further import was the shared belief that knowledge making encompassed the whole child – mind, body, spirit – as it does the researcher as described above. The dynamic depth of the researcher-participant relationship does not end there. Crystallization, “reflect[ing] a grounding of knowledge production in the body” (Ellingson, 2009, p. 35), linked researcher and participants. Confirmation of implementation, however, was sealed by a provocative paradox. The two strategies– the constructivist ontology of VTS and the concept of crystallization – each seek a deep and complex understanding of a topic, yet both acknowledge that there is always more to know (Housen, 2001-2002; Richardson & St. Pierre, 2005; Yenawine, 2013).

The pre- and post-intervention writing tasks



Chevalier, N. (1880). *Race to the market, Tahiti*. [oil on canvas]. AGNSW, Sydney, NSW, Australia.

A digital image of the above work of art was the focus of the pre- and post- intervention assessment tasks. The writing tasks were analysed according to a rubric (Appendix 2), the development of which adapted the following two mechanisms: a coding method developed by the VTS founders Housen and Yenawine (Yenawine, 2013), and an assessment rubric developed by the Isabella Stewart Gardner Art Museum, Boston, to use in its VTS focused school partnership program. The attributes appraised included word count, simple and detailed observations, through to speculation, inferences and concluding with language signalling acknowledgement of multiple perspectives or possibilities.

The current study was designed to examine how the development of critical and creative thinking skills might be fostered through the implementation of the dialogic VTS art-based pedagogy. Thus it may seem puzzling to assess the efficacy of this study (*Looking to see, seeing to learn*) with a writing task. The decision to do so was based on a convincing body of evidence. Eisner (1981), for instance, as previously cited in Chapter 2, identified several decades ago the importance of ‘looking to see’ as a stimulus for productive writing. More recently, the relationship between seeing, thinking and writing was succinctly summed up by William Gormley (2017) with an apt metaphor, “writing is the ‘hard copy’ of thinking” (p. 128). A metaphor illustrated in Elizabeth S. Pierre’s (2021) description of her writing process: “So *it was in the thinking that writing produces* that I first understood ...” (original emphasis, p.5). The cycle of connection between seeing, thinking and writing, as described above, confirmed that the pre- and post-intervention writing task was an authentic assessment instrument.

3.8 Focus group

The collaborative dialogic nature of both VTS and the focus group suggested a natural complementary pairing. Throughout the dialogic VTS praxis, the participants became accustomed to my interest in knowing what they idiosyncratically thought. Not only did the posing of three

authentic focus group questions reinforce that understanding, it also signalled the ‘stepping back’ of the researcher which, as Kamberelis and Dimitriadis (2011) have argued, nourishes “the democratization of the research process” (p. 560). Such democratisation nurtured the building of “a collaborative, reciprocal, trusting, mutually accountable relationship” between “those studied” (Denzin, Lincoln & Giardina, 2006, p. 776) and the researcher-collaborator. Thus, in addition to the dialogic process of VTS which encouraged the development of individual voices amongst the students, the inclusion of the three focus questions provided a further empowering opportunity to do so. Importantly, the focus group also had significant advantages over an individual interview: “a sense of safety in numbers” (MacDougall & Darbyshire, 2018, p. 7) with less pressure on individuals, and the interactive nature of the focus group in which one response may trigger that of another participant.

Collected focus group data was reviewed for emergent themes and nuances of meaning. Accordingly, and to encourage a further sense of agency, the focus questions permitted the student participants to evaluate their experiences during the study. This was for me, the researcher, an important element of the study. The responses would serve as a measurement of sorts, of the VTS process from an additional perspective. Had the VTS engagement also increased the young participants’ courage and confidence and, in turn, increased their sense of agency? Asking them what had worked well for them, what did they enjoy or not, matched methods employed by Morgan, Gibbs, Maxwell and Britten, (2002) in their research of student agency. Despite some niggling thoughts regarding the focus questions – Were they too ‘sophisticated’ for the young students, was one such concern – the responses proved otherwise. The focus questions, as it turned out, provided the students with empowering opportunities to assess the study from their individual perspectives, by sharing their thoughts and asking their questions of me, the researcher. This seemed to suggest that this might be an infrequent opportunity for many a school student.

3.9 Ethical considerations

Prior to commencement of the study, ethics approval was sought and gained from two authorities: the University of Sydney Human Research Ethics Committee (HREC) and the State Education Research Applications Process (SERAP). Ethical considerations were next addressed at the selected school. The principal, as chief executive of the school, authorised the implementation of the study and was provided with a Principal Information Statement, as was the Deputy Principal, the subsequent ‘gatekeeper’ of the study.

The implementation of the study was severely impacted by the Covid-19 pandemic. As a result, the study was delayed by one year. During that period several events precipitated an essential modification. For instance, the transfer of the participating Stage 2 (Year 4) teacher occasioned the subsequent recruitment of a Stage 2 (Year 3) class, working with the specialist visual arts teacher. Once permitted to enter the selected school, life for students and staff was not ‘back to normal’. Outbreaks of Covid continued amongst students and staff. It was considered noteworthy that all study participants were present throughout this investigation. This was an unsettled time. The study, originally planned as ten-hour long lessons across two terms – to allow for incubation - was thus mindfully reduced to a six-week continuous block to minimise disruption to the school, teacher and students. The ethical procedures related to the provision of consent and information remained unchanged.

To enable informed consent by parents or caregivers, and students, details of the research were explained by letter in age-appropriate language, and personally by the Visual Arts teacher. Information included advised that participation was voluntary and withdrawal from the study was permitted at any time. The accompanying Informed Consent forms likewise provided in age-appropriate language, advised that data collection included audio recordings during Weeks 3 and 5. Further underlying ethical issues related to the care of the vulnerable young participants: provision of a safe environment, preservation of anonymity of the participants and school, and confidentiality

of the findings. Anonymity was preserved by each student choosing a pseudonym for the purpose of the study. Confidentiality was addressed with study results to be released in an aggregate form with no possibility of results identity matching. The withdrawal of the participants to a safe and comfortable space raised the issue of exclusivity. This was resolved on reflection of current practices in primary school education. Targeted group work is a recognised support component of primary school teaching. For example, small group withdrawal may be required for learning support of a particular skill in Reading and Mathematics. For these reasons, negative feelings of exclusivity did not disrupt the social fabric of the classroom. In addition, there was an element of team teaching in this process, another recognised support component in primary school education.

Chapter 4 – Interpreting the study

*First of all, looking at art requires thinking – art must be ‘thought through’ ...
thoughtful looking is a way to make thinking better* (Perkins, 1994, p. 5).

This study investigated the potential of the Visual Thinking Strategies (VTS) pedagogy to foster the development of the now essential 21st century skills of critical (CT) and creative thinking (CRT) within the Australian primary school context. That said, the words “within the Australian primary school context” highlighted a crucial element of the study. Is it possible for the stakeholders of an education system to learn from an astute comparison of international counterparts? Perhaps, if as Lingard (2013) cautions, a well advised “policy learning” (p. 82) mitigates against “inert borrowing” (p. 82), that is, borrowing without regard to local considerations of culture and politics. Alexander (2004) likewise alerts the educationist to “the hazards of international cherry picking” (p. 54). Employing an equally evocative phrase, Burdett and O’Donnell (2016) similarly recommend that when “horizon scanning,” (p. 113) the transnational policy borrower should be mindful of the socio-political context in which the desired policy or pedagogy is embedded. In the case of Australia, however, there is an acknowledged long-term history of international education policy influence, for example, that of the United Kingdom (UK) and the United States of America (USA) (Gibson & Ewing, 2011).

4.1 Pedagogy – Some cultural considerations

Globally, the understanding of pedagogy is varied. In Europe, pedagogy is a generally respected broad intellectual discipline whereas elsewhere it is often simply considered to be the act of teaching. Of the many explanations of pedagogy, I found that of Alexander (2008) to be particularly relevant to the current investigation: “Pedagogy connects the apparently self-contained act of teaching with culture, structure and mechanisms of social control” (p. 540). Crucially for this study, Alexander (2021) recently reconfirmed the interdependent social construction of both curriculum

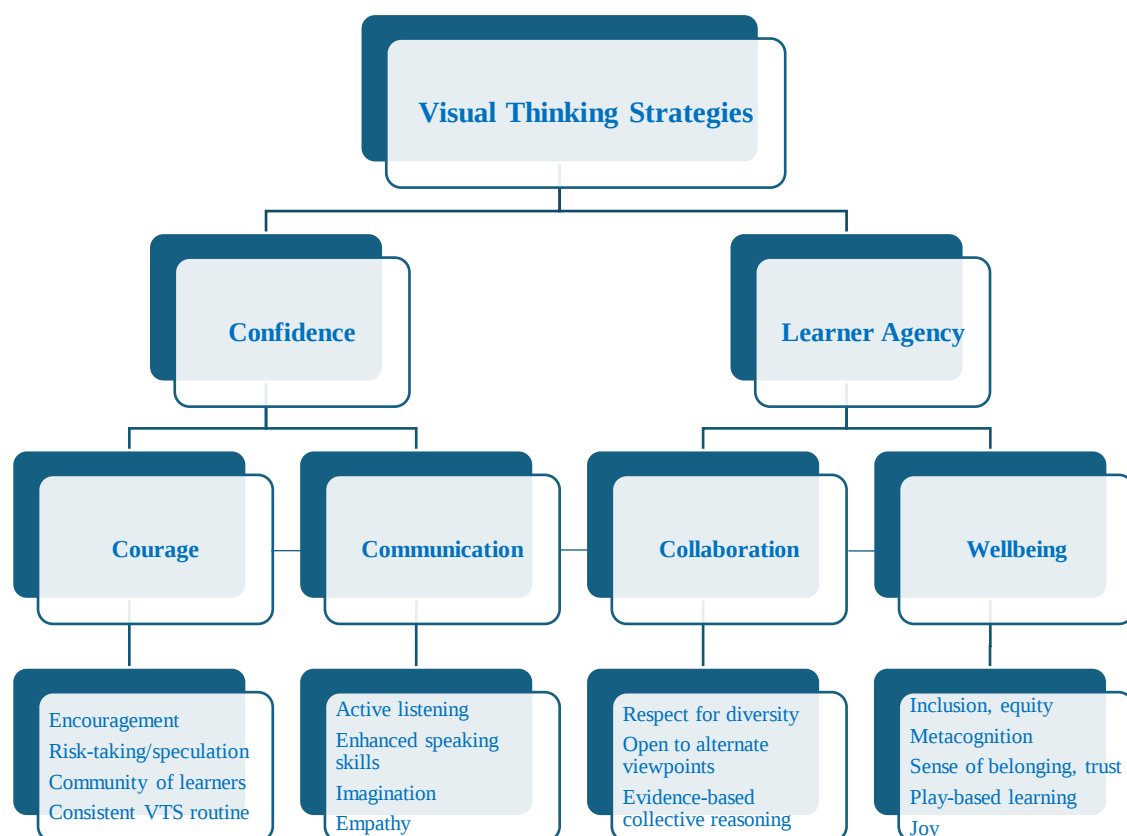
and pedagogy, but at the same time robustly claimed that pedagogy is at “the very core of the educational enterprise” (p. 299). To that he added a caveat when ‘borrowing’ transnationally. Alexander (2021) argues that it is essential to “teas[e] out what is universal in pedagogy from what is culturally or geographically specific” (p. 287), an issue to which I remained sensitive throughout the research project. With the above discussion in mind, the current study found that the VTS pedagogy offered an effective ‘universal’, or non-culturally specific, tool to nurture the now mandated critical and creative thinking skills as detailed in both state (NSW) and federal curriculums.

