Chapter 6
Arts and technology

Narelle Lemon

This chapter endeavors to extend the contribution and to ignite the conversation. It is also a chapter to inspire practice, to challenge those who come across difficulties and to share and imagine what is possible. For me as an arts practitioner, this chapter shares the possibilities of future considerations that emphasise what is achievable in the arts classroom when embedding technology. Through the narratives of practicing teachers, this chapter highlights technology as a tool that can profoundly impact young people’s learning and the way they see and experience the world.

Introduction

Vignette 1:

I am loving the ART ROOM!! My own space that I could set up and run and enjoy all the different personalities in the school (and aides, it's nice to get to see them all twice a week), we are starting the year with self portraits and things are starting to come together.

So in regards to your technology and art question, I have big plans but things move a little slower in special ed. I am hoping to use the Photo Booth program with some of the more able students and use it as a starting point for looking at drawing faces in different ways. I also want to get my hands on the two iPads the school has just bought and see if I can use them somehow and eventually I'd love to do some stop motion animation. However these are all in the pipelines and the most I have done with the kids so far is use the overhead projector and colour photocopier.
I hope my 'intentions' eventuate; the kids loved playing with the Photo Booth program and were very engaged at all the different effects. We had a PD on the new interactive whiteboards the school has. They have some great drawing tools and a lot of possibilities... I just need time to play with it.

Georgia’s sharing is exciting. She has energy. She sees the possibilities. She is open to taking risks and she wants to expand how the young people she teaches see, experience and understand the world around them. Georgia Ensor is an art teacher at Yarraville Special Development School, Melbourne, Victoria. She’s an artist, a learner who works with young people in the arts environment. She is a young teacher, a new graduate who engages with technology personally. Her energy and enthusiasm also positions her to think carefully about how she engages with ideas, opportunities and possibilities of working with technology in the arts classroom. Georgia shares her ideas, and there are many. She is also transparent in that the opportunities she provides need to be meaningful, engaging for the students, and purposeful in application. Georgia acknowledges the importance in training and development of skills; that her use of technology is not simply about using technology but of the why in application. Her careful consideration of art skills and knowledge, curriculum design and pedagogy underpin the passion of embedding technology in her arts classroom.

Throughout this chapter you will hear from teachers who are working in primary, secondary and multi aged arts classrooms in Victoria, Australia. Each of these teachers shares insights into their classroom and their use of technology to support the creating, making, responding and exploring of arts. Throughout the chapter theory is embedded with practical strategies, narratives and conceptual ideas.

Australian schools, policy and technology

The arts collectively foster ways of knowing and learning (Barrett & Smigiel, 2003; Donahue & Stuart, 2010; Ewing, 2011). The arts support the development of creativity and imaginative thinking in young people (Ewing, 2011). The UNESCO World Conference on Arts Education and subsequent Road Map for Arts Education (UNESCO, 2006) reiterates that arts education can increase the quality of education by engendering a range of cross-cutting skills and abilities and raising student motivation and active participation in class. Specifically, the Road Map for Arts Education reinforces the considerations of technology stating that observing the development of
information and communication technologies (ICT) in all areas of societies and economies highlight the potential they represent for enhancing Arts Education; and encourages and promotes the development of art practices through digital media.

Technology can serve as an essential platform for collaboration among art teachers and between artists and other educators. An understanding of technology is central to a young person’s preparedness for life in modern society, in which technology play a significant role. This understanding also empowers individuals to participate appropriately in understanding the impact technology has on their lives, and how it contributes significantly to the personal, social, professional and cultural lives of everyone (Tapscott, 1998; Groundwater-Smith, Ewing & Le Cornu, 2007; Thomson, et al., 2010).

Building students’ capacity to engage with technology in the arts classroom supports the development of young peoples’ understanding of personal, social and global contexts. Building capacity also scaffolds the understanding of technology in different contexts (Key & Stillman, 2009; Thomson, et al., 2010). Both students and teachers are called upon to recognise the value in linking ideas and materials from different learning areas.

The Organisation for Economic Co-operation and Development (OECD) considers that technology is so pervasive in modern life that it is important for students to be literate in these areas as well (Thomson, et al., 2010). As the Melbourne Declaration on Educational Goals for Young Australians (Ministerial Council on Education, Employment, Training and Youth Affairs, 2008) reiterates, curriculum should be designed to develop successful learners, confident and creative individuals and active and informed citizens. The declaration, which sets the direction for Australian schooling for the next 10 years, acknowledges that rapid and continuing advances in ICT are changing the ways people share, use, develop and process information. ‘While schools already employ these technologies in learning, there is a need to increase their effectiveness significantly over the next decade’ (Ministerial Council on Education, Employment, Training and Youth Affairs, 2008, p. 5). In the digital age that is currently present, young people need to be highly skilled in the use of ICT. Successful learners and individuals who can engage meaningfully with society are creative and productive users of technology as a foundation for success in all learning areas. As a foundation for further learning and adult life the curriculum will include practical knowledge and skills development in areas such as ICT and design and technology, which are
central to Australia’s skilled economy and provide crucial pathways to post-
school success (Ministerial Council on Education, Employment, Training and

In Australia, the Digital Education Revolution (DER) Strategy
(Commonwealth of Australia, 2010) is a national approach to implement
systemic change to increase the level of ICT proficiency for teachers and
school leaders across Australia. The Statements of Learning for Information
and Communication Technologies (2006) are also positioned in the Australian
context for both teachers and students and provides a description of
knowledge, skills, understandings and capacities essential for all Australian
students to learn. The learning of both the teacher and the learner are situated
upfront in both these policies, each having similar but also different needs in
understanding, integrating, and embedding ICT in the teaching and learning
process.

Ensuring the DER agenda has been set as a priority the commitment to
national ICT infrastructure has been made by the Australian Government
through a $2.4 billion financial commitment over seven years. This project
reiterates teachers and school leaders require access to rich online learning
resources, world class technology curriculum and ICT professional
development. To allow schools to engage with opportunities created under this
strategy is seen crucial in improving teachers’ understanding and proficiency
in the use of ICT in the teaching and learning process. According to the DER,
21st century schools require 21st century programs and educators capable of
using 21st century resources and strategies for learning, and the vision is to
empower teachers and school leaders to integrate ICT in education. This
empowerment is to improve school effectiveness and provide students with the
skills required for further education, training and to live and work in a digital
world. The Australian Government share the objective of raising overall
attainment so that all Australian school students acquire the knowledge and
skills to participate effectively in society.