4.2 Imperative connections

The analysis of the collected data, sourced from field observations, pre- and post-intervention writing tasks, focus questions and audio-recorded facilitated discussion, revealed the emergence of two overarching crucial themes - the growth of confidence in the participants, and a new-found sense of agency in their learning. From there, flowed a cascade of interconnected factors, which laid the foundation on which to build the sought-after thinking skills. These factors, arrayed hierarchically in Figure 5 below include a largely recognised combination of cognitive and social-emotional skills, all inter-related and required to support successful learners at school and beyond. The relationship of this mosaic of components to the key finding - that CT and CRT skills may be fostered within the VTS process - is described in detail in Chapter 5– Interweaving elements: The big picture revealed. The following analysis examines the function of the pre- and post-intervention benchmarking tasks as a mechanism of assessment.

Figure 5

Key findings – The contributing cascade of interwoven factors



4.3 Benchmarking

When a specific issue requires investigation, the aim of benchmarking is to provide reference points rather than set standards. In this instance, to assess the effectiveness of the VTS pedagogy as a learning tool within the Australian context. The pre-intervention benchmarking writing task thus established a base line, against which subsequent student achievement was assessed, a process which supported the integrity of the current art-based study's findings. Underpinning the benchmarking writing task was the pivotal relationship between 'looking to see', thinking and writing (Chapter 3, 3.7). The task proved to be an appropriate instrument to evaluate the pedagogical effectiveness of VTS to foster the essential skills of creative and critical thinking.

4.3.1 Pre- intervention – A surprise

The results of the pre-intervention task established reference points of accomplishment for each student according to the elements of an assessment rubric (see appendix 2). From the perspective of word count alone, participant results revealed the six students to be arrayed along a continuum of capability – Emily (ninety-four words) and Camila (eighty-four) the most accomplished, then a mid-continuum gap followed by Kitty, Daisy, Bob and Wolfeon ranging across thirty and forty words each.

Word count, a seemingly simplistic data gathering approach did, however, reveal an unexpected complex issue for one participant. The pre-intervention writing task indicated that Wolfeon was most probably dyslexic. This equally impacted his post-intervention writing task as, unlike his fellow participants, his word count tally did not increase nor did his enjoyment of writing. Wolfeon's written communication, a source of frustration was, however, juxtaposed by his ease and enjoyment of oral communication, which from the outset of the study was evident. Wolfeon seemed to understand that VTS offered him an opportunity to exhibit his strength: *He really wanted to ... look at the pictures ... expressing my thoughts about what's going on.* His last words interestingly captured the internalised words of the fundamental first VTS question. Might it be reasonable, then, that Wolfeon be considered 'twice exceptional' – high achieving with an accompanying disability? He exhibited exceptional verbal communication skills which offered him a pleasurable opportunity to 'shine' as the more communicatively competent other (Vygotsky, 1978) - boosting his confidence and sense of agency. Interestingly, many of the strengths of students like Wolfeon - the processing of visual images, creativity, inferential and critical reasoning, a general inventiveness (Daniels & Freeman, 2018; Eide & Eide, 2011; West, 2009) - echo engagement in the art-based iterative 'habits of mind' VTS process. Similarly emphasising the importance of process to thinking, Beghetto (2020) has strongly argued that the overlapping skills of creative and critical

thinking should each be considered a process; a series of steps the learner is disposed to take, not an end product. VTS, the key process which underpinned this investigation, afforded *all* study participants a valuable tool to support the development of their targeted thinking skills. I anticipated that the art-based dialogic process was likely to have a positive impact on the study participants of mixed ability and gender. I did not anticipate, however, the welcome opportunity to observe its benefit for the often frustrated ‘twice exceptional’ dyslexic student.

4.3.2 The work of art

“Works of art”, we are told, “invite and welcome sustained involvement” (Perkins, 1994. p.85). Evidenced by their willing commitment, it was an invitation that the study participants clearly accepted. The initial benchmarking task provided a base line against which to assess the effectiveness of this research project. What I found important at this initial stage was the capture of the participants’ idiosyncratic ability to closely observe (‘look to see’), the key element of the “thoughtful looking” (Perkins, 1994, p. 5) that underpins the development of thinking skills. That the selected artwork, *Race to the market, Tahiti*, was developmentally appropriate in accord with both VTS criteria and those of the NSW K-6 Creative Arts Syllabus was supported by Camila: *I really like this image.*



Chevalier, N. (1880). *Race to the market, Tahiti*. [oil on canvas]. The Art Gallery of NSW, Sydney, NSW, Australia.

The subject matter was accessible, engaging, layered in meaning and sufficiently complex to inspire nuanced discussion. Accordingly, observations of the artwork ranged from the factual to the fanciful, reflecting the diverse perspectives within the small study group of six.

The pre-intervention writing task

The beginning Stage 1 viewer will often make an initial observation related to a concrete object (Housen, 2001-2002), as did Kitty in the pre-intervention task: *There are two canoes with food in them*. Wolfeon, on the other hand, opened with an inference (evidence supported observation) - *I think that the two men have been picking fruit because they have two bamboo leaf baskets*. – thereby demonstrating that he was steps ahead in the process of enhancing his thinking skills. As it was not possible to evaluate the further development of Wolfeon’s thinking skills in written text, I

have concentrated on the upward trajectory of growth identified in the benchmarking tasks of the remaining five participants.

4.4 An upward trajectory – The evidence

Kitty, again, in the post-intervention task opened with a simple observation listing the animals she could see in the image. *I can see 3 animals, a dog, a piglet and a rooster.* Beginning with a concrete observation was perhaps a reassuring warm-up activity, similar to taking a deep breath before launching into a complicated action. In this instance she was about to ‘enter’ the painting creatively weaving her now detailed observations into a narrative. This, Housen (2001-2002) explains, is a typical action for the Stage 1 viewer. Importantly, Kitty’s detailed observations were supported by evidence; an indication that she had internalised the second VTS question – What do you see that makes you say that? *The people look like they have just started canoeing because behind them I can see an island that isn’t too far away.* Remarkably, Kitty’s incomplete concluding sentence – writing time was up? – indicated growth from two additional perspectives. *I have noticed that everywhere there is more than I ...* Kitty appeared to understand her own thinking, which Bandura (1997), Branigan (2019) and Ellerton (2017) emphasise is illustrative of a learner’s evolving critical and metacognitive thinking skills. Of particular relevance, furthermore, is Branigan’s (2019) assertion that the development of such skills is an iterative and interactive process dependent on effective teacher-pupil dialogue, thus unknowingly illustrating the aptness of the VTS process. In her remarkable closing words I also heard an echo of seminal Berger (1972). “The relation between what we see and what we know is never settled” (p. 7). Had the third reiterated VTS question – What more can we find? - also been internalised? Kitty appeared to understand that ‘seeing’ is never done, a notion reflected in the words of VTS co-founder Housen: “The more one looks, the more one sees. The interpretative possibilities in art keep unfolding” (Housen, 2001-2002, p. 121).

It was the subtle ‘unfolding’ in art viewing, which I found provided the ideal means for Kitty, and her fellow participants, to expand their thinking skills.

People, animals, objects, actions, interactions, settings, gestures, emotions and expressions were all represented in *Race to the market, Tahiti*; content that has been identified as engaging for young people (Yenawine, 2003; Yu, Garces-Bascal & Wright, 2017). With equal access to the information before their eyes in the “self-contained world” (Housen, 2001-2002, p. 121) of the artwork, it might seem plausible that each student would offer a similar interpretation. The similarities, however, lay only with acknowledgement of content – *I see a puppy on a boat (Daisy)*; *There are two canoes with food on them (Kitty)* – rather than with the constructivist nature of their individual narrative interpretations. Emily, for example, opened with a logical observation in the pre-intervention task. *There are some people that are in canoes* then concluded her opening sentence with the visually inaccurate (fanciful) *drifting on shallow water*; perhaps imagining what she would like to do? Emboldened, however, by the intense weeks of shared close looking and dialogic engagement within the non-judgemental collaborative community of learners, Emily revealed her now confident enriched thoughtful looking in the powerful opening sentence of her second benchmarking task. *The picture is full of action*; no drifting! She then continued creatively musing that the people in the canoes might be racing *because*, as she reasoned critically from the evidence within the image, *the woman with the fan might be cheering on her partner*.

Nevertheless, the benchmarking writing tasks made it possible to evaluate the development of each student’s thinking skills, and also to make some generalisations. As a result of participation in the study the number of observations increased for all, as did speculation arising from the increasing complexity of observations. Inferences (evidence supported observations) and the consideration of multiple perspectives, which take more time to develop, increased for four participants, of whom Camila was one. Camila’s ‘looking to see’ trajectory between pre- and post-intervention task is illustrative of the potential for VTS to foster creative and critical thinking.

The artwork appealed to Camila and her observations prior to the intervention indicated that she looked throughout the image. She noted the *characters on two canoes who look[ed] like they're going on a ride* and used pinpointing language – *I see palm trees in the back and some mountains*. Without the pressure to offer a response as is often the case (Kettler, Lamb, Willerson & Mullet, 2018), Camila participated in the VTS process by attentively listening and silently observing until Week 4, when she then began orally reasoning, inserting her interpretations into the context of the image. The result of Camila's cognitive meaning-making was evidenced in the post writing assessment task. Again she 'anchored' the two canoes in her initial sentence, observing factually that one held a dog and the other a piglet. *But*, she continued imaginatively, *I can see in the furthest boat there is a man holding a bag that could have other piglets and the piglet I mentioned earlier could have escaped!* Her voice could almost be heard. Increasingly complex observations in tandem with the conditional language of her speculation evidenced Camila's burgeoning creative thinking. Speculative meaning making continued as Camila wondered if *a man paddling while looking at the other* might imply that they were in a race. This, Beghetto (2020) has argued, is suggestive of the productive uncertainty that serves "as a catalyst and condition for creative thinking" (p. 59). Two sentences further into her writing, and in line with her developing visual literacy, Camila demonstrated a characteristic of critical thinking – thinking about her thinking. She reflected on her previous interpretation that the canoeing men seemed to be racing. Her in depth observation revealed another possibility. *It looks like there is a wave coming and they could be rushing because of that as well*. The artwork seemed to come 'alive' for Camila as she observed, imagined, then evaluated interpretative options; all steps in the process of developing critical and creative thinking.

Daisy and Bob's debut in the research project revealed each to be in the early accountive phase of Stage 1 in Housen's scale (2001-2002) of aesthetic development (Appendix 1). At this stage, the viewer might call on memories, on personal associations, or what is known or is simply liked. This was the filter through which Daisy and Bob appeared to offer their interpretations.

Daisy was first drawn into the artwork by the puppy *wagging its tail and saying woof*. She liked the puppy and imagined it barking. It was a joyful meeting of her visual and auditory senses. Such “perceptual sensitivity,” Lowenfeld (1964, p. 5) declares, is afforded by engagement with visual art, a learning opportunity important for the educative process. Next, she exhibited accurate pinpointing language – *there are 2 boats with 2 people on each boat* – then concluded her initial writing task with the fanciful claim that the people were *fishing to have for supper and lunch and for morning tea*. Might Daisy have called on a memorable occasion fishing from a boat? Or might she have merely wearied of prolonged looking at this early stage? Visual thinking, as Arnheim (1969) has commented, is an “often toilsome process, so the perceiving of a work of art is not accomplished suddenly” (p. 35). The latter toilsome process was welcomed in Daisy’s post-intervention task. *I see people fishing* may have again been her fanciful opening words, but thereafter her numerous observations were factually and richly detailed – *There is also a big big mountain on the side of them and there is a mini wave crashing onto a rock*. - and expressed in a lively fashion - *There is a lady waving something that looks like a leaf that has been dried*. Daisy’s recurrent inclusion of *it looks like* in her now richly detailed observations suggested that she was actively wondering about ‘what’s going on in this picture’, creatively making connections; she was, according to Marshall (2019), “seeing the abstract in the concrete” (p. 72). She was creatively thinking and, I would contend, on the cusp of thinking critically. Might the next step of grounding her observations in evidence have been achieved with an extended time of participation in the collaborative learning environment of the VTS process? Perhaps so, because, as Daisy later wrote in a note, she *really really had a great time* learning during the study.

Similarly, Bob maintained pre-intervention that a family was fishing, *with a dog*. *They were fishing with fishing nets*. He seemed to have glanced rather than ‘looked to see’ the work. Yes, a glance would have revealed nets, but they were holding produce, chickens in one instance, and no indication of fishing. Bob’s interpretation, however, did demonstrate that the development of his

thinking skills was in advance of Daisy. He opened with a speculation, *I think this was a long time ago maybe somewhere around 1779*; Daisy opened with an observation, *I see a puppy on a boat*. Importantly for the nurturing of his thinking skills, Bob's curiosity was clearly aroused, as did his musings stir mine. His writing seemed to indicate an attempt to balance what he perhaps knew - *a resort island ... with many palm trees* – against his unfamiliarity with other elements, thus relegating the people and the boats to a long ago unknown pinpointed year of 1799.

Post-intervention, however, Bob's writing task demonstrated a different narrative. Over the sequence of VTS lessons during the research project, a striking interwoven growth in both aesthetic development and critical and creative thinking skills had occurred. In line with Perkins' conviction that "works of art are made to draw and hold attention" (1994, p. 5), it appeared that in his opening sentence, Bob's curiosity had been captured by the artwork and he was now on a quest for a deeper understanding, *It looks like they are racing* (speculation following close observation) *because they are staring at each other to see if they are winning* (evidential reasoning). Continuing his quest, Bob discarded his earlier glance and patiently persisted with his close observation, a supportive practice recommended by various educationists, including Perkins (1993), Tishman (2017) and Yenawine (2013), for fostering the desired cognitive skills of CRT and CT. Bob's consideration of multiple possibilities pointed to his now enhanced flexible creative thinking. *Maybe they are trying to sail to the mountain to find gold or maybe somewhere warm*. Then critically evidenced another possibility that *they might be sailing to another island because they have lots of food*.

4.5 The VTS effect

Underpinning the VTS effect was a powerful combination of three critical elements: an authentic problem, a dialogic discussion and facilitation; a combination similarly found to be effective by Abrami, Bernard, Borokhovski, Waddington, Wade and Persson (2015). An authentic problem combined with dialogic discussion was found to be an effective tool to foster thinking skills. A

further finding was, however, particularly interesting. When mentoring was added to the mix – I consider the facilitated dialogue between participant/s and researcher to be equivalent - it acted as a catalyst boosting the acquisition of thinking skills. Although engagement in the novel VTS pedagogy may at first have been a challenge for some, the iterative process forged an overall joyful agentic learning atmosphere.

As the above diagram (Figure 5) has illustrated, the role of VTS in fostering the development of critical and creative thinking is indeed complex. During the process, as in a mosaic artwork, a constellation of seemingly disparate elements interweave, at first randomly, then following close observation and reflection settle into place to reveal the picture. This, too, was the study process, as is the nature of much 21st century learning. In contrast to the previous century, Corbisiero-Drakos, Reeder, Ricciardi, Zacharia and Harnett (2021) have compellingly argued that knowledge, skills and capabilities are now intended to be intertwined “resulting in sophisticated skill sets that can be applied readily to solving a multitude of complex problems” (p. 3).

Chapter 5 – Interweaving elements: The big picture revealed

... boredom and a sense of futility are among the worst obstacles to learning. To feel oneself en route, to feel oneself in a place where there are always possibilities of clearings, of new openings: this is what we hope to communicate to the young (Greene, 1991. p. 37).

As illustrated in Figure 5 (Chapter 4) several complex interwoven subsets of aptitudes and dispositions lie at the heart of the development of thinking skills. Implementation of the VTS pedagogy, beguiling in its design simplicity, revealed a complex tessellation of similar elements leading to the fostering of creative and critical thinking. The intersection of these thinking skills with the VTS process crucially underpinned this inquiry art-based investigation. For the beholder, it is importantly that very multitude of tessellations which offers the energising possibility “to feel oneself en route” (Greene, 1991, p. 37) to new learning in classrooms that pulsate, nurture and listen to children’s voices; that are “just all at once” as Green advises (1995, p. 43).

The following discussion explores how the now evident empowering themes of *confidence* and *learner agency* developed within the study participants. Each – beginning with *confidence* -is analysed according to the hierarchical subsets of elements (Figure 5), which led to their subsequent growth. Of parallel importance is the belief that both self-confidence and learner agency are each a skill, which like CT and CRT, may be nurtured. The interdependent ingredients essential for their growth became visible during the study. These are explored from the perspective of the participants’ engagement with the pedagogical tool of Visual Thinking Strategies; a process mindful of Arnheim’s concept of visual thinking. “Art education”, he asserts, “is a training ground for visual thinking” which “is the ability of the mind to unite observing and reasoning in every field of learning” (1993, p. 98).

5.1 The development of confidence

Self-confidence - or self-efficacy as conceptualised by Bandura (1997) - broadly relates to belief in oneself and trust in one’s ability to undertake a task. More specifically, self-confidence Kaufman

(2002) and others believe to be a key ingredient of creativity, which Beghetto (2010) contends impacts all aspects of learning. Somewhat contrarily, however, confidence also means admitting to one's mistakes and, crucially, learning from them. The latter, suggesting positive action, in turn implies a likely willingness to embrace intellectual risk-taking - the notion of intrinsically motivated volition in action (Byman & Kansanen, 2008; Haggard & Lau, 2013).

5.1.1 VTS introduced to participants

In the 21st century, acceptance of ambiguity and viewing failure as an opportunity to learn (Ellerton,



2015; Partnership for 21st century skills (P21), 2011) is in clear contrast to previous decades, in which one correct answer was the often-expected learning outcome of its transmissive pedagogy. The VTS pedagogy is in alignment with the former way of thinking. Prior to the initial facilitated discussion (a distinguishing characteristic of the

VTS process) it was stressed to the participants in encouraging verbal and non-verbal language, that giving answers to the three VTS questions was not a test in which one correct answer was expected.