While many teachers make use of online curriculum resources, there
are a number who resist the use of digital technologies or view them as
‘add-ons’ rather than as an integral part of curriculum delivery
(Commonwealth of Australia, 2010, p. 4).

For schools and teachers, the DER is challenging pedagogy and use of
ICT to contribute sustainable and meaningful change to teaching and learning
in Australian schools to prepare students for the future. The integration of information and communications technology in schools by supporting the professional competence of the teachers is essential for the success of technology engagement (UNESCO, 2006; Council of Ministers of Education, Canada, 2010). As Kraidy (2002) reiterates:

Digital technologies, however, are initiating a revolution at least of the magnitude of the one spawned by Gutenberg's press. The challenge faced by education, however, is to develop leadership both in shaping the future of technological innovations as well as in adapting to the implications of those developments (pp. 104-105).

The affects in education of this digital revolution are generating interest amongst educators and are beginning to be researched in regards to impact, possibilities and new ideas. But in regards to application in the arts classroom what does this actually mean? New communication technologies open up new possibilities for use in the classroom but to keep up to date is an onerous task. Not only must there be consideration for how to use the technology but then there is the transference to personal use, and then of course the extension of this for use in the classroom. Explicit considerations for meaningful learning and experiences that embed ICT and enhance young people’s learning need to take into account their experiences with this technology.

**Teachers learning FOR and WITH students**

The internet has opened up enormous possibilities to connecting people all over the world. Features of which allow one to search for and access information, engage in the digital and social media realm, while networking opportunities to learn with and from others anywhere in the world are more accessible than before. Find, listen to and start the conversation allows for endless possibilities. There is a want and a need for individuals, and particularly young people, to interact in this way. What does come with this is a challenging opportunity for educators to engage with the social media available and the various ICT platforms, tools and devices that allow for meaningful and authentic engagement.
The call for artists went out on Twitter.
One Tweet by an artist.
Retweeted by several others as the word spread through their networks.
The goal was to create a digital image.
To upload an animal to represent every letter of the alphabet.
Join the fun.
Pretty cool engagement with technology.
What an idea.
Twitter it, engage with idea, create, make, respond, evaluate, contribute
through uploading on a Blog, curate an online gallery, view others’ creations,
respond and explore.

The use of technologies has expanded the role of arts education. Opportunities for extension in innovative practice are available, whereby curriculum design and good pedagogy underpin new tools existing for arts educators. These technologies provide new opportunities and changing roles for art teachers in the 21st century. A shift however does have to occur in the uptake; a different way of looking and transferring pedagogical skills, and designing curriculum. Technology itself will not deliver or support innovative and meaningful learning. Rather purposeful application needs to be considered and planned for. There is also a need for openness to transferring meaning to what and who constitutes a ‘learner’ and a ‘teacher’. The role reversal, shifting of indoctrinations of who are learners in a school context, allows for interesting potential in applying, extending and adapting technological knowledge and skills for learning.

Recently I visited a school where several students were invited to attend a staff meeting. At this staff meeting their sole role was to share with all teaching staff a digital device or software that they were using to enhance their understanding of the world. As part of the sharing, each student was required to introduce the item, talk about why it was important to them, and then show an explicit example of how it was used for learning. The shift in the room was incredible. Resistance to students teaching teachers moved from excitement, from an opportunity to utilise the resources of young people under their very
A teacher learning for and with students transfers the power in the classroom to look holistically at what is possible. It is not uncommon to hear about rejections of technology being used in the classroom due to expense, accessibility, technology not working when you need. Now with the emergence of money and resources being created for schools to support teacher professional development for meaningful ICT implementation in the classroom, arenas are now becoming available whereby ideas, strategies and applications of these technologies are being discussed for and with classroom teachers.

There are ‘major shifts in patterns of cultural consumption. New generations of customers are using the internet, mobile telephony, digital media, etc. In ways that not only expand their range of cultural experience but also transform them from passive recipients of cultural messages into active co-creators of cultural content (Throsby, 2010, p. 6).

Becker (2001), in his study, found that teachers with a constructivist teaching philosophy used technology more frequently and were more likely to apply their technical expertise in the classroom. Likewise, there is general agreement that teachers’ pedagogies can make a difference to the way technology, computers, digital cameras, USB digital video cameras, and other devices are taken up and used in the classroom (Snyder, 1996; Snyder, 1999; Becker, 2001; Trinidad, 2003; Jones & Vincent, 2006). It is widely accepted that:

ICT is changing the way education is being delivered and educators across the world are faced with a number of challenges [and] despite the introduction of technology to most learning environments there has
been little change in the process of teaching and learning (Trinidad, 2003, p. 97).

The Melbourne Declaration advocates that ‘schooling should also support the development of skills in areas such as social interaction, crossdisciplinary thinking and the use of digital media, which are essential in all 21st century occupations’ (Ministerial Council on Education, Employment, Training and Youth Affairs, 2008, p. 5). With acknowledgement in the shift in global communications ‘new and exciting approaches to teaching, learning and assessment’ (Trinidad, 2003, p. 98) are presenting themselves for arts educators. As Schulman (1986) discusses, pedagogical content knowledge goes beyond knowledge of subject matter per se to the dimension of subject matter knowledge for teaching. Further, Shulman argues the need for teachers to have “knowledge of the strategies most likely to be fruitful in reorganizing the understanding of learners, because those learners are unlikely to appear before them as blank slates” (pp. 9-10). Thus, educators in the arts need to modify their pedagogical approaches towards technology (Jones & Vincent, 2006) to achieve a balance among the appropriate use of direct instruction, collaboration, inquiry, knowledge construction, and other approaches to support student learning (Trinidad, 2003). It is the responsibility of educators to assess critically how technology can be integrated (Snyder, 1999) as “technology cannot replace the role of the effective teacher or facilitator; it can [only] enhance what an effective teacher can provide in a classroom” (Rickards, 2003, p. 125).