In fact, multiple answers (interpretations) about the artwork were anticipated and all were acceptable (valid) provided each response was supported by evidence contained within the artwork (*Fire's on* by Arthur Streeton) digitally displayed before them (evidence-based reasoning). While the offer of such ambiguity may have been surprising, the demeanour of the young participants evidenced a continuing calm engagement with no visual or audible expression of disquiet apparent. Perhaps this uncommon embrace of uncertainty offered an easing of an occasional question-answer tension. Or perhaps the young students were relishing the experience as an opportunity to break free from "being shut up within one's own private feelings and sensations" (Dewey, 1934, p. 18); the "heightened vitality" (Dewey, 1934, p. 18) of art as experience. Again, might the innate curiosity of the child have been in play? Costantino (2010) supports this notion. Writing persuasively, she "emphasiz[es] the epistemic value of curiosity as an appetite for knowledge that must be satisfied" (p. 66). Consequently I considered it reasonable to speculate that acceptance by the participants of

this foundational premise of the pedagogy, at a varying pace, kindled that spark of *courage* so essential to achieving self-confidence. Interestingly, my initial observations of the participants – temperament and disposition – frequently paralleled their pace of developing courageous participation. First introduced in a whole class situation with the implementation of the pre-intervention benchmarking writing task, the class dynamics limited an in-depth assessment of the six participants. Overall, the participants, save one, ‘melted’ into the background of a class that exhibited a dynamically dominant group of approximately six students. The one ‘visible’ case study participant, Wolfeon, confidently engaged with the researcher which, following the whole class benchmarking task, continued during the initial VTS facilitated discussion with the six study participants now removed to the adjacent inviting study space.

5.1.2 An encouraging space

The designated adjacent space assisted the successful implementation of the study (see details in section 5.4). The safe and supportive environment contributed to the wellbeing of the participants, which in turn fostered their feeling of belonging; the sense of being part of a ‘community of learners’ (Gibson & Ewing, 2020; Rogoff, 1994; UNICEF Innocenti Report, 2020). Moran and John-Steiner (2003) add a cognitive element by describing such a group as “thought communities ... in which to continue their own and each other’s development” (p. 83), a practice central to the VTS process. In the words of the VTS co-founder, Philip Yenawine (2013), the open and supportive constructivist process of a VTS discussion gives students “permission to be puzzled and to think. To use what they already know, to reflect on what they don’t: the first steps in learning” (p. 2). In short, participants are granted “permission to wonder” (Yenawine, 2013, p. 1), a concept that resonates with others including Dewey (1891/1969), for whom wonder was the kindling that fuelled a “spring to intellectual action” (261). Echoing Dewey, Fisher (1998), similarly describes wonder as the stimulating impulse for inquiry: “The details of thought, of problem solving, of the analysis of

works of art where a slow unfolding of attention and questioning takes place in the presence of the work are all questions within the domain of wonder” (p. 7). According to Arnheim (1993) and Latham and Ewing (2017) wonder, and its “intellectual feeling” (Dewey, 1891/1969, p. 261), is at the heart of visual arts practice, and more broadly underpins learning outcomes for all students (de Carvalho, 2019).

5.2 Courage

Three focus questions were individually posed across Weeks 4, 5 and 6 of the study. Focus question 1 (FQ1) - Were you surprised by anything that happened when you started sharing your thoughts about the pictures? - was posed in Week 4. Scheduled mid-way during the study, the timing afforded the development of a comfortable familiarity with the VTS process both within the individual participant and the study group collectively. Degrees of *courage*, a crucial enabling element of *confidence*, were revealed in the participant responses to the question. Wolfeon, for instance, the most self-assured in verbal expression from the outset, conveyed an engaging sense of joy in his response, exhibiting what Glaveanu (2017) has described as a sense of “excitement about the possible” (p. 175). *I was actually really excited to start doing it cause I really wanted to express all the thoughts I had about doing it, looking at the pictures and expressing my thoughts about what’s going on.* Comfortably confident when involved in a facilitated VTS discussion, Wolfeon demonstrated his readiness to engage in the reflective reasoning of critical and creative thinking. Camila, on the other hand, presented a dissimilar picture.

Camila did not join in the VTS dialogic discussion during Weeks 1 to 3. Her eyes, however, were firmly ‘on canvas’, as co-founder Abigail Housen described the characteristic close looking of the VTS process; she was still and absorbed, and attentively listening. Camila was also engaged in a parallel close observation of her fellow learning community members, quite likely reflecting on their risk-taking courage when offering speculative interpretations; perhaps ‘sitting back’ to see

how her fellow learners fared in this novel situation. Camila seemed to be silently engaged in a learning process described concisely by Philip Yenawine (2013). “The fact of them using their eyes to figure out what’s going on around them, the way they listen to what people say to pick up language, the interest they have in making sense of what they see and hear – each of these provides a strong starting point” for learning (p.164). By Week 4, Camila had developed sufficient courage to speak but, interestingly, this first articulation highlighted the intensity of her preparation to do so. First to respond to FQ1, and speaking in a cheery buoyant voice, she offered the following comment: *Um I was surprised like how all the trees and the river – it was really pretty and there was a lot of nature. Then I realised the buildings in the back, actually they’re making smoke, which like didn’t look very nice in front of the nature area.* Camila’s response, in fact, indicated that she



remained mentally immersed in the prior facilitated discussion of the painting *Bathers at Asnières* by Georges Seurat, when in reality, the study participants had moved on to a discussion of the first focus question (FQ1).

This response, nevertheless, indicated a breakthrough. It may be that anxiety stalled the process – not unusual for any hesitant communicator in a similar situation - as she became completely engrossed in figuring out her response to the image. Despite this setback, Camila resiliently persisted with the development of her emerging communication skills.

Due to time constraints limiting the number of responses, our Week 4 FQ1 discussion continued into Week 5. Demonstrating her resilience and resolve, Camila was again the first responder, and this time on topic. Expressing a mix of confidence and unease she self-confidently persisted, using the discourse markers ‘um’ and ‘like’ as she searched for the wanted word, or as she self-repaired (Fillipi, 2020). *I felt um confident about it because I like I really wanted to spot things out so people could look at what I am seeing. I also felt um a little bit nervous because if something I saw wasn’t there or if I was just going to say something then I forgot then I was a bit scared.* I then asked: “How do you feel now after you have done it?” Camila, responding that she

felt better now that she had tried ‘it’, then went on to say: *And now I like know I can do it I’m just going along with it.* Her pride in her achievement was audible in her animated voice and visible in her body language as she gestured and nodded her head. She understood within herself the significance of pushing through her self-doubt and timidity. It seemed that confidence in her ability to learn had been fostered by her engagement in the dialogic and consistent VTS pedagogy; a ‘safe’ structure that had enabled her risk-taking. A sense of safety, which Davies, Jindal-Snape, Collier, Digby, Hay and Howe (2013) suggest, is of particular importance “to enable pupils to take risks, to think creatively and critically” (p. 6), the basis of this study. I suggest, furthermore, that Camila’s new-found courage facilitated effective communication, two intertwined elements of learner confidence.

5.3 Communication

A key finding of this study, confirming the vital role of communication in the development of confidence within the participants, should come as little surprise. Robust research, nationally (Jefferson & Anderson, 2017) and internationally (Alexander, 2004; Barnes & Todd, 1995; 2021; Dysthe, Bernhardt & Esbjørn, 2013), has identified communication skills to be fundamental to the holistic development of the child. Similarly, there is a widespread consensus that the social and emotional skills embedded in effective communication offer pathways to successful learning. Communication, furthermore, in tandem with collaboration, critical thinking and creativity, has been identified as one of the four essential 21st century skills, commonly known as the 4Cs. Adding another layer of understanding, recent research by Jefferson and Anderson (2017) suggests that communication is “intrinsic to the other Cs, critical reflection (critical thinking), collaboration and creativity” (p. 127), thereby suggesting the multifaceted nature of the process – as is the pedagogy of VTS. To manage the inherent complexity of communication, the process is frequently divided into two modes, verbal and non-verbal, as does the NSW Year 3- 6 English syllabus which includes

a focus on the foundational importance of communication and oral language. During this study both modes were visibly intertwined in meaning-making. The generally accepted key skills of communication – speaking and listening – were plainly evidenced in the dialogic VTS process. Yet it was the presence of a variety of non-verbal elements, which contributed to the richness of understanding during the investigation. Gesture, gaze, facial expression, body posture and movement - the visual language of semiotics – each mode contributed, as Jewitt, Bezemer and O'Halloran (2016) have posited, with no “*more or less potential* than the other” (p. 3 original emphasis) to develop the ‘integrated whole’ of effective communication.

The six participants had instinctively acquired the ability to speak, but it was clearly apparent that articulating an idea was a communication skill to be learned. Without using discourse markers such as ‘um’ and ‘uh’ (Fillipi, 2020), Emily and Wolfeon, demonstrated a facility in verbal



communication being respectively the first and second to respond in Week 3 to the opening question about *The Apology* by Mark Ryden: What’s going on in this

picture? (VTSQ1). Emily without hesitation offered a factual description of the artwork in a dispassionate even-toned manner – *I think this girl is talking to the tree trunk that has one eye* – a common style of opening response prior to deeper discussion (Housen, 2001-2002)). In Emily’s case, however, it also possibly reflected her characteristic desire to ‘get the right answer’, an echo of the present culture of high stakes testing, considered by many to have had a negative impact on learning (Berliner, 2011; Jefferson & Anderson, 2017; Robert, Barblett & Robinson, 2019). In response to VTS question two (VTSQ2) – What do you see that makes you say that? - Emily communicated her evidential reasoning by concurrently adopting the facial expression (*she looks confused*) and gestures of the young girl (*because her hands are in this position*) then posed a question in an energetic commanding voice: *She might be asking the trunk – Why, why it’s here and how it came alive?* It seemed that Emily’s enacted responses provided the participants with a useful foundation on which to layer their subsequent constructivist interpretations. At this initial stage,

then, Emily and Wolfeon were in the position of the ‘more capable person’ as Vygotsky theorised in his social concept of the ‘zone of proximal development’ (ZPD) (Vygotsky, 1978). Yet, in response to FQ1 re-posed in Week 5, Wolfeon was not the first responder. I would contend that a distinct but subtle response to the courteous dialogic nature of the VTS process was indicated. In exercising restraint, it is feasible to suggest that by this latter stage of the study, Wolfeon displayed an empathic understanding of ‘taking turns’ with his fellow participants, particularly those who were less communicatively able.

Importantly, consistency in the iterative cycle of the VTS process supported all participants psychologically and pedagogically, who variously exhibited difficulty in concentration, reluctance to communicate, anxiety, and in one instance a shy solitariness sitting apart from the group. Bob, Daisy and Kitty, like Camila as described in the previous section (5.2 Courage), were initially reluctant to communicate verbally but, nevertheless, remained eager to be part of the study group and were happy to move to the appealing study space adjoining the visual arts room. Bob, however, chose to sit beyond the inclusive semi-circle of his fellow participants; an action that I accepted, as did his fellow participants, who were most probably familiar with his often-withdrawn nature. Week 3, as it happened, saw an important breakthrough communication moment for Kitty, Daisy and Bob. Each, it seemed, had been assured by the iterative nature of the VTS three-question protocol to now communicate with an emergent self-confidence their imaginative speculations and inferences; a learning community in action. Kitty, for example, building on Wolfeon and Emily’s interpretations that all the trees in *The apology* by Mark Ryden had been cut down to make buildings, speculated *that maybe they’re going to cover up the grass with roads*. My subsequent paraphrasing indicated that with each communication a more complete understanding of the artwork was being constructed. “So Kitty’s thinking a little bit beyond what has been said by Wolfeon and Emily.” We then paused briefly because of outside noise. On resumption, I reopened the dialogue with the following comment. “OK girls and boys, between you, you are building up quite a picture

and an understanding of what might be happening.” Daisy then, with new-found confidence, surprised the group. *It looks like she might be lost. Then she found that tree stump with an eye and she started chatting with it.* My paraphrasing responses throughout were an important discussion linking tool. In this instance - “So Daisy is taking us in a new direction ...” – not only signalled approval of ambiguity but also provided them with a licence to imagine, that is, a licence to think creatively and critically.

Now seemingly more at ease, Bob’s breakthrough moment began during the Week 3 VTS session when he shuffled forward to sit with his fellow participants. Previously solitary, Bob now freely sat within the semicircle community of learners. It continued when the remainder of the class joined the group for a storytelling session related to the week’s artwork, *The apology* by Mark Ryden. When storyteller Victoria arrived, Bob was interrupted while expressing his first verbal observation: *So, ah maybe I think the tree* – slowly with each word spaced out and quietly spoken in a monotone. The storyteller’s arrival, as it turned out, created a serendipitous extra benefit. While Victoria and the children exchanged joyful greetings, I was able to manoeuvre Bob to the side, and during a brief but encouraging intense one-on-one dialogue, was able to capture Bob’s imaginative solemn and slowly articulated thoughts about the artwork. What factors might have triggered Bob’s verbal and psychological breakthrough moment in communication?

Like his fellow reluctant verbal communicators – Camila, Daisy and Kitty - Bob initially chose to use his eyes and ears to figure out what was going on as his fellow participants and the researcher engaged in the VTS protocol. He would have been consistently reminded of the initial VTS introductory instructions, which invited the students to look closely at the picture before them and think carefully about what they saw. Crucially, Bob was also a member of a social group, the significance of which Vygotsky (1978) has decisively explained in his concept of ZPD. In contrast to the role of ‘the more capable person’ alluded to previously, Vygotsky likewise emphasised that “a full understanding of the concept ... must result in revaluation of the role of imitation in

learning” (87). As they collectively observed and listened to their fellow participants engaged in the VTS process, it seemed that Bob, and his fellow hesitant communicators, were preparing to enact Vygotsky’s theory of imitation. “[T]hat a person can imitate only that which is within her developmental level” (p. 88) was clearly corroborated, as each initiated verbal VTS engagement at an individual pace. Then there was the heuristic factor which drew on my previous broad experience as a VTS facilitator. I empathically understood Bob to be “nearly there. It was worth persevering” (Arnold, 2005, p. 113). Such professional perseverance aligns with Arnold’s belief in the transformative energy of enthusiasm, which in instances such as this she describes as profound and purposeful rather than exuberant performance. Suggestive of potential joy, Arnold (2005) believes the appealing concept of enthusiasm is “motivated by belief and hope” (p. 22), that students may be supported “through periods of self-doubt ... by [professionals] caring enough to listen” (pp.24). During this dynamic exchange with Bob, a sense of hope was ‘in the air’; a sense that this liminal time was “a gateway to the possible” (Beghetto, 2020, p. 1). As it was impossible to know what Bob was thinking, I speculate that the dialogic nature of the VTS process echoed the *Hope Theory* (1991), in which Snyder, Irving and Anderson (1991) identify the three underlying concepts contained within a feeling of hope: goal, pathway, and agency. Ongoing research by Snyder, and others, has provided evidence of a connection between hope and self-efficacy (Marques et al, 2017); hope and belongingness (Wurster et al, 2021); hope and student engagement (Farnsworth et al, 2022) and Snyder’s expanded thinking (2002) in his evocatively titled article ‘Hope theory: Rainbows in the mind’.

Cautiously and tentatively are descriptors that best explain Bob’s initial verbal communication style. *So, ah maybe – I think ...* spoken in a similar fashion to a recording at reduced



speed. Bob’s manner, in fact, appeared to align with his temperament. Upon identifying *Spring frost* as his preferred painting during Week 5, Bob and I became absorbed in a dialogue that encouraged him to explain why. He enjoyed

the picture about the farm because it *felt calm* – *calm* spoken with a rising inflection, not monotone - *without buildings and like the countryside. And it looked like early in the morning.* His words were again spoken hesitantly but with an expressive rising inflection on *countryside*. Hearteningly, when repeating the last sentence, Bob this time spoke surely and naturally with an emergent self-confidence, then concluded by stating that this artwork made him feel *calm*; a statement implying support of the VTS methodology, which advises the presentation of diverse artworks to facilitate the engagement of diverse viewers. Throughout, his fellow participants were engaged in attentive observation and listening. Perhaps they, too, noticed a subtle growth of confidence in Bob's verbal communication.

In this century when often passive and solitary screen time absorbs the attention of young people more than in the past, the socio-constructivist VTS pedagogy offers an important tool for the development of effective communication skills; oracy for instance, the crucial companion of literacy, and respectful attention to the expression of multiple perspectives (ambiguity). The artwork *The apology*, in which a young girl and a tree trunk are engaged in animated conversation, offered that “discontinuous moment in experience” (English, 2013, p. 1049) when something unfamiliar is encountered, which according to English, (2013) provides that essential stimulus for learning to occur; the exercise of imagination. I was conscious, however, that all responses to this unfamiliar composition would be filtered through the lens of each participant's individual past experiences and knowledge, an issue that has been explored in detail by White (2013) - “a great painting becomes a mirror of the self” (p. 105) – and Dewey – “a beholder must create his own experience” (1934, p. 56). The responses of five of the six participants illustrated this concept. Camila, the remaining participant, continued in Week 3 to silently evaluate the process. As many young people today are disturbed by issues negatively impacting their environment, it was not surprising that most responses took an environmental perspective. Most interestingly, such responses according to Lowenfeld (1964) are developmentally consistent for children aged seven to nine years (the age of

the participants). In his seminal work *Creative and mental growth*, he maintains that the “formulation of a definite concept of man and environment” (p. 398) is characteristic of this schematic stage; a finding of educational significance.

Purposeful and iterative, the characteristically reassuring routine of VTS offered the young participants an opportunity to communicate authentically with each other. In so doing, as Jefferson and Anderson (2017) maintain, their “sense of self [was] enabled” (p. 105). As the students communicated verbally and non-verbally (multimodally) according to their individual readiness, their growth in confidence was likewise apparent. The ‘safe’ dialogic VTS process generated an energising risk-taking by the young students, as they engaged in the characteristic creative and critical thinking of the Visual Thinking Strategies pedagogy. Engagement in the process demonstrated that communication skills can be learnt, joyfully. Posed in Week 5, FQ3 – What worked well for you? What did you enjoy, or not? - triggered an enthusiastic response with many hands immediately in the air. Camilla, non-verbal until Week 4 as earlier described, confidently voiced her joy at listening to the ideas of her peers. *I am like where is that and when I see it, I get what they mean.* Wolfeon, conversely, relished the opportunity to share his ideas and *felt very relieved about telling everybody my thoughts because sometimes it’s hard for people to express their thoughts. It’s hard to think of them so it’s good seeing what they mean and like it’s better.* Both spoke with an embodied passionate intensity, matched in turn by the depth of focus between both participants and researcher during each exchange. A feeling of joy was also within me as I observed the potential of VTS to be an effective tool to both enhance communication skills and nurture confidence within the participants.

5.4 Collaboration

Creating meaning in a community has a long history dating from the time of Socrates to more recently the philosophy of Vygotsky (1978), and his compatriot Bakhtin (1984), the latter who, as

Dysthe, Bernhardt and Esbjørn (2013) comment, “emphasizes more strongly that dialogue is the very foundation for all human understanding” (p. 58). It became clear throughout the current study why collaboration along with communication – two of the 4Cs ‘super’ skills - have been deemed essential 21st century skills for the learner at school, and beyond. Jefferson and Anderson (2017) offer a succinct explanation of their alliance: “Communication is a sharing of information and collaboration focuses on how to share it with others” (p. 137). During the facilitated VTS discussions, the ‘how’ of collaboration was activated; collaboration’s essential elements were observable.

The facilitated discussion surrounding *Spring frost*, a painting by Elioth Gruner, serves as an



illustrative example. The study at this point was in the 5th week of its 6-week duration and the students collectively understood that their goal was to collaboratively decipher what was going on in the artwork. The diverse

community of participants respectfully shared an equally assorted variety of interpretations. Camila, exercising her new-found voice, opened the discussion. Her demeanour and carefully articulated initial thought suggested a desire to first present a factually accurate interpretation to her colleagues.

Um. Well it looks like this man is like feeding cows or looking after cows in a paddock. After a stabilising breath or two, Camila then continued in a firm more self-assured voice: It looks like sunset 'cause the sky's orange and um all those trees makes it look like [pause] it makes it really pretty and then behind that tree, just there, is some water, just there. So, it just looks really pretty.

By pointing throughout – a ‘visual paraphrase’ - the researcher both indicated her understanding and ensured that all eyes were ‘on canvas’ (Housen, 2001) noting what Camila had identified, thus supporting her newly enabled confident articulation.