Arts educators have noted that technology ‘is composed of both good and bad and of both generative and repressive influences’ (Snyder, 1999, p. 3). The use of new technology is not without difficulty, and Snyder (1999) reminds us that “discussions about social, cultural, and educational influences have often been clouded by hype: technology is presented as a panacea of the oppressed, and democratization” (p. 2). Cynicism about technology and its so called ‘power’ also emerges in the literature with reports that technologies are often dismissed as simply new instructional and communication tools (Birkerts, 1994). As Snyder (1999) states:

...the need to move beyond them [technologies] is becoming increasingly urgent. Instead of either celebrating or demonising the technologies, it is more productive to further understand them to exploit their educational possibilities (p. 2).
It is now important to move forward and to recognise the possibilities technologies offer for effective teaching and learning (Snyder, 1996; Snyder, 1999; Gee, 2003; Trinidad, 2003) by ‘creating environments in which students are encouraged to play and explore with the technology’ (Snyder, 1999, p. 6). The authors have drawn attention to the issues associated with using technology in the classroom by linking to the expectations for workers to acquire lifelong learning skills. Being able to adapt to a working world where ICT dominates is essential particularly with pressures of greater mobility and connectivity, knowledge information and transfer, and virtual transparent boundaries increasingly shaping the world of work. Workers are going to be carrying out roles that have not even been designed today (Gee, 2003; UNESCO, 2005; Groundwater-Smith et al., 2007). Therefore in preparing young people for a world driven by globalization, technological innovation and changing work practices, teachers and schools must show an appreciation of fostering lifelong learning and provide authentic learning contexts. The importance of making strong connections with multimodal literacies and the real world enhanced through technology is vital for arts educators.

Although some teachers and schools have traditionally been resistant to technological innovation (Selwyn, 2003; Phelps, Graham & Kerr, 2004), this position is no longer acceptable. Technology permeates societies and has changed our modus operandi. Teachers who utilise in their classroom fixed or mobile technology to assist in the development of skills such as selecting, synthesising and reflecting to form knowledge are ‘at a distinct advantage over those who cannot, as they are multi-skilled and can offer their students additional experiences in their quest for knowledge’ (Rickard, 2003, p. 117). Yet, having a technology rich environment does not automatically ensure that effective teaching and learning takes place. Pressures of time, a crowded curriculum, and technology being not fully operational can all impact on potential effectiveness (Rickard, 2003; Groundwater-Smith et al., 2007). Despite these issues, Rickard (2003) reports that he is optimistic of a “more effective and responsive pedagogy” (p. 119) result.

The world that today’s children inhabit diverges sharply from the one in which their parents were raised (Gee, 2003; Groundwater-Smith et al., 2007). Indeed, children are not merely wired; they’re also constantly being rewired, as information providers explore new ways of delivering information.

Questions about what students learn from technology and how it can be incorporated within the classroom are key to understanding and designing
curriculum in the 21st century. James Gee (2003) argues that the "theory of learning in good video games fits better with the modern, high-tech, global world today's children and teenagers live in than do the theories (and practices) of learning that they see in school" (p. 7). In stating this, Gee reinforces what Bach (1998, 2001), Tinker and Krakcik (2001), Swan et al. (2005), and Groundwater-Smith et al. (2007) say when they argue technology as integral to classroom pedagogy and curriculum design. They remind educators to embrace the interests, knowledge and skills that children are using every day. Embracing work together as learners, a shifting of approaches in the classroom supports the development in how children view and interact with the world, as too educators. Students are learning by becoming teachers. The articulation, thinking, discussions that emerge from interaction and transparency of all learning together help others and reinforce purposeful application of technology in learning.

The arrival of digital technology has given a renewal in possibilities of embedding new devices, tools and software into the arts classroom. In Australia, there is a low level of usage of these new technologies, across both primary and secondary levels (McCann, et al., 1998). Consideration of the barriers, issues and blockages in a way that allow dialogue about learning in the arts classroom including policy and best-practice examples allows for seeing meaningful embedding of technology. Highlighting practical suggestions for how teachers and teaching teams as learners can continue to use innovative instructional strategies and engage students while considering privacy issues also allows for the learning with and for students.

**Know your students: Success of student engagement in arts classrooms**

Young people are capable users of technology in the arts classroom but strong student involvement and transparent meaning and purpose must be present when planning for learning opportunities (Grace & Tobin, 1998; Donahue & Stuart, 2010; Lemon, 2010). Dinham (2011) talks about children and new media with communications through various technologies are likely to be naturalized in their home. She reminds us that 'in their daily lives most children have had experience entering the virtual worlds of computer games and are familiar with the Internet and its search engine tools...its social networking sites...and its video sharing capacities...' (pp. 96-97). AVG Digital Diaries, released in October 2010, is a series of studies looking at children from 2 to 5 years of age from birth in Europe, North America, Australia / New Zealand and Japan. The findings report that while most small children can’t
swim, tie their shoelaces, or make breakfast unaided, they do know how to turn on computers (57% 2-3yr old/68% 4-5 yr old), navigate with a mouse (58% 2-3yr old/82% 4-5 yr old), play a computer game (44% 2-3yr old/76% 4-5 yr old), and increasingly – operate their parents’ Smartphones (17% 2-3yr old/21% 4-5 yr old).

These acknowledgements are important for educators both as users themselves but as facilitators of learning through technology. This has huge ramifications for education and the changing nature of learning with and through technology. For the arts classroom it encourages re-purposing experiences such as these into learning situations that contribute to artistic expression and communication (Grace & Tobin, 1997; 1998; Dinham, 2011). To build on these skills and to support transferring of skills allows for new opportunities for new forms of artistic expression and new opportunities to interact and immerse in the arts environment.

For educators, digital equipment and devices are tools that allow accessible technology to enter the classroom and assume a key role in the enactment of curriculum. Student learning devices which are mobile and available at school and beyond can empower students to take control of their own learning. As the State of NSW, Department of Education and Training, Curriculum K-12 Directorate (2009) reiterates, ‘this is an unprecedented opportunity for transformation of teaching and learning’ (p. 4). In the 21st century, curriculum documents for schools are stipulating more integrated use of technology (The Government of South Australia, 2001; Department of Education Tasmania, 2006; Victorian Curriculum and Assessment Authority, 2006). ICT is no longer a separate subject run by a specialist teacher but embodies interdisciplinary knowledge, skills and behaviours that must be applied to all subjects. With this comes the challenge for teachers to use technology and to embed ICT across the curriculum. But as Swan et al. (2005) attest, many teachers are struggling to integrate the use of ICT.