Camila’s comments are illustrative of the constructivist VTS pedagogy in action. As its name suggests, constructivism implies an active process of learning, rather than the passive transfer of knowledge (Dewey, 1934; Vygotsky, 1978), which in turn is shaped by embodied life

experiences (Stolz, 2015). Might Daisy have been reminded of a special occasion when she first saw *Spring frost*? She, before the audio recording began, spontaneously commented on the beauty of the light shining through the trees. Daisy was immersed in the work but, as she commented in response to FQ3 – What worked well for you? What did you enjoy or not? – Daisy, a counsellor supported student, stated that she found it *hard to talk out loud*. Might the originally planned extended study have assisted the development of her verbal collaborative skills? Once recording began Camila, as indicated in her above comment, brought to the discussion a similar appreciation and aesthetic enjoyment of the natural environment, perhaps also cultured by her family activities. Responding to the third VTS question - What more can we find? - Wolfeon approached from a different perspective. In keeping with his exuberant response to FQ1 and in keeping with his Stage1level of aesthetic development as a storyteller (Housen, 2001-2002, p. 126), the engaged Wolfeon constructed an energetic narrative. *I think that maybe the cows have gone out of their pen where they're meant to be and their owner, the farmer there, is trying to get them back in*. As the students continued to listen and speak with an equal attentiveness, they seemed to become aware of the collaborative nature of constructing a more complete understanding of the artwork. As in critical thinking, they suspended judgement as various inferences were made. Kitty acknowledged Wolfeon's comment - that the farmer was trying to retrieve the cows that had escaped – but, following further in depth 'looking to see', she exhibited creative thinking as she speculated, with a new-found courage, that *maybe they've eaten all the good grass in their paddock, so they got out somehow to get the greener grass from the other paddock, because they look like they're really enjoying the grass there*. Might Kitty's thinking be anchored in real-life country experience? Might Bob's also when he commented: *I see the trees and the house... It's a chicken pen*. No mention of the centrally visible cows but perhaps relating to a lived country, or backyard, experience? A distinctly divergent interpretation but accepted equably by the collaborating participants during the constructivist VTS inquiry process. As they imaginatively explored possibilities and took risks to

solve the ‘problem’ of the artwork, the ability of VTS to simultaneously support the development of their critical and creative thinking skills thus became evident.

The value of collaborative dialogue-based learning has been endorsed by many educators. For example, English (2016) argues that “aside from any particular disciplinary knowledge” what is important in peer shared dialogic learning is how “one’s own and others’ ideas ... and shifts in perspective are treated as valuable” (p. 1060); a notion which Alexander (2004) agrees “reaches across the entire curriculum” (p. 9). Expanding this thinking, Kangas (2019) posits that a diversity of interpretations presents a welcome opportunity “for viewers to better understand their uniqueness and similarity to others” (p. 4). Bandelli (2018) advises that such diversity importantly presents an opportunity for the development of imagination and empathy which, he argues, are essential ingredients in effective 21st century pedagogy; and more broadly, I would suggest. Writing in the first decade of the 21st century, Swartz and his colleagues (2008) express agreement, existentially. “Human beings are made to be different,” they claim (p. 243)). “We come from diverse backgrounds of knowledge, experience, and culture” (p.243); diversity is the basis of human survival. Engagement in the ‘level playing field’ of the Visual Thinking Strategies protocol – no prior knowledge required, stimulus for CT and CRT contained within the image - addressed a taxonomy of elements that foster effective collaboration.

The novel and authentic collaborative learning situation of the VTS protocol piqued the children’s natural curiosity. “Without curiosity,” Berliner and Judd (2019) advise, “learning is a laborious chore” (p. 168). Curiosity also gave them “permission to be puzzled and to think” (Yenawine, 2013, p.2). What is noteworthy within the findings is the emergence of an individual ‘voice’; not only as a developing clear articulation, but ‘voice’ as an empowerment. This outcome occurred in stages. Once familiar with the VTS process, participants appeared to first enjoy the novelty of thinking together. This was the case of the newly eager communicator, Camila, during the exploration of *Spring frost*. Captured in the audio recording was her sense of satisfaction that

she was now capable of contributing to the collective discussion; the ‘we’ of collaborative thinking. Aware of her alternative tangent, she confidently speculated then inferred that *maybe the man, he doesn’t actually have to be a farmer because he’s like wearing a hat and a jacket, maybe he’s like trying to steal the cows, because that cow and that cow are basically looking at him asking - why are you here?* Then, with intensified authority and conviction (agency), a subtle change from the ‘we’ to an empowered ‘yes, this is my thinking’ occurred as Camila corroborated her stance with the freely available evidence situated in the artwork, which I as the VTS facilitator visually paraphrased as she summed up her case. Also, you can see there’s no light coming from the house like no one might be in there and he’s trying to like steal. Importantly, her reasoning also presented evidence of the emerging development of her critical and creative thinking. Such a progression has been described by Vygotsky (1978). “Every function ... cultural development appears twice: first on the social level, and later on the individual level” (p. 57). To observe an emerging student voice was encouraging from the perspective of both participant and researcher. For the researcher, offering participants an additional opportunity to express their ‘voice’ was an underlying crucial feature of the study. To this end, three focus questions were presented to the students. Two of the three (FQ1 and 3) were open ended inviting unrestricted comments and have previously been alluded to in the discussion. A reversal of the order was the design feature of the third. When I constructed the simple FQ2 - Are there any questions you would like to ask me? - I pondered if there would be a significant response. The children’s responses were immediate and multiple; it was a joyful moment for all. *Why do you want to do this with us? Did you choose the pictures? Have you done this in any other school?* were some of the questions, to which I responded with a matching earnestness. The Year 3 students were being taken seriously; “one of the keys to good dialogue-based teaching” (Dysthe et al, 2013, p.162). Furthermore, their eagerness of response appears to relate to research by Engel (2013), who found that opportunities for students to ask questions begins to diminish about eight years of age; around the age of the study participants. It

seems, then, that ‘flipping’ a transmissive pedagogy for one of student-centred shared learning, affords optimal conditions for developing a sense of empowered learning; of learner agency.

Participating in the VTS dialogic interaction - between students, between students and facilitator – afforded these students, through enhanced speaking skills, an opportunity to clearly articulate their thoughts, to develop a ‘voice’. The created culture of collaboration enabled self-respect and confidence to be nurtured within the participants; all components of voice, self-efficacy and, in turn, agency; all facilitators of creative and critical thinking. During engagement in the dialogue-based study process – VTS pedagogy and open-ended focus questions – I have evidenced how participants observed the value of building understanding of the artwork together and at the same time accepted the ambiguity of multiple interpretations; a notion described by some scholars as ‘multivoicedness’ (MV). The value of multivoicedness is supported by Dysthe and her colleagues (2013), who importantly emphasise the crucial role of the educator as both a model of, and facilitator of respectful dialogue for MV to be an effective learning tool; a role I demonstrated throughout the research project. Extending their argument, these researchers stress MV’s potential to “address how to deal with disagreement and difference in a constructive way [which] has always been a key question for democratic education” (p.233). Such thinking is supported by Alexander (2004; 2020), who acknowledges dialogue’s “importance in building children’s powers to think and reason” (2004, p. 19), to question and evaluate; to think creatively and critically. These are skills required of citizens in a thriving democracy, which may decline if citizens “comply rather than debate” (Alexander, 2004, p.37). In this time of increasing polarisation of thought and democratic decline, the above reasoning is pertinent to this study.

5.5 Wellbeing

The nexus between the concept of student wellbeing and learning is now well established (Darling-Hammond, Flook, Cook-Harvey, Barron & Osher, 2020; Jefferson & Anderson, 2017).

Similar to the impact of VTS on student learning as illustrated in Figure 5 (Chapter 4), wellbeing is a construct encompassing the development of the whole child and as such consists of a complex of contributing elements. Furthermore, wellbeing is also increasingly recognised as fundamental to student flourishing, which Schinkel, Wolbert, Pederson and de Ruyter (2022) – building on the positive psychology research of Seligman (2011) - consider “should be the overarching aim of education ... or what the point of it is” (p. 144). With the necessity of a broader conceptual understanding of wellbeing acknowledged, its definition has shifted “from concentrating only on trends of dying, distress, disability and discomfort to tackling the issue of indicators of sparkle, satisfaction and well-being” (Resnick, 1995, p.3). In other words, to the essential physical conditions of the student, conceptual understanding of wellbeing has now expanded to include an ensemble of social and emotional influences, less tangible, but equally underpinning successful learning (Farah, 2017; Goleman, 1995; Smilkstein, 2011). This expanded focus, which is reflected in the ‘soft skills’ now considered essential for the 21st century population, has also been endorsed in the *NSW Wellbeing Framework* (NSW DET, 2015) by defining wellbeing broadly “as the quality of a person’s life” (NSW DET, 2015, p. 3). Crucially for education overall, and for this current study in particular, wellbeing is now to be linked with “changes to how children and young people learn and how teachers teach” (2015, p.2). A sense of wellbeing, achieved by the interplay of the VTS process with associated epistemic elements, provided that all-important foundation on which to foster the now crucial skills of creative and critical thinking within the young participants.

5.5.1 The elements

During the current study an emergent sense of joyful release became apparent amongst the young participants. Statements such as: *I really wanted to express all my thoughts* (Wolfeon) and *I felt relieved cause when I have ideas it just feels good to say them out loud* (Kitty) contributed to the researcher's assessment. The VTS process - posing open-ended questions complemented by extended thinking time - released the students from the tension of 'getting it right'; a situation to which Sawyer (2019) offers a similar solution. If "students are too focused on getting the right answer ... consider asking them to sit back, take a breath, and look around for a minute or two" (p.25). Related to such thinking is an implied need for a more playful approach to learning, which a growing body of research supports (Sahlberg & Doyle, 2019; Weisberg, Hirsh-Pasek & Golinkoff, 2013). Moreover, Zosh, Hirsh-Pasek, Golinkoff and Dore (2017) suggest that guided play, as in VTS, contributes to student wellbeing by offering them a sense of agency in their own learning "with adults playing the supporting role of scaffolding their exploration" (p.175). First, however, it was essential that a safe space be created for the diverse group of participants. Without this, all aspects of student wellbeing could not be nurtured (Moran & John-Steiner, 2003).

5.5.2 The study space

The student participants were first met in a whole class situation. Physically, the classroom was congested with little space between table groupings and classroom supplies. This aspect, when combined with the previously described class dynamics, limited an in-depth assessment of the six Year 3 participants. Once we had moved to the adjacent designated study space, the atmosphere changed markedly. The often-documented natural curiosity of the child appeared to have been released (Berliner & Judd, 2019; Yenawine, 2013). There was a sense of anticipation in the air as the participants and researcher restructured as a small group in a calm spacious

room. Used intermittently for various learning activities, the room had a mixture of furniture, which afforded a flexibility of purpose – a teacher’s desk, storage units, some tables and chairs, and a mix of brightly coloured red and green plastic furniture. The latter I arranged in an enfolding semicircle in front of the whiteboard on which the digital works of art would be displayed. The naturally bright and well-ventilated room was situated on the first floor of a brick building, with an attractive view of the outside world with sky and the green leaves of a tree top visible through the uncovered windows. There was no distracting noise. The students chose where to sit in the enclosing semicircle – or just beyond as did Bob. Nevertheless, a feeling of ownership was initiated within this space.

The above description of the study space resonates with the findings of research by Barrett, Treves, Shmis, Ambasz and Ustinov (2019). In their investigation of the impact of school infrastructure on learning, the researchers also specifically explored how classroom conditions might influence both the development of student wellbeing and learning outcomes. Their findings emphasised the importance of a flexible classroom space with “good ‘natural’ conditions” (p.14) relating to “lighting, air quality, temperature control, acoustics and links to nature” (p.14). Although negatively impacted occasionally by intrusive exterior corridor noise, the optimum conditions were largely met in the designated study space. During the Week 5 research session, for example, bustling exterior corridor noise impacted on the study space’s acoustics. For me, the noise was frustrating as it was difficult to hear each student clearly. At the same time, I was reminded of a recent school indoor environment study, which found that students “complain mostly about the acoustical environment” (Bluyssen, Zhang, Kurvers, Overtom & Ortiz-Sanchez, 2018, p.117). Curiously, however, the intrusive noise seemed to affect me more than my fellow ‘community of learners’ (Arnold, 2005; Eisner, 2002; Gibson & Ewing, 2020; Rogoff, 1994). Later, I reflected at length on this point of difference.

5.5.3 The emotional connection

Instinctively I had leaned forward toward the group of six participants sitting in our semicircle (Bob in Week 4 now sat comfortably with us) intent on maintaining the energy of our dialogic VTS discussion. Without raising my voice I increased its intensity by speaking more slowly and enunciating more precisely, while maintaining my usual calm and VTS neutral tone. Yet, I was conscious of ‘working hard’ to maintain our dialogic momentum. Our time together was too important to be thwarted by a passing disturbance. Did the students sense this? As their body language and eye focus indicated continuing engagement, I found this to be an intriguing possibility.

Recent investigations suggest that this might be possible. When our dialogic discussion was interrupted, it appeared that my passionate belief in the importance of the project was communicated to the students; a notion defined by Frenzel, Daniels and Buric (2021) as “emotional contagion” (p.251), a two-way street of emotions between educator and learner. During this incident, I accommodated the interruption and, because a sense of trust and belonging had now been established – indicated by the weekly eager readiness of participants to move to the study space and engage in the dialogic VTS pedagogy - my fellow participants persevered and remained engaged. Probing more deeply, these researchers further maintain that teachers “who experience positive emotions during teaching have access to a wider array of instructional strategies and are more flexible and creative in adapting to different classroom situations” (p.253).

Approaching from a physical perspective, Paulmann and Weinstein (2022) similarly investigated the teacher-learner connection. They found that a teacher’s body language, facial expression, words, and their tone of voice had a major motivational impact on student wellbeing and behaviour. Furthermore, a quiet voice, slower speech and less voice energy was also found to communicate support, rather than the authoritarian control of an opposite speech pattern; a

‘soft’ versus a ‘harsh’ voice. As further evidenced in Paulmann and Weinstein’s investigation (2022), a ‘soft’ voice approach potentially nurtures a student’s sense of belonging, and connection with the teacher, a feeling of trust and, importantly, a sense of joy in learning; all, as it happens, conditions for the successful development of student wellbeing.

5.5.4 The importance of relationships and participation

In the preceding reflection many ideas are interrelated. The observed connecting thread was an understanding of the crucial importance of relationships to wellbeing. A linkage is implied in the following comment. Camila, newly confident in Week 5, assertively remarked that she enjoyed *listening to the other people’s ideas ... I get what they mean*, thus implying her now comfortable relationship within the study community. A recent investigation by UNICEF seems to support this premise. Children, the researchers found, “view good relationships as crucial” (Gromada, 2020, p.5) to their wellbeing; with family, then peers, and a sense of belonging at school. In such a participatory relationship, opportunities for the expression of individual views is considered essential and is described as giving a person a voice, a step on the path to acquiring a sense of agency. Might not it also be defined as a conversation? Described by Tumarkin and Rogers (2023) as “a precious opening” (np), I was struck by its aptness as a descriptor of the role of dialogue during the current study. Thus, Tumarkin and Rogers’ poetic explanation of ‘conversation’ could, I believe, be equally applied to ‘dialogue’ as applied in the dialogic method of the Visual Thinking Strategies. Continuing, the link between ‘conversation’ and ‘dialogue’ is reinforced when the researchers evoke a fundamental element of VTS dialogic practice. It is in conversation, they maintain, that “the light of another person’s presence turned towards you will almost always illuminate something you couldn’t see or find thinkable before” (2023, np).

The importance of participation for the development of learner wellbeing is also acknowledged by UNICEF. Reporting on their recent investigation of the topic, findings

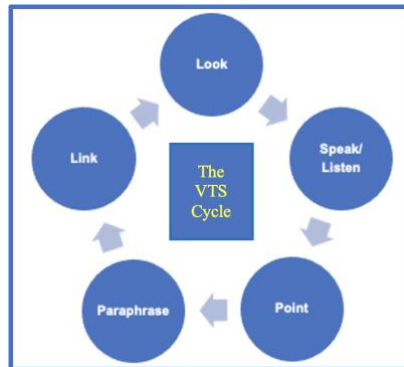
indicated that to foster wellbeing today, “[p]rotection and provision do not suffice – children also need participation” (Gromada, 2020, p. 29) by autonomously expressing their views and, crucially, having them noted; a statement reinforcing the United Nations Convention on the Rights of the Child (CRC). Included amongst the many newly proclaimed rights, the following has a specific resonance for this study. “Children have the right to share freely with others what they learn, think and feel, by talking, drawing, writing or in any other way unless it harms other people” (1989, Article 13) and “adults should listen and take children seriously” (1989, Article 12); statements which are compatible with the goals of the Visual Thinking Strategies pedagogy and evidenced in my research.

5.6 The power of the iterative VTS process

Learning takes time; whether time on task, or reflecting creatively and critically, or simply having time to muster courage in a novel learning situation such as VTS. Moreover, as John Berger (1972) stated in the opening paragraph of his influential work *Ways of seeing* – a notion that underpins the constructivist ontology of this study - “[t]he relation between what we see and what we know *is never settled*” (p. 7, my emphasis). That is, knowledge, like the condition of learner agency and wellbeing, is in a constant state of flux; mirrored likewise in the current global age of uncertainty. Upon reflection, it thus seems reasonable to suggest that the ‘quiet’ concept of stability was of strategic importance for the establishment of an empowering sense of wellbeing amongst the young participants; stability in the respectful relationship between myself and the participants, and stability in the predictable cyclical VTS process as Fig. 6 shows.

Figure: 6

The iterative and predictable VTS cycle



As more often unaccustomed to freely sharing their thoughts, the shift to the unfamiliar dialogic style of VTS caused some initial discomfort. Both Emily and Camila, for instance, were *nervous* when they first articulated their interpretations. However, the ongoing security afforded by VTS predictability supported a second counterbalancing shift. Camila came to feel *better* and Emily *more comfortable* because once they had tried ‘it’, they now understood that in the VTS dialogic process their contribution, and those of their learning community were, as Alexander (2004) has succinctly described the process, “stages in an ongoing cognitive quest rather than ... terminal points” (p. 35). The influence of wellbeing on a learner’s ability to think creatively and critically was evidenced by Camila in Week 5 when she confidently opened the discussion of *Spring frost*. First, she creatively speculated that *it looks like this man is like feeding cows or looking after cows in a paddock*, then critically inferred that it looked *like sunset cos the sky’s orange*. Joy in learning seemed also to be the outcome of her new-found wellbeing, acting as a catalyst for further CT and CRT when she reasoned authoritatively that the man in the painting might not be a farmer because he was *wearing a hat and a jacket* – paraphrased as “a little too dressed up” - and why the house was empty – *there’s no light coming from the house*. I propose that Resnick’s concept of ‘sparkle’, an evocative energising expression, may be likened to the concept of joy, which “connects us to our core identity ... It is the emotion”, Van Cappellen (2020) advises, “that makes life worth living in the moment” (p. 40); in this instance, joy in learning. Such joyful

engagement was expressed by Kitty in an animated voice. *I enjoyed noticing all the little things in the pictures that we saw.* In keeping with his quiet manner, Bob likewise expressed his joy speaking steadily in an even tone. *I enjoyed the picture about the farm, the cows and the light shining through the trees ... The picture felt calm* and, as he later commented, it made him feel calm. For all, this last discussion before the post-intervention task concluded on a joyful note.

A discussion of observed colours in the grass animated the students. *Well, everything in the picture isn't just one still colour. There's lots of dots like different colours. The grass ... has blue in it and it looks like it has some yellow, and the leaves have like different shades of green in the trees,* observed Kitty. After paraphrasing I added a further comment. "What is interesting is if you stand up, go over to there [moving away from the whiteboard towards the window], if you were to go and see this painting at the Art Gallery of New South Wales and did what we're doing now, you'd see something magic happen." Without further stimulation, excitement and laughter broke out amongst this at ease group of learners, a sense of agency and discovery was in the air. *Actually the view is better from here!* exclaimed Wolfeon. *Yeah!* said the others excitedly. Multiple comments ensued and then when I was in mid-sentence – "We can't get far enough away here. Ok, thank you folks. You've really been ..." - a firm interjection from Kitty captured our attention. *I've got one comment. When we're far away the grass looks real but when we walk closer it looks like paint;* the magic of the artwork. Stability and joy in combination, two powerful concepts with the capacity to activate additional indicators of wellbeing: senses of belonging and trust, inclusion and equity.