In acknowledging that today’s children are often more technologically adept than their teachers, this research recognises that in respect to students’ learning the digital equipment and devices (such as digital camera, USB cameras, and so on) have the potential to be as important as pencils and paper. These digital equipment and devices can be available when needed and readily used as a part of the daily curriculum (Grace & Tobin; 1997; 1998). They also cater for and addresses the research concerns of Inkpen (2001) and Sharpies (2002) who
argue that the smaller and less destructive the device, the more chance it stands of becoming a life-long learning tool, anywhere and anytime.

Knowing your students also means acknowledging the recent research that states there is no technology gender divide between young boys and girls aged between 2 and 5 years. According to the Internet security company AVG (2010) as many boys (58%) as girls (59%) can play a computer game or make a mobile phone call (28% boys, 29% girls), turn a computer on/off (65% boys 61% girls), with 15% of both genders knowing at least one web address. What does however become evident in the research is a trend towards an increasing use of technology in solitary environments as individuals become older (Hein, et al., 2007). Girls make less use of new media technologies and use them in different ways to boys. Television is used most similarly in terms of time spent watching programs (Rideout, et al., 1999; Wright, et al., 2001).

Utilising resources that link into these medium, but in a purposeful way for learning exploration rather than entertainment or time wasting, allows for much potential in the arts space. When time, resources and travel availability are limited bringing the artist into the classroom on the screen has much potential. As Zoe Keystone, a visual arts teacher at South Oakleigh College reflects about accessing MOVE Video Art in Schools (Kaldor Public Art Projects, 2009), a Kaldor Public Art Projects collection of Australian contemporary video artists that ignite interest amongst students to emerge with moving image:

Vignette 4:

In Davis Rosetzky’s cinematic narration, Nothing Like This, the audience delves into the lives of a group of young people as they take us on a journey of relationships, teenage angst and identity. In parts, the audience finds itself uncomfortably close to these strangers, almost literally breathing down their necks. Each journey, narrated by a different character, intertwines and connects the characters dialogue to the visual narration of the images. As an audience, we are never asked to contribute to the visual narrative or dialogue or to pass judgment. Our role is to objectively listen and observe these characters.

Engaging with video art in this way shows young people how the use of technology itself can ignite feeling, thought, and ideas about both ICT, arts and the co-relationships. Planning and igniting interest in video art has
emerged in Zoe’s classroom through the television as a tool for viewing. A specific selection by the arts educator to show the art form as a viable medium alongside the form of viewing advocating technological application as an audience.

**Student meaningful engagement with technology in arts classrooms**

The arts can be used to teach principles of other subjects and other subjects can be used in the teaching of art concepts (Council of Ministers of Education, Canada, 2010, p. 30). Howard Gardner’s (1983) theory of multiple intelligences has given educators a broader picture of the human mind and learning dispositions and is actively referred to when addressing how inquiry can be actively connected to the arts (Burton, et.al., 2000). But what must also be acknowledged is how other learning areas can enhance arts learning. Creativity, imagination, critical and divergent thinking are dimensions that are widely linked to other subject areas however, coupled with the arts students extend and apply these areas through and in the arts classroom (Burton, et.al., 2000; Gardner 1983; Greene, 1995; Perkins, 1987). Technology also sits well as a way to enhance and support the development of these areas, and even more so in the arts classroom.

Jeanette Jennings, a specialist arts teacher at Carey Grammar Donvale, Victoria, and a community artist in sculpture and design, shares her insights into meaningful use of technology in the arts classroom. In this vignette Jeanette describes how as a teacher she provides new ways to engage in learning and artistic expression. This practice highlights the changing ways children work together and how they interact with community and artists to create new understandings.

**Vignette 5:**

*I like to use the computer as another artistic tool and to integrate what we are learning about through technology. I also use it as a resource for images and background information on a topic or artwork. We often create slide shows of the students’ work and use downloads of music and comments relating to the work, particularly where we can integrate literacy and art, which obviously live in harmony with one another. On my website (www.jeanettejenningsart.com) there is a lovely example of combining literacy, art and IT. The students read the story of Tenzing Norgay who climbed Everest with Sir Edmund Hilary. They created artworks based on the illustration*
techniques used in the book and wrote about the feelings and emotions they felt when viewing the illustrations.

Our librarians work closely with the art room and they collected the students’ thoughts. I worked on the artwork, and all was combined in the movie clip. I find this a powerful example of collaboration with library, art and IT and the students learnt a great deal through this process. Because the students’ world is a technologically based one it is important for us to use it as a learning tool. Other areas are taking their artwork and manipulating it through software programs to create other artistic interpretations of their work.

Screen dump of Jeannette’s website that shows the interaction of art, technology and literacy.

When linking thinking and social skills with technology in the arts classroom, there needs to be a balance between teaching basic self-help skills as well as developing explicit social interactions, cognitive, and language skills appropriate for creating and responding learning activities. Researchers have suggested early, positive exposure to the digital environment is beneficial (Shade, 1993). A great deal of research has linked increases in higher-order thinking behaviors to interactions with open-ended computer programs (Nastasi, Clements, & Battista, 1990) and learning opportunities. Use of technology in the classroom from early years supports the development of problem-solving skills, higher-order thinking skills, reasoning, and language development (Lemon, 2008). As we move into the 21st century, technology plays an increasingly important part in learning and understanding of the world. As Gee (2003) claims it is ironic that young people today are often exposed to more creative and challenging learning experiences with popular
culture than they are in school. The principles on which video-game design is based are foundational to the kinds of learning that enable children to become innovators and lifelong learners (Gee, 2005). Learning is complex and often time consuming, requiring children to learn in deep ways: to improvise, innovate, and challenge themselves; to develop concepts, skills, and relationships that will allow them to explore new worlds; and to experience learning as a source of enjoyment and as a way to explore and discover who they are.