It was evident throughout the research project, that the civil dialogic nature of VTS contributed to the creation of a safe learning environment, an essential ingredient of wellbeing. As the NSW Wellbeing Framework (NSW DEC, 2022) has indicated, wellbeing "can become a powerful force in students' learning and development" (p.2) which, as this investigation found, facilitated the development of the young participants' skills of critical and creative thinking.

Chapter 6 – The future: Toward a level playing field?

It is by way of communication that art becomes the incomparable organ of instruction, ... it is a way that lifts art ... far above what we are accustomed to think of as instruction (Dewey, 1934, p. 361).

The transformative nature of critical and creative thinking permeates the science of student learning in the 21st century. The inclusion of these skills as one of seven general capabilities in the K- 10 Australian curriculum (ACARA V9.0), indicates their crucial importance for the student at school, and beyond as an informed citizen responding to the complex pressures of this century.

Internationally, most countries include these skills as key elements of their education systems.

Moreover, in addition to the regular assessment of reading, mathematical and scientific literacies of fifteen-year-old students, the 2022 triennial Programme for International Student Assessment (PISA) included assessment of a student's creative thinking, thus further underscoring its importance. There is mounting evidence, however, of a lack of implementation by teachers.

Importantly, not because of resistance to change, but because of an absence of a clear understanding of what these thinking skills mean and an accompanying lack of pedagogical support (Alter, 2011; Ab Kadir, 2018; Cignetti & Rabella, 2023; OECD 2019, *Fostering Students' Creativity and Critical Thinking: What it Means in School*). This is the 'gap' that this research study sought to address.

Research findings suggest that engagement in the art-based Visual Thinking Strategies dialogic pedagogy did, indeed, facilitate the development of the study participants' observation and thinking skills. "Reimagining pedagogical approaches" (UNESCO, 2021, p. 51), a necessity as advised by the *International Commission on the Futures of Education* (UNESCO, 2021, p. 51), is demonstrated in the novel VTS approach. Furthermore, the dialogic process is described as a "signature pedagogy" by Vincent-Lancrin (OECD, 2019, p. 105) and assessed as effective for developing critical and creative thinking in students. As agents of change (Hattie, 2012) this research offers teachers a message of hope. VTS presents teachers with a "deceptively simple" (Housen, 2001, p. 2) tool to put in their 'Art of Teaching Toolbox'. The implementation of the

Visual Thinking Strategies has moved beyond the context of the USA, its country of origin. To investigate the usefulness of VTS, the Erasmus project “*Permission to wonder*” was conducted and supported over three years (2017-2020) by six European countries – Spain, Ireland, Denmark, Slovenia, Netherlands and Finland. Introduced into the Australian context of art museum teaching in 2012 at Heide Museum of Modern Art in the state of Victoria, where VTS is now further supported at la Trobe University in its program, “A critical eye”. Nevertheless, context remains an issue. Introduced recently into the Danish education system, its positive reception is attributed by Nolan (2023) to a philosophical match between VTS and the Danish culture. The concept of *bildung*, which supports agency, lifelong learning and democratic principles, underpins the Danish education system and consequently is a good fit with the level playing field – all information contained within the image, no art history required – of the collaborative dialogic VTS process.

There is a sense of change in the education air of NSW. The NSW curriculum has recently undergone “the biggest shake up of the education system in thirty years” (NSW government, 2020). Might its report title, *Nurturing wonder and igniting passion: Designs for a new curriculum*, also include the reimagining of pedagogy as advocated by UNESCO (2021)? The small size of this study is an inherent limitation. However, the VTS protocol affords an advantage; it is replicable. An extension of this current study would be an informative follow up of the Year 3 participants now that they are in Year 5. In turn, a future project might entail a comparative investigation of the VTS pedagogy working directly with teachers in a variety of contexts. My informed confidence in the potential benefits of the Visual Thinking Strategies pedagogy, for both learner and teacher, ignited my passion for this study.

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APPENDIX 1

Stages of aesthetic development

Stage I

Accountive viewers are storytellers. Using their senses, memories and personal associations, they make concrete observations about a work of art that are woven into a narrative. Here, judgments are based on what is known and what is liked. Emotions colour their comments, as viewers seem to enter the work of art and become part of its unfolding narrative.

Stage II

Constructive viewers set about actively building a framework for looking at works of art, using the most logical and accessible tools: their own perceptions, their knowledge of the natural world, and the values of their social, moral and conventional world. Their sense of what is realistic is the standard often applied to determine value.

Stage III

Classifying viewers adopt the analytical and critical stance of the art historian, identifying the work as to place, school, style, time and provenance. This viewer believes that properly categorized, the work of art's meaning and message can be explained and rationalized.

Stage IV

Interpretive viewers seek a personal encounter with a work of art, letting its meaning slowly unfold. They appreciate subtleties of line and shape and colour. Each new encounter with a work of art presents a chance for new comparisons, insights and experiences.

Stage V

Re-creative viewers have a long history of viewing and reflecting about works of art. A familiar painting is like an old friend who is known intimately, yet full of surprise. Here, memory infuses the landscape of the painting, intricately combining the personal and the universal.

Adapted from: Housen, A. (2001-2002) Aesthetic thought, critical thinking and transfer. *Arts and Learning Research Journal*, 18(1), 99-131.

APPENDIX 2

Benchmarking Writing Task

Key: **Pre-Intervention** - **Post-Intervention**

Name: Kitty		
Attribute	Result	Sample Comment
Simple Observation: Listing, labelling.	1 2	There is one woman and three men.
Detailed Observation: Includes adjectives, pinpointing language.	0 3	There are 2 canoes with food in them.
Speculation: Unsupported conclusions; may use conditional language.	2 1	They look like they are coming from a stranded island. The dog looks like it is very excited.
Inference: Comment grounded in evidence found in image.	4	They might be racing for a few days because they have lots of fruit.
Evaluation of Multiple Possibilities/Perspectives: Recognises more than one idea is plausible; use of “or” to present various options.	0 0	
Word Count	Pre 35 Post 115	

Name: Camila		
Attribute	Result	Sample Comment
Simple Observation: Listing, labelling.	2	I see palm trees in the back and some mountains.
Detailed Observation: Includes adjectives, pinpointing language.	2 6	I can see two canoes with four people, two in each canoe and both of the boats have animals in them.
Speculation: Unsupported conclusions; may use conditional language.	2 2	The water looks really nice to swim in.
Inference: Comment grounded in evidence found in image.	0	It looks like there is a wave coming and they could be rushing because of that as well.
Evaluation of Multiple Possibilities/Perspectives: Recognises more than one idea is plausible; use of “or” to present various options.	0 2	... two men rushing to maybe win a race... looks like there is a wave coming, they could be rushing because of that as well.
Word Count	Pre 84 Post 141	

Key: Pre-Intervention - Post-Intervention

Name: Bob		
Attribute	Result	Sample Comment
Simple Observation: Listing, labelling.	0 0	
Detailed Observation: Includes adjectives, pinpointing language.	2 1	They lived on a nice island with many palm trees.
Speculation: Unsupported conclusions; may use conditional language.	3 2	They were fishing with fishing nets. The dog might be thinking of jumping on to the other boat and eating the pig.
Inference: Comment grounded in evidence found in image.	0 2	It looks like they are racing because they are staring at each other to see if they are winning or not.
Evaluation of Multiple Possibilities/Perspectives: Recognises more than one idea is plausible; use of “or” to present various options.	0 3	Maybe they are trying to sail to the mountain to find gold or maybe somewhere warm.
Word Count	Pre 44 Post 97	

Name: Emily		
Attribute	Result	Sample Comment
Simple Observation: Listing, labelling.	0 0	
Detailed Observation: Includes adjectives, pinpointing language.	1	They are travelling in canoes instead of ships and boats.
Speculation: Unsupported conclusions; may use conditional language.	3 4	The canoe is carrying a lot of supplies and might be “goods”.
Inference: Comment grounded in evidence found in image.	2 3	The picture is full of action.
Evaluation of Multiple Possibilities/Perspectives: Recognises more than one idea is plausible; use of “or” to present various options.	2 2	They could also be stowaways or prisoners escaping the island forever with a stray they had met in the middle of their adventure because they weren’t wearing well looked after clothes.
Word Count	Pre 94 Post 172	

Key: Pre-Intervention - Post-Intervention

Name: Daisy		
Attribute	Result	Sample Comment
Simple Observation: Listing, labelling.	1	I see a puppy.
Detailed Observation: Includes adjectives, pinpointing language.	1 3	There are 2 boats with 2 people on each boat fishing. There is also a big big mountain on the side of them.
Speculation: Unsupported conclusions; may use conditional language.	1 3	2 people one each boat fishing to have for supper and lunch and for morning tea.
Inference: Comment grounded in evidence found in image.	0 1	There is a lady waving something that looks like a leaf that has been dried up.
Evaluation of Multiple Possibilities/Perspectives: Recognises more than one idea is plausible; use of “or” to present various options.	0 0	
Word Count	Pre 36 Post 140	

Name: Wolfeon		
Attribute	Result	Sample Comment
Simple Observation: Listing, labelling.		
Detailed Observation: Includes adjectives, pinpointing language.		
Speculation: Unsupported conclusions; may use conditional language.		I think he might be trying to trap something.
Inference: Comment grounded in evidence found in image.	2	Wolfeon’s writing was extremely difficult to decipher. He is verbally expressive. Based on his use of <i>because</i> , I suggest he made two inferences.
Evaluation of Multiple Possibilities/Perspectives: Recognises more than one idea is plausible; use of “or” to present various options.		In the final sentence of his post intervention task, Wolfeon engaged imaginatively with the reader: <i>If you have seen ... it looks like ...</i>
Word Count	Pre 39 Post 51	