Educational technologies have the capacity to bring other considerable benefits that are very beneficial and essential for purposeful embedding in teaching and learning. Encouraging teachers to ask questions about the way learning happens. Technology applications to the teaching and learning process need to be guided by an understanding of effective learning conditions (McCann, 1998). Technology also is very beneficial for children within a special needs classroom. For these children, “technology becomes a means of providing increased experiences, opportunities and independence” (Snider & Badgett, 1995, p. 103). There are special tools that are designed to help students with special needs, to aim to make them feel as comfortable in a regular learning environment as possible. These are known as assistive technology, of which some of these tools include a joysticks, taped stories, touch screens and communication boards. Devices and ‘everyday’ technologies benefit all students as in their exploration of understanding the world and exploring ways of seeing. At the disposal of arts teachers are a variety of possible ICT resources that enhance students’ ability to explore, design and present ideas. Some of these include:

<table>
<thead>
<tr>
<th>Desktop and laptop PC</th>
<th>Digital camera</th>
<th>Digital video camera</th>
<th>USB Digital video Camera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactive whiteboard</td>
<td>Data projector</td>
<td>Sound recording devices</td>
<td>Digital microscopes</td>
</tr>
<tr>
<td>Smartphone</td>
<td>Overhead projector</td>
<td>Printer</td>
<td>Scanner</td>
</tr>
<tr>
<td>iPads</td>
<td>iPods</td>
<td>Online data storage</td>
<td>Applications</td>
</tr>
<tr>
<td>News feeds</td>
<td>Photocopier</td>
<td>Software packages</td>
<td>Fax machine</td>
</tr>
<tr>
<td>Mobile phones</td>
<td>Digital galleries</td>
<td>Social networking sites</td>
<td>Internet</td>
</tr>
<tr>
<td>Online discussion forums</td>
<td>Blogs</td>
<td>Wiki</td>
<td>Ning</td>
</tr>
<tr>
<td>Games</td>
<td>Electronic books</td>
<td>Virtual worlds</td>
<td>QR codes</td>
</tr>
</tbody>
</table>
Student meaningful engagement in selecting and accessing technology for the arts classroom motivates educators to think about and consider the how and why of these technologies. The role of an arts educator is to be informed and to provide educationally sound opportunities for young people in the classroom. The following checklist for valuing the learning and teaching experiences (developed from Haugland & Shade, 1990; Snider & Badgett, 1995) assists in the thinking about these areas when considering the development of purposeful embedding of technology into the arts learning space.

**Checklist for valuing the learning and teaching experiences**

<table>
<thead>
<tr>
<th>Consider…</th>
<th>Think about further…</th>
<th>Checklist comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of child control</td>
<td>How do I honour the degree of control a student has use of technology? How is the transfer and application of technology software/device in the arts classroom? How do I respect individual use? How do I personalise learning? How will the use benefit exploration into arts?</td>
<td></td>
</tr>
<tr>
<td>Independent use by child</td>
<td>Is the use of technology student centered? Teacher centered? What capabilities are developed in use of technology?</td>
<td></td>
</tr>
<tr>
<td>Age-appropriateness and Child-friendly</td>
<td>What technology aligns well to supporting learning about, through, and with arts? What technologies are students already using? How can this use of technology transfer and/or enhance arts skills/knowledge? How do I determine value of the material/use of device? How can I utilise assistive technology to include all learners?</td>
<td></td>
</tr>
<tr>
<td>Clear instructions</td>
<td>What is the best way to introduce the device/tool? Who can introduce the device/tool? How are student/teacher roles defined while using technology?</td>
<td></td>
</tr>
<tr>
<td>Progressive complexity</td>
<td>How will the use of technology enhance arts development, knowledge and/or skills? How is thinking, reflection, viewing and personal use enhanced, developed and/or introduced?</td>
<td></td>
</tr>
<tr>
<td>Trial-and-error support</td>
<td>How do you help children problem solve while using the technology? How do you assist students to think metacognitively? What do you think you should do? Why do you think that is the application you should apply? How did you decide that?</td>
<td></td>
</tr>
<tr>
<td>Realistic models provided as reference points for learning</td>
<td>How does the technology focus on success and actual abilities rather than disabilities?</td>
<td></td>
</tr>
</tbody>
</table>

Chapter 6.
Focus on process instead | How does the technology develop concepts, skills, and relationships that will allow them to explore new worlds and understandings?

Cause-and-effect of product computer manipulation | What are the reasons for using this technology? How will it enhance student learning? How will it benefit the exploration, responding, creating and making? Why will the technology be more beneficial than another?

The use of software which is open-ended and without set goals is especially important for all learners as well as for those with special needs. | How does the technology support student arts practice? How are creating, making, process recording, responding, evaluating, questioning, and so on supported, co-constructed and scaffolded?

As this checklist explores, thinking about meaningful engagement with technology in the arts classroom is not just about the focus being on the technology, rather, it's the pedagogy that counts. Any specific technology is a tool that is at educators' disposal to make learning easier, and more enjoyable and meaningful for children. Authentic arts education means a genuine curriculum that is aimed at developing young people's creativity, self expression, aesthetic sensibilities, and arts literacy; these areas are 'grounded in knowledge and proficiency' (Dinham, 2011, p. 25). Challenging students and providing meaningful context and learning opportunities means establishing authentic expectations, and high standards that are attainable. Authentic expression, when encouraged and allowed supports powerful and deep creative thinking that supports and feeds the exploration and expression of their ideas and feelings (Grace & Tobin, 1997).

Practical activities are at the centre of any arts program where authenticity is paramount. Participation in opportunities to imaginatively develop, express and present own ideas and interpretations are at the forefront. Supported by opportunities to develop thinking, for example creative, critical, problem solving, analysing, and so on, the use of art materials and processes along with arts knowledge, aesthetic sensibility, and cultural awareness are reflected in arts practice undertaken and experienced.

A constructivist approach whereby knowledge and meaning are co-constructed with teacher as facilitator allows for learners(s) to construct their
own knowledge in contexts that are part of real life. Making personal discoveries and connections allows for the construction of arts understandings. It allows for ways of seeing and understanding the world to be explored and considered. Julie's example of working with an interactive whiteboard (IWB) within her primary art classroom at Osborne Primary School, Victoria shares these principles:

**Vignette 6:**

*Technology is used in my art room as another tool. I don’t teach it as a stand-alone component of the program. I use the interactive whiteboard:*

- To tune students in to the topic that I’m introducing
- To recap / revise / revisit what they have done during the class or previous sessions
- Easier to display and use graphic organisers (see example) as a whole class or in small groups
- To introduce relevant websites
- Displaying artists' and students' work
- Displaying photos taken by students or myself
- Playing online clips as tutorials and the students' own FLIP movies
- Students to create art on the board using different programs, eg.
  - Artpad- [www.artpad.com](http://www.artpad.com)
  - Artrage- [www.artrage.com](http://www.artrage.com)
  - Flashface- [www.flashface.com](http://www.flashface.com)
  - ScrambleUp- [www.scrambleup.com](http://www.scrambleup.com) this is a great site to direct you to loads of interactive programs and clips related to the topics you choose.
In this vignette Julie shows how the authentic learning experiences value students' opinions, expression and ideas about what art is or isn’t according to their reference points associated to inquiry units of study. In this example of students and teacher authentic learning in the arts classroom, the role of the teacher is to construct opportunities to invite views, opinions and ideas. Establishing a community that supports mutual respect, no judgments or put downs where authentic expression of own ideas is valued. Teachers themselves must model an acceptance and willingness to engage in this practice. Sometimes confronting, when unknown what may be expressed. However, with mutual respect comes a co-construction of knowledge, ideas, and exploration of understanding the world. This approach asks teachers to build on their thinking and to be engaged in meaningful open-ended learning that comes with creating a learning environment such as this. Underlining this vignette is the embedding of technology as a tool to enhance this expression. It is not the ICT that does the work, rather it supports as a tool that allows for expression of understanding, in a format that is tangible and authentic for all learners – creators and viewers. The access to this technology allows for multiple views, multiple construction(s) of ideas and multiple perspectives.
Arts education contributes to success in learning and enriches students’ lives individually as members of the local and global community (Council of Ministers of Education, Canada, 2010) and “when children are engaged in authentic learning experiences that value their intelligence, creativity and opinions, they switch on to learning and build positive images of themselves” (Dinham, 2011, p. 55). Technology must be available to respond to the diversity of the learners’ interests, needs, abilities, and experiences. The resources need to include materials for hands-on creative learning experiences, performance materials, and production tools and processes. As a supplement to their classroom learning, students benefit from access to artists within the community and to community resources beyond the confines of the classroom.

Vignette 7:

The focus of Year 10 Fashion was for students to explore and investigate the process involved in putting together a “photo shoot.” Students could use digital photography as the art form and worked through a process to create their response to a set topic. The aim of the course was for students to understand the process of responding to a brief and how to prepare a folio for presentation. Students had to decide how they would explore and respond to a set brief by gathering ideas, planning, research, trialing, and experimenting. Besides Internet based research (where students were given a list of artists to use as inspiration), this planning was completed before students were given the access to technology. Each assessment task in the course required students to select and present 4-8 images to the class. Often, students had 10-15 digital images to choose from, however were required to select 4-8 for presentation.

To begin the course, students were given access to a “point and shoot” digital camera. They were restricted by the functions and effects they could apply as the cameras were limited in their ability. Students were given a concept to respond to using the cameras and were asked to present this response to the class using a PowerPoint presentation. During this presentation students were required to justify their creative decisions and were questioned how their images responded to the topic.

As the course progressed, the technology available for students to use increased. Once students had demonstrated they understood the planning and exploration process they were given access to more sophisticated cameras.
digital SLR cameras, and image manipulation programs such as Adobe Photoshop were introduced.

During the course, the teacher had control over the implementation of technology and based on the needs of the students was able to feed the technology into the course when required. When surveyed, many students knew they wanted to use Photoshop, but did not know what they wanted to use it for. Many students were unfamiliar with opening a Photoshop document. Using this information, the teacher was then able to plan a series of Photoshop tutorials prior to “post-production” beginning (after students had taken photographs in response to the brief). Technology was introduced in stages and often during whole class tutorials where students would follow the teacher step-by-step demonstrations.

In the discussions and evaluations at the end of the unit, students stated that technology was only useful in the art making process after an idea or concept had been planned, developed, and explored. Students stated, “If you had given us a camera and asked us to go out and take photos we would not have taken lots of random photos that don’t relate or mean anything.” “I liked this subject because we learnt how to coordinate everything in a photo shoot, from planning to shooting to reshooting to presenting.”

Restricting the technology available for students and controlling the introduction of the technology, meant that students were not distracted by the endless possibilities technology could provide them. Instead they had to focus on the process of the art making and developing their ideas and concepts. Technology became a tool for the students to use to communicate their concepts and ideas to an audience. Without an idea or concept, technology wouldn’t have assisted the art making process in this subject.
An example of Conceptual Art where the objective is to select an object, which represents you, and photograph it in different locations, and with pocket-sized point and shoot digital camera.

"This image represents me because this is my bass guitar, another very important possession, and each size inside the babushka doll is spread along the fret board, as if it is a footpath towards something." - Georgia, Year 10

Introduction to digital SLR cameras and Adobe Photoshop with the objective for students to work collaboratively to respond to the theme of Alice in Wonderland. They had to shoot the Mad Hatter's Tea Party, the Queen of Hearts croquet match and Alice slaying the Jabawocky. The images were captured with a digital SLR and manipulated in Photoshop during post-production.
Zoe’s vignette of how she works with secondary school arts students at South Oakleigh College supports how students become proficient with creative processes in a variety of media including technology. The students explore communicating through manipulating elements and forms, using the critical analysis process, constructing and analysing art forms, and using media and technology to produce art and convey ideas about art. In this vignette it is evident that technology can be used to assist in teaching students arts concepts; we see the work with colour, shape, line and more. In the arts classroom the computer and digital technologies are used as a learning tool that merely supports the specific pedagogy. The students’ diversity in approach and how they see their world has been honoured. Careful pedagogical decisions have been made by Zoe to advocate meaningful, purposeful and engaging use of technology in the arts classroom. When considering Zoe’s vignette in the year 10 classroom, explicit planning in the purpose of technology is evident.

**Purposeful use of technology in the arts classroom: Working in a safe environment**

The nature of the arts classroom is itself messy, structured chaos (Holland & O’Connor, 2004; Dinham, 2011). However, there is always focus on creating a learning environment that is ethical, emotionally secure, physically safe and environmentally aware. Alongside respectfulness of others, a ‘safe’ arts environment is community that works together to explore ideas and highlight looking out for each other. The use of technology itself as a tool for exploring and making ignites further consideration of the connections to these areas in the arts classroom. Technology itself does not attend to these areas unless they are specifically addressed. Forgetting about the why and how of application lends itself to thinking carefully about the ethical, emotionally secure, physically safer and environmentally awareness. The challenge is to acknowledge these areas meaningfully for success in embedding the tools into authentic arts practice.

To create an ethical, emotionally secure, and physically safe environment for students to engage with and explore technology as part of their learning in the arts classroom, the best time to begin establishing a culture of proper use is the first day you introduce your students to technology. Teaching good practices is much easier than eliminating bad ones. If technology is already an established part of your students’ educational experience, however, it is recommended that starting over with a clean slate is essential. Effective use of technology in the education of all young learners is
dependent on the manner in which it is used. It is not necessary to adopt the frame of mind that this is an "all-or-nothing" situation (Snider & Badgett, 1995, p. 104). Think critically about what technology will be used and how it will support the arts practice of exploring, responding, creating and making. There is a need to think critically about the safety of when, where and how technology is embedded into arts practice.

Participation in a ‘safe’ network could create an inflated sense of trust that doesn’t serve as children migrate along with their peers to less child-oriented online communities outside of the school environment. Although technology is a very helpful classroom tool, it needs to be used in the right way in order for it to be effective; choosing the appropriate software and computer programs is vital. In order to do this, teachers need to select “appropriate software or computer programs [which] involves matching the competencies and skills of the user with those required by the software” (Snider & Badgett, 1995, p. 102). Often there can be a tendency for no fundamental skills to be taught to students about safety of working with technology and in online or virtual environments. With a small amount of skills development, web authoring, online communication, and digital device use and care, skills can be improved to ensure maximum impact of students’ arts learning activities and projects. Incorporating a culture of ‘safety’ is vital in the creation of a learning community that values technology and digital learning spaces as valued contributors to arts practice (Haugland & Shade, 1990; Ramon, 1992). In working in the arts classroom, think about:

<table>
<thead>
<tr>
<th>Creating a ‘safe’ environment for embedding technology in arts classroom</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of physical spaces inside and outside of the classroom</td>
<td></td>
</tr>
<tr>
<td>Promoting responsible use of products, material, resources and use of space(s)</td>
<td></td>
</tr>
<tr>
<td>Establishing clear procedures for handling equipment – items and user are safe</td>
<td></td>
</tr>
<tr>
<td>Promoting functionality of equipment – when used, why, meaningful application to learning</td>
<td></td>
</tr>
<tr>
<td>Making decisions that support personal judgment and artistic creation as part of learning process</td>
<td></td>
</tr>
</tbody>
</table>
Establishing a community of mutual respect – value self expression with body, voice, movement around room and learning spaces, use of materials that can create hazards

Establishing and maintaining conversations and dialogues should be positive and no putdowns to support exploration with ICT

Promoting exploration – respect technical materials when using ICT

Promoting physically safe environments – virtual and real life

Promoting emotionally secure sites – build confidence, eradicate behaviours that undermine self esteem and confidence and are not proactive to the learning environment – don’t set the students up to be unsuccessful when engaging with ICT

Promoting the taking of turns with equipment – allow children to develop competence

Promoting genuine relationships of trust – sharing, helping, working together, supporting each other

Establishing safe storage of equipment – access, safety, bulk items, parts all together

Maintaining equipment – batteries, electrical power cords, extension cords, memory cards, working parts, regular services, steps for reporting problems with technology

In the visual arts classroom at Osborne Primary School, Victoria, Grade Six students have been exploring and reflecting on the concept of environmental art. When the students had the opportunity to interview each other about their thoughts and unpack to a deep level their reflection and metacognitive thinking about what environmental art is they used the technology to record but to also look back and add further layers to their dialogue. Students generated digital narratives using USB digital video cameras. They operated, filmed, downloaded, edited and shared their arts experiences and responses as part of the student centered learning activity. The technology, as an embedded pedagogical tool, contributed to the learning of process but also their creation of a final product of ephemeral art work. Julie reflects:
Vignette 8:

Some children loved using the flip cameras just because they wanted to see and hear themselves, which is expected and understandable. We had a bit of this during the first session— silliness etc but after the second session when I edited all the clips and only showed the meaningful ones, they soon realised that if they wanted to be seen on screen they needed to take the project seriously and make positive comments and contributions to the group through their filming.

Others took a more planned approach— discussed the roles of members in the group— camera operator, reporter, etc and some even made small scripts.

Overall I feel that it really added to the process as we used these films to aid reflection and model appropriate behaviours and as a process diary of our experiences. It also gave the students an opportunity to develop new skills using current technology.

Julie’s vignette of the grade six visual art classroom shares an experience of integrating of USB digital video camera into the classroom to record in moving image and audio of young people’s investigation into environmental art. Not only does this shared experience inform us of how to make students’ thinking visible and how integrating technology supports authentic connections, we are, however, reminded of the considerations Julie had to make before, during, and after these learning experiences. As the students share:

Vignette 9:

*We loved making the flip movies about our long walk. We wanted to make a statement about the environment as well as art. We wanted the other kids to realise that we have to stop leaving rubbish around before it’s too late and our earth is ruined.* - Abigail, Andrew and James
What did Julie have to consider in order to co-construct a meaningful learning experience that honored students’ thinking, exploration, responding, and making? The following chart provides insight into these considerations about the students’ participation and contribution and also the use of USB digital video camera as a technology embedded into the learning activity.

**Co-constructing a meaningful learning experience**

<table>
<thead>
<tr>
<th>Ethically secure</th>
<th>Emotionally secure</th>
<th>Physically safe</th>
<th>Environmentally aware</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB digital video camera in working order, battery charged</td>
<td>Students know how to use equipment</td>
<td>Express a belief in students’ ability to handle technology properly</td>
<td>Think about spaces and impact that they can have on students when working</td>
</tr>
<tr>
<td>Draw parallels between the real world and the electronic world</td>
<td>Build confidence in use of equipment, practice filming sessions to explore quality of angle, vision,</td>
<td>Negotiate together an acceptable use policy including the consequences</td>
<td></td>
</tr>
</tbody>
</table>

Chapter 6

129
During
• Computers accessible to allow for downloading of footage
• Editing done in pairs to allow for co-construction of film for viewing
• Ask for opinions, respect right to pass
• Ongoing checks that the technology is reliable, usable and supportive of children’s use

Audio
• Mutual respect to share personal perspectives
• No judgments on others’ differing opinions
• No put downs of peers’ opinions
• Evaluate students learning in use of technology and embedding technology to support inquiry
• Instil a sense of responsibility

For violating it
• Involve students in constructive activities that are student centered
• Create a physically safe learning environment for collaboration and interviewing, filming, and reviewing

After
• Check all equipment is in working order
• Report any problems with equipment
• Equipment to be serviced/repairs if needed
• Equipment stored so accessible and ready to use for next lesson

• Mutual respect when viewing and hearing recorded
• Instil a sense of responsibility that comes with sharing openly perspectives and use of technology to do this

• Assign students to work with technology buddies

This vignette is an example where meaningful embedding of technology supports and enhances arts experiences. The use of an accessible handheld technology supports the learning (Lemon, 2008; 2010). Julie is innovative and successful in her learning and teaching as underlying as this learning opportunity is student-driven. The students are provided with learning experiences of successful use of the USB digital video cameras and software to
download and edit footage while they create an investigation into their thinking of environmental art, which then become peer-reviewed and further developed by others as an audience (Hargadon, 2008). The students are creating rich educational material that is accessible to a wider audience but that provides meaningful, purposeful and tangible access to thinking, opinion, perspectives in responding and exploring arts. The culture of using and exploring the technology is embedded from the beginning and Julie thinks about the ethical, emotional, physical, and environmental safety at all stages of the process. In this vignette we learn that technology in the arts classroom enhances the exploring of environmental art. It highlights thinking processes and interdisciplinary skills development allowing for justification, verbalising and visual reflection about self.

Future imaginings

Vignette 10:

Once you begin searching it is amazing what you find. I scratched the surface and found some wonderful posts by other educators, artists, teachers, and learners. They had links to like-minded people, who in turn had fascinating ideas. As I’m upping my interaction with social media - I’ve got Facebook, Twitter, YouTube and Delicious all on the go. Some overlaps, benefits for each application but the differences as well are clear. Others’ posts and experiences highlight my experiences and open up perspectives from around the world of what people, adults, young people, are doing with their learning about, through and with the arts. Now the challenge of how to meaningfully interact but also have meaningful resources for me of all I discover so I can share with others and keep track...but the ideas are incredible. I’m inspired, I can see what others are doing, I can interact with them, ask questions follow and see, but most importantly I can share with my colleagues and my students. They in turn teach me to another level with our conversations about what we see, think, could do, can do, will do...

Imagining, dreaming, and connecting. Making possible what is seen through the social media allows for future imaginings of the arts curriculum and purposeful engagement with technology. This reflection reminds us that future imaginings also bring up the need to be able to interpret, analyze and create. Providing opportunities for learning with and through technology in the arts classroom supports:
• innovative and imaginative development of ideas;
• learning and practicing of skills with arts materials, concepts and processes;
• establishing, creating and fostering an environment that supports expressive development of self;
• reflection on learning; and
• learning more about arts as way of seeing and experiencing the world, culture, and people.

The future and what is possible for the meaningful integration and embedding of technology in the arts classroom is tremendous. The accessibility to ideas, to what is possible is what inspires artists, creative thinkers, and visual and kinesthetic learners. The wonderings are incredible. The more engagement as educators we enact and open ourselves up to, the more opportunities and experiences that we see, feel, and touch. The variety of ways of seeing, exploring, and engaging with arts practice personally allows for the possibilities of doing the same with young people. In turn their explorations alongside us allow for further possibilities. The transforming of who is the ‘teacher’ and who can be ‘taught’ is challenged, recreated and repurposed – alongside each other ‘we’ all learn from each other while exploring meaningful technology in the arts domain.

There are an incredible amount of goodies to engage with. Goodies that we can critically analyse their worth, purpose, need, and the how of using. Part of this negation and thinking is a need for conversation - dialogue between learners, educators, administrators, leaders and artists alike. A dialog that is critical and creative paralleled whereby the innovation, creativity, evaluating and responding support and not hinder or ‘bog down’ the possibilities. The ‘red tape’, ‘it’s too hard’, and the ‘NOs’ are all too familiar in reasons for not imagining futures of technology and arts education partnerships. These frames of thinking are hard, tiring and blockers to learning, potential, creativity and exploration. As arts educators and artists we can ask why, how and what is the learning, we can intrinsically know and extrinsically evaluate what is appropriate and what is needed to inspire the young people we work with. It is our voice, our knowledge paired with different ways of seeing that allow for the future possibilities. There is always a way to move forward, always another option, another way of explaining, framing or showing what is possible.

In the Australian context we have access to innovation, ideas and enthusiasm from all learners, yet there are times when our forward thinking is
stopped by ‘blockers’ but most of all from our fear of the unknown. It’s a time to celebrate what has been done, what is being created, and what is being imagined. Future possibilities is as much about ideas as it is the courage to place ourselves as educators alongside our students, to be learners together. Working with technology in the arts classroom asks us to think about purpose and to action open ended exploration supported by possibilities of exact outcomes being unknown until you reach that point. There is a change in approach, a willingness to trust the unknown. But also a realisation in skills and knowledge that already exist; that the exploration and learning along the way is part of and in light of shaping, supporting and igniting learning about, with and through the arts for future engagement with the world.

Arts and technology as a tool for learning is about realising the potential; authentically sharing, exploring and risk taking between the teacher and students and developing a relationship where technology allows for and supports creating, making, exploring and responding. Technology in the arts classroom assists exploring and understanding the world around us and contributes to how we then continue to gain knowledge and understanding. It’s about becoming adventurous in what can be possible.

Remember Georgia at the beginning of the chapter. Georgia’s energy that bounces off the page is a reminder of the possibilities. A reminder of future imaginings of technology embedded purposefully in the arts classroom to enhance young people’s exploration, responding, and creating.
References